



# PARTNERSHIP FOR CLEAN INDOOR AIR

**PCIA Bulletin**

**April 2010 Issue 23**

## *Carbon Finance and Carbon Project Development*

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 **350** 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](http://www.pciaonline.org) to join!

The last decade, and last 5 years in particular have seen tremendous breakthroughs in stove design and performance, in clearer linkages between indoor air pollution and health outcomes, and in stove testing and monitoring tools and their application. We understand commercial markets for improved stoves and fuels better than ever, the need for a variety of stove types to meet varying needs of consumers, and the importance of local partnerships on the ground.

The important work of fostering network building, capacity building and technical assistance across sectors, for small and large stove manufacturers and project implementers alike, has resulted in important collaboration and achievements toward initial scale-up in deployment and use of cleaner cookstoves and fuels. Key PCIA Partners, for example, are reporting to double their stove dissemination achievements at least every two years despite limited resources.

We are truly at a tipping point, with the knowledge and mechanisms for successful interventions to reduce indoor air pollution now well-established, and the missing piece the resources to bring it all to scale. Carbon finance has that potential. Much of the content of this Bulletin was inspired by the PCIA Carbon Finance Planning Meeting held in Bonn, Germany in October 2009. This Bulletin is the first step in sharing information

on carbon project implementers and developers, tools and resources, and advocacy and capacity building efforts to increase the number of registered cook stove projects in the CDM, Gold Standard and voluntary carbon markets. Look for announcements regarding upcoming PCIA carbon finance activities, including a DOE cook stove workshop, Webinars to share fuel savings assessments, and training opportunities, in your email in the coming weeks.

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## *Save the Date!*

The 2011 PCIA Forum will be held in

*Lima, Peru*

*February 21-26, 2011*

*More information about the Forum will be published in a future issue of the Bulletin, and on the PCIA website at [www.pciaonline.org](http://www.pciaonline.org) in coming months*

## ☀ FEATURE ARTICLES - *Carbon Finance Introduction*

### Carbon Credits Offer Household Energy Projects an Opportunity: an Introduction to Carbon Finance

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Projects that distribute products like stoves, water filters, and solar lights stand to benefit from the steps that many governments and companies are taking to fight climate change. Upon providing proof that these products really reduce CO<sub>2</sub> emissions, valuable carbon credits can be generated and sold to customers around the world. Income from carbon credits can be used to sustainably grow a project and to compensate for the expenses of creating marketable carbon credits.

#### Creating a Carbon Credit

To claim carbon credits, a project must first be registered, or "validated," to an international carbon standard such as the Voluntary Gold Standard or the Clean Development Mechanism (CDM). These carbon standards have sets of rules, also known as methodologies, that determine what a project must do to become registered. The registration process typically takes more than one year.

Once a project is registered, it must sell or distribute the energy saving products (such as a more efficient biomass stove) and monitor them carefully. As the stoves are used, they reduce emissions. The emissions that have been reduced are then counted in a separate verification process. Verification typically takes 5 to 8 months. Every time a project wishes to create carbon credits, it must go through a new verification process to show that the stoves are still being used, and functioning as intended.

#### Who Creates Carbon Credits?

There are many actors in the process of creating carbon credits. Typically a stove project or NGO will work with a consultant or a Project Developer with experience registering projects and selling the carbon credits. Audit firms and the organizations that set carbon standards are also involved to ensure the validity of the process.

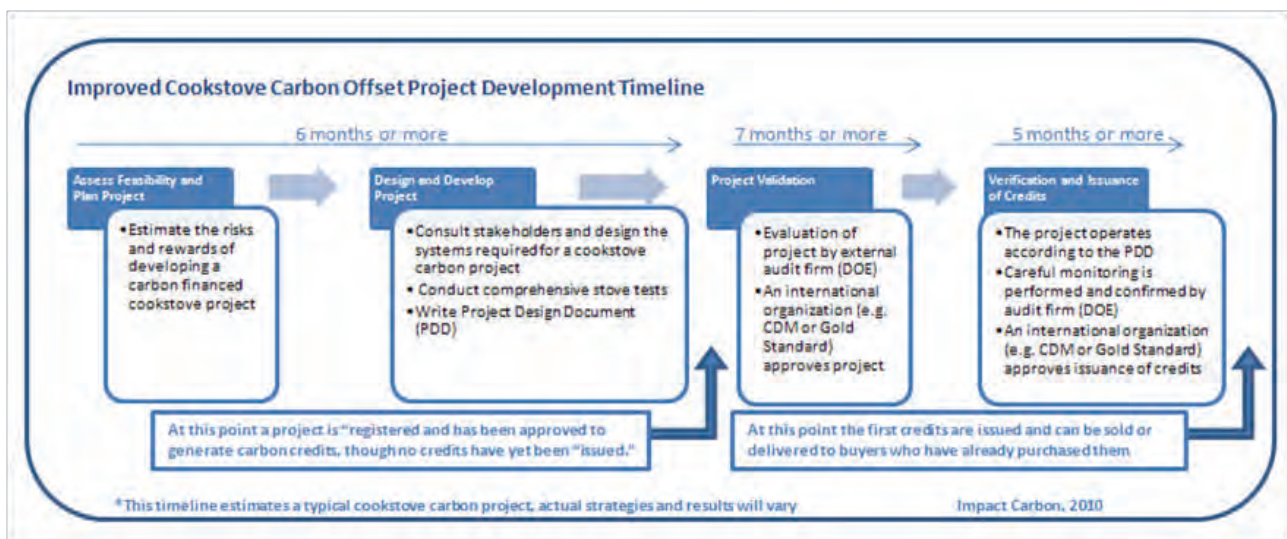
Many organizations are working to simplify and speed up the process of registering a carbon project. These efforts may make it easier for local and small scale projects to create carbon credits independently.

#### What Projects and Technologies are Eligible for Carbon Credits?

Many factors will determine whether it is advantageous for a cookstove, water filter, solar light, or biogas project to verify and market carbon offsets. The most important of these factors are:

- The quantity of units that can be reasonably expected to be distributed or sold with carbon finance
- The type of fuel currently under use, and the amount of fuel that customers save with the new product
- The lifespan, durability, and uniformity of each product

There are no magic numbers, such as a minimum number of stoves required, in the world of carbon finance. Based on many factors, a stove project must assess whether it makes sense to pursue carbon finance. In practice, this decision often is affected by whether a project can find an investor willing to cover some or all of the project's costs. Carbon finance is only advantageous to a



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cookstove project when the financial and social benefits outweigh the costs and risks involved. Success is far from guaranteed. The first step is to collect good information about product performance. It is very important to rigorously test the stoves, water filters, or other products in labs, and in the field.

With testing information, and other research, a project can build a financial model of carbon offset creation. The model provides the basis on which many strategic project decisions can be made. Projects can decide whether to create carbon offsets through the CDM, or through

voluntary standards such as The Gold Standard. Projects can decide whether to seek investment up-front, or to pay for the work themselves in an attempt to increase the revenues they realize down the road. Projects can also decide whether to seek a guaranteed carbon price from an offset buyer, or to take their chances on the future value of credits in the carbon market.

The process is complex, but every day there are more resources to help navigate the complexity. And, there are new ideas for how the process can be simplified. Many of those resources are presented or referenced in this issue of the PCIA Bulletin.

## Experience of Carbon Finance Implementers and Developers

### Leveraging Carbon Finance for Efficient Stove Programmes

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**Applying Carbon to Stoves Projects:** Areas in which low-income households use three-stone fires for food preparation are often characterized by unsustainable use of wood fuel resources, which results in a net release of carbon dioxide into the atmosphere. By using efficient stoves the net carbon dioxide released to the atmosphere is reduced. Once a project is registered, these reductions are monitored, verified, and issued as carbon offset units.

Under the CDM there is an approved small-scale methodology "AMS II.G" which calculates emission reductions as the delta in efficiency between a three-stove/ open fire and an efficient stove. This is multiplied by the percentage of non-renewable biomass (NRB) in local fuel consumption, multiplied in turn by the fuel consumption per household. Baseline fuel consumption is determined from survey data.

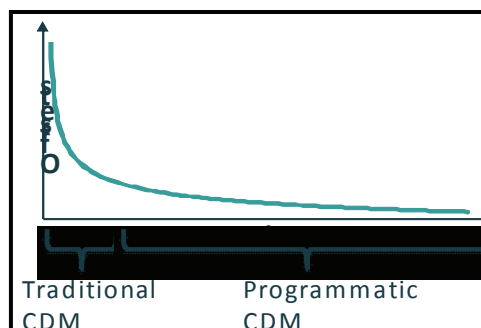
**Programmatic Approaches:** Carbon offset projects have certain inbuilt transaction costs associated with developing documentation, accurate monitoring, and enlisting the help of third-party validators and verifiers. These have traditionally been high. This has penalised projects where the emission reductions are generated by the aggregation of a large number of individually small improvements (think stoves!), as compared to projects where a small number of actions create individually significant reductions. In practice this has made it very hard for projects such as improved stoves to access the market.

A development within the CDM is the use of **Programmes of Activities** to address this issue. At its heart, a programmatic approach separates out the 'approval of concept' from the 'approval of individual action': a project first seeks approval for a specific

activity, in a specific location. Once this has been approved, individual sub-groups of project activities conforming to these specifications can be added with minimum additional review. In practice this means that once a project is approved, it can be rapidly scaled up with minimal additional transaction costs. This approach is not without risks: programmatic carbon is still in its infancy; the rules are still unclear (emerging); and there is little existing 'case history' to serve as a track record.

### Developing a Programmatic Carbon Offset Project:

Developing any carbon offset project can be a challenging business. This is especially true of CDM



projects, where the centrality of the UNFCCC's CDM Executive Board adds a level of bureaucracy.

1. Developing any carbon offset project starts with **designing the project**. Most of what the project does will already be decided, but some of how you implement your project might have to change to reflect the discipline imposed by carbon.
2. The next step is to prepare the **project documentation**. This is a description of how the project will reduce the emissions of greenhouse gases, and how this will be measured over time – applying an approved methodology for calculating emission reductions. This is an extremely complex task, and requires a fair amount of specialist knowledge to document things in accordance with the carbon offsetting standard involved. Preparing these 'in house' is possible, but can lead to delays and

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potentially serious pitfalls if you get it wrong. For programmatic projects the description of the overall project is captured in a CDM Programme of Activities (PoA) Design Document, along with a document laying out the specifics of the first bundle to be included.

3. The next step is **validation of the project** by independent 'auditors' ("Designated Operational Entities" in the parlance of the CDM). One of a number of organisations approved by the standard must review the project, and sign off on its accuracy and conformance to the rules. This can be a very time consuming process (and one that can penalise newcomers to the carbon market who are unfamiliar with the rules of the game).
4. Projects must then be **registered** by the administrators of the standard (such as the CDM EB). At this point the project is considered to have commenced, and emissions reduced will be eligible to create credits. Again this seemingly simple step can turn out to be a headache, as projects may be reviewed by the administrators, which can be both confusing and time consuming. If handled badly, this can lead to projects being outright rejected.
5. For programmatic projects, subsequent 'bundles' of project activities can be 'included' in the PoA after review by the validator.
6. Registered projects must thereafter be constantly **monitored** to assess how emissions are actually being reduced on a quantitative basis, then verified. **Verification** is again conducted by independent 'auditors' who assess whether the project has been monitored and reported in line with the rules and the procedures set out in the project documentation.
7. Following a successful verification, projects are then **issued** credits which they can sell to third-party buyers.

Costs of preparing all the necessary documentation for the initial presentation of the project to the EB are in the range of approximately US\$100,000, with potential annual additional costs of US\$20,000 or less for the inclusion of each year's group of replaced stoves. The cost of monitoring the project will continue on for as long as the project is still generating credits. These costs can be high for stoves projects due to the geographically dispersed nature of the activity, and should be adequately planned for.

#### **Using Carbon Finance - Opportunities to Scale-Up:**

Carbon finance can be used in a number of ways to scale-up stove projects. One feasible approach is to use some part of the expected carbon revenue to 'buy-down' the cost of stoves to the end user. Where stove cost is thought to be the limiting factor on achieving scale, this might be a useful way of overcoming this barrier. Project developers will most likely have to seek an organisation willing to provide up-front payment for some of the

credits in order to implement this, and this in turn will require having very solid implementation, after-sales care, and monitoring and evaluation procedures in place.

Another approach is to use carbon revenues to finance company or project overheads and development costs. This could allow projects to use working capital to undertake serious marketing / awareness campaigns where these are important to achieve scale, build up project infrastructure, and allow stoves to be sold at a minimum 'marginal cost of production' without loading the project overheads on the units sold, reducing their cost to the consumer.

Finally, it is worth noting that in more mature project types (such as wind and hydro generation projects) a predictable stream of future carbon payments can be used as collateral to secure a line of credit from a lending institution. This remains untried in the world of improved stoves, and would require a lot of 'educating' a financial institution – but for a savvy developer with financial expertise this remains a very interesting possibility.

Carbon prices have historically been extremely volatile. Furthermore current uncertainty surrounds the architecture of the future regime after the expiration of the Kyoto Protocol in December 2012, the lack of progress at the recent talks in Copenhagen and the stalled passage of US domestic legislation. Building a business on the back of this volatility and uncertainty is both challenging and risky. It is therefore important that project developers identify a carbon financial partner early in the project development, and work with them to structure stable and long-term financing that will enable equally long-term planning.

Developing a carbon finance project is no small endeavour, and working with the right partners is key to reducing risks and minimising transaction costs and time lost. That said, the additional revenue that carbon finance brings offers the chance of creating sustainable improved stove programmes, and bringing them to the kind of scale that will be necessary to start to chip away at the problems of indoor air pollution and deforestation.

**About C-Quest Capital:** C-Quest Capital is a carbon finance business dedicated to developing high-quality emission reduction projects around the world. We invest in carbon assets that generate superior returns and concrete benefits to the environment. C-Quest is headquartered in Washington, D.C. with offices in Australia and Malaysia and a presence in India. C-Quest aims to use its competency in environmental markets and finance to accelerate the global transition to a low-carbon economy and foster sustainable development.

## Carbon Finance and the Efficient Fuel Wood Stoves for Nigeria Project

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Land use and land use change are the main sources of greenhouse gas (GHG) emissions in Nigeria, and contributed to 40% of CO<sub>2</sub> emissions of the country in 1994, according to Nigeria's First National Communication under the United Nations Framework Convention on Climate Change (UNFCCC). Since then, emissions from land use change and forestry have continuously increased.

Fuel wood consumption is one of the main drivers of land use change and deforestation in Nigeria. To date, there is no general law that prohibits fuel wood extraction from forests. Although fuel wood extraction is not permitted in protected areas, illegal firewood extraction continues, as laws are not enforced. Improving the efficiency of fuel wood consuming appliances is therefore crucial to combat deforestation and tackle GHG emissions in Nigeria, but a large-scale adoption of improved appliances has not yet taken place.



Photo credit: Habiba Ali

Woman using SAVE80 Stove in Nigeria

The Efficient Fuel Wood Stoves for Nigeria project is a joint initiative by the German NGOs atmosfair gGmbH and Lernen-Helfen-Leben e.V. (LHL), and the Nigerian Developmental Association for Renewable Energies (DARE). It uses carbon finance to promote the dissemination of the SAVE80, an improved cookstove saving up to 80% of fuel wood, to households in Nigeria. It was the first project using CDM methodology AMS II.G., and was registered by the CDM Executive Board on 12 October 2009. Since atmosfair requires its projects to follow the Gold Standard criteria, the project needed to be registered by the Gold Standard Foundation as well, which was completed in January 2010. Up to 12,500 efficient fuel wood stoves (SAVE80) and heat retaining polypropylene boxes are being disseminated in multiple states located in the Guinea Savannah Zone of Nigeria. Users are households who previously used inefficient, traditional fireplaces. The stoves are sold at a subsidized price, payable in installments, as purchasing power of the users is low and hence families cannot afford to pay the full price of the stove, despite substantial wood savings

that reduce expenses for fuel wood.

Initially, the project was planned as a voluntary emission reduction Gold Standard (VER GS) project, as there was no approved CDM methodology in place until February 2008. Lernen Helfen Leben (LHL) and DARE approached atmosfair for upfront carbon finance, but it is atmosfair's policy only to go for CDM GS projects, hence atmosfair could not fund the project at that time (2007). The first stakeholder consultation dates back to September 2007 and was held under the requirements of the Gold Standard. The first container shipment from the German manufacturer (in total 900 stoves) was financed through private donations and loans from LHL members and supporters. The container arrived in Kaduna (where DARE's main office is located) in November 2007. The first SAVE80 stoves were sold in January 2008, at full price, as LHL/DARE had to secure payback of the loans, and did not have an investor at that time. Given the low average income of targeted households only few SAVE80 stoves were sold.



Photo credit: Abdulrazak Survan

SAVE80 efficient wood stove

After approval of the CDM methodology AMS II.G. in February 2008, LHL/DARE approached atmosfair and received seed funding in the amount of US\$50,000, which made it possible to reduce the stove's price to make it affordable for Nigerians. In April 2008 the first stoves were sold at the subsidized price (which is currently around 60 EUR), and the container was sold out in August 2008. As atmosfair originally planned a Programme of Activities (PoA), but could not proceed with it due to the reluctance of DOEs to validate PoAs, atmosfair decided to develop it as a SSC (small-scale) CDM project. Since September 2008, atmosfair has been financing stove procurement and shipment to Nigeria. Two more containers (3,000 stoves) have already been sold.

After completion of the baseline survey and the draft PDD, atmosfair commissioned a DOE (TUEV Nord) for CDM Gold Standard validation in October 2008, and the PDD was first published on the UNFCCC website in November. The on-site visit of the DOE took place in December 2008. After several rounds of clarification and corrective action requests, the DOE submitted its final validation report to UNFCCC secretariat and requested registration in June 2009. The project was eventually registered on October 12, 2009.

As mentioned previously, the project uses AMS II.G., which is the only eligible CDM methodology for this

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project type (projects where there is no complete replacement of non-renewable biomass by renewable sources). Non-renewable biomass (NRB) fraction was calculated by comparing FAO data on fuel wood demand with fuel wood supply in the project area, the Guinea Savannah Zone. The approach chosen follows the guidance of the GS cookstove methodology, as CDM methodology AMS II. G. remains rather vague in defining how to determine the share of NRB. Recently, the CDM Executive Board undertook a revision of the methodology to increase its scope and ease of application in practice, and now provides further guidance on NRB determination.

DARE/LHL will be the owner of the Certified Emission Reductions (CERs), and atmosfair is the main CDM project developer and purchaser of CERs. Atmosfair pays upfront for stove shipments from Germany and covers the gap between sales price and real costs in return for GS CERs. In addition, CERs ceded to atmosfair are also used to ensure effective monitoring of the project. CDM funding is subsidising sales of the SAVE80 system.

