



PARTNERSHIP FOR CLEAN INDOOR AIR

PCIA Bulletin

July 2007 Issue 12

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. More than **140** governments, public and private organizations, multilateral institutions, and others 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!

Note to readers: This issue's introduction was written by Guest Editor and Winrock intern Sally Maki, also a past volunteer with ETHOS and Ecofogão in Brazil.

Household energy and indoor air pollution are fields whose urgent importance has captured the devotion of individuals and organizations around the world. Such enthusiasm makes a great gateway for volunteer contribution. Volunteer programs also offer a logical approach to the common challenges of limited financial resources and limited specialized capabilities.

From the volunteer's point of view, a chance to learn and gain experience while making a difference in people's lives is hard to beat. Before I decided to join a volunteer program, I felt unchallenged at my job and discouraged that I wasn't really contributing to the world. After learning about the University of Dayton ETHOS program, which gives students a chance to get hands-on experience while helping people and learning a culture and language, I could not resist. The experience surpassed even my highest expectations. It made a lasting impression that has shifted my direction to the more challenging and rewarding path that I pursue today.

Volunteers often provide technical, business, or social know-how that would otherwise be costly to hire. Their excitement often translates to hard work, providing additional manpower to accomplish tasks and increase the reach of an organization's hands. When the time comes for volunteers to leave a project, they are likely to long remember their gratifying experiences and support future work of the organization.

Designing a successful volunteer program to really tap into volunteers as resources requires organization and effort. In this issue of the Bulletin, you will learn how PCIA Partners have created successful volunteer programs, and how their volunteers have made a difference. You will also hear from volunteers on what they've gained from their unique experiences. We hope that this Bulletin will provide valuable insight as well as encourage you to consider making volunteers a part of your efforts. Enjoy!

Attention Asia Partners!

**PCIA Asia Regional Workshop on IAP and Household Energy Monitoring
August 7-11, 2007, Hanoi, Vietnam**

Register Now!

Information and registration materials available at www.pciaonline.org

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PARTNER SPOTLIGHT Colorado State University

Each quarter, the *PCIA Bulletin* highlights one or more Partners who are reducing women and children's exposure to indoor air pollution. This issue highlights the activities undertaken by Colorado State University.

A positive force for change: *Innovative collaborations for the reduction of Indoor Air Pollution.*

Emily Wilmsen and Mac McGoldrick, Colorado State University; Mac.McGoldrick@colostate.edu

Colorado State University (CSU) mechanical engineering student Sachin Joshi remembers a recent trip overseas when he stepped into a fragile, one-room home in Gatlang, Nepal, then immediately backed out. "I don't know how they manage to live in that room and work and eat," Joshi says of the smoke that poured from the building. "They keep the fire going all day and night because they need to warm their houses."

Sachin and fellow students were in Nepal in January, funded by a Mondialogo Award, teamed with our partners at STARIC/N (Sustainable Technology – Adaptive Research & Implementation Center, Nepal) to help resolve the problem by installing efficient, clean-burning cookstoves to reduce emissions as well as provide electricity and light. CSU students increasingly tackle such tough global dilemmas as air pollution through multidisciplinary collaboration at the University, including a new program developed through the colleges of Engineering and Business. Under the Global Innovation Center for Energy, Environment & Health, business and engineering students work together to address global challenges that may be out of reach for relief organizations.

Engineering students develop the technology, and business students figure out how to get it to people who need it. They work with international microfinance organizations and others who can help deliver those solutions to people cheaply while also sustaining profitable business enterprises. In their field testing work in India, the CSU team partnered with the Self-Employed Women's Association (SEWA) and SELCO – the Solar Electric Light Company. This field research was generously funded by a grant from the National Collegiate Inventors & Innovators Alliance (NCIIA).

Working in tandem with the center is the College of Business' new Global Social and Sustainable Enterprise master's degree program, a three-semester program that teaches students to develop sustainable business solutions to serious problems affecting the globe, largely in the developing world. Students assess market needs, build production and distribution systems, and create enterprises that eventually could become profitable. "The new Global Social and Sustainable Enterprise degree empowers students to use business as a positive force for change," says Paul Hudnut, business instructor who helped create the degree program. The multidisciplinary academic approach embraced at CSU has proven itself already: Technology developed at the University led to the creation of Envirofit, a private, nonprofit company that is retrofitting two-stroke taxis in the Philippines with cleaner, more efficient engines. Envirofit's mission is to develop and disseminate appropriate technology solutions to issues that plague the developing world – and have partnered with the Global Innovation Center in the area of clean cookstoves. And now, efficient cookstoves are being tested in homes in Nepal, India, and Nicaragua. "This cookstove project brings electricity to people, which allows them to improve their lives and increase their income," Hudnut says. "The light can be used to extend their work day, run a small radio, or for reading and education."