Though the recent methodology revision will hopefully help to foster the uptake of more cookstove projects in the carbon market, carbon players are still reluctant to invest in the poorest countries and populations within countries. CDM transaction costs, especially if cookstove

projects are replicated at a larger scale through programmatic CDM, tend to be prohibitively high. We therefore highly welcome the decision taken in Copenhagen to set up a loan facility to cover CDM transaction costs up to first verification for countries with a limited number of registered projects. However, loans should also be provided for the first 10 projects applying a methodology which was not used before, regardless of the country where the project is located. This would surely foster the application of many new and presently underutilized methodologies, since currently, "first movers" are afraid of the high delay, failure or rejection risks associated with being the first one to develop and/or apply a methodology, whereas others can largely benefit from the experiences of the pioneers. Loans should also be paid back with CERs; in case of delivery failure, loans can be converted into grants.

DARE suggests that PCIA can help lobby for simplification of CDM methodologies related to household energy, as well as the establishment of loan and grant mechanisms to cover transaction costs as promised by officials in Copenhagen. Furthermore, PCIA, through promotion of best practices, information exchange and setting of quality standards (e.g. benchmark efficiencies for improved cookstoves) is helping to make household energy "marketable", i.e. attractive for commercial (compliance) investors.

### GERES's Voluntary Emissions Reduction Project in Cambodia

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Carbon finance is a new and innovative funding stream. In some respects it can be favourably compared with donor funding as it is long-term and out-put based. However, if it is to be deployed as an effective tool to finance sustainable development initiatives, stakeholders must actively engage in the market. The article below summarises some of the experiences of the GERES New Lao Stove project in Cambodia.



New Lao Stove

In 2003 Groupe Energies Renouvelables, Environnement et Solidarités (GERES), developed a charcoal stove that uses 22% less charcoal than traditional stoves. The stove, called the New Lao Stove, costs about three times as much as the traditional stoves, but users are willing to pay because they recoup the difference in price through the increased

longevity of the stove as well as the savings on the purchase of charcoal. The project is managed by GERES which acts as both the project implementer, through training new producers and overseeing quality control, as well as the project developer responsible for all aspects relating to carbon finance. Since 2007, the project has funded itself through carbon finance. Three annual verifications have been conducted thus far yielding credits over 500,000 t/CO<sub>2</sub> under the Voluntary Carbon Standard. As one of the first and certainly the largest improved stove projects to be validated and verified by a United Nations approved auditor, the GERES NLS is a useful case study to illustrate the generic issues facing stove projects.

Project developers must ensure that their project is large enough to cover the fixed transaction costs of entering the carbon market. Most household stoves reduce emissions somewhere between 0.5-1 t CO<sub>2</sub> per year, therefore only stove projects that can realistically expect to disseminate thousands of stoves are suitable (Harvey, 2009). In effect, carbon finance is only appropriate for proven technologies which can guarantee scale. The GERES experience points to the potential benefits of combining donor finance and carbon finance to scale up stove dissemination. Donor funding can be used to develop and refine suitable technologies during a pilot

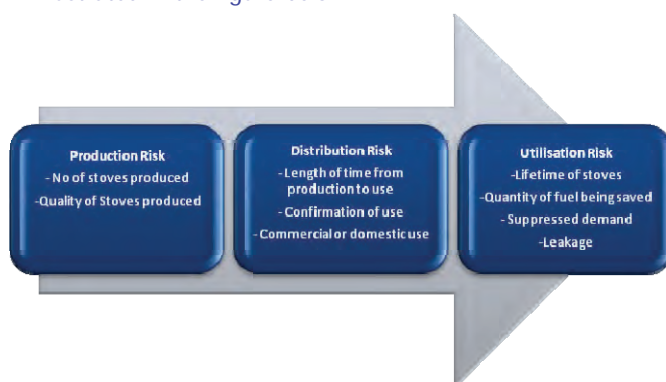
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phase, whilst carbon finance can be used to scale up successful approaches. The need to cover transactions costs presents a further dilemma as project developers must have access to capital, since credits are only issued after periodic verification. This is especially so in cooking stove projects as the numbers of stoves in use generally accumulate over time. Therefore most organisations will need access to pre-finance to initiate their projects.

The relative advantages of the various markets must be assessed to select the most appropriate for each project. For example, a project might use either the voluntary or regulatory carbon markets. Generally, credits under the Clean Development Mechanism (CDM) attract higher prices and demand is more assured. However, there are long lead-in times and the rules on avoided deforestation have the effect of reducing the quantity of emissions that can be claimed. Although the credibility of the voluntary market has improved, the impacts of the global economic situation may affect demand and the prices of the credits are generally lower. A recent development is that programmatic approaches are now available under both the CDM and some voluntary market standards. This allows project developers to conglomerate projects that follow a specified blueprint. Although this approach is in its infancy it is expected to reduce that time and costs of obtaining carbon finance.

Whatever the market standard, emission reductions are calculated by multiplying the number of improved stoves in use by the quantity of biomass saved by each improved stove. Ascertaining this is complex because there are many variables in the calculation. These variables mean that the risk of inaccurately reporting the emission reductions is high. The project is assessed by auditors, known as Designated Operational Entities (DOEs), according to how well these risks are mitigated. To obtain carbon finance project developers must focus on identifying and mitigating reporting risks. The risks associated with the cooking stove supply chain are illustrated in the figure below.



Two important principles are used to mitigate risks. Firstly, project developers must learn from successful precedents and replicate what has worked in the past.



Production of New Lao Stoves

Secondly, project developers must employ the principle of conservativeness to compensate for the inherent uncertainty in these project types.

As both the project developer and stove owner might legitimately claim ownership of any credits, project developers must secure legal recognition. To date there are three approaches to dealing with the issue of ownership. An institution within the host country might approve the use of carbon finance for a specific purpose. In this case it is assumed that the host country institution is responsible for safeguarding the equitable use of carbon finance. A number of projects have implemented a claim that consent is given by users where carbon finance is directly passed to consumers through a received benefit. By accepting a direct benefit, users are tacitly consenting to recognising the project proponent's right to ownership of the credits. Direct consent would take the form of a signed contract between the stove user and the project developer.

All of the points above require human resource capabilities. Project developers need access to the following human resources and project management capacities:

1. Research capabilities to generate baseline and survey data;
2. Carbon analysts to write the project documents and ensure methodological compliance;
3. A monitoring team to collect the data required by the monitoring plan;
4. Access to legal expertise; and
5. Marketing skills to sell credits once they have been issued.

In many cases the human resource requirements are specialised and project developers need assistance to bring their projects to the market. There are a growing number of initiatives, such as NEXUS (see pg 34), with the aim of assisting project developers to fill these skills gaps and channel essential and additional funding into sectors which, to date, have struggled to access carbon finance. You can read more about the GERES experience with carbon finance at: <http://www.geres.eu/en/studies/122-publi-etude-nls>.

Works Cited: Harvey, A. (2009, October 29th). CDM Practitioners Workshop. Retrieved March 15, 2010, from CDM: NR

## Carbon Finance in Uganda: The Ugastove Experience

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Impact Carbon is a nonprofit project developer that generates carbon-emission reductions from household energy projects. These projects have co-benefits that improve living conditions in the less-developed communities we serve. Impact Carbon has partnered with JPMorgan Climate Care and a local Ugandan enterprise, Ugastove, to leverage carbon finance to create a long-term, sustainable solution to environmental and economic problems in Uganda, a country which relies heavily on biomass for cooking. The project is the first cookstove project ever to be accepted for registration by The Gold Standard Foundation, and will be the first to successfully achieve Gold Standard certification of voluntary emission reductions (VERs) for a cookstove project. [Editor's note: news of GSF's acceptance for this project came during the 2009 PCIA Forum in Uganda!]

Carbon finance has been invaluable in keeping this project viable and now in expanding it. From January through August 2005, Ugastove sold less than 3,000 stoves. The company lacked the resources to make physical improvements at the factory, develop institutional capacity, develop a quality assurance system, improve awareness in the community, run marketing campaigns or provide credit to purchasers.

During this time, plans were made to secure carbon finance so that sales could be increased dramatically through a major marketing and promotion effort, combined with technical development and quality assurance to disseminate reliable improved-efficiency models at affordable prices. A grant from the EPA helped lay the groundwork for improving production and stove designs, setting up the factory to scale with carbon finance, and performing the initial monitoring and evaluation activities. From September 2005 through 2006 and 2007, using carbon finance advances and monies expected to be recouped from carbon finance, the expansion began. Marketing and operational capacity were improved, quality assurance systems were devised, and the technical designs of the stoves were improved to achieve the high levels of efficiency listed below. Without the carbon revenue, Ugastove would not have been able to grow to a point where it could reach significant numbers of Ugandans with efficient cookstoves. Now, Ugastove sells 3,000 stoves per month.

The carbon finance provides a basis for maintaining a professional commercial relationship between the user and the disseminators, while also introducing an affordable price, a quality guarantee and a warranty

system. The quality assurance strategy is a major benefit of carbon finance. It has the potential to introduce a new set of quality expectations amongst consumers and so shift the current prevailing practice away from inefficient cooking with its extreme environmental and health consequences, to a new cooking regime with significantly reduced GHG emissions and healthier kitchens.



Photo credit: Matt Evans

*Family with Ugastove, Kampala Uganda*

Impact Carbon-sponsored stoves in Uganda can reduce charcoal and wood use by 35 to 65 percent and save the poorest families more than US\$75 per year. Carbon finance has provided hundreds of thousands of dollars in subsidies to poor consumers and supported the distribution of more than 50,000 efficient stoves to date. With the price premium that comes with Gold Standard credits and voluntary markets, each of the estimated 1.4 tonnes of carbon emissions that a stove will reduce annually over 3 years can be sold for between US \$7 and \$20 dollars per tonne.

The carbon credits generated from the project are transferred from the end user to Ugastove, who then transfers them to Impact Carbon. Impact Carbon then sells the credits to buyers and brokers. Many of the tonnes from the first verification have been sold to JP Morgan Climate Care, our partner and supporter in this project, who has sold many of these tonnes on to Land Rover UK to offset vehicle emissions.

There have been many lessons learned from being the first GS VER cookstove project. During the verification process, it became clear that a top priority for the Designated Operational Entity (DOE) during its audit is assessing the rigor with which the project owner adheres to the validated PDD. The DOE expects compliance on all deliverables promised in the PDD even if they are not required in the methodology. Clear and precise project documentation is critical during the DOE review. Project verification is a lengthy process that can delay the issuance of credits significantly and project developers should expect delays and make financial plans accordingly.

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Photo credit: Matt Evans

*Ugastove stove liners basking in the sun*

The Gold Standard methodology is currently more conducive to crediting large-scale cookstove projects with co-benefits than the small-scale CDM methodologies, and there is room for additional improvement. Building on experience, Impact Carbon is working with E+Co, JP Morgan, Berkeley Air Monitoring Group, and The Gold Standard to develop version three of the methodology

which will have added clarity and simplicity and will allow for a more streamlined project development cycle, minimizing the length of time from the start of the project to the first issuance of credits, while maintaining and increasing scientific rigor and certainty. This mitigates the risk and difficulty associated with securing enough capital to begin the project, a task which constrains many development organizations and NGOs who could otherwise participate.

Going forward, Impact Carbon plans to include new technologies under the current project to expand its reach and continue to scale access to improved cookstoves. Impact Carbon is now investigating additional technologies that can qualify for inclusion by meeting certain performance standards, and is evaluating the best structure with which to bring qualifying technologies into the project. Making this project larger and more inclusive will create a faster transition to improved cooking in Uganda. During this process Impact Carbon is eager to share lessons learned and best practices while setting an example for other projects seeking to scale impact.

### **Nepalese Biogas Program Benefitting from Carbon Revenue**

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**Background:** In December 2005, Alternative Energy Promotion Center (AEPC) registered 2 CDM projects “Biogas Support Program Nepal (BSP-Nepal) Activity I and II” with the CDM Executive Board. The total anticipated greenhouse gas (GHG) emissions abated by these two projects, which have installed 19,396 household-level biogas plants, is 93,883 tons of CO<sub>2</sub> equivalent per year. The Community Development Carbon Fund (CDCF) of the World Bank purchased these credits at the rate of \$7 per Certified Emissions Reduction (CER). As of 2009, AEPC has already received \$848,784 in two installments. For additional background, please reference [PCIA Bulletin #6](#) (January, 2006), page 4.

**Current Status:** Although the carbon revenue from this project has been already received from the World Bank as an advance, the issuance of the CER is still pending. After the registration of the project, AEPC submitted the first monitoring and emission reduction report in October 2006. However, the CDM Executive Board did not approve the requests for issuance of CERs for this project for the monitoring period 1 August 2004 - 31 July 2006 saying that the project participant and the Designated Operational Entity (DOE) could not demonstrate that independent assessment, including survey, random sampling, and statistical analysis, had been conducted to confirm that the claimed emission reductions resulted solely from the project activity.



Photo credit: Suman Dhakal

*Biogas in Nepal*

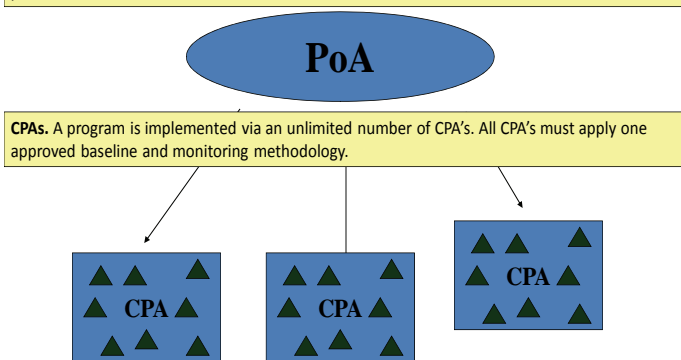
Through the DOE, AEPC made a request for review, which was accepted by the CDM Executive Board (EB). The EB then asked AEPC to submit the new monitoring and emission reduction report together with the verification report by the DOE. As per the sampling guidelines issued by the CDM EB, AEPC has already done the survey and prepared the emission reduction report which is now being verified by the DOE. Mr. Saroj Rai, the Executive Director of Biogas Sector Partnership (BSP) Nepal says the World Bank, AEPC and BSP are very hopeful that the EB will accept the request for issuance of CER this time, as they have followed the sampling guidelines prescribed by the EB. The World Bank has made the advance payment to AEPC with the expectation that the EB will issue the CERs.

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**Programmatic Approach for Future Plants:** AEPC is now planning to develop a Program of Activities (PoA) for the Nepal Biogas Program for future biogas plants to be installed. Programmatic CDM is designed to overcome many of the shortcomings of the project approach. A CDM PoA is a coordinated effort on the part of a private or public entity to implement a GHG reducing policy or measure via an unlimited number of emission reduction project activities (CPAs) that are dispersed over a geographic region and implemented over a period of time.

**Managing entity.** The program is coordinated or managed by one entity, which can be private or public.



**Multiplicity of activities to reduce GHG.** The sites could be located within one or more city, region, or country, as long as each involved country submits a Letter of Approval (LoA). The GHG-reducing activities do not necessarily occur at the same time. A program can have a duration of up to twenty-eight years.

*Graphic adapted by GERES Cambodia, from a November, 2007 Presentation at the DNA Forum in Bali by Christiana Figueres entitled "Programmatic CDM: A new opportunity."*

### Gold Standard VER Project registered by WWF

**Nepal:** World Wildlife Fund (WWF) Nepal has developed a Gold Standard VER project from their biogas program in

Nepal. WWF plans to install 7,500 toilet-connected biogas plants in the 10 districts of Nepal. This project is already registered with the Gold Standard Foundation. The first emission report has already been submitted and verification by DOE is being done at this stage. With the Gold Standard level on this project, WWF Nepal expects to secure a high price of around 13.5 EUR per VER. Over 4,000 biogas plants have already been installed under this project.

**Biogas and MDG Links:** Biogas plants not only contribute to reducing GHG emissions, but also contribute to the sustainable development of the host country (both are objectives of CDM). Biogas has multiple benefits in terms of health, environment, and gender, and contributes to all the following Millennium Development Goals: Eradicate extreme poverty and hunger; Achieve universal primary education; Promote gender equality and empower women; Reduce child mortality; Improve maternal health; Combat HIV/AIDS, malaria and other diseases; and Ensure environmental sustainability.

**Conclusions:** Domestic biogas projects are eligible carbon projects. Options are available for developing the projects as a programmatic approach, small-scale bundled, or with the voluntary market as well. The Gold Standard Foundation has developed a separate methodology for such household biogas plants. Any of these approaches can be adopted depending on the nature of the project. National Domestic Biogas Programs in Pakistan and Vietnam are also trying to develop as programmatic CDM. Experiences show that it requires a lot of time and resources. This project, being the first CDM project in Nepal, has gone through a difficult time getting this done. Although this seems to be a lengthy process, once developed this will not only provide a sustainable source of funding for the program, but also help to ensure the quality of the installed plants.

### CRT/N Carbon Projects - Energy, Rural Technologies and Gender

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The Centre for Rural Technology, Nepal (CRT/N) in partnership with The Offset Carbon Company (ToCC), UK launched the pilot project "*Chitawan ICS Carbon Project*" in early June 2007. The project aimed to achieve a measurable and verifiable reduction of CO<sub>2</sub> emissions through dissemination of 1,500 fuel efficient improved cooking stoves (ICS) over the period of 2 years. The project was implemented in 3 Village Development Committees (VDCs), namely, Meghauri, Jagatpur and Shukranagar, of the Buffer Zone area of Chitwan National Park in Chitwan district in central south Nepal.

The project promoted an improved version of a two pot hole mud brick stove which consumed about 35% less fuel wood as compared to the traditional stove. Performance tests conducted at the project households indicated that the overall efficiency of the improved stove was in the range of 20-25% where as the traditional stoves were below 10%.

In addition to a reduction in fuelwood consumption, time savings during cooking, environmental protection, and a reduction in indoor air quality, ICS has led to a reduction in time and the workload of women, which has provided women with wider opportunities to access other economic as well as social activities that are usually dominated by men. Beyond the dissemination of stoves,

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the project trained 21 local community members, more than half of whom were women (13 women and 8 men) as ICS promoters/technicians. Capacity building activities for community based organizations was also done to monitor, test and supervise the stoves installed. The trained local people (promoters) are self-employed workers who get paid from the households where the stove is installed.



*Carbon finance and cleaner cooking*

Due to the project intervention, the use of traditional cookstoves has been significantly reduced. Altogether 1,701 ICS were installed in the project area by July 2009; this exceeds the project target for installation of 1,500 ICS during the period. Winrock International Nepal was assigned as an independent consultant to verify the CO<sub>2</sub> reduction achieved by the ICS in the pilot project area. The verification process basically aimed to estimate the savings of fuel wood per family after the implementation of the project. The use of ICS has resulted in a 38% reduction of fuel wood consumption and consequent greenhouse gas emissions reduction achieved. At the time of the verification study, it was found that about 98% ICS were in full operation.

According to the verification survey, the annual emission reduction was found to be 2.74 tCO<sub>2</sub> equivalent per family. As of July 2009, the total emission reduction achieved was 2,157.17 t CO<sub>2</sub> equivalent from the installation of 1,701 ICS in the project area. These Verified Emission Reductions (VERs) have been purchased by ToCC. In fact, ToCC provided the funding as up-front payment, which enabled CRT/N to launch the project.

The installation of ICS in the project area has clearly showed positive impacts and benefits, particularly for women and children who spend most of their time inside the house or kitchen. The smoke released from traditional cookstoves was responsible for various health problems such as eye irritation, headaches, respiratory problems, burns, and so on. In addition, they needed more fuel wood to cook food, thus resulting in economic burden as most of the families need to purchase fuel wood. Families

who need to collect fuel wood from nearby forests are also spending more time for fuel wood collection. The cooking time is also much longer as compared to ICS, which increases exposure to smoke and exacerbates women's health problems. ICS has been helpful to reduce all these problems.

Besides the VER project, CRT/N has also initiated a CDM project entitled "Efficient Fuel Wood Cooking Stoves Project in Foothills and Plains of Central Region of Nepal." The project is being supported by Egluro, a private company based in UK, with the provision of up-front financing against future Certified Emission Reductions (CERs).

The proposed project activity aims to disseminate about 26,400 efficient cooking stoves in the next 3 years in 6 Terai districts, namely, Bara, Parsa, Rautahat, Sarlahi, Mahottari and Dhanusha covering 20 VDCs in each of the district. The project falls under Type II category G project in the CDM regime. According to the applicable methodology, an efficient cooking stove is estimated to save about 1.41 tCO<sub>2</sub> per year and the entire project activity will save the emission of 200,182 tonnes of CO<sub>2</sub> over the period of 7 years (by 2016).



The project will promote two types of stoves: an improved version of a two pothole mud brick stove and a portable rocket stove. The project aims to train local community members as stove technicians for ICS installation. Additionally, the project will also create stove entrepreneurs who will promote portable stoves as retailers in the area.

The project will also provide some additional benefits to the stove users: financial support for non-local materials (liner, chimney outlet and iron rods). The project will also support the marketing of stoves, information campaigns, training, monitoring and follow-up and other project related activities.

The Gold Standard procedures and methodologies have been followed to ensure quality of CERs. Following the Gold Standard procedure, two rounds of stakeholders'

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consultation meetings have already been organized at the local level as well as at the central level to involve people that will be affected by the project and aimed specifically to discuss, correspond and incorporate the social and environment impacts of the project that will help ensure better implementation of the project. The stakeholders' consultation report has been listed on the Gold Standard website (<https://gs1.apx.com/myModule/rpt/myrpt.asp?r=113>) for public comments. The documents are also available for public comments at [www.crtnepal.org](http://www.crtnepal.org).

The Project Idea Note (PIN) has already been approved by the Designated National Authority (DNA) hosted by the Ministry of Environment of Nepal. The Project Development Document (PDD) has been prepared and under the process of validation. The DNV, a private company based in Norway will validate the Project Design Document (PDD). The PDD was web-hosted on the UNFCCC website (<https://cdm.unfccc.int/Projects/Validation/index.html>) for public comments until 10 February 2010.

### Carbon Finance for Biogas; Initiative Développement's Experience

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Initiative Développement (ID) has developed two biogas projects with carbon finance under the Gold Standard. The different steps of the project's development are explained here as well as difficulties encountered. ID is a French nonprofit NGO founded in 1994. It has projects in 7 countries (Haiti, Chad, Benin, Togo, Congo, Comoros and China). Since 2002, ID has implemented water and sanitation projects and has been building biogas tanks since 2005. The biogas replaces fossil fuel and non-renewable biomass and thus greatly improves indoor air quality in the targeted households. ID targets the poorest regions and households. They generally contribute in kind to the projects which are also subsidized at different rates.

#### First biogas project: 1,300 biogas tanks in Guizhou province

*Financial aspects:* In 2007, with the collaboration of Action Carbone (AC), a French offset organization, ID's biogas activities were scaled up and 1,300 biogas tanks were built over 3 years. The ERs will be used to finance the long term monitoring (10 years) of the project, maintenance of bio-digesters, and to reimburse the initial funding from AC.

*NRB share calculation:* With regards to firewood, two different NRB (non-renewability of biomass) studies were made, one for each climatic zone. The studies strictly adhered to the guidance for NRB provided by Gold Standard. A local approach was used, and data was gathered thanks to extensive surveys. For each village, calculations were made based on the following three parameters: the forest area where the villagers collect their wood, the growth rate of the forest and the total wood consumption of the village. Research was made easier due to the fact that the villagers use local firewood and all the forests of each village have been divided up amongst the villagers. The local approach was necessary since accurate regional data were difficult to obtain.

*Baseline and monitoring methodology:* The methodology used was the Gold Standard Small-Scale Bio-digester Methodology. The baseline calculation requires the various fossil fuels and daily biomass consumed to be weighed and also to identify how animal waste was handled before the project. Monitoring is performed for a representative sample of 200 beneficiaries twice a year, as the energy consumption is different in summer and in winter when beneficiaries heat their houses.

*Registration:* The project is now registered. The writing of the PDD took more than one year. What made the project more difficult to develop was the great diversity of energy consumption patterns. This project is in two different climatic zones, and the beneficiaries use coal, charcoal and firewood. The first construction work started in 2007 but the project was registered in early 2010.



*A biogas tank under construction*

#### Second biogas project: 1,100 biogas tanks in Yunnan province

In 2008 ID started a new bio-digester project in Yunnan province. Some 1,100 biogas tanks will be built over three years. For this project, ID developed the carbon project on its own. To make the project simpler, all bio-digesters will be implemented in the same area and we

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will choose beneficiaries that use mainly fossil fuel. Thanks to a better understanding of the requirements, the writing of the PDD and validation took around one year.

*Local Stakeholder Consultation:* We started this project with a stakeholder consultation. The aim of this meeting was to explain the project to stakeholders, to gather their comments and suggestions, and to define with them the sustainable development impact of the project. A monitoring plan of all the sustainable impacts of the project has been set up and will be done at the same time as the monitoring of green house gas reductions.



*A biogas tank and pigsty once finished*

**New projects and perspectives:** Two new projects are going to start in 2010:

1. An eco-stove project in Guizhou: 1,000 households will be equipped with efficient cookers (wood-saving stoves) in villages of an economically underdeveloped district in Guizhou, one of the poorest provinces in China. These stoves are designed to reduce the families' consumption of wood by 30 to 80% compared to the furnace they currently use, and can save the villagers some gruelling journeys searching for wood, and also reduce deforestation. An upfront payment will be made by an investor who will be repaid through the sale of ERs within 2 to 4 years.

2. A biogas and cook-stove project in south Yunnan: Households will be equipped with smaller tanks than are usually used in China. Thanks to warmer temperatures, the average retention time of the manure can be reduced without affecting the gas production. Some households will also be provided with eco-stoves for cooking animal food. That way, we will be able to cover more needs. In addition, we will experiment with a new economic model.

This project will be subsidised and carbon finance sought to finance long-term follow-up and monitoring, as well as scaling up of the project.

Our work generally aims at experimenting with projects and models which can be later scaled-up in similar contexts thanks to carbon finance.

*Why choose Gold Standard?* Gold Standard's procedures are well suited to NGOs. A simplified procedure is allowed for very small projects, in order to reduce validation costs, and specific tools assure a participatory process and a strict monitoring of the other benefits of the project. Furthermore, unlike the CDM AMS IC methodology which has not been adapted to suit biogas project monitoring, a GS methodology has been developed specially for rural biogas projects.

*A global expertise on carbon finance* Thanks to the development of these projects, ID has gained expertise in both biogas project implementation and various aspects of carbon project development. We have developed a specific database to monitor not only carbon emissions according to GS methodology, but also other impacts of biogas implementation and the condition of the tanks (failures, gas pressure, etc.). We are currently providing capacity building for local Chinese organizations for a much bigger project funded by the *French Development Agency* and *French Global Environment Fund*. We are also ready to provide capacity building to NGOs to help them gain access to carbon finance.

For more information please see [www.id-ong.org/cn](http://www.id-ong.org/cn), contact Olivier Lefebvre [o.lefebvre@id-ong.org](mailto:o.lefebvre@id-ong.org) (Carbon Project Developer) or Christophe Barron [c.barron@id-ong.org](mailto:c.barron@id-ong.org) (Head of China Programme and Environment and Renewable Energies Department).

#### **WBT/CCT Training Opportunity!**

The U.S. Environmental Protection Agency is funding Aprovecho Research Center to provide three Partner organizations training and technical support to evaluate and improve the performance of their stove using the WBT and CCT. Applications are due Monday, May 10, 2010, and should be submitted via e-mail to [PCIA@epa.gov](mailto:PCIA@epa.gov). For more information including selection criteria and application submission instructions, please visit <http://www.pciaonline.org>.

## Carbon Finance: A Paradigm Shift for Improved Stoves

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E+Co is a non-profit investor that provides services and capital to small and growing clean energy businesses that support poverty alleviation while protecting the planet. In 2006, E+Co invested in Toyola Energy Limited, a Ghana-based stove company run by two local businessmen, Suraj Wahab and Ernest Kyei. Wahab and Kyei had been trained to manufacture stoves by Enterprise Works Ghana, but lacked financing and formal business skills to grow their company. Recognizing the promise and drive of these entrepreneurs, E+Co began developing a carbon finance project around Toyola's work, providing capital to meet their needs as they grew.

In 2006, Toyola was selling several hundred stoves per year; in 2010 sales projections exceed 70,000 stoves. This growth has been due largely to the future promise of carbon revenues. The expected revenue stream has allowed E+Co to sufficiently capitalize the company without overburdening it with debt. The company is able to reduce stove prices since carbon revenues are used to subsidize their sale. In September 2009, the E+Co/Toyola collaboration became the second stove project registered with the Gold Standard worldwide. E+Co has launched a similar project in Mali, investing in a local stove company called Katene Kadji. Katene Kadji is also now selling tens of thousands of stoves per year. The first tranche of offsets from these projects will be sold to Goldman Sachs in the first half of 2010.

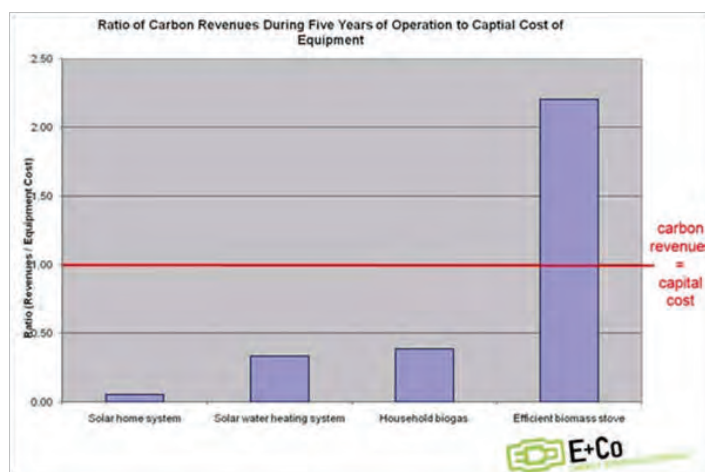


*Toyola Energy Limited stove production, Ghana*

Significant promise underlies carbon finance transactions that address indoor air pollution and save lives by subsidizing the manufacture and sale of improved stoves. While many in the stove community have been slow to embrace carbon finance as a central strategic element of stove initiatives, outside investors are moving quickly and changing the industry in dramatic ways. What was once a razor thin margin industry that peddled homemade contraptions is becoming a high finance endeavor in which mechanized manufacturing produces life saving

stoves that are sold at deep discounts to the world's poorest households, with polluters in the developed world footing the difference. Advocates of clean cooking technology need to join this movement, or carbon finance proponents may charge ahead without the expertise and experience of those who have championed stove design for three decades.

Skeptics suggest that carbon finance is a distraction from the real business of manufacturing and distributing efficient stoves. They also assert that carbon project development and certification is too challenging and bureaucratic. Since upfront cost of stoves and awareness of their benefits are significant barriers to widespread adoption, however, considerable investment capital is needed in order to reduce prices and increase distribution. Unfortunately, traditional investors regard small businesses in the developing world as too risky. When transparent carbon credits are generated from stoves, small businesses qualify for significant capital that can fund product subsidies and effective marketing campaigns without sacrificing stove quality.



This makes stoves unique. Among the technologies that can change lives and livelihoods at the household level – including solar PV, solar water heating or household biogas – only efficient stove economics can be fundamentally altered by carbon finance. While gaining the necessary approvals to sell carbon offsets is tricky and best achieved with the assistance of firms that specialize in the approach, E+Co's experience confirms that the rewards far outweigh the risks. We outline here three of the key lessons learned.

First, additionality is central to carbon finance projects. Project developers must prove that their project would not happen in the absence of carbon revenues. They must show that without the additional income generated by the sale of carbon credits, a stove company would not be able to manufacture clean stoves, or would not be

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able to sell them at a price low enough for ordinary consumers. Otherwise, carbon offsets fail to 'offset' a buyer's emissions, and carbon credits become meaningless. If local stove manufacturers and distributors are already engaged in commercial practices without the support of carbon finance, auditors may question their eligibility. In such cases, auditors might conclude that carbon revenues can only be sought for those stoves sold in excess of the current sales level. Thus project developers should start the carbon finance approval process immediately upon initiating a stove program, and embed carbon revenues into business plans to make clear that the company could not survive without them. If working with an established business is essential, consider rationale for why the stove program was commercially viable before, but will not be in the future without carbon revenues.

Project scale is a second criterion when considering carbon finance for improved stoves. With few exceptions, carbon projects require \$100,000 - \$200,000 to develop to the point of registration, which includes site visits, auditors' fees and drafting of detailed documents required for approval. Since project development costs are nearly fixed regardless of project size, there is a strong incentive to select large projects that will generate more revenues relative to those costs. E+Co seeks projects with the potential to exceed 20,000 household stoves sold per year.

Third, stove projects can only gain carbon credits for the portion of biomass being saved that is non-renewable, or the portion of harvested biomass that exceeds the country's capacity for forest regeneration. While there are many ways to calculate the non-renewable biomass percentage, E+Co has successfully used studies from the UNFAO and others to compare total forest stocks, regeneration rate and harvesting rate. The formula to calculate non-renewable biomass is outlined in the Gold Standard and CDM methodologies. Other project developers make their case with more qualitative



*Toyola employee assembling stove bodies and liners*

measures, such as showing that users travel increasing distances to collect fuel wood, indicating depletion of biomass resources. The percent of non-renewable biomass is one of the largest variables that dictate carbon revenues, so it is critical to design projects around maximizing this number. For more details on any of these issues, readers should scrutinize the registered project design documents of projects on the Gold Standard APX registry (<http://goldstandard.apx.com>) or the CDM project pipeline on the UNFCCC website (<http://cdm.unfccc.int>).

By changing the way 3 billion people cook their daily meals, carbon finance from improved stoves will save lives and reduce emissions. This sea change will happen within years, not decades. Organizations with strong field experience have an opportunity to lead, and without them we risk large scale but misguided stove programs that promote inappropriate or obsolete technology. While the opportunity to shape the effect of carbon finance on cleaner cooking is great, the window to engage in this market is narrow. The time to act is now.

### **Top tips from the experts on carbon finance**

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This article brings together advice from specialists around the world who have been involved in the development of methodologies, and in planning, developing, implementing and investing in carbon finance projects in recent years.

Carbon finance now has a proven track record, though only a few projects have been registered to date (see the Fact Box on page 40 for a list of registered and pipeline

cookstove carbon finance projects). The journey from project idea to registration and beyond can be very rewarding, but also long and complex. Much of the advice below is aimed at helping organisations navigate the monitoring, documentation, collaboration, planning and financial aspects.

First of all, be informed. Many resources are available for free, such as the Gold Standard ([www.cdmgoldstandard.org](http://www.cdmgoldstandard.org)) registry project materials, the PCIA ([www.pciaonline.org](http://www.pciaonline.org)) and HEDON ([www.hedon.info](http://www.hedon.info)) websites and communities, and occasional courses. In addition, many organisations exist to support the development of carbon finance projects,

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and you may consider engaging their help. Choosing the right carbon partner is critical, and the more experience they have in your particular area, the better. Approach a range of potential organisations and companies to discuss how you could work together. There is no need to commit early on; take time to understand offers, and how changes to the price of carbon credits would affect you. Consider fixed price contracts to protect against volatility. The relationship ideally develops into a close and ongoing collaboration rather than simply a transaction, allowing each party to benefit from the strengths of the other.

Sustainability has been a priority for donor-driven activities within the household energy sector for decades. One of the most exciting features of carbon financed improved cookstove programmes is the implicit emphasis on large-scale, long-term use of effective technologies, distributed within a viable business model. Familiarising yourself with business planning and modelling techniques is essential. One respondent recommended using Excel to build a financial model for your project, which can then be tested against various assumptions, risks and worst-case scenarios to ensure it is robust, and to reveal its vulnerabilities. Consider forming partnerships or hiring expertise to assist with this. Do not commit significant resources before addressing key sustainability and viability issues.

Without significant scale most projects cannot succeed, but achieving scale has been one of the most challenging aspects in this sector's history. Unless people buy your product and use it for many years, your carbon project will not succeed. Product quality, longevity, consistency and measurable performance are of paramount importance. Focus your attention on high-quality technologies, and systematically plan maintenance and stove replacement. Carefully plan your dissemination and marketing strategies, test assumptions and pilot. Make certain that people really do want to use the product. Attention to these aspects will lead to greater customer satisfaction and should stimulate sales.

Particularly in the voluntary market, co-benefits attract buyers. Invest in creating and documenting co-benefits, such as positive impacts on indoor air pollution and socio-economic aspects. Ensure that the human development priorities and standards of your partners match your own, if this is important to you. Some organisations focus on this aspect more than others – for example focusing on Gold Standard activities.

Many specialists underlined the importance of monitoring, as well as the challenges of monitoring many small technologies scattered across large geographical areas. Poor tracking of stove purchases and verification of ongoing use were cited as one of the main areas that prevent projects from generating revenue. View

monitoring as an asset and invest in it, as it will determine whether or not your project can succeed.

In working with Designated Operational Entities (DOE), one expert recommended providing as much published, credible literature as possible to back up your claims. This allows DOEs to easily check your sources, and reassures them that your observations and research match those of independent third parties. A number of individuals emphasised the need to 'keep the ball rolling'; when you are asked for clarifications respond quickly and comprehensively. DOEs will, understandably, interpret methodologies word for word, so in general it is wise to follow methodologies word for word even where interpretations are scientifically logical.

A number of specialists offer words of caution. There is a perception among some that there is a 'pot of gold at the end of the carbon finance rainbow'. While this may be true, developing a project requires considerable time, expertise, work, risk and coordination. Project proponents can often expect to have to work on the ground for many months - or even years - before seeing financial returns. Some fall at avoidable early avoidable hurdles. One proponent demonstrated the viability of their project in the absence of carbon finance in their idea note. This rendered it ineligible for support due to 'additionality' rules; only projects *unlikely* to succeed without carbon finance are eligible. If you are unsure of your own capacity to apply the methodologies, seek help from experts who can help walk you through the minefields and ultimately save you time and money.