CSU stove installation in India; January 2007

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Dan Mastbergen, doctoral student in mechanical engineering, accompanied Joshi and Hudnut on recent trips to test the stoves in India and Nepal. As a graduate student in the College of Engineering's Engines and Energy Conversion Laboratory, Mastbergen helped develop the technology for a cleaner-burning cookstove that generates electricity. Mastbergen says he better understood challenges facing the developing world during a trip to India, where he went from vendor to vendor hunting for parts for the stove. "Parts would be hanging from strings from the ceiling, and hardware would be in coffee cans," Mastbergen says. "Many of the shops are just three walls with a garage door that opens into the street. There's tons of commotion – cars, tricycles, bikes, buses, cows, horses, camels. It's really crowded. Just the experience of going there, trying to start a business, and working with people to develop a new technology – you realize how difficult that task really is," Mastbergen says.

Students are learning how their technologies and business plans improve lives. For example, in Nepal, people were surprised when they saw they could have light in their homes from the cookstoves – without the smoke, says Joshi, who is from Nepal.

Smoke from traditional stoves that use fuels such as wood and dung is a serious health threat to women and infants. "They didn't have to tell you – you could see it in their faces," he says with a laugh. "They were really happy. They had been living for generations with kerosene, with these really dim lamps. They just couldn't believe their eyes."



CSU stove installation in Nepal; January 2007

The cookstove project, called Bright Light Innovations, was a class project for entrepreneurship students in the College of Business during the 2005-2006 school year. Now, students are working side-by-side with families overseas and creating relationships with microfinance organizations and companies to build, distribute, and service the stoves. Students also benefit in personal ways from such projects. "It gives me the opportunity to apply many of the skills I've developed in my schooling toward a really huge problem," Mastbergen says. "It allows me to focus on developing a product that hasn't been developed yet." Colorado State Magazine featured the efforts of the clean cookstove team in their Spring 2007 edition. For more information about the stoves program, please visit our website at www.eecl.colostate.edu.



ASHDEN AWARD WINNERS

The world's leading green energy prize, the Ashden Awards for Sustainable Energy, has announced its ten winners, including three organizations working on household energy programs: Beijing Shenzhou Daxu Bio-energy Technology Company Ltd (Daxu), for an innovative stove design in China that replaces coal with widely available crop waste and burns wood much more efficiently; BIOTECH, for biogas plants in Kerala, India that use food waste often left out in the streets to rot to generate gas for cooking; and SKG Sangha, for dung based biogas plants for cooking in Karnataka, South India with high quality fertilizer outputs. For more information, please visit <http://www.ashdenawards.org>.

☀ FEATURE ARTICLES

Energy Clinic: Women, Energy Conservation and Environmental Protection

K.M. Dhariesan Unnithan, Director, Energy Management Centre; emck@keralaenergy.gov.in

In 1996, the Government of Kerala, India established the Energy Management Centre (EMC), becoming India's first state to create an institutional mechanism for energy management and conservation. The mission of the Centre is to achieve sustainable development through enhancing total energy efficiency, applying renewable energy and environmentally friendly systems in all sectors of the economy.

One of the Centre's main strategies is to utilize local participation, especially that of women and youth, to encourage energy conservation. This has led to the design and implementation of the "Energy Clinic" Programme, which relies on women volunteers and volunteer organizations to promote energy conservation activities in the household sector.

Volunteers are selected with the goals of both extending the reach of the programme and boosting the self-confidence of the participating women. Kerala, which has a high literacy rate, has been showered with voluntary involvement of citizens interested in developmental and nation-building activities.

Selection of volunteers occurs in phases. First, the Centre publicizes a request for applications through print media. Women are especially encouraged to apply. Volunteers are expected to have higher secondary education and experience conducting classes. Workshops on domestic energy conservation are administered to the qualified applicants. After completing the workshop, applicants take an aptitude test and volunteers are selected based on their score. The selected volunteers then undergo two to four additional workshops to learn more about energy conservation and how to conduct the classes. They are provided with a report form for their classes which they must return, along with a participant list. For each class, EMC pays the volunteers an honorarium of Rs. 250 (~US\$6). The government of Kerala has also requested its Panchayats (municipalities) provide Rs. 150 (~US\$3.5) in support to the volunteers per clinic. Districts are demarcated for the volunteers, where

they can organize awareness classes in association with Panchayats, non-government organizations (NGOs), women self-help groups and any other social or cultural organizations. There is no limit on the time period for a volunteer.

The main problem EMC faces with volunteers is attrition. In order to address this issue, EMC has requested notification from volunteers who are no longer interested in continuing their service. This way, EMC can update lists with these changes, as well as start to look for new people through media advertisements.

The EMC engages volunteers in two programmes, in an Energy Clinic and in an indoor air pollution initiative, where volunteers construct and disseminate the 'Thapabharani' thermal cooker.

Energy Clinic: EMC's experience shows that 10-15% energy savings can be achieved by simply creating awareness of energy efficiency. The Energy Clinic (known locally as Oorja Clinic) uses women volunteers as agents of change to educate housewives on energy conservation principles. EMC has trained 120 women volunteers throughout Kerala to organize demonstration classes on energy conservation in multiple villages, and is now in the process of selecting 300 more women volunteers for extending the reach of this programme in all the villages.



An energy efficient cooking contest after the clinic

These volunteers display and demonstrate energy efficient devices, including a compact fluorescent light bulb, pressure cooker, thermal cooker (known as Thapabharani, developed at the EMC), and the Nutan Stove (a high efficiency kerosene

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stove), which are provided by the EMC. The Energy Clinic Programme attracts a large number of people, mostly housewives, and many have adopted the energy efficient technologies demonstrated.

In the classes, the locally known teachers can easily engage with participants on a deeper level. They are able to use an informal, interactive and entertaining teaching style that relaxes the housewives and invites questions. The demonstrations of the energy efficient items, especially the efficient rice cooker, particularly capture the audience's interest.

Construction and Dissemination of Oorja II (Thapabharani), the thermal cooker:

Low-income people spend up to 25% of their monthly income on cooking fuel - usually using inefficient devices. The Thapabharani (thermal cooker) is one solution that simultaneously has many other positive side effects. First, it reduces both energy consumption and saves fuel money that can be spent on other things. It shortens the duration of cooking and time spent at the fireplace, providing more leisure time for poor rural women. It also decreases indoor air pollution when women are cooking, which improves their health. Finally, it can even help alleviate poverty and generate income, as fabrication and propagation of this device can create employment opportunities that

empower women and improve their quality of life. This cost effective, efficient and environmentally friendly thermo-container is capable of saving around 75% of cooking energy while cooking rice, grains and similar foods. Women volunteers are selected from all parts of the state in association with the local governments, leading women's groups, women's self-help groups and prominent NGOs in their respective districts. Training on the fabrication of the device is provided to the volunteers and they are identified as local trainers, to provide further training to women's groups engaged in the fabrication of the devices. Women volunteers are also trained to conduct awareness classes in selected Panchayats for educating rural women about the opportunity and need for energy conservation, and the application of this device in their daily lives.



A master trainer demonstrating how to make an Urja II

The University of Dayton Engineers in Technical Opportunities for Service-learning (ETHOS) Program

Margaret F. Pinnell, Ph.D.
(margaret.pinnell@notes.udayton.edu), Charlie Schreier, Phil Aaron, S.M., Bill Eger

The University of Dayton (UD) Engineers in Technical Humanitarian Opportunities of Service-learning (ETHOS) program was developed in the spring of 2001 by an interdisciplinary group of undergraduate engineering students. The ETHOS program was founded on the belief that engineers are better prepared to serve the world more appropriately if they have experienced opportunities that increase their understanding of technology's global linkage with values, culture, society, politics, and the economy. The ETHOS program seeks to provide these opportunities through international technical service-learning immersions, on-campus student organization

activities, collaborative research and hands-on classroom projects that support the development and facilitation of appropriate and sustainable technologies for the developing world. Service-learning and appropriate technology serve as the core of the ETHOS program. Students that participate in the ETHOS program engage in research, testing and development activities associated with alternative and non-traditional technologies that are based on fundamental engineering principles and provide culturally appropriate solutions. The experiences provided through the ETHOS program allow students to recognize the far-reaching effects, positive and negative, of engineering and technology and the responsibility that an engineer is faced with in an ever-increasing global society.

Of the three primary ways that the ETHOS program reaches students, the international

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technical service-learning immersions are believed to have the biggest impact on the attitudes and perceptions of the students. Many students describe their ETHOS technical service-learning internship as "life changing." Since its inception in 2001, over 40 engineering students have worked with organizations in such countries as Nicaragua, Honduras, Brazil, Bolivia, Cameroon and Peru. Research has included appropriate technologies related to the mitigation of indoor air pollution and deforestation through the development of more efficient biomass cookstoves and alternative energy sources. This research includes focus on improving combustion efficiency, energy reclaim, material selection, and stove design modifications. Other research and projects include solar cooker design and production, photovoltaic system design, and water supply system design and implementation.

The ETHOS international technical immersions are offered as part of a three semester hour course, *Engineering Design and Appropriate Technology*. This course spans three semesters. During the winter semester, students meet once a week for two hours and participate in additional hands-on activities, fund raisers and preparatory exercises. In the sixteen week spring semester, there are three modules that students complete. In the first module, students participate in a language preparation "crash" course for four meetings. Next they attend a cultural immersion course for six weeks which covers important and practical information associated with international travel such as cultural sensitivity, passports, vaccinations and health issues, packing tips, travel safety and



Kevin Keefe, a 2005 ETHOS volunteer installs photo-voltaic panels in El Transito, Nicaragua

the personal formation associated with travel. The remaining six meetings are used for organizational meetings, placement information, fund raising, an introduction to appropriate technology and hands-on technical training.