Finally, an old hand offers a piece of advice which reinforces much of which others have said: 'Always think big, long-term and focus on carbon credit quality'. Good luck!

*Sincere thanks to all those who kindly contributed their insights:* Christiana Figueres, Independent climate change specialist; Dana Charon, Berkeley Air Monitoring Group; Daniel Farchy, C Quest Capital; Dick Jones, Carbon Aided; Don Feil, Relief International/EWV; Eduardo Ferreira, JP Morgan Climate Care; Evan Haigler, Impact Carbon; Florian Zerzawy, Atmosfair; Iwan Baskoro, GERES Cambodia; Jamal Gore, Carbon Clear Ltd; Khalequzzaman Mohammad, GTZ BD; Kristel Dorion, Energetix Climate; Liz Bates, Independent household energy specialist; Matt Evans, Impact Carbon; Philip Mann, Oxford University Centre for the Environment; and Richard Grinnell, Helps International.

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## The Gold Standard

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The Gold Standard (GS) was established by a group of NGOs at the 7<sup>th</sup> Session of the UNFCCC Conference of Parties in late 2001. These NGOs set out to create a rigorous methodology to enable project developers to adhere to CDM criteria for offset projects, and ensure that projects led to real and verifiable emissions reductions while making a measurable contribution to sustainable development. Since the 2003 launch of the Gold Standard Rules and Procedures for CDM, the standard has matured in parallel with global carbon markets. In 2006, the Gold Standard Foundation was organized as an independent legal entity in Geneva Switzerland, and later that year GS certification was extended to voluntary market projects.

Today the Foundation is owned by over 60 of its NGO supporters, and continues to promote sustainable development through carbon offset markets characterized by transparency and equality of access. All developers of GS projects are required to incorporate feedback from stakeholder consultations into their project design, and project documentation includes a tool used to check that projects will make significant contributions to long term sustainable development. In the voluntary market, the Gold Standard provides an assurance that carbon credits are of high quality, and in the compliance market it complements the CDM criteria by requiring documented local stakeholder involvement and sustainable development assessment. For these reasons it is recognized as the benchmark for quality in both voluntary and compliance markets.

Since the approval of a voluntary market methodology for cookstoves in June 2008, the Voluntary Gold Standard (VGS) has emerged as the choice of many cookstove project developers. As of January 2010 there were three VGS stove projects registered and nine more in the pipeline. The methodology provides detailed guidance on how to determine baseline emissions, estimate post intervention emission savings, calculate the fraction of renewable fuel used, conduct ongoing monitoring, and establish emissions reductions using sound statistics. In contrast to CDM cookstove projects, the VGS methodology does not place a limit on overall project scale.

A new, simplified methodology for improved cook-stove activities is also under development and will be made available for use in the context of the new GS community -focused micro-scale scheme (to be launched on April 1<sup>st</sup>). By-default factors for non-renewable biomass fraction and/or emissions savings and simplified monitoring procedures are among the simplifications foreseen. Activities reducing emissions by less than 5,000 tCO<sub>2</sub>e per year, located in Least Developed Countries, Landlocked Developing Countries, and Small Island Developing States or targeting poor communities in other countries will be eligible under this new scheme.

For more information about how PCIA Partners are accessing carbon finance for cookstoves through the VGS, please see articles on the subject throughout this issue. In addition, detailed information about all VGS projects is posted on the GS website: <https://gs1.apx.com/myModule/rpt/myrpt.asp?r=111>.

### Information Project Developers Want to Know

Make sure you can provide the following information about your proposed project:

- ◆ Project goals
- ◆ Type of technology
- ◆ Size of the project
- ◆ Project location
- ◆ Estimated CO<sub>2</sub>/other GHG reductions compared to baseline
- ◆ Suggested project/crediting life time
- ◆ Suggested CERs/ERUs/VERs price in US\$ or € /ton CO<sub>2</sub>e reduced
- ◆ Source of project's financing
- ◆ Anticipated socio-economic or environmental benefits



*Adapted from World Bank PIN form, with inputs from Jamal Gore of Carbon Clear Limited.*

### Mobile Technology for Cookstove Carbon Finance

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Complete, accurate sales records are the foundation for monitoring in cookstove carbon finance projects, but maintaining the records on paper can be a slow and error prone process, especially as projects scale. Building on discussions started during the 2009 Forum in Kampala, I have been working with PCIA Partner E+Co to develop a system for maintaining a database of stove sales using standard mobile phones. We are currently piloting the system in two carbon finance projects in Ghana and Tanzania, with plans to expand the pilots into production systems by fall 2010.

Generating high quality offsets from cookstove sales requires intensive monitoring throughout the project cycle. Details differ by methodology, but project developers must demonstrate on an ongoing basis that claimed emission reductions are actually being achieved. To obtain this evidence it is common for trained enumerators to periodically visit or call a sample of homes where improved stoves are in use to evaluate actual fuel consumption and cooking behavior. Project developers have to maintain detailed point of sale data both to locate stove owners for these monitoring visits, and for use in the calculation of emission reductions. Compiling these records is time consuming and tedious work that project implementers may see little initial incentive to do.



Photo credit: Michael Benedict

*Training stove sellers in Ghana on how to record sales using their mobile phones*

Mobile technology, in particular text messages sent using standard cell phones, can help meet this data collection need. Our software allows individuals who sell stoves to update an electronic database of customers using a text message (also called SMS) sent from their mobile phone. Automatic checks on incoming data reduce errors in the project database, and if stoves are serialized during

manufacture the system can help prevent fraud and double counting. All information received is available through a password protected webpage, so field staff, project developers, verifiers, and other stakeholders have access to sales records in real time. The system is based on an open source program called RapidSMS that was initially developed by UNICEF to support their operations in the developing world.

Before starting to sell stoves retailers use a simple command to register their mobile phone and then must be given a 'stock' of stoves to sell by a system administrator. During the pilot in Ghana, once a new seller is registered the messages they use to record a cash sale look like this:

```
sale <user first name> <user last name> <stove serial #> <price paid> <mobile number> <region code (0-9)> <village> <free text description>
```

where region codes are specified on laminated reference cards given to stove sellers. For example, to sell a stove for 10GHC to a customer named Marindame Kombate who lives in Kumasi with mobile number 0241273802, the message sent would be:

```
sale marindame kombate hmn123456 10 0241273802 5 kumasi near ecobank
```

"near ecobank" is a brief, optional free-text description that can be used to help the seller remember the stove's location.

Different messages can be used to sell a stove on credit or record a payment, and administrators can use their phones to check how many stoves an individual has sold. The web interface provides aggregate statistics like the number and total value of stoves sold, and the option to export the database as an Excel spreadsheet. An incidental benefit of the software is that it provides supply chain and sale performance information to business owners.

The most common issue reported is that messages used to record sales are too long. It takes time to correctly type them out (the simple example above is 69 characters), so for bulk sales or a market situation it is difficult to enter data fast enough. This is significant and we are exploring options for making data entry easier. Some of these include phones with full keyboards, basic graphical interfaces, and smart phones with touch screens. In the near future technologies discussed elsewhere in this issue such as bar codes, RFID tags, and usage meters could be integrated with the system to help quickly collect rich, accurate information from the field.

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There are no licensing fees to use the software, so the primary costs are computer hardware, message fees, internet service, and time for development. Development of the pilot system took about a month. Our server and modem for sending and receiving text messages cost less than \$1000, and each message sent or received costs approximately \$0.03. The first pilot server used E+Co Ghana's existing internet connection, but due to difficulties with unreliable power and internet connectivity we are exploring options to have the server hosted by a third party.

Mobile data collection and related technologies have the potential to improve record keeping in a broad range of development initiatives, including cookstove carbon finance. Please get in touch if you are interested in learning more about the technology or approaches and whether they are appropriate for your organization.

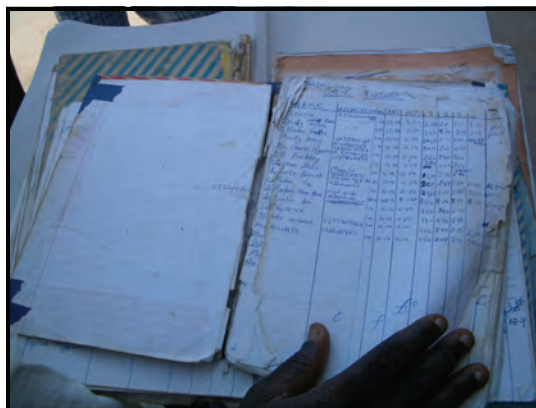


Photo credit: Michael Benedict

*The need for paper sales records like these can be reduced or eliminated with an SMS-based system*

### ProBEC's Solar and Hotbag Use Meters

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<http://www.pciaonline.org/partners/gtz-hera>;  
See Project Profile for ProBEC: <http://www.pciaonline.org/projects/probec>

The Programme for Biomass Energy and Conservation (ProBEC) is a Southern African Development Community (SADC) programme implemented by GTZ. ProBEC has been active in promoting improved stoves in the SADC region since 1998, and over the past 18 months has been developing a Regional Carbon Facility based on the products it has developed in the region since its inception, with a view to this facility continuing ProBEC's work. ProBEC will be registering the SADC Carbon Facility as a CDM project in 2010 and will then apply for Gold Standard registration.

ProBEC comes to a close in December 2010 and has devised a programme exit strategy which builds on the foundation laid by ProBEC's work over the past 10 years, so as to ensure continued activities around biomass energy related issues and, overall, continue to highlight poor people's energy needs and requirements and to ensure sustainability after the end of the programme.

ProBEC commissioned the development of two use meters, a solar use meter and a hotbag use meter, since use rates are a key indicator for establishing the user acceptance of such devices. The use meters log temperatures (food and ambient) as well as solar irradiance. Automatic data evaluation yields the number of cooking cycles, the corresponding cooking time, the quantity of food cooked and the reduction of fuel consumption and an estimate of GHG emissions compared to other cooking techniques.

It is anticipated that there could be further technical developments to make the meters smaller, but at this stage they are prototypes that would cost between 5-10 EUR. ProBEC has 20 of each meter available and is willing to partner with organisations/partners that want to test them in the field.

**Solar Use Meter:** The Solar Cooker Use Meter (SUM) is a device for the automatic metering of solar cooker use. It logs date and time, pot bottom temperature, ambient temperature and solar irradiance (by a photodiode). The SUM measures the speed of heat-up of the pot content and compares it to the power going into the pot content: slow heat-up, for a given input power, means high thermal mass, rapid heat up means small thermal mass. The input power is determined by putting the measured pot content temperature, ambient temperature and solar intensity into the linear collector equation of the cooker. This means that the slower the heat up time, the more food is being cooked and the more food being cooked, the more carbon is being saved per cooking cycle. This yields a reliable estimate of the quantity of food cooked in the metered solar cooker, of fuel saving and GHG emission reduction resulting, compared to the baseline.

The SUM in this project phase has been developed for field tests, in two versions, corresponding to two solar cooker models available in RSA: the SunStove solar box cooker, and the K14 solar concentrator. The basic physics involved is described in Grupp et al. (2007/2009). The 2000 version SunStove with its corresponding SUM, consists of an absorber plate, fitted with a glued thermocouple sensor connected to the logger unit. All sensors were calibrated in situ.

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*The Sunstove SUM*

The K14 SUM is based on the same data logger as the SunStove SUM described above and features an external thermocouple mounted in the centre of the cooker focal area, shielded against stray radiation by a reflector-protected cellular concrete basis, with the thermocouple in direct contact with the pot bottom (see photo below). As with the SunStove, the sensor was calibrated by comparison with a thermocouple placed in the water in the pot. The SUM unit is fixed in a normal position relative to the reflector plane and photodiode opening.



*Detailed view of pot bottom sensor. Note the reflective casing protecting the cellular concrete.*

**Field trial with hot-bag use meters:** The Hot-bag Use Meter (HUM) is an automatic recording device for use with appliances to record at what times of day and for how long food is cooked. ProBEC conducted a two-week field study with the HUM in June 2009, by placing hotbags (heat retained cookers) in five households from Kwa-Thema, a low-income residential area towards the east of Johannesburg, South Africa.

The HUM is meant to be read at regular intervals, like an electricity meter. Automatic evaluation software calculates use rate, load in terms of quantity of food “cooked” in the device, number of successful service cycles, and allows – by comparison with baseline data – estimation of energy savings and greenhouse gas emission reductions. It is anticipated that the HUM will be central to carbon incentive schemes whereby use-meter data can be the basis of rewards for avoiding the use of a specific energy source.

From the data recorded by the HUMs, households saved on average 25 kilograms of CO<sub>2</sub> during the field test, raising the possibility that an average household could save around 600 kilograms of CO<sub>2</sub> per year. The results

of the field trial were reported in terms of monetary savings. The exercise also proved that the device worked, and that it is inconspicuous and does not interfere with users’ normal cooking habits. The improved stoves replace coal generated electricity or paraffin, which has an enormous impact on air quality. It is also a way of paying people for the energy they *don't* consume.

Heat retention devices are peripheral to ProBEC so it has not pursued further research on the topic. Ideally, a 6-month field trial should be undertaken to establish how long the meters last and if people tamper with them.



*Note the HUM at the bottom of the bag*

**Conclusions and recommendations:** Unfortunately, 3 of the 5 HUM test units developed an “on-off” sensor short-circuit due to humidity in the Hotbag. But since they are low-cost items, they can be replaced by a sturdier model.

This device shows the advantages of a standard, non-modified, industry-produced solution that is easily replaced.

Users liked their hotbags: all five households have purchased them at full price, with two users expressing interest in selling them.

To simulate a situation where users would benefit from carbon savings achieved through the use of the hotbag, users were offered a ZAR5 incentive (5 South African Rands, the local currency) for every bona fide HUM use cycle. The impact of the availability of an incentive scheme was tested and from user feed-back, it was concluded that the incentive is of lesser importance than the convenience afforded by the hotbag. All users purchased their bags without the incentives. The results show the figures corresponding to a HUM-based carbon value of US\$20 per ton. A full-scale field test with HUMs and SUMs is planned for 2010 in Botswana or Lesotho.

*For more information, please see: Grupp, M, Balmer, M, Beal, B, Bergler, H, Cieslock, J, Hancock, D and Schroeder, G. 2009. On-line recording of solar cooker use rate by a novel metering device. Prototype description and experimental verification of output data. Solar Energy 83 (2209). 276 – 279.*

## How many stoves are being used? Stove Use Monitoring Systems (SUMS)

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Improved cookstoves can bring significant health, welfare and environmental benefits to the lives of the 700 million households still relying in biomass for cooking and heating, as well as the climate co-benefits for a larger portion of the world population.

It is important to emphasize that the actual delivery of those benefits depends not only on developing or distributing better stoves but just as crucially on their adoption and sustained use. Monitoring and evaluation of usage is needed to ensure that stoves perform as intended. It is also essential for designing dissemination strategies that respond to the population dynamics of use, the sources of variability and the needs and motivations of different groups of adopters.

At the University of California Berkeley we have developed over the past years a set of tools, methods and metrics for the systematic collection and analysis of stove use data using sensors: the Stove Use Monitoring System (SUMS). Such systems provide statistically reliable information with smaller sample sizes than the current house-to-house surveys or sales records, and in ways that are less resource intensive, scalable and can operate in remote settings. They do not alter household behavior or rely on respondent's memory. Quantitative metrics of stove adoption and use like those derived with the SUMS can enhance the transparency of the verification process in the currently accepted Gold Standard Methodology for valuing carbon credits. They also help improve our understanding of the cooking system and the stove adoption process.

Using small temperature loggers as stove use monitors, we quantified the patterns of adoption and use of a cohort of about 80 households for two years. The

monitoring is part of the CRECER<sup>a</sup> chimney stove trial in the highlands of Guatemala. We used ThermoChron iButtons<sup>®</sup> which cost between \$20-\$50 each and are about 1.5 cm in diameter. These stainless steel sensors record time/date and temperature with 1°C accuracy at programmable sampling rates from 1 minute to several hours. Communication with the monitors is by momentary contact with a special probe, and programming and downloading of the data is easily done in the field with a PDA, smart phone or laptop computer. Depending on the model, iButtons store between 2048-8192 readings and have operating temperature limits of 85 C, 120 C or 140 C. The battery life of the sensors usually exceeds 1 year in stove monitoring conditions if kept within the manufacturers specifications, after which the whole unit must be replaced as the battery cannot be changed. They are easy to use, unobtrusive, water and tamper resistant.



Photo credit: Ilse Ruiz

*Monitoring with the SUMS in the field in CRECER*

When following with the SUMS the daily percentage of stoves in use since construction, we found an initial period of gradual increased use. After that, equilibrium is reached above 70% with a slight decline over the two-year period and well defined seasonal and local festivity patterns. Monthly use rates seem stable despite the fact that the set of chimney stoves being used is different



Photo credit: Ilse Ruiz

*A routine M&E household visit to monitor stove use with the SUMS and IAP in the CRECER study. Note the presence of both a stove and an open fire, highlighting the importance for monitoring usage. (Continued on page 22)*

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every day. The levels of variability in stove use that we observed in this study and in current collaborative SUMS implementations with colleges in Mexico<sup>b</sup> and India<sup>c</sup> suggest that the expected gains in stove performance (reductions in indoor pollutants, GHG emissions, and fuel use) given by pure technical improvements in stove design can be easily outweighed by fluctuations in user's patterns of use.

Therefore, it is important to a) characterize population adoption rates and seasonal patterns of use, b) quantify the percentage of daily meals being cooked with the efficient stove, and c) understand the health and climate impacts of those cooking practices substituted by the new stove. Users that during a number of days each month cook elsewhere, do not cook at all, or combine the use of other devices could still be long term adopters. Improved stoves that are not used for every meal but that effectively eliminate the cooking practices with the heaviest IAP exposure and GHG emissions "signatures" provide substantial benefits to the users.

These phenomena underscore the importance of stove use and adoption as performance parameters of the stove system that must be monitored just like any other technical specification. The SUMS will play a fundamental role in enabling such verification at the scale of millions in carbon stove projects. Our current system could easily integrate with other bar code and cell phone-based monitoring technologies like the ones featured in this issue. A wireless version of the SUMS to optimize data collection and transmission is currently being implemented<sup>d</sup>.

[a] *Chronic Respiratory Effects of Early Childhood Exposure to Respirable Particulate Matter (CRECER) Study*, <http://ehs.sph.berkeley.edu/quat>

[b] *Interdisciplinary Group on Appropriate Rural Technology (GIRA) and the National Autonomous University of Mexico (UNAM). Patsari Stove Project*, <http://patsari.blogspot.com>

[c] *Sri Ramachandra University (SRMCU)*, <http://www.srmc-ehs.org.in>

[d] *Berkeley Air Monitoring Group*, <http://www.berkeleyair.com>

### **Cambodia Study on Use of Information Technologies in Monitoring Activity**

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To obtain carbon finance emissions reductions must be real, long term and measurable. However, owing to their variable and dispersed nature, proving emission reductions from cooking stoves is expensive and time consuming. The use of Information Technology (IT) has the potential to reduce costs and increase confidence in materiality of carbon credits from cooking stoves. The key issues are how to track the number of stoves in use and the amount and type of fuel being used. In 2009 GERES conducted a study on the possible use of IT in monitoring cooking stove projects. It showed that a number of projects are developing innovative ways to improve the efficiency of monitoring systems.