During the summer semester, the ETHOS students participate in the international technical service-learning immersions. Students travel in small teams of 2 to 3 students each and live individually with host families that the partner organization arranges. The students must stay at their placement for a minimum of eight weeks. During the technical service-learning immersions the students work with collaborating organizations and communities to assist in finding appropriate, sustainable and effective solutions to technical challenges through guided research, development projects, and technology dissemination. Students use their engineering knowledge to address real world problems, while gaining a better understanding of the interface between technology and global society. Due to the nature of their living arrangements they are forced to engage in local culture including language, infrastructure, and general lifestyle.

During the fall semester, students return to campus, write a technical report summarizing their work, write a reflection report, attend a dissemination dinner, submit an expense report and give two presentations. At least one of these presentations has to be on campus, but the students are encouraged to give the second presentation off campus.

The *Engineering Design and Appropriate Technology* course is offered to undergraduate engineering (or related discipline) students who have completed their sophomore year. The technical immersions are also available to graduate students, but no academic credit is offered for their participation. Students learn about the program from the ETHOS student on-campus presentations, faculty members, e-mail advertisement and signs that are placed throughout the School of Engineering. Students interested in participating in ETHOS must go through an application process which includes an interview with the ETHOS administration. The number of ETHOS participants has ranged from 5 to 23 for a summer.

Some of the biggest challenges that the ETHOS program has been faced with is coordinating the

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Lori Hanna, a 2006 ETHOS participant, reviews the design of a solar cooker, working at Grupo Fenix in Nicaragua

student placements. The ETHOS administration works hard to match student qualifications and interests with organizational needs. The ETHOS program has worked to overcome this challenge by establishing and maintaining a good working relationship with its international partners.

Feedback provided by the international partners suggests that the student ETHOS volunteers have made significant contributions to the development of more efficient biomass cookstoves and other related technologies. The students bring creativity, enthusiasm and technical competence to the international partner organization.

For more information on this program, please visit www.udayton.edu/~ethos or contact Margaret Pinnell at margaret.pinnell@notes.udayton.edu.

Volunteers Contribute to Improved Ecostove Performance In Brazil

Ronaldo Carneiro, Ecofogão;
ecofogao@ecofogao.com.br

Ecofogão is small Ecostove business created in 2003 in Belo Horizonte, Minas Gerais, Brazil. Ecofogão manufactures Ecostoves, which were originally designed and manufactured in Central America by PROLEÑA with help from Trees, Water and People and Aprovecho Research Center.

While Ecofogão is a small industry with limited human and capital resources, it faces the large challenge of introducing the Ecostove into an open Brazilian market. The Ecostoves must first be adapted to fit the cultural needs of the Brazilian market and be manufactured with available and cost-effective materials. Furthermore, it is essential for the Ecostove to be properly marketed so that people in Brazil are aware of the advantages of this innovative wood stove.

As a way to support the development and strengthening of the Ecostove industry, Ecofogão decided to accept volunteers to help out with specific research tasks that are not possible to accomplish within the every day activities of the company.

Since 2004, in partnership with the ETHOS program of the University of Dayton, Ohio, student volunteers have come to Brazil every summer for two months (June and July) to

provide support with stove design development. In addition, one student from Harvard University has volunteered in the past. The students generally have chemical, mechanical or civil engineering backgrounds.



Sally Maki and Steven Osgood testing an Ecostove for energy efficiency

The students come to practice their technical skills and to help develop stoves that are appropriate for low income people. They also come for the cultural experience of living in a different country and learning the basics of a new language - Portuguese in Brazil's case. Usually the students arrive with a basic understanding of Portuguese, and by living with a local Brazilian family they quickly develop more advanced communication skills. This allows them to interact with Ecofogão employees, the host family and with new friends

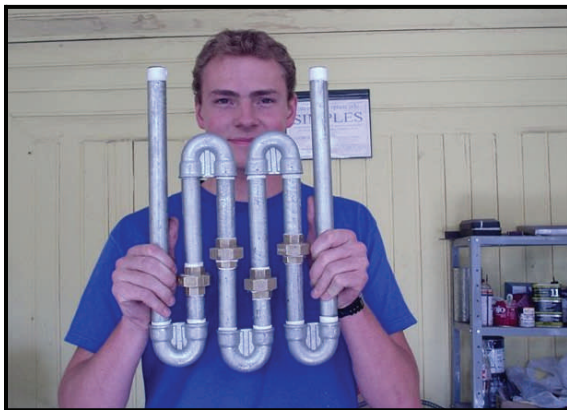
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that they make during their two-month internship. Ecofogão provides guidance to the students, orienting their work activities and integrating them with friends and families.

Volunteers at Ecofogão have made significant contributions to develop better and affordable stoves. For example, Ecostoves were originally made of metal, which had significantly increased in price over the past years. In response, Ecofogão requested that volunteers design a new stove framed in concrete, in order to reduce the manufacturing cost and make it more affordable to the low income households. As a result, Ecofogão is now commercializing a new low cost Ecofogão model at R\$150 (US\$77), a 50% price reduction from the original price of R\$300.