**Cell phones** are widely used across the developing world and can capture key monitoring data by allowing users to register their details such as their name, address and date of purchase through SMS (Short Messaging System). This information can automatically be transferred to a central database to allow the project developer to build up an accurate customer database.

**Barcodes** or **RFID** (Radio Frequency Identification) are commonly used for registering products, sales or tracking products' progression in a supply chain. The difference between them is that with RFID, no direct contact is necessary between the tag and the reader. Therefore the stoves could be encoded with information, such as the

serial number, date of construction, as well as time and date of the reading. These technologies could help simplify the issue of how many stoves are being used as well as locating them geographically, which can also help answer the question of the renewability of the fuel being used. A crucial factor in monitoring stoves is demonstrating the use of non-renewable wood. Geographical data (e.g. location of disseminated stoves) can be obtained by using devices such as GPS emitters, cellphones, and RFID tags. **GIS** technology can be used to layer this data on maps to illustrate the localized energy context that the stoves are used in. For example, when stoves are used in areas where there is a wood fuel deficit there is very clear evidence that the woodfuel used in the project is non-renewable.

The use of **heat sensors** can provide improved information on fuel use. Currently lengthy household cooking tests must be performed on stoves to gauge the quantity of fuel being used and saved by efficient cooking stoves. At least two research organizations (a French association called Synopsis, and University of Berkeley) are using heat sensors to capture this field level data. The idea is to measure stove use in real-time, instead of using standard stove use data measured during household tests performed on a few families. The data directly measured by these devices is temperature and time, from which other information can be deduced such as the status of the stove (in use / not in use), and the mass of food being cooked.

Once data has been acquired and sent to a central

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location, it needs to be properly stored (accessible to anyone involved in the project whatever their office location, and accessible in the future if requested by carbon auditors for instance), and managed in order to extract the relevant information (perform calculations and generate reporting tables, maps and graphs). A number of projects have begun to use customized software designed for the purpose of simplifying monitoring. For example the Ecotrack software has been developed by the company Eco Ltd, to systematize monitoring. The integrated software increases efficiency, transparency and timeliness of project implementation and management.

Numerous technologies are in existence that can be applied to data acquisition, transfer and management. The challenge now is to mainstream their implementation to improve the accuracy and cost effectiveness of monitoring systems.

### GTZ Guidebook on Carbon Markets for Improved Cooking Stoves

Carbon finance is seen by many as a key mechanism to increase the dissemination rate of improved cookstoves in developing countries. Nevertheless, due to a number of obstacles faced by stove projects in the carbon market, only a small number of project activities have so far been implemented successfully. The GTZ project "Poverty-oriented Basic Energy Services (HERA)" has therefore launched a comprehensive guide on carbon markets for improved cooking stove projects. The guide offers an overview of the various steps in the project cycle of CDM and Gold Standard projects, describes existing methodologies, and addresses the most critical issues in project development.

The guide is updated on a regular basis and has recently been supplemented with the latest changes in the CDM methodology AMS-II.G. HERA is closely following the ongoing discussions for a second revision of the methodology which might take place in April 2010. "Carbon Markets for Improved Cooking Stoves – A GTZ Guide for Project Operators" can be downloaded from <http://www.gtz.de/en/themen/umwelt-infrastruktur/energie/20674.htm>.

## Carbon Finance Resources and Trainings

### UNFCCC Sustainable Development Mechanism (SDM) Program's Practitioners Workshop

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The UNFCCC secretariat organized a one-day workshop entitled "Practitioners' Workshop on AMS-I.E, AMS-II.G and AMS-I.C: CDM methodologies for household cooking energy supply" on 26 October 2009 in Bonn, Germany. Apart from the benefits of emission reduction and sustainable development, projects for the supply of household energy are seen as one opportunity for addressing the regional distribution of CDM project activities (see Annex 54, EB50 at <http://cdm.unfccc.int/EB/index.html>).

The objectives of the workshop were:

- To take stock of the experience gained through previous CDM cookstove projects in order to identify the barriers that prevent the use of CDM methodologies for the supply of household cooking energy;
- To determine and implement methodological solutions to improve the usability of CDM methodologies for the supply of household cooking energy.

Participants, many of whom were PCIA Partners, included CDM cookstove project proponents from least developed countries and low-income developing countries; NGO

sponsors; research organizations; and UN organizations including the UNFCCC Sustainable Development Mechanism Programme and its related Panels and Working Groups. A third of the 55 workshop participants were women.

The workshop analysed the lessons learned from stove dissemination in the past three decades, together with experience from recent project implementation under the CDM. Technological options that have evolved over time were discussed, as well as the advantages, opportunities, and challenges that carbon finance could bring to the sector. Participants agreed that rigorous monitoring methods to determine stove efficiency and calculate the non-renewable biomass fraction of fuel usage are currently available, and that these methods would create real and measurable emission reductions.

Key recommendations, (including those which were used to revise AMS-II.G), were:

- Methodologies should be simplified and clarified for the determination of the efficiency of the stoves and through more flexible, more cost-effective and less intrusive monitoring that allows a choice between default conservative factors, laboratory monitoring and field monitoring;
- Further guidance should be given on a simple method to determine the fraction of non-

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renewable biomass;

- The scalability and the possible implementation of CDM cookstove projects under a programmatic approach (PoAs) should be assessed;
- The applicability conditions should be broadened to include more technologies, avoided methane emissions and unmet demand;
- Leakage assessment should be simplified; and
- Indoor air pollution to determine the health co-benefits of emission reduction in cookstove projects should be monitored.

The CDM Executive Board (EB 51) has subsequently approved changes to 'AMS-II.G Energy efficiency measures in thermal applications of non-renewable biomass' including:

- Default efficiency factors for baseline cookstoves;
- Procedures for sampling;

- Revised procedures for determining the quantity of woody biomass that can be considered as non-renewable; and
- Clarifications of leakage requirements that are appropriate for projects, as opposed to PoAs.

The Small-Scale Working Group (SSC WG), in its 23rd meeting report, has indicated its intention to recommend further changes to cookstove methodologies. Textual proposals for methodological revisions and other inputs can be sent to the secretariat at: <http://cdm.unfccc.int/methodologies/SSCmethodologies/clarifications>.

A list of attendees, presentations and proceedings from the Practitioners' Workshop can be accessed at: [http://cdm.unfccc.int/Panels/ssc\\_wg/workshop/091026/index.html](http://cdm.unfccc.int/Panels/ssc_wg/workshop/091026/index.html).

### GERES' Carbon Finance Capacity Building Activities

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A lack of knowledge about carbon finance is preventing development stakeholders from accessing carbon finance. GERES is attempting to address this by sharing knowledge about climate change challenges and transferring its experience with CDM (Clean Development Mechanism) project development. This is done through the capacity building activities developed by GERES' Climate Change Unit, which adapts its services according to the needs of its audience.

For field NGOs and social enterprises, GERES has designed a 6-day training session, designed to share with them the insights of a development-oriented CDM project and guide them through the steps to access carbon financing. The training is based on the principle of action-research: the issues and problems tackled are the ones faced by the GERES teams in their day-to-day work, for which they have found efficient methods of response. Another lighter 3-day training program is addressed to aid agencies and companies eager to gain knowledge of Carbon Finance and CDM projects, but with no need to go into all the details of CDM project development.

The trainings are held on a quarterly basis in varying locations such as Cambodia, France, and soon in western Africa. The fee system is designed to induce solidarity; participants with more purchasing power such as international organizations pay a higher fee, thus supporting the participation of NGOs from developing countries.

PCIA supported the participation of two PCIA Partners in the GERES carbon finance training session in June, 2009. Both reported that the training gave them the chance to connect and exchange ideas with people from various organizations working in carbon finance, and a greater understanding of the process.



*GERES carbon training, September 2009*

*The next training is scheduled to take place in July with the venue to be confirmed. For more information on the programme, dates and fees of GERES training activities: [s.fauveaud@geres.eu](mailto:s.fauveaud@geres.eu)*



### **Energy-efficient Stoves and Policy Gaps under the CDM**

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### **Current deficiencies of CDM and recommendations for making CDM accessible for pro-poor sustainable development and climate mitigation:**

Poor communities in developing and emerging countries suffer from limited access to clean energy, which heavily restricts their opportunities for economic development and education in a socially and environmentally sound way. The Clean Development Mechanism (CDM) has not helped these communities to improve energy services, though one of its objectives is to support "sustainable development," in addition to reducing green house gases. Energy efficient stoves bear high potential for combining poverty reduction and mitigation of climate change. Considerable progress has been achieved in relation to the CDM baseline calculation for such projects; recently the relevant methodology (AMS-II.G)<sup>1</sup> has been simplified significantly (see CDM Executive Board article on page 23).

However, there are still important constraints for household and community projects under the CDM. As carbon credits are obtained only after a project has become operational, up-front funding is still needed for project implementation. Yet poor communities hardly have access to such up-front funding. At the same time, CDM transaction costs are high particularly for small projects; e.g. validation costs alone surpass 15,000 EUR (and even 50,000 EUR in the case of programs of activities). Finally, the approval procedure is still too bureaucratic and time-consuming to be practical for poor communities and their representatives.

WECF and its partners, in co-operation with atmosfair, assess the feasibility of CDM<sup>2</sup> projects regarding energy-efficient stoves in the Caucasus and Central Asia since, due to climatic conditions in that region, the demand for such stoves is high for heating and cooking. According to its stated objectives, we believe that the CDM should be the funding option for such projects, in combination with microfinance, where CDM funding could be used to capitalize microfinance funds and reduce interest rates.

**WECF and atmosfair policy recommendations for the UNFCCC negotiations 2010:** We recommend the following improvements to the current CDM that should apply to household and community level projects in general:

a) Creation of a funding mechanism for such projects which should:

- Provide grants for CDM project development and transaction costs, e.g. validation;
- Grant up-front funding for project implementation as a soft loan to be returned by Certified Emission Reductions (CERs);
- Buy CERs from such projects at fixed and high prices.

b) Recognition of suppressed demand in baseline methodologies, e.g. allowing for the application of a firewood baseline in areas where dung is used as an alternative due to the decline of firewood sources, or in cases where beneficiaries have increased indoor temperatures after using new efficient stoves.

c) Simplified approval procedures for household and community based projects, e.g. by providing default values for baseline calculation.

d) Introduction of environmental and social criteria defined in the Gold Standard into the CDM in general. Within the consultation of stakeholders, equal participation of women and men has to be guaranteed and a gender sensitive approach needs to be taken, which takes into account the different cultures, mentalities and ways of life of the CDM host countries.

WECF and atmosfair have jointly presented these recommendations for improvement to the UNFCCC directly through its calls for input, as well as at multiple workshops and events. For more information please contact the authors or visit [www.wecf.eu](http://www.wecf.eu) or [www.atmosfair.de](http://www.atmosfair.de).

<sup>1</sup> "Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass"

(<http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html>). In December 2009, the way to calculate of the fraction of non-renewable biomass was simplified and a default value for the efficiency of traditional stoves was introduced.

<sup>2</sup> This study is supported in the framework of the International Climate Protection Initiative (ICI) based on a decision of the German Parliament, by the Ministry of Environment, Nature Protection and Nuclear Safety.

### **Partner Profile Update Prizes!**

Thank you to everyone who has already updated their Partner Profile. The winners of our first round of prizes are **Impact Carbon** and **Solar Household Energy, Inc.** Each has won round trip airfare for a member of their organization to attend the 2011 PCIA Forum! We are pleased to announce a second round of prizes for those who make substantive updates to their profile by **April 20th**. For more information on prizes, and instructions for updating your profile, please visit <http://www.pciaonline.org/news/second-round-prizes-partner-profile-updates>

## Emissions Reducing, Pro-Poor Technologies Ineligible under the CDM

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

A paradox at the heart of efforts to enhance sustainable development through carbon offsetting is that there is little opportunity to generate emission reductions in the least developed countries or poorest areas of emerging countries where the use of fossil fuels is limited. This issue has been recognised at the highest levels and the CDM has been instructed by the Meeting of Parties to the Kyoto Protocol to: *Prioritize....the development of baseline and monitoring methodologies that are applicable to under-represented project activity types or region.*

This article looks at some project types which are currently ineligible but have great potential to generate large scale emissions reduction in areas which are currently under-represented in the CDM.

Biomass briquettes can be made by charring biomass waste streams such as coconut husks, sugar cane or rice husks. The process has the benefit of substituting charcoal use, improving sanitation and creating a value added product from a waste. This simple technology has huge potential in urban areas across the developing world where populations are reliant on charcoal and large amounts of biomass waste is produced. However, owing to the present wording of the relevant CDM methodology, biomass briquettes are ineligible as a CDM project. This is because the methodologies focus on end use thermal appliances rather than fuel.



*Char briquettes*

Projects disseminating Ceramic Water Purifiers (CWP), which displace the use of non-renewable biomass to boil water, are also excluded by the focus on thermal technologies. Approximately 1.1 billion people across the developing world lack access to clean drinking water. A

proven reliable technology for water purification is ceramic water filters. The technology relies on the small pore size of ceramic material to filter dirt, debris and bacteria from water. There have been many successful projects distributing these filters and although comparatively inexpensive the cost is often above what poorest families are willing or able to pay. Carbon finance could alter this and greatly increase the distribution of water filters across the developing world.

The 200 million people living in cold regions of the developing world are very poorly served by the CDM, again because their consumption of fossil fuels is limited. Thermal energy is provided by a mixture of cow dung and wood. Energy efficient building and passive solar construction techniques greatly improve the thermal comfort within buildings. However, presently CDM methodologies for buildings are limited to electricity consumption rather than reductions in thermal energy use.



*Passive Solar Housing, India*

The list of technologies above is not exhaustive. Many development organisations have developed innovative pro-poor technologies. Their inclusion in the CDM could improve the geographical distribution and enhance the delivery of sustainable developments through the CDM.



## Profiles of Cookstove Carbon Project Developers

PCIA Partners who are carbon project developers share information on their capabilities and experience. While not a comprehensive list, we hope this will help organizations interested in carbon finance start to identify potential partners. You can learn more about these organizations by visiting their Partner Profiles or contacting them directly using the details provided. Several of the developers listed here have also contributed articles elsewhere in the issue.

*Do you work in carbon project development but aren't included here? Please update your PCIA Partner Profile! For detailed instructions visit <http://www.pciaonline.org/content/how-update-your-partner-profile>*

	Impact Carbon	ClimateCare
<b>PCIA Partner since:</b>	➤ 2003 as CEIHD	➤ 2004
<b>How long have you been active in the carbon finance field?</b>	➤ Impact Carbon has been active in carbon finance since 2004. Impact Carbon contributed to the development of the Voluntary Gold Standard cookstove methodology and partnered with JP Morgan Climate Care to develop the first project to be registered using the methodology.	➤ 2003
<b>Do you work with voluntary market projects, the CDM, or both?</b>	➤ Impact Carbon works on both voluntary and compliance projects. To date, our voluntary projects have utilized The Gold Standard. However, we recognize that choosing an appropriate standard depends heavily on the circumstances of the project scenario.	➤ Both, VCS and GS.
<b>Total Volume of CERs generated by your project to date?</b>	➤ Approximately 140,000 Gold Standard Voluntary Emission Reductions (GS VERs) have been generated to date. Of those, almost 70,000 have been verified.	➤ ClimateCare Cook-stoves is about 400,000 of which 100,000 are CERs and 300,000 are VERs. These are projects we have major involvement in; there is another 300,000 VERs in projects we finance by large forward purchase contacts.
<b>Number of projects underway? At validation? Registered?</b>	➤ Impact Carbon has three projects underway, and many others under development or in our pipeline. Our flagship project in Uganda has been validated, registered, and verified with the Gold Standard and is in the final stages of issuance. Cookstove projects in Kenya and China are about to enter the validation process.	➤ Cook-stove programs and projects: 5 under validation or preparation for validation, 2 registered.
<b>How do you select implementers to engage with or projects to pursue?</b>	➤ Impact Carbon pursues projects that have high social and environmental returns. When searching for partners, we look for those with good business operations practices, viable technologies, potential to scale, ability to distribute, a demonstrated need for resources, and commitment to social impact.	➤ Marketing and distribution capability.
<b>Are you currently seeking new project implementers to work with?</b>	➤ Yes. Impact Carbon has new carbon projects under development in Asia, Africa, and Latin America, and is seeking support to initiate these new self-sustaining projects. Opportunities include cookstoves, solar lights and water filters.	➤ Yes, definitely. We request that skilled management staff have permanent presence in the country and experience of successful marketing and distribution capability.
<b>Do you sign ERPA with implementers? How do you divide project responsibilities, ER ownership, and carbon revenue with your partners?</b>	➤ Impact Carbon specializes in carbon asset development within developing country contexts and signs ERPA with implementing partners. Project responsibilities are divided based on expertise, and the terms of ER ownership and carbon revenue vary from project to project. Impact Carbon is committed to returning the majority of carbon revenues from the project to the communities in which we work.	➤ Yes, we consider our partners in-country as owners of carbon credits from which we buy via ERPA. We also help design and develop the project, even the implementation as it relates to carbon reductions and measuring them; but essentially our task is to secure the credits and sell them, feeding the proceeds back to the implementing partner by virtue of buying the credits from them. Our only source of income is the margin between buying wholesale from the imp partner and selling retail.
<b>What lessons have you learned from working with project implementers?</b>	➤ It is important to create a structure which allow for the project to grow and expand over time.	➤ Choose carefully.
<b>What suggestions do you have for working effectively with verifiers on cookstove projects?</b>	➤ There have been many lessons learned from registering and verifying the first GS VER cookstove project. Please see the related article on the Uganda project in this Bulletin.	➤ Choose carefully.
<b>What methodology is employed in the projects you work with?</b>	➤ Projects use the Gold Standard large scale voluntary methodology and applicable small scale methodologies (AMS I.C, I.E, and II.G). Future projects will use the Program of Activities (PoA) approach.	➤ CDM AMS IIG v2 and GS cook-stove.
<b>What types of monitoring activities do you undertake? Who conducts them?</b>	➤ Baseline and project fuel consumption and savings, biomass non-renewability, usage, performance depreciation with aging, user characteristics and follow-up information, sales reporting (sales, production and inventory), leakage, sustainable development impacts. Impact Carbon uses a combination of direct monitoring and collaboration with third party organizations for different tasks.	➤ We try to get a local credible 3rd party involved. Sometimes the implementation partner as capable.
<b>How long does the carbon finance process take from project conception to ER issuance? If ERs are not yet being issued, how long do you anticipate the process to take?</b>	➤ The carbon finance process has taken about 24 months from project conception to issuance.	➤ 2 years currently. We are trying to get the process streamlined and shortened by GS.
<b>What advice do you have for PCIA Partners interested in pursuing carbon finance?</b>	➤ Developing a carbon asset is a long process that requires time, resources, and specialized expertise. Before committing, conduct a rigorous feasibility assessment with realistic and conservative project assumptions. Explore partnering with different project developers that can offer different expertise, resources, and terms.	➤ Contact us!
<b>For more information</b>	➤ <a href="http://www.impactcarbon.org">www.impactcarbon.org</a> Caitlyn Toombs ctoombs@impactcarbon.org	➤ <a href="http://www.jpmorganclimatecare.com">www.jpmorganclimatecare.com</a> Adam Harvey Adam.harvey@jpmorganclimatecare.com

	Carbon Clear Limited	GERES Cambodia
<b>PCIA Partner since:</b>	➤ 2007 as a corporate member. On an individual level, I have been involved with the PCIA since its first informal planning meetings at the EPA offices in 2001 and the subsequent kickoff meetings in New York and Johannesburg.	➤ 2007
<b>How long have you been active in the carbon finance field?</b>	➤ 2006	➤ Since mid 2004.
<b>Do you work with voluntary market projects, the CDM, or both?</b>	➤ Both. Our company avoids voluntary carbon exchanges, as they tend to obscure the sustainability co-benefits of projects and encourage commodification based on price. We only develop and sell credits under the VCS, Gold Standard for VERs, CDM Gold Standard, and CDM. We may explore CAR if a suitable protocol is developed.	➤ The current project is under VCS, there is one more project that will be VGS or CER-GS.
<b>Total Volume of CERs generated by your project to date?</b>	➤	➤ In total we generated 501,024 tCO <sub>2</sub> eq (10 May '03 - 09 Jan '07 = 182,402 tCO <sub>2</sub> eq; 10 Jan '07 - 09 Jan '08 = 126,022 tCO <sub>2</sub> eq; 10 Jan '08 - 31 Dec '08 = 192,600 tCO <sub>2</sub> e).
<b>Number of projects underway? At validation? Registered?</b>	➤	➤ A PDD for one new project, improved cook stove for palm sugar producers, is being prepared
<b>How do you select implementers to engage with or projects to pursue?</b>	➤ Track record implementing successful projects of the type being proposed, and a desire to work in partnership rather than in a zero-sum transactional relationship are the most important over-arching criteria. We have a detailed checklist for evaluating projects and partners.	➤ We implement the projects by ourselves.
<b>Are you currently seeking new project implementers to work with?</b>	➤ Yes. Community focused renewable energy and efficiency projects in sub-Saharan Africa that are able to operate at scale (e.g., cook stove projects with capacity to deliver thousands of stoves per year, electricity projects with aggregate installed capacity >1MW, etc.)	➤
<b>Do you sign ERPA with implementers? How do you divide project responsibilities, ER ownership, and carbon revenue with your partners?</b>	➤ Yes. Division of responsibilities is negotiated with the implementing partners based on each party's respective desires and capabilities.	➤
<b>What lessons have you learned from working with project implementers?</b>	➤ Working with non-profit project implementers has been an excellent way to develop projects with excellent community co-benefits. Their focus on sustainable livelihoods has helped ensure that the Gold Standard stakeholder consultation process is more than just a formality. On the other hand, many NGOs are unaccustomed to working with for-profit companies. The companies' quite reasonable desire to minimize risk and pay for results is sometimes at odds with the NGO funding approach, which relies on payment to do the work.	➤ Prepare the necessary documentation properly (monitoring report, soft data, hard data, consistency of data and reports compared to the real situation in the field), share documentation with the verifier before the verification to allow the verifier to learn the scope of activities.
<b>What suggestions do you have for working effectively with verifiers on cookstove projects?</b>	➤	➤ Prepare the necessary documentation properly (monitoring report, soft data, hard data, consistency of data and reports compared to the real situation in the field), share documentation with the verifier before the verification to allow the verifier to learn the scope of activities.
<b>What methodology is employed in the projects you work with?</b>	➤ Approved VCS/CDM/GS-VER methodologies.	➤ Improved Efficiency in Use of Non-Renewable Biomass Reference: Climate Care Trust, derived from proposed methodology SSC.II.G, amended by the Joanneum Institute and approved by the community of practice (HEDON, Stove and Carbon Special Interest Group) and meets the relevant VCS requirements and local legislation.
<b>What types of monitoring activities do you undertake? Who conducts them?</b>	➤ We monitor the overall health of our partner organizations to ensure that they are able to continue effectively implementing the project activity. The emissions reduction monitoring plan is specified in the PDD and varies by project. It often makes sense for project staff to engage in data collection and monitoring during the course of project implementation rather than building it in as an add-on after the fact. Third parties may be contracted to conduct broader household energy surveys and/or to verify the results of the initial monitoring reports.	➤
<b>How long does the carbon finance process take from project conception to ER issuance? If ERs are not yet being issued, how long do you anticipate the process to take?</b>	➤ Minimum 12 months for registration; potentially indefinite. The Gold Standard says they have never rejected a project, but they have sent some back for such extensive revision that there is no timeline for getting to registration. Issuance generally occurs at a minimum several weeks after the verification report is prepared by the DOE. The DOEs can take weeks to months to finish the verification process after receiving the monitoring report from the project proponent. Project proponents will typically want the monitoring report to run through the end of the calendar year, so anywhere from 1-12 months after registration.	➤ It takes about three years.
<b>What advice do you have for PCIA Partners interested in pursuing carbon finance?</b>	➤ Find the right partner to work with you. Not every development project is a good carbon project, and vice versa. An experienced and competent partner will help you identify projects with good carbon credit potential, and can help structure an ERPA that makes practical and financial sense for both parties. The right partner will help with the division of responsibilities to only involve the project developer in the intricacies of the project registration process as much as he or she is able and willing - bearing in mind that some input is required given the developer's intimate knowledge of the project's details.	➤ (a) Do not do it on your own, but make alliances to be strong, (b) Always think and do business when dealing with carbon buyers (they are businessmen!), (c) Always think big and long term, or your efforts are not worthy at all, (d) Focus on carbon credit quality, reach as high quality as possible (e.g. GS-CER).
<b>For more information</b>	➤ <a href="http://www.carbon-clear.org">www.carbon-clear.org</a> Jamal Gore jgore@carbon-clear.org	➤ <a href="http://www.geres-cambodia.org">www.geres-cambodia.org</a> Iwan Baskoro i.baskoro@geres.eu

	myclimate—The Climate	E+Carbon
<b>PCIA Partner since:</b>	➤ 2008	➤ 2008
<b>How long have you been active in the carbon finance field?</b>	➤ Carbon finance since 2002. First cook stove project in 2007.	➤ Since early 2007.
<b>Do you work with voluntary market projects, the CDM, or both?</b>	➤ Both, voluntary (only Gold Standard) and CDM + GS.	➤ Both, Voluntary Gold Standard and CDM.
<b>Total Volume of CERs generated by your project to date?</b>	➤	➤
<b>Number of projects underway? At validation? Registered?</b>	➤ 34 (23 registered, 6 at validation, rest before validation).	➤ 4 Voluntary Gold Standard projects in various stages of development, 2 registered, 1 CDM programme of activities.
<b>How do you select implementers to engage with or projects to pursue?</b>	➤ Only Gold Standard, only renewable energy and energy efficiency, must have social benefit.	➤ Innovative and hard working entrepreneurs with growth potential.
<b>Are you currently seeking new project implementers to work with?</b>	➤ Yes. Organisations with much experience in developing countries, Gold Standard, integrated cooking (solar and/or efficient stoves).	➤ Yes. We consider efficient stove projects that have the potential to reach scale (>20,000 household stoves per year).
<b>Do you sign ERPAs with implementers? How do you divide project responsibilities, ER ownership, and carbon revenue with your partners?</b>	➤ The price is defined in the ERPA. We pay our development costs, validation and verification costs. We buy all ERs generated through the project and support the implementing entity throughout the carbon process.	➤ Yes, we sign ERPAs directly with implementers. Division of responsibilities and carbon revenues vary between projects. We are a non-profit that focuses on maximizing local company growth potential, and our revenue allocations reflect this.
<b>What lessons have you learned from working with project implementers?</b>	➤ Positive: good structured monitoring under Gold Standard. PoA development. expansion of small projects in place. Negative: time consuming, much effort needed.	➤ See article in this bulletin.
<b>What suggestions do you have for working effectively with verifiers on cookstove projects?</b>	➤ Well structured and understandable documentation of all processes.	➤
<b>What methodology is employed in the projects you work with?</b>	➤ Gold Standard Methodology for Improved Cook-stoves and Kitchen Regimes UNFCCC AMS-II.G.	➤ See standards above for carbon methodologies. We use paired kitchen performance tests to calculate fuel savings.
<b>What types of monitoring activities do you undertake? Who conducts them?</b>	➤ According to the Gold Standard Methodology: Kitchen Surveys, Kitchen Tests, usually conducted by staff of the implementing partner.	➤ Monitoring is usually contracted by a qualified third party.
<b>How long does the carbon finance process take from project conception to ER issuance? If ERs are not yet being issued, how long do you anticipate the process to take?</b>	➤ 1-2 years.	➤ 2 years.
<b>What advice do you have for PCIA Partners interested in pursuing carbon finance?</b>	➤ Use the Gold Standard! Consider a PoA.	➤ See article in this bulletin.
<b>For more information</b>	➤ <a href="http://www.myclimate.org">www.myclimate.org</a> Martin Jenk martin.jenk@myclimate.org	➤ <a href="http://www.eandco.net">www.eandco.net</a> Erik Wurster ewurster@eandco.net

	Atmosfair	C-Quest Capital
<b>PCIA Partner since:</b>	➤ 2009	➤ 2009
<b>How long have you been active in the carbon finance field?</b>	➤ From its original conception as a flight offset retailer, Atmosfair has developed into a full CDM project service provider. Today Atmosfair employs 15 experts with broad experience in project development, climate markets, software solutions, marketing and public relations. Through our own projects, Atmosfair has developed full professional experience with cookstove projects using AMS II.G. and programmatic CDM.	➤ Since C-Quest Capital's (CQC) inception in November 2008; cookstoves projects starting in early 2009.
<b>Do you work with voluntary market projects, the CDM, or both?</b>	➤ Atmosfair only works with the CDM Gold Standard.	➤ Gold Standard, VCS, and Climate Action Reserve.
<b>Total Volume of CERs generated by your project to date?</b>	➤ The project in Nigeria was registered in October 2009. In the first months since then it has generated around 1,000 CERs. However, first verification has not yet been conducted and is planned for the second quarter of 2010. Due to current delays in verification and issuance procedures at the DOE and UNFCCC level, we estimate the first carbon credits will only be issued at the end of 2010. The total volume of CERs generated by the projects contracted by Atmosfair were almost 120,000 t of CO2 by the end of 2009.	
<b>Number of projects underway? At validation? Registered?</b>	➤ Atmosfair currently has contracted 6 registered CDM Gold Standard projects with a total annual generation of more than 145,000 CERs. Several projects were developed by Atmosfair which are at validation stage, e.g. a project on hydraulic rams for irrigation in China and a composting PoA in Indonesia. Furthermore, there are other registered projects where Atmosfair developed the Gold Standard documentation, e.g. a small hydro project in Honduras.	➤ Unfortunately, this is confidential information we are not able to share at this time.
<b>How do you select implementers to engage with or projects to pursue?</b>	➤	➤ Significant potential for scaling-up project, high sustainability of project implementation and financing and financing, and consistent focus on quality of product and customer follow-up.
<b>Are you currently seeking new project implementers to work with?</b>	➤ Atmosfair is always looking for cook stove projects and project implementers with broad experience in stove dissemination and strong interest in CDM.	➤ CQC is committed to developing the efficient stove market with stove implementing partners globally through providing carbon finance. To this end, we would be interested in hearing from organizations planning to implement large-scale stove distribution projects that would like to work with CQC to leverage carbon financing opportunities for their project.
<b>Do you sign ERPAs with implementers? How do you divide project responsibilities, ER ownership, and carbon revenue with your partners?</b>	➤ We are signing ERPAs with implementers where project responsibilities are clearly divided: The implementer is the seller of the ERs and responsible for accurate monitoring on the ground. Though we may provide upfront finance and will of course assist implementers in adopting the specific requirements of CDM monitoring, implementers must be willing to engage in monitoring, to assign a monitoring team and to accept output-based (i.e. CERs) revenue streams.	➤ Yes. This is assessed on a case by case basis according to the expertise and desired level of participation of both partners. CQC usually relies on the project implementation partner to implement the project on the ground, and works with the partner to help structure a sustainable business plan. CQC either undertakes the development of the carbon finance process itself, or works in collaboration to undertake this.
<b>What lessons have you learned from working with project implementers?</b>	➤	➤ Sustainability and Scale: project implementers need to focus on achieving a scale to their activities that is commensurate with the scale of the issue. Project developers must develop projects in such a manner that they can be scaled-up to a significant size. Doing so requires that both project implementation and its financing be planned in a sustainable manner. Follow-up & Product Quality: Several years of stove usage, and therefore of credit generation, are needed to make a successful carbon finance project. Project implementers must focus on the long-term use of the products they install, and ensure after-sales support and product quality are optimized to ensure product durability. Furthermore implementers must develop mechanisms to allow them to track end-users over time and regularly measure continued stove usage.
<b>What suggestions do you have for working effectively with verifiers on cookstove projects?</b>	➤	➤ Work with carbon finance partners who have deep experience with the regulation and processes of developing carbon offset projects. For project entities focused on efficient stoves, going it alone into the carbon offset world can be very challenging, time consuming, and a distraction from their core focus. Given the potential delays and pitfalls that can ensue, there is a high chance of ending up with a sub-optimal outcome.
<b>What methodology is employed in the projects you work with?</b>	➤ For cookstove projects only AMS II.G.	➤ In the CDM, the preferred stove methodology is AMS II-G. This also applies to the VCS. In Gold Standard the stove-specific methodology is the standard approach.
<b>What types of monitoring activities do you undertake? Who conducts them?</b>	➤ Performed by staff from DARE, Lernen Helfen Leben and Atmosfair.	➤ This is a project-specific issue.
<b>How long does the carbon finance process take from project conception to ER issuance? If ERs are not yet being issued, how long do you anticipate the process to take?</b>	➤ For the Nigerian project, the process lasted 18 months from project conception to CDM registration. From registration to first issuance we expect at least another year.	➤ For complex projects a year from concept to registration is not unrealistic. Issuance occurs approximately 1 year after registration.
<b>What advice do you have for PCIA Partners interested in pursuing carbon finance?</b>	➤ Contact Atmosfair!	➤ Working with an experienced carbon finance partner is crucial.
<b>For more information</b>	➤ <a href="http://www.atmosfair.de/en">www.atmosfair.de/en</a> Florian Zerzawy zerzawy@atmosfair.de	➤ <a href="http://www.cqcllc.com">www.cqcllc.com</a> Daniel Farchy dfarchy@cquestcapital.com

	Kiva Carbon	Fair Climate Network
<b>PCIA Partner since:</b>	➤ 2010	➤ 2009
<b>How long have you been active in the carbon finance field?</b>	➤ We have been working on Improved Stoves projects since 2007.	➤ We have been active since August 2009. Currently we are developing 10 improved cookstove projects in various regions of India.
<b>Do you work with voluntary market projects, the CDM, or both?</b>	➤ Only the Voluntary Market, with Gold Standard certification, at this point. We might carry out CDM projects in the future.	➤ We are involved in both. We are developing one improved cookstove project based on the Gold Standard and proposing sustainable agriculture mitigation projects in the voluntary market.
<b>Total Volume of CERs generated by your project to date?</b>	➤ Our project in Mali assumes 370,000 VERs over a period of 10 years.	➤ Currently 2 projects have been registered that will generate 63,915 CERs. Under PDD preparation - 17 projects.
<b>Number of projects underway? At validation? Registered?</b>	➤ We have a pilot project in Mali (Rocket Stove), and we contribute to a another project in Niger. We have conducted field tests and have partners (local production and funding). PIN and financial analysis are finished. We are finalizing contacts with potential carbon credit buyers. The PDD phase will come after. We plan to start the production by the end of 2010, and issue the first credits in 2012.	➤ Currently the status of projects are as follows: Under Validation - 1 biogas project which will generate 16, 264 CERs.
<b>How do you select implementers to engage with or projects to pursue?</b>	➤ We work exclusively with African entrepreneurs, with experience (it can be small businesses!) in the field of household energy. We rely on women's groups for distribution, and we offer attractive remuneration to the network of small distributors. Projects to pursue: improved stoves projects, in Africa at the moment; projects with strong social and environmental benefits.	➤ The CDM Technical Team of FCN assists grassroots NGOs in implementing CDM projects, wherein the poor rural communities are the direct beneficiaries of the project. The projects are implemented with CER forward funding with no costs to the communities, and Carbon revenue that accrues from these projects will be shared with the beneficiaries. Thus any NGO from the network that follows this model qualifies to receive FCN Technical Team support.
<b>Are you currently seeking new project implementers to work with?</b>	➤ Our goal is to carry out 10 to 20 concurrent projects in Africa in the next five years, and to set up an organization that will be able to capitalize on the experience gained: a 'Technical and Business Pole of Expertise' in Africa, and a 'Carbon and Financial Pole of Expertise' in France. We want to spread Improved Stoves Projects at the very best cost. This organization will take a percentage of carbon credits in order to achieve its goals. We are looking for project holders in Africa: all contacts will be welcome.	➤ We offer our CDM consultancy services free to grassroots NGOs from the Network to implement CDM rural energy and forestry projects for the rural poor. They need to bear the other transaction costs of validation and registration. The most important criteria is that the rural communities especially the poor are the direct beneficiaries and the NGO will be the implementer for the project and will monitor the project for the crediting period. They need to have a long-term association and work in close association with the communities. The project will be implemented with no or minimal costs to the communities.
<b>Do you sign ERPA with implementers? How do you divide project responsibilities, ER ownership, and carbon revenue with your partners?</b>	➤ We haven't signed any ERPA at this point. Carbon Credits will bring a fair income to local partners, and will allow us to sell the stoves at a low cost (for example \$ 3 for a stove that may cost up to \$ 12 to produce), and will allow a very significant budget for local promotion. The Kiva-Eco organization will take a percentage of carbon credits (less than 5%), in order to finance feasibility studies, technical studies, field and lab experiments, continued search for partners to open up new regions, search for buyers of carbon credits, training of local partners, etc.	➤ The FCN Technical Team only provides technical assistance to the NGOs to get a project registered as a CDM project. We are not involved in any way in signing ERPA. The FCN assists the NGO in writing the PDD, getting it validated and registered. The NGO or the project proponent assists the Technical Team in the process through Baseline surveys, preparing a database of the rural communities, and setting up a CDM team for implementation and monitoring the CDM project. The ER ownership lies with the NGO with a CER sharing agreement with the beneficiaries. There will be no carbon revenue sharing between FCN and the implementing partners.
<b>What lessons have you learned from working with project implementers?</b>	➤ We have experienced that these project require a lot of time. Field tests are necessary. A team combining people from the North and South is essential. We need to understand the local specificities, and the 'Carbon logic', which comes from Northern countries.	➤ The NGOs with which the FCN Technical Team is working are involved in developmental work for more than 2-3 decades. They are closely associated with the rural communities in implementing projects related to agriculture, health, education, women empowerment, etc. The beneficiaries are identified and database prepared upfront. They have a well established institutional structure to undertake regular monitoring of the project activity. They will also be able to undertake service and maintenance of these technologies. The investors' risk in CDM projects implemented by the NGOs is low due to their long-standing presence in the region and their commitment to the people. The NGOs need to shift from the donor driven mind set to a business model. Due to lack of knowledge on CDM, capacity building of the NGO is required before a CDM project is taken up.
<b>What suggestions do you have for working effectively with verifiers on cookstove projects?</b>	➤ No verifications have been made at this point.	➤ A qualified Sector Expert for this methodology needs to be identified by the verifier who understands the complexity of this methodology.
<b>What methodology is employed in the projects you work with?</b>	➤ Methodology for Improved Cook Stoves and Kitchen Regimes, Gold Standard.	➤ AMS-I.A. Electricity generation by the user; AMS-I.E. Switch from Non-Renewable Biomass for Thermal Applications by the User; AMS-II.G. Energy Efficiency Measures in Thermal Applications of Non-Renewable Biomass; AMS-II.J. Demand-side activities for efficient lighting technologies; AR-AM0004. Reforestation or afforestation of land currently under agricultural use; and Sustainable agriculture for the voluntary market.
<b>What types of monitoring activities do you undertake? Who conducts them?</b>	➤ Monitoring and accurate record-keeping will be fully integrated into our activities with our staff; we also will work with third-party monitoring.	➤ The NGO establishes a CDM team with a CDM coordinator. The CDM team implements and monitors the usage, service and maintenance of the implemented technology. An online monitoring solution is custom designed for each of the projects to maintain the records of continuous usage, service and maintenance of the units. This irrefutably provides the evidence of emission reduction due to the project activity, which can be verified by the DOE. If required by the NGO, the Technical Team of FCN will provide its services in preparing the monitoring report, verification and issuance.
<b>How long does the carbon finance process take from project conception to ER issuance? If ERs are not yet being issued, how long do you anticipate the process to take?</b>	➤ Two years.	➤ From our experience with biogas projects, the time period from project conception to first ER issuance was 3.5 years. For an improved cook stove project it may take about 2.5 years.
<b>What advice do you have for PCIA Partners interested in pursuing carbon finance?</b>	➤ Find local partners with which you really want to work, and build a confident relationship. Implement training programs for local people, and do not underestimate the need for a significant budget for promotion and local communication. Always conduct field tests.	➤ Identify technology for implementation which is culturally suitable for the rural communities. This will ensure its usage, thus emission reductions. Involve the communities in CDM process upfront so that they are aware of their roles and responsibilities. Build the capacity of the implementing organization in CDM process.
<b>For more information</b>	➤ <a href="http://www.kivacarbon.fr">www.kivacarbon.fr</a> Marc Aristegui m.aristegui@kivacarbon.fr	➤ <a href="http://www.fairclimate.com">www.fairclimate.com</a> Sudha Padmanabha Sudha@fairclimate.com