Another example was the development of a rocket-stove compatible “serpentine,” a coil to produce hot water with the stoves. Rural families in the Southeast (Minas Gerais region) like to have serpentine to heat water for the shower and kitchen with their wood stoves. The volunteers worked hard to find an appropriate serpentine design well-adapted to the “rocket stove” combustion chamber. Other contributions of volunteers at Ecofogão include designing a better chimney to improve energy efficiency and avoid indoor air pollution, adjusting the rocket stove combustion chamber grate height, exploring ethanol stove designs, and translating the Ecofogão web site (www.ecofogao.com.br) into English.



Peter Kleinhenz developing a first prototype of a serpentine for the Ecostove

The work done by volunteers is usually field tested in nearby low income households, so that the volunteers can get direct and quick feedback from the families toward whom the technology is aimed.

In order for volunteers to really make a contribution they must be well-guided. Basic and fundamental rules of expected behaviors must also be diplomatically shared with the volunteers as they arrive, given that they are in a completely new culture and must follow the basic rules of that society. Otherwise, cultural conflicts could be created, making the whole experience less enjoyable.

In Brazil, people are very friendly and eager to learn from foreign volunteers. Specifically, the US volunteers who have come have greatly helped to create friendly impressions of the US people on the Brazilians who they have met and befriended.

The work performed by volunteers has been very welcome by Ecofogão, and has allowed the company to better design stoves for its main market and purpose – to reach the poorest people who are still exposed to indoor air pollution due to the use of primitive wood stoves with low efficiency and high indoor emissions.

Ecofogão is thankful to the following volunteers: Peter Kleinhenz, George Mertz, Sally Maki, Steven Osgood, Josh Heyne and John Succo, all from the University of Dayton, and Elena Marie Krieger from Harvard University. Their contributions in terms of funds for their travel and living expenses and their time and motivation have been much appreciated, and Ecofogão has continued developing the work they started. Without their contributions, Ecofogão’s mission to provide cleaner and efficient cooking technologies to the poor would have been much more difficult.

☀ NOTES FROM THE FIELD

Volunteers, Social Enterprise and Cubicles

Stewart Craine, Barefoot Power;
info@barefootpower.com

Seven years ago, as a volunteer engineer, I had a two bedroom flat, a nice office to work in and sufficient salary to eat well and enjoy life in Kathmandu - all for the princely salary of about \$10,000/year. Now, as a social entrepreneur trying to implement a larger scale commercial model of those first village electrification projects, the salary hasn't changed, and the accommodation has degraded to zero star hostels in China with a thriving family of cockroaches. But I'm not going back to my office cubicle just yet!

Australia Volunteers Abroad (AVA) arranged a wonderful placement for me in Nepal for 2 years to manage several micro hydro projects, enabling some very remote and poor villages to gain access to clean, renewable energy. Coming straight out of university and into the hills of western Nepal, I had a steep learning curve, but a fantastic experience. It was a rewarding career choice, too, especially as I threw out a recently purchased UK work visa to opt for AVA instead.

Delivering clean energy to the poor is a challenge; I learned about improved cookstoves, solar panels, micro hydro, white LED lighting, thermoelectricity and numerous other technologies, many of which had high upfront costs in a land where long-term loans to the poor were rarely available. I was lucky enough to participate in some very innovative projects, including Nepal's first microhydro application using only compact fluorescent lamps (LEDCO), Nepal's first improved water mill using only CFLs (CRT/Light Up The World) and also using white LEDs (Light Up The World / Alex Zahnd), and a study on energy efficient lighting for microhydro in Nepal (DANIDA). These projects showed that abandoning incandescent lighting could yield very large savings due to lower peak demand and saved generation costs. This could be used to quickly rehabilitate overloaded plants and extend existing plants to cover new villages. In new project areas, costs could be reduced to a level similar to existing kerosene expenditure on lighting, with payback periods of 1-3 years instead of 5-10 years, thereby reducing perceived investment risk. However, it took 4 years before a

national policy which discriminated against energy efficient projects was changed. This policy promoted less efficient designs due to a cost per kW maximum cap on subsidies; because these projects used electricity more efficiently, delivering the same lighting service at a high cost per kW but much lower cost per household, they were disqualified from applying for the subsidy as the rules indicated they were "too expensive". The lessons learned were the lack of basic engineering knowledge in both the development and government spheres of influence, and the lack of ability one has as a volunteer to make serious contributions. I also found traditional volunteer programs to have little sense of urgency or scale.

So, as it appeared one needed to wear a suit and be paid ridiculous sums of money to be taken seriously, I spent the next 4 years as a consulting engineer for a power utility in Australia. Unfortunately, they had no interest in developing country projects, and the few projects they did undertake in this area were highly dismissive of the designs that had been used successfully in Nepal. Even commercially viable proposals of using energy efficient lighting on diesel grids in Australia were knocked back. So were project proposals similar to ABB's Energy Access programme, which is an excellent example of global Corporate Social Responsibility from a global energy company, to recognize and address global energy poverty. Even a simple idea of developing a Foundation, like Shell and EdF, to tackle energy poverty in the Australasian region, could not gain traction. Finally, after being paid exorbitantly for a rural electrification plan that was dropped by the client in the target country and shelved by the utility as a new business path, it was clear to me that decision makers in private industry were not going get involved in energy poverty either.