	The Paradigm Project	GoodPlanet Foundation
PCIA Partner since:	➤ 2010	➤ 2010
How long have you been active in the carbon finance field?	➤ The Paradigm Project has formally been operating since May of 2009. However, it was co-founded by the owners of Blue Source (among others), which has been active in the voluntary carbon space since 1996. The Paradigm Project has been in early planning and design on cookstove-related projects and finance since November of 2008.	➤ Since October 2006.
Do you work with voluntary market projects, the CDM, or both?	➤ We are chiefly focused on the Voluntary Gold Standard.	➤ Yes, specifically with voluntary market projects. We try to mainly develop projects under the Gold Standard or Voluntary Carbon Standard (VCS).
Total Volume of CERs generated by your project to date?	➤ We're currently funding a Phase 1, \$10M raise which will be followed by a \$30 to \$100M raise depending on project pipeline and success of the initial projects.	➤
Number of projects underway? At validation? Registered?	➤ 3 projects in early implementation or planning stages: Kenya, Haiti and Guatemala. Project pipeline of 8 other countries in East Africa, Asia and Central America.	➤ 3 registered projects (Biogas and Solid waste management), and 5 other projects in pipeline.
How do you select implementers to engage with or projects to pursue?	➤ We have a unique model that brings non-profits together in partnership with local manufacturers and distributors to build a market-based system with added education and marketing muscle. We look to build local capacity and establish sustainable market-based systems that are supported by NGOs with tremendous marketing and monitoring capacity. We look for NGO partners who have strong community relationships, an established track record of success in development and exiting infrastructure that can help facilitate progress on the round rapidly.	➤ Small-scale projects led by NGOs exclusively with high social and sustainable development criteria apart from a high scaling-up potential.
Are you currently seeking new project implementers to work with?	➤ Not at this time, however we do like to constantly engage partners in discussions to pave the way for future opportunities.	➤ We are seeking projects worldwide, especially on waste management, energy efficiency and renewable energy projects that are being developed to reduce deforestation.
Do you sign ERPAs with implementers? How do you divide project responsibilities, ER ownership, and carbon revenue with your partners?	➤ We go into projects with a clear financial and revenue sharing plan that is heavily weighted toward maximizing the financial benefits for communities involved. We have an exclusive relationship with Blue Source to market and sell all of the ERs resulting from our business activities, so all revenue sharing is contracted based on net cash sale value.	➤ Yes, but most of the time we finance projects up-front (partly or entirely) and have ownership of the ERs.
What lessons have you learned from working with project implementers?	➤ The carbon asset development aspect of this business is truly the easy part. Behavioral change and developing culturally appropriate solutions on the ground is an art and science that requires earned experience. Our implementing partners each bring a highly refined skill set to the table, which, when combined, makes for a powerful comprehensive model.	➤ Adapt high standards for the selection of supported projects. It is necessary to visit the project sites before making any decisions. We prefer to scale-up small successful projects rather than launching ambitious big projects, which also gives us the time for capacity building with our local partners.
What suggestions do you have for working effectively with verifiers on cookstove projects?	➤	➤ No experience yet with verifiers on cookstove projects specifically. We have experienced verifiers for other projects. Keeping in constant contact with them is really important to make the verification easier.
What methodology is employed in the projects you work with?	➤ Gold Standard improved stoves.	➤ Gold Standard methodology † Energy Efficient Cooking Stoves ‡ (for a project of solar cookstoves in the Andes: Peru and Bolivia). But this methodology is very demanding (moreover for micro-scale projects i.e. projects with <5000 tCO2)!
What types of monitoring activities do you undertake? Who conducts them?	➤ We are engineering extensive monitoring processes to track economic, environmental and health outcomes from our projects. Chiefly this is being built by and with our NGO partners as one of their core responsibilities.	➤ Staff performs monitoring. However, we offer capacity building to the NGOs, which includes help on editing project documents and training on carbon finance and carbon studies.
How long does the carbon finance process take from project conception to ER issuance? If ERs are not yet being issued, how long do you anticipate the process to take?	➤ We anticipate an 18 month process.	➤ Around 2 years.
What advice do you have for PCIA Partners interested in pursuing carbon finance?	➤ We're early in the process and not in a position to provide recommendations derived from direct experience. However, this process should bring the kind of due diligence to the table that any business endeavor would, regardless of whether you look at your organization as a business or a social program. The rigor of tuning in and planning around both the big picture and the details, and of supporting your concepts with strong data can only make these kinds of projects stronger and more attractive to investors.	➤ Patience and a good planning are necessary!
For more information	➤ <a href="http://www.theparadigmproject.org">www.theparadigmproject.org</a> Neil Bellefeuille <a href="mailto:neil@theparadignproject.org">neil@theparadignproject.org</a>	➤ <a href="http://www.goodplanet.org/en">www.goodplanet.org/en</a> <a href="http://www.actioncarbone.org/en">www.actioncarbone.org/en</a> Baptiste Flipo <a href="mailto:baptiste@actioncarbone.org">baptiste@actioncarbone.org</a>



## ☀ NOTES FROM THE FIELD

### Providing Clean Burning, Fuel-Efficient Stoves in Rural Honduras

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<http://www.pciaonline.org/proyecto-mirador>

Over half the population of Honduras lives below the poverty level, and 65% are considered impoverished by USAID standards. About 74% of Honduras' poor, and 86% of the extremely poor, live in rural areas. New stoves are not affordable to them. Proyecto Mirador (PM), a registered non-profit organization, builds and installs *La Justa 2x3* fuel-efficient cookstoves in these rural homes. This article discusses Proyecto Mirador, its cost sharing arrangement with beneficiaries, and how it is pursuing carbon finance, a market-based solution, to provide financial support for its operations. PM's project directors believe carbon finance can be used by other stove projects around the world to transform their sources of funding and hopes to offer a model program for other project developers.



*New La Justa 2x3 stove*

Proyecto Mirador believes in a cost sharing arrangement with its recipients that is referred to as *"No Cuesta, No Cuida"* (if something costs you nothing, then you will not take care of it). Therefore, families must participate and contribute to the cost of their stoves. Proyecto Mirador contributes a technician to build each new stove in a family home and provides materials for installation, including the *plancha* (cooktop), ceramic pieces for the firebox (stove mouth), and the chimney. PM revisits homes to follow up with training on the use and maintenance of the stove. Beneficiary families help with construction and supply the remaining components such as cement, bricks, adobe blocks, and wood ash, all common items available in the villages that do not constitute a barrier to participation for even the poorest families.

Proyecto Mirador has confronted tough questions regarding financing of its operations and has concluded that relying on charitable donations or government is not a viable long-term option. Instead, Proyecto Mirador has turned to the carbon market for funding and is in the last stages of applying for carbon credit certification by the Gold Standard. If successful, Proyecto Mirador will own 100% of the value of its credits for approximately 30,000 stoves, generating approximately 381,000 tons of CO<sub>2</sub> over a 10-year period.

For most projects, securing carbon credit certification without sacrificing revenue is impossible. The Gold Standard and CDM certification processes require substantial investments in time and money, as well as a high level of managerial and technical expertise. For Proyecto Mirador the process was expensive and has taken more than 2 years. Most stove builders do not have the financial resources to sustain scientific measurements, certification, and sales, so they pay a percentage of the value of their credits by teaming with a financial organization that better understands the process.

A number of critical issues must be addressed for carbon finance to be successful and provide a truly transformative source of financing:

- First, projects like Proyecto Mirador must control 100% of the returns from carbon sales. In this way, projects and the stove industry can have the necessary funds to expand dissemination of fuel-efficient cookstoves to millions. If builders cannot maintain control of their carbon value, projects will be choked by the very structure that was designed to support them.
- Second, it is crucial that premium prices be secured or guaranteed for CDM or Gold Standard certificates in order for carbon finance to transform the economics of stove dissemination. Certification by organizations with lower, easier, standards cannot provide sufficient revenue streams to fundamentally alter project economics.
- Third, the stove industry needs to develop and construct a Seven-Year Stove, in one-pot and *plancha* versions, that is culturally accepted and an efficient generator of carbon savings. Stoves that only last 2 years stress distribution systems, generate waste, and will eventually cause households to lose faith in their efficacy and the organizations that disseminate them. With supplements from carbon finance, stove builders would be able to invest in the development of better, longer-lasting materials.

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- Fourth, stove projects need long-term equity capital to fund certification and the negative cash flows incurred during the process. For example, a project may require a year's time for certification while paying third party advisors, and although it may be credited a year later, it cannot realize actual benefits from carbon sales until year 3.

By executing a market-based solution to transcend the financial constraints that limit most stove projects, PM hopes to expand dissemination of stoves. With carbon sales, Proyecto Mirador should have sufficient funding to pay for both the cost of the stove and, through a *Programa de Socios* (Program of Associates or Partners) pay other local Honduran entrepreneurs to build stoves under the PM umbrella. Although returns from carbon are not yet realized, PM implemented a test *Socios* program in March with two Honduran entrepreneurs who now manage their own stove building organizations. This program enables construction of many more stoves each month while insuring that Proyecto Mirador maintains control over carbon credit certification, training of users, project finance, and that the returns from carbon are reinvested in more new stoves. In other poor countries,

carbon finance can be used similarly to create new jobs while expanding program operations, resulting in overall expansion of the stove industry.



*Traditional fagon stove*

### Nexus, Carbon For Development

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*"We commit to work together to create a new organization that will use **carbon finance** to **reduce poverty**, **reduce emissions** of greenhouse gases, and where possible achieve other benefits such as **improved human health** and conservation of **biodiversity**, in a **sustainable manner**." ~ The Charter of the Nexus founders*

Nexus is a global non-profit alliance of international leading field organizations. It enables access to carbon finance for pro-poor projects thus overcoming the limits of the CDM. It provides technical support, risk management, capacity building, carbon marketing services and financial solutions to its members.

**Background:** Some 1.6 billion people do not have access to electricity, 2.4 billion people in developing countries lack modern fuels for cooking and heating (UNDP 2005) and 1.6 million premature deaths of mostly women and infants are caused each year by pollution from fossil fuel (WHO, 2006). Access to energy and its efficient use are central components of poverty alleviation and climate change mitigation measures. Technologies such as biogas, improved cookstoves or water filters are appropriate, affordable and contribute to mitigating climate change.



*A Vattanak stove for palm sugar production: training of village technicians (Cambodia)*

However, a number of factors limit the scaling up of success stories:

- their isolation
- traditional donor funding is limited in time and in amount
- methodological barriers limit access to carbon finance
- a lack of capacity and a culture gap with market based mechanisms prevent social project developers from taking advantage of existing opportunities

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### Enabling Carbon Finance for pro poor development projects:

Nexus aims at facilitating access to clean energies to at least 20 million people in Africa and in Asia and at reducing greenhouse gas emissions by 10 million tons CO<sub>2</sub> equivalent by 2020. It will accelerate, through traditional finance and carbon finance, the replication and the scaling up of international best practices.

Nexus will:

- Identify, capitalize and transfer technologies and competences
- Remove methodological and financial barriers
- Assist social project developers throughout their organizational development
- Promote social projects in the carbon market : "fair trade approach to carbon finance"

Three tools are being implemented:

- A global non-profit cooperative of pro-poor project developers to foster technology and knowledge transfers, reduce projects risks, provide technical assistance and capacity building, shape the carbon market and commercialize carbon credits.
- A grant mechanism dedicated to fund projects' early stages to allow them to ensure eligibility for carbon finance.
- An innovative funding mechanism combining an ethical investment fund dedicated to scaling up best practices: Once the project is identified as being eligible for carbon financing, it can apply for a loan from Nexus, which will be paid back from the sale of carbon credits generated by the project.



*Made from organic wastes like coconut shells, these char-briquettes are more efficient than traditional charcoal.*

### Nexus builds on GERES expertise: Carbon for Development:

GERES is the lead member of the Nexus alliance. Created in 1976, GERES operates in 10 countries and has over 150 staff. Its mission is to develop and disseminate clean and affordable technologies in developing countries. In Cambodia, GERES successfully implemented the first ever cookstove projects to benefit from carbon finance (VCS). With a grant from the World Bank (CF Assist), GERES carried out consultations in 2006-2007 aiming at identifying barriers to carbon finance for development practitioners in Asia and at proposing solutions to tackle those barriers. Nexus stems from GERES experience. It builds on the results of the consultations: it was designed by and for development practitioners. **For more information about becoming a member of Nexus please visit [www.nexus-c4d.org](http://www.nexus-c4d.org) or contact us directly on [info@nexus-c4d.org](mailto:info@nexus-c4d.org)**

### HELPS is working towards registration under the Programmatic CDM

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

Since before the last PCIA Forum in Uganda, HELPS has been interested in applying for CER's and/or VER's to aid in expanding the ONIL Stove project throughout Central and Southern Mexico and the Central American region. Although HELPS has been successful in distributing over 70,000 stoves in Mexico, Guatemala and El Salvador, HELPS understands that these numbers are insufficient to make an impact on the problem of IAP. As proud Partners of PCIA, HELPS is pursuing carbon credit (CC) income to create a massive awareness campaign and distribution system. This will help reach the goal of distributing enough ONIL Stoves to actually stop the

increase in IAP, or even better, start statistically reducing the problem.

In seeking guidance to start the process and understand who purchases the CC's once certified, Kristel Dorion, from Energetix Climate, a consulting firm based in Durham, North Carolina, called. She said that Christiana Figueres, a consultant for CQuest Capital, had mentioned CQC's interested in helping develop the project and purchase the CC's! The process began in November 2009 and has been exciting to participate in. In record time, Energetix Climate managed to put a survey together and have it implemented in Guatemala and Mexico. By the 29th of December, Daniel Farchy from CQC gave us a call with the wonderful information that we were listed on the UNFCCC webpage as an organization in line for the validation process. The validation is programmed to begin in May or June of this year.

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The ONIL Stove program is working on two PoA's: The Guatemala ONIL Stove Distribution Project and The Mexico ONIL Stove Distribution Project. If all goes well, other PoA's will be started to cover the other regions where HELPS plans to begin ONIL Stove production and distribution in the region.

The process has been a steep learning curve for HELPS, but with the assistance that CQC and Energetix Climate have offered it has not been as painful as it had been described to us. One important lesson we have learned is the need to register programs very early on with the

UNFCCC to be able to capture the CER's of all stoves. We missed out on an opportunity to include several thousand additional stoves, because we didn't realize this earlier.

We understand that there are a lot of ground breaking decisions that have to be made and that other projects are also going through similar processes. Hopefully the road will start to be paved so that more efforts to reduce IAP will be able to access this source of income and eventually solve the problem!

## ☀ HAPPENINGS

### Recent Partner Activity...

#### **PCIA Side Event at COP15: Black Carbon and Health Co-benefits of Cleaner Cooking Stoves**

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<http://www.pciaonline.org/impact-carbon>

For those with high hopes for a global climate treaty, the United Nations Climate Change Conference in Copenhagen last December was a disappointment. For organizations concerned about indoor air pollution from cooking stoves there was silver lining: the conference saw a groundswell of interest in valuing short-lived climate forcers such as black carbon and promoting projects with health, environmental, and social co-benefits.

One takeaway message from the PCIA side event was that crediting black carbon reductions in future carbon markets can provide a stopgap solution to limit climate change while incentivizing projects with significant co-benefits. Crediting black carbon offsets can make the next generation of clean cooking stoves with electric fans cost competitive and scalable while reducing indoor air pollution by over 90% without a chimney!