Hence, in 2005, Barefoot Power (www.barefootpower.com) was born. Barefoot Power is a social venture built on a sound business plan that will not be constrained by donors or governments. It sees a market in delivering services to the poor that commercial energy companies typically dismiss. The International Finance Corporation estimates

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kerosene lighting is a \$38 billion/year global market - we will need more than volunteers and NGOs to redirect this cash to investments in electricity. Without learning about on-ground realities as a low-cost volunteer or understanding how to negotiate with business people in the commercial world, it would have been very hard to get such a business started. It still has been (hence the zero star hostel), but momentum is building, and milestones are being met. We have engaged Australian Business Volunteers to continue to place low-cost project managers with micro businesses in Papua New Guinea, and have had no shortage of enthusiastic applicants who want to see a third way of conducting sustainable business in development. The Dutch Business in

Development competition (www.bidnetwork.org) was a massive highlight last year and a great place to meet like-minded social entrepreneurs, who are as committed as any volunteer, but know that scalable models are desperately required to end poverty in our lifetime. Many social entrepreneurs I know, as well as compulsive volunteers, forgo much higher salaries to try and build up sustainable models in the hardest markets on the planet. Sanity is not a strong trait, but inspirational determination abounds. I loved my time as a volunteer, and recommend that spending a year or so as a volunteer or with a social enterprise is a great way to determine if the safe career in a cubicle is really the best way to learn about business and the real world.

HAPPENINGS

Upcoming Events...

Parabolic Solar Cooker Course

July 14, 2007, Granadilla, Spain

La Agencia Insular de La Energía de Tenerife (AIET) and the Instituto Tecnológico y de Energías Renovables (ITER) are hosting a workshop at Eólica, an International Festival of Renewable Energy. At this workshop you will learn how to build your own parabolic concentrating solar cooker. Please visit <http://www.iter.es> for more information.

Aprovecho/ETHOS Stove Camp

July 16-20, 2007, Creswell, Oregon, USA

This is an event for those interested in improved cook stoves to come together. An "Introduction to almost everything about stoves" class will be taught the first two days, followed by an opportunity for hands-on experience designing and building a cook stove in a competition to make the most efficient, clean, and cost effective stove. See <http://www.aprovecho.org/stovecamp07.htm> for more information.

CleanAirSIG e-conference

July 16-27, 2007

"Taking ACTION to rid the world of Indoor Air Pollution," at <http://www.hedon.info/goto.php/CleanAirSIGConferenceJuly2007>.

PCIA Asia Regional Workshop on IAP and Household Energy Monitoring

August 7-11, 2007, Hanoi, Vietnam

USEPA, CEIHD and ARECOP are organizing this event for PCIA members who are interested in developing and implementing a monitoring and evaluation plan for their household energy and health projects. The deadline for registration is July 20, 2007 (July 6th for applicants requesting financial support). Please visit www.pciaonline.org for information on the training and registration materials.

ARECOP Asia Regional Training on Kitchen Improvement

August 12-15, 2007, Hanoi, Vietnam

Participants will learn a holistic kitchen assessment methodology, designed to provide an understanding of the kitchen environment and processes, as they relate to the improvement of kitchen users' health, comfort and efficiency of kitchen processes. Participants will also be guided through the design and implementation of kitchen improvement interventions. The registration deadline is July 20, 2007. For more information, please visit <http://www.arecop.org>.

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International Training Workshop on Technology and Utilization of Biomass Gasification

September 1-20, 2007, Yingkou, China

This workshop provides information and discussion about biomass gasification technology through a combination of lectures, field trips, and participant presentations and exchange. Applications are due July 30. For more information, please visit <http://gasifiers.bioenergylists.org/yinkougasworkshop07>.

19th International Society for Environmental Epidemiology Conference

September 5-9, 2007, Mexico City, Mexico

Translating Environmental Epidemiology into Action: Interventions for a Healthy Future. For more information, please visit <http://www.isee2007mx.org>.

Fourth Annual Meeting of the Mexican Bioenergy Network

October 1-5, 2007, Zacatecas, Mexico

For more information, please visit <http://www.rembio.org>, or contact mprehn@oikos.unam.mx.

International Conference on Environmental Exposure and Health, EEH 2007

October 3-5, 2007, Atlanta, Georgia, USA

The EEH conference strives to bring together health specialists, scientists, and engineers in

order to discuss problems and work toward solutions. Key themes include methodology, site specific concerns, data collection, indoor exposure, rural areas exposure and exposure specific to the developing world. For registration and more information, visit <http://mesl.ce.gatech.edu/EDUCATION/EEH2009>.