The fifteenth United Nations Conference of the Parties (COP15) in Copenhagen was largely focused on negotiating an international framework for addressing climate change after the current phase of the Kyoto Protocol, which ends in 2012. COP15 was attended by thousands of country delegates and a wide range of observers from NGOs that are negotiating approaches to climate change mitigation and adaptation. Among many others, two topics that figured prominently in official meetings and side events were potential co-benefits from climate mitigation projects, and fast-action mitigation measures with short-lived forcers such as black carbon. Clean and efficient cooking stoves are an example of a technology that can reduce carbon dioxide and methane emissions while providing social and health co-benefits

through reduced fuel consumption and reduced indoor air pollution. Clean cooking stoves also have the potential to significantly reduce black carbon emissions. Several side events at COP15 highlighted the potential for emission reductions and co-benefits from clean cooking stoves, including the U.S. Environmental Protection Agency sponsored event by PCIA, titled *Cleaner Cooking Stoves for Developing Countries: Improving Health, Reducing Climate Change*.



*PCIA Presentation at COP 15 in Copenhagen, Denmark*

The PCIA side event included presentations by Dr. William Martin, Dr. Veerabhadran Ramanathan, and Samuel Bryan, and was moderated by Evan Haigler who was representing the Partnership. You can download the presentations at [www.PCIAonline.org](http://www.PCIAonline.org).

Dr. Martin is a pulmonary and critical care physician and Associate Director of the National Institute of Environmental Health Sciences. His presentation focused on the health effects of indoor air pollution in the developing world, highlighting "the need to integrate the message that reducing black carbon release from cook

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stoves improves health among the poor and helps the planet." Dr. Ramanathan is a distinguished professor of climate sciences at the Scripps Institution of Oceanography at UC San Diego and is a leading expert on the role of black carbon in regional and global climate change. Dr. Ramanathan explained it is probable that greenhouse gas emissions to date will cause warming of close to 2 degrees Celsius. Reducing short-lived forcers by 30% in the next 30 years can buy us about 30 years time to develop the transformational technologies needed to limit global warming to 2 degrees Celsius. To date, black carbon's contribution to warming has been more than 25% of that from carbon dioxide, and residential cooking and heating is responsible for approximately 25% of black carbon emissions.

Samuel Bryan is the Technical Director of Carbon Finance projects at GERES, a French NGO, which is commercializing cleaner stoves at a large scale in Cambodia. GERES has disseminated over 800,000 improved charcoal stoves and verified emission reductions of more than 500,000 tCO<sub>2</sub> in the voluntary market. Evan Haigler, who moderated the session and presented on behalf of the Partnership, is the Executive Director of Impact Carbon, a non-profit carbon project developer. Impact Carbon contributed to the development of the Gold Standard Voluntary Cookstove

Methodology and developed the flagship project, registered in Uganda. GERES and Impact Carbon both provided examples of clean cooking stove projects that have leveraged carbon finance to scale, and that could scale further through black carbon offsetting.

Valuing black carbon reductions could help create a fundamental shift in the cooking practices of those using solid fuels with incomplete combustion. Currently, offsets from clean cooking stove projects with co-benefits can command a price premium in voluntary and regulated markets while black carbon reductions are not directly valued in either. Given the interest in short-lived forcers at COP15, it is possible that progress will be made in Mexico City at COP16 this November to value black carbon in a post-Kyoto agreement. It is also possible that a parallel process could create a regulated market to value black carbon under a separate international agreement. In the interim, the voluntary carbon market is the only option, and integrating black carbon into one of the existing standards would create a larger market for black carbon offsets. Given the focus on climate change co-benefits and the need to address warming from short-lived forcers, in time climate change policy should effectively address black carbon reductions and clean cooking stoves, even if progress to date hasn't been as fast as hoped.

### SNV calls for scaling-up practices at International Biogas Event in Nepal

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

The President of Nepal, Dr. Ram Baran Yadav, and SNV director, Dirk Elsen, closed a successful three-day biogas event in Nepal. More than 150 experts from 26 countries participated in SNV's International Workshop on Domestic Biogas (10-12 November), which ended with the celebration of the 200,000th constructed biogas plant in Nepal under the SNV-supported programme and was attended by various international donors and government ministers.

How to improve and scale-up domestic biogas practises around the world were among the key issues discussed at the event. Among the discussants were representatives of private and civil society organisations, government institutes, knowledge centres, development agencies and international donors. During the workshop, a variety of topics were discussed, including: carbon finance components in biogas programmes, the importance of the private sector in SNV's market oriented sector development approach, and cost price reduction initiatives to expand the target group of potential biogas users.

During the event, the Asian Development Bank (ADB), co-funder of the workshop, and SNV officially launched the

working group on domestic biogas under ADB's 'Energy for All' Partnership. The working group aims to equip one million households with biogas plants by 2015.

For more information, please contact Mr. Fred Marree ([fmarree@snvworld.org](mailto:fmarree@snvworld.org)), Corporate Knowledge Network Facilitator on Renewable Energy for SNV Netherlands Development Organisation, or visit: <http://www.snvworld.org/en/ourwork/Pages/Renewable%20Energy.aspx>



Mr. Dirk Elsen, SNV Chief Executive (left) and Dr. Ram Baran Yadav, President of Nepal (right)

## **Workshop on Short-Lived Climate Forcers by Erika Sasser, EPA**

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

Cookstoves were one of the topics discussed at a recent U.S. Environmental Protection Agency-sponsored workshop on *Addressing Black Carbon and Ozone as Short-Lived Climate Forcers* in Chapel Hill, North Carolina, March 3-4, 2010. The workshop brought together over 180 experts from government, academia, industry, and the non-profit sector, and included participants from 20 other nations as well as the United States. The event was designed to improve participants' understanding of the climate/air-quality co-benefits of reducing short-lived climate forcers and to highlight the pros and cons of alternative mitigation strategies, especially for black carbon. Keynote presentations covering the public health and climate impacts of emissions from cookstoves were provided by Dr. Kirk Smith (UC-Berkeley) and Dr. V. Ramanathan (Scripps Institute of Oceanography, UC-San Diego). In addition, interested participants were able to join a special breakout session on cookstoves led by Jacob Moss (USEPA) and Dr. Tami Bond (University of Illinois at Urbana-Champaign).

Some of the key issues discussed at the workshop included critical scientific gaps in understanding the full extent and composition of emissions from various sources like cookstoves, and pinpointing more precisely how these emissions impact climate-sensitive regions. Special presentations on the Arctic and the Himalayas, as well as on the public health burden resulting from exposure to

short-lived forcers, highlighted the urgency of addressing these emissions. Presenters also discussed the political, economic, and social obstacles to rapid action on short-lived forcers, and suggested near-term opportunities for action that could provide clear win-win solutions for both climate and public health.

The workshop highlighted how short-lived forcers present different opportunities—and different challenges—than long-lived greenhouse gases. But addressing these short-lived species may be one of the best options for limiting climate change in the near-term. Furthermore, the workshop highlighted the impact that wider dissemination of existing technologies and practices internationally could have on reducing emissions. For example, cookstove replacement programs, improvements in diesel engines and fuels, and controls on numerous high-emitting small industrial sources, could substantially reduce emissions in key regions. While additional work is needed to pinpoint the net global and regional climate impacts of specific mitigation options, it was widely acknowledged that these steps would provide significant across-the-board public health benefits.

Input from the workshop will be incorporated into an April 2011 Black Carbon Report to Congress being prepared by US EPA, and may help to inform future emissions control strategies to ensure they optimize both public health and climate co-benefits. The final workshop presentations and other materials are available at: <http://www.cleanairinfo.com/slcf>. For more information, please contact Dr. Erika Sasser at [sasser.erika@epa.gov](mailto:sasser.erika@epa.gov).

## **TWP wins UNEP Sasakawa Prize!**

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

Trees, Water & People (TWP) has been honored by the United Nations Environmental Programme (UNEP) with the 2009-10 Sasakawa Prize for their work collaborating with local NGOs to distribute fuel-efficient cook stoves to communities in Honduras, Guatemala, El Salvador, Nicaragua and Haiti. TWP shared the prize with Nuru Design, a company bringing rechargeable lights to villages in Rwanda, Kenya and India.

The UNEP Sasakawa Prize, worth \$200,000, is presented each year to sustainable and replicable grassroots projects around the planet. The winners received the prestigious Sasakawa Prize at an award ceremony in Bali on February 23<sup>rd</sup> attended by dozens of Environment Ministers during the 11<sup>th</sup> Special Session of the UNEP Governing Council. The 2009-10 theme for the Sasakawa Prize is "Green Solutions to Combat Climate Change." The winners, selected by a panel of four people including Nobel Peace Prize Laureate and UN Messenger of Peace Wangari Maathai, will receive \$100,000 each in order to

expand and develop their grassroots projects.

To date, TWP has coordinated the building of 35,000 stoves throughout Central America and Haiti, benefitting more than 175,000 people. The ecostoves burn 70 per cent less wood than traditional ovens, saving families \$1 to \$5 per day. They also decrease harmful carbon emissions by 1 tonne of CO<sub>2</sub> equivalent per year per stove for domestic users and 3.5 tonnes of CO<sub>2</sub> equivalent per year for commercial users, like tortilla makers. To supplement the fuel-efficient stoves project, TWP has helped villages create 16 community-run tree nurseries that sequester carbon and counter the effects of deforestation. To date, three million trees have been planted throughout Latin America. TWP will use the Prize money to support and expand the fuel-efficient stove projects and community tree nurseries throughout Central America and the Caribbean, purchasing equipment and materials necessary for increased stove production, as well as vehicles for transportation and delivery.



*A special thanks to those who attended the PCIA Planning Meeting in Bonn on October 27, 2009:*

Habiba Ali, DARE  
 Sabine Bock, WECF  
 Samuel Bryan, GERES  
 Mariana Butrón, GTZ Bolivia  
 Juan Alfonso Cardenal, SOTER  
 Dana Charron, Berkeley Air  
 Monitoring Group  
 Lisa Feldmann, GTZ – Hera  
 Evan Haigler, Impact Carbon  
 Adam Harvey, JP Morgan  
 ClimateCare

Marlis Kees, GTZ – Hera  
 Philip Mann, University of  
 Oxford  
 David L. Mukisa, Kean  
 Development  
 Tivoly Yoro Olivier, GTZ  
 Sudha Padmanabha, Fair  
 Climate Network  
 Jonathan Rouse, HED  
 Consulting  
 Florian Zerzawy, atmosfair

### **New Blog on Energy for Development and Poverty Reduction (EgyDev)**

Douglas Barnes, a longtime supporter of work on household energy, has started a new blog on Energy for Development and Poverty Reduction to promote information exchange on household and renewable energy in developing countries for all those interested. The topics to be covered include air pollution, improved stoves, energy access, rural electrification, household energy, renewable energy, and poverty alleviation. There will be weekly postings on existing work and new information as it becomes available. Please check it out at [www.energyfordevelopment.com](http://www.energyfordevelopment.com).

## **Upcoming Events...**

### **5<sup>th</sup> Asia Clean Energy Forum 2010 and PCIA Parallel Session June 22-25, 2010 Manila, Philippines**

Policymakers, private sector firms, and non-governmental organizations (NGOs) across Asia will gather on 22-25 June 2010 in Manila, Philippines during the 5th Asia Clean Energy Forum: Meeting the Technology Transfer Challenge. PCIA will host a parallel session on household energy and health during the forum, as well as an open space session on Thursday June 24. The forum will promote best practices in policy and finance and will seek to catalyze actions that respond to the challenges posed by a new era of clean energy. Areas of focus include scaling up the technology transfer and diffusion process, best practices in and around the region, and how to effectively link energy efficiency and renewable energy projects to finance sources. For more information see <http://www.adb.org/documents/events/2010/asia-clean-energy-forum/>

### **Carbon Finance and Analytics Programme May-October, 2010 London, United Kingdom**

Building upon the successful launch in 2009, Point Carbon and the London Business School are pleased to invite

participants to the Carbon Finance and Analytics Programme 2010, an educational initiative developed for professionals wishing to excel in the global carbon and energy markets. The programme draws upon the exciting combination of our institutions complementary expertise while utilising our extensive network of experts within business, academia and policymaking institutions. The programme will be delivered by a highly knowledgeable and experienced team from London Business School, Point Carbon and selected external speakers, and emphasize mastery of wide range of analytical tools and techniques required to be successful in the carbon markets. For more information see: <http://www.pointcarbon.com/events/carbonfinance/>

### **COP-16 November 29-December 10, 2010 Cancun, Mexico**

The 2010 United Nations Climate Change Conference will be held in Cancun, Mexico, from 29 November 2010 to 10 December 2010. Several preparatory talks will take place during 2010. The first of these (AWG-KP 11 and AWG-LCA 15) will be in Bonn, Germany, from 9 to 11 April 2010, followed by the intersessional meeting of the subsidiary bodies, also in Bonn, from 31 May to 11 June 2010.

## ☀ FACT BOX: SELECTED COOKSTOVE CARBON FINANCE PROJECTS

### CDM Project Activities

Project Title	Reg. Date/ Status	Implementing Organization	Project Developer	Country	Meth.	*Est. Ann. Reductions
CDM SOLAR COOKER PROJECT Aceh 1	6-Feb-06	PT Petromat Agrotech	Klimaschutz e.V.	Indonesia	AMS-I.C	3,500
Solar steam for cooking and other applications	22-Aug-06	Gadhia Solar Energy Systems Pvt Ltd		India	AMS-I.C	562
Federal Intertrade Pengyang Solar Cooker Project	25-Mar-09	Ningxia Federal Intertrade Co.		China	AMS-I.C	35,723
Federal Intertrade Hong-Ru River Solar Cooker Project	31-May-09	Ningxia Federal Intertrade Co.		China	AMS-I.C	35,723
Efficient Fuel Wood Stoves for Nigeria	12-Oct-09	Nigerian Development Association for Renewable Energies (DARE)	atmosfair gGmbH	Nigeria	AMS-II.G	31,309
CDM LUSAKA SUSTAINABLE ENERGY PROJECT 1	9-Jan-10	Presbyterian Church of Africa in Zambia	Climate InterChange AG	Zambia	AMS-I.E	130,032
Ningxia Federal Solar Cooker Project	12-Feb-10	Ningxia Federal Intertrade Co.		China	AMS-I.C	40,702
Efficient Fuel Wood Cooking Stoves Project in Foothills and Plains of Central Region of Nepal	Validation	Centre for Rural Technology, Nepal	Egluro	Nepal	AMS-II.G	20,017
CDM COOK STOVE PROJECT Kupang 1 Indonesia	Validation	BPPT	Klimaschutz e.V.	Indonesia	AMS-I.C	446,250
Federal Intertrade Haiyuan Solar Cooker Project	Validation	Ningxia Federal Intertrade Co.		China	AMS-I.C	33,482
Federal Intertrade Yulin Solar Cooker Project	Validation	Ningxia Federal Intertrade Co.		China	AMS-I.C	34,386
Hebei Wuji biomass combined stoves and heaters (BCSH) Project 1	Validation	Hebei Milestone Biomass Energy Co Ltd	Sindicatum Carbon Capital	China	AMS-I.C	11,508
Hebei Xinji biomass combined stoves and heaters (BCSH) Project 1	Validation	Hebei Milestone Biomass Energy Co Ltd	Sindicatum Carbon Capital	China	AMS-I.C	14,426
Hebei Zhuozhou biomass combined stoves and heaters (BCSH) Project 1	Validation	Hebei Milestone Biomass Energy Co Ltd	Sindicatum Carbon Capital	China	AMS-I.C	17,463

### CDM Programme of Activities

Project Title	Coordinating Entity	Other Project Participants	Country	Meth.	Est. Ann. Reductions
Improved Cooking Stoves in Bangladesh	J.P. Morgan Energy Ventures Corporation	Grameen Shakti, SZ Consultancy	Bangladesh	AMS-II.G	43,022
Heat Retention Cooking in South Africa	J.P. Morgan Energy Ventures Corporation	Natural Balance (Pty) Ltd.	South Africa	AMS-II.C	34,815
Distribution of ONIL Stoves—Guatemala	HELPS International AC	C-Quest Capital LLC	Guatemala	AMS-II.G	2,261
Distribution of ONIL Stoves—Mexico	HELPS International AC	C-Quest Capital LLC	Mexico	AMS-II.G	2,500
"Turbococinas", rural cooking stove substitution program in El Salvador	Soter AG	Tecnologías Ecológicas Centroamericanas S.A. de C.V.	El Salvador	AMS-II.G	36,016

\*Estimated annual emissions reductions are in units of tons CO2 equivalent



## ☀ FACT BOX: SELECTED COOKSTOVE CARBON FINANCE PROJECTS

### Voluntary Gold Standard

Project Title	Reg. Date/ Status	Implementing Organization	Project Developer	Country	Est. Ann. Reductions
Efficient Cooking with Ugastoves	Issued*	Ugastove	ClimateCare J.P. Morgan	Uganda	74,083
Improved Household Charcoal Stoves in Mali	9-Sep-09	Katene Kadji, Mali	E+Carbon, Inc	Mali	72,112
Improved Household Charcoal Stoves in Ghana	9-Sep-09	Toyola Energy Ltd.	E+Carbon, Inc	Ghana	65,563
Gyapa Improved Stoves in Ghana	Validated	EnterpriseWorks/VITA	ClimateCare J.P. Morgan	Ghana	167,279
Proyecto Mirador enhanced distribution of efficient woodstoves	Validated	Proyecto Mirador	Proyecto Mirador	Honduras	38,149
Dissemination of Fuel Efficient Biomass Stoves in South Africa	Listed		E+Carbon, Inc	South Africa	61,933
Improved Cookstoves in Fatick Region, Senegal	Listed		CLIMACTIS	Senegal	3,061
Improved Cookstoves in Atakora, Benin	Listed		CLIMACTIS	Benin	670
Darfur Efficient Cook-stove Project	Listed		Carbon Clear	Sudan	28,203
Qori Q'oncha - Improved Cook Stove Diffusion Programme in Peru	Listed		myclimate Foundation	Peru	47,681
Stoves for Life: Energy Efficient Cook Stoves Project in Kakamega, Kenya	Listed		myclimate Foundation	Kenya	38,600
Charcoal Improved Domestic Stoves, Huruma, Kenya	Listed		co2balance	Kenya	4,999
Shimba Hills Improved Cook Stoves	Listed		co2balance	Kenya	60,000
Efficient Institutional Cook Stoves in Lesotho	Listed		ClimateCare J.P. Morgan	Lesotho	2,027

\*69,952 tons issued In april 2010

### Summary

	CDM Project Activities	CDM Programme of Activities	Voluntary Gold Standard	Total
Est. Ann. Reductions Registered	211,758	277,551	211,758	<b>701,067</b>
Est. Ann. Reductions Pipeline	452,602	577,532	118,614	<b>1,148,748</b>
Est. Ann. Reductions Total	664,360	855,083	75,592	<b>1,595,035</b>
Projects Registered	3	7	3	<b>13</b>
Projects in Pipeline	11	7	11	<b>29</b>
<b>Total</b>	<b>14</b>	<b>14</b>	<b>14</b>	<b>42</b>

Do you know of a carbon finance project that should be listed here? Email [moderator@pciaonline.org](mailto:moderator@pciaonline.org) to let us know!