20th World LP Gas Forum

October 24-26, 2007, Cape Town, South Africa

This year's conference, themed "LPGas- Fueling Life," highlights LP gas developments in Africa, and LP's role in improving lives. The first day focuses entirely on LP in Africa, including lessons learned, barriers, and a panel of Africa's Energy Ministers. The rest of the conference will include presentations from around the world to discuss the market and showcase new technologies and research on LP gas. Discounted early registration by August 17. For more information, visit <http://www.wlpgasforum2007.com>.

World COPD Day

November 14, 2007

World COPD day is a way to increase awareness of chronic obstructive pulmonary disease, a disease which can be caused by smoke from cooking indoors. Activities are planned in several countries; visit the website to see check on events in your country or look for ideas to plan your own COPD event! <http://www.goldcopd.com/WCDIndex.asp>

PCIA Website Update

Please visit the website (www.PCIAonline.org) for information on PCIA activities!

New features on the website include:

- **IAP Monitoring Workshop web pages, including registration form and information packet**
- **New articles in Media Coverage**
- **Information on new partners**

We encourage you to visit the website and give us feedback on these new features. For any website related questions please contact Winrock International at PCIAModerator@yahoo.com

☀ WHAT'S NEW?

... In Resources

The Partnership for Clean Indoor Air has now published the "**Design Principles for Wood Burning Cook Stoves**" in French. To download the document, please visit <http://www.pciaonline.org/resources.cfm>.

The **WHO Air Quality Guidelines, Global Update 2005** is now available. The WHO air quality guidelines offer guidance on reducing the effects on health of air pollution. This book presents revised guideline values for the four most common air pollutants - particulate matter, ozone, nitrogen dioxide and sulfur dioxide. For more information please visit: http://www.euro.who.int/InformationSources/Publications/Catalogue/20070323_1.

Updates have recently been made to the **WHO indoor air pollution website**, including resources on survey questions on cooking and heating practices, country-by-country estimates of the burden of disease due to indoor air pollution, and an update on household energy and health at CSD-15. WHO's revised set of four questions on cooking practices and a stove card are available here: http://www.who.int/indoorair/health_impacts/cooking/en/index.html.

To access country-by-country estimates for deaths due to acute lower respiratory infections (ALRI) among children as well as chronic obstructive pulmonary disease (COPD) and lung cancer among adults, please visit:

http://www.who.int/indoorair/health_impacts/burden_national/en/index.html.

For more information on the position statement for CSD-15 prepared by the World Health Organization, jointly with the German Technical Cooperation (GTZ), Practical Action, the HEDON Household Energy Network, Winrock International and the Partnership for Clean Indoor Air, please visit: <http://www.who.int/indoorair/policy/hhhcsd15/en/index.html>.

The **proceedings of the ARECOP Planning Technical Advisory Meeting** (January 2007, Chiang Mai, Thailand) are now available for download at http://www.arecop.org/resources/pub_detail.php?recordID=49.

... In Research

Energy performance of wood-burning cookstoves in Michoacan, Mexico

Víctor M. Berrueta, Rufus D. Edwards and Omar R. Masera

This paper presents an integrated energy evaluation of the Patsari cookstove, an efficient wood-burning cookstove developed in Mexico that has recently obtained international recognition, in comparison to traditional cookstoves in rural communities of Michoacan, Mexico using three standard protocols: the water boiling test; the controlled cooking test, and the kitchen performance test. The full abstract of this article is available free of charge at <http://www.sciencedirect.com/>.

A China Environmental Health Project Research Brief

Produced by the Woodrow Wilson Center's China Environment Forum in partnership with Western Kentucky University as part of the USAID-supported China Environmental Health Project. http://www.wilsoncenter.org/index.cfm?topic_id=1421&fuseaction=topics.item&news_id=235891.

Distribution, utilization structure and potential of biomass resources in rural China: with special references of crop residues

H. Liu, G.M. Jiang, H.Y. Zhuang, and K.J. Wang
This paper explores the distribution, utilization structure and potential of crop biomass, finding that these resources are largely used with lower efficiency or wasted, with 37% being directly combusted by farmers, 15% lost during collection and 20.5% discarded or directly burnt in the field. The authors make recommendations for greatly improving the farm system and cutting down fertilizer pollution. The full abstract of this article is available free of charge at <http://www.sciencedirect.com/>.

Commercialisation of biofuel industry in Africa: a review

B. Amigun, R. Sigamoney and H. von Blottnitz
This article provides knowledge-based review for expansion (commercialisation) of biomass-derived

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fuel (biofuel) through improved understanding of its economics in Africa. In addition, recommendations to overcome the technological and non-technological hurdles to market penetration of biofuels are discussed. The full abstract of this article is available free of charge at <http://www.sciencedirect.com/>.

Energy indicators for tracking sustainability in developing countries

Andreas Kemmler and Daniel Sprenga
This paper explores the energy system as a sound framework for providing lead indicators for sustainable development, noting that the use of energy indicators is not restricted to environmental and economic issues but is also relevant for social issues. The full text of this article is available in Energy Policy, Volume 35, Issue 4, April 2007, Pages 2466-2480.

Fuel demand elasticities for energy and environmental policies: Indian sample survey evidence

Haripriya Gundimedaa, and Gunnar Köhlin
This study uses the linear approximate Almost Ideal Demand System (LA-AIDS) using micro data of more than 100,000 households sampled across India. The results can be used to evaluate recent and current energy policies, and can be used for energy projections and carbon dioxide simulations given different growth rates for different segments of the Indian population. The full abstract of this article is available free of charge at <http://www.sciencedirect.com/>.

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More volunteer opportunities

In addition to the organizations featured in this issue's Spotlight and Feature articles, the following organizations also provide opportunities for volunteers in household energy and health projects:

Common Hope

<http://www.commonhope.org/>

Darfur Cookstoves Project

<http://darfurstoves.lbl.gov/>

Earthways Foundation

<http://www.earthways.org/>

Engineers Without Borders –

San Francisco Professionals (EWB-SFP)

<http://www.ewb-sfp.org/>

Global Vision International

<http://www.gvi.co.uk/index.asp>

Global Volunteer Network

<http://www.volunteer.org.nz/>

Guatemala Stove Project

<http://www.guatemalastoveproject.org/>

HELPS International ***PCIA Partner!***

<http://www.helpsintl.org/>

i-to-i ecotourism

<http://www.i-to-i.com/>

The International Humanitarian Foundation

<http://www.internationalhf.org/>

The Nature Conservancy ***PCIA Partner!*** (**TNC-China**)

<http://www.nature.org/aboutus/travel/ecotourism/>

Peace Corps

<http://www.peacecorps.gov>

ProPeru ***PCIA Partner!***

<http://www.myproworld.org/locations/peru.htm>

ProWorld

<http://www.myproworld.org/>

StoveTeam Guatemala ***PCIA Partner!***

nancyineugene@yahoo.com

Trees, Water & People ***PCIA Partner!***

<https://www.treeswaterpeople.org/>

Is your organization missing from this list?

Please let us know! Email us at

PCIAonline@yahoo.com

In addition, short-term volunteer vacations incorporating household energy and health activities are available through organizations such as G.A.P Adventures (<http://www.gapadventures.com/>) and Responsible Travel (<http://www.responsibletravel.com/>).

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Household CO and PM measured as part of the review of China's National Improved Stove Program

Edwards RD, Liu Y, He G, Yin Z, Sinton J, Peabody J, Smith KR

This paper is available in *Indoor Air*, 17(3); 189-203, 2007, and also downloadable from <http://ehs.sph.berkeley.edu/krsmith/>.

Changes in fuelwood use and selection following electrification in the Bushbuckridge lowveld, South Africa

M. Madubansi and C.M. Shackleton

This paper reports on a longitudinal study of fuelwood use, using identical approaches, in five rural villages in the Bushbuckridge region of South Africa, spanning the period over which electricity became widely available. Almost a decade after the introduction of electricity, over 90% of households still used fuelwood for thermal purposes, especially cooking, and the mean household consumption rates over the 11-year period had not changed, even with a policy of 6 kWh per month of free electricity. The proportion

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 PCIAonline@yahoo.com. The deadline for contributions to next quarter's Bulletin is **August 15, 2007**.

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

of households purchasing fuelwood had increased, and overall, there was an increase in the number of species harvested over the 11-year period. The implications of these findings for rural energy provision are discussed. The full text of this article is available in *Journal of Environmental Management*, Volume 83, Issue 4, June 2007, Pages 416-426.

***Special Household Energy and Health Monitoring and Evaluation Project Issue
Energy for Sustainable Development, Vol 11, #2, June, 2007***

Editorial: **'You don't get what you expect, you get what you inspect'** Kirk R. Smith

1. Monitoring and Evaluation of Improved Biomass Cookstove Programs for Indoor Air Quality and Stove Performance: Conclusions from the Household Energy and Health Project

Kirk R Smith, Karabi Dutta, Chaya Chengappa, P.P.S. Gusain, Omar Masera, Victor Berrueta, Rufus Edwards, Kyra Naumoff Shields, Rob Bailis

2. Impact of Improved Biomass Cookstoves on Indoor Air Quality near Pune, India

Karabi Dutta, Kyra Naumoff Shields, Rufus Edwards, Kirk R. Smith

3. Impact of Improved Cookstoves on Indoor Air Quality in the Bundelkhand Region in India

Chaya Chengappa, Rufus Edwards, Rajesh Bajpai, Kyra Naumoff Shields, Kirk R. Smith

4. Impact of 'Patsari' improved cookstoves on Indoor Air Quality in Michoacan, Mexico

Omar Masera, Rufus Edwards, Cynthia Armendáriz Arnez, Victor Berrueta, Michael Johnson, Leonora Rojas Bracho, Horacio Riojas-Rodríguez, Kirk R. Smith

5. Performance Testing for Monitoring Improved Biomass Stove Interventions: Experiences of the Household Energy and Health Project

Rob Bailis, Victor Berrueta, Chaya Chengappa, Karabi Dutta, Rufus Edwards, Omar Masera, Dean Still, Kirk R. Smith