

October 2013

# Amaray

Energy and development for rural areas



## Clean Energy

Promoting care  
of the environment

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## Peace Corps

Volunteers driving  
progress in rural areas



# Natural resources

Lloros, San Martín

The process of energy generation, in many cases, implies the consumption of natural resources that, if not administered adequately, can generate a terrible impact on the well-being of natural ecosystems. In this sense, the use of forestry resources must be permanently supervised, focusing on a sustainability framework.



# Energy from wood

Paucamayo, Cajamarca

In Peru, the principle source of energy utilized for cooking food is firewood, whose use is an ancient practice. However, this consumption is carried out in an inefficient manner and without taking into consideration the social and environmental impacts that it produces, due to the contaminating gases that the burning of firewood generates inside homes.

Archive EnDev-GIZ



# Traditional cooking stoves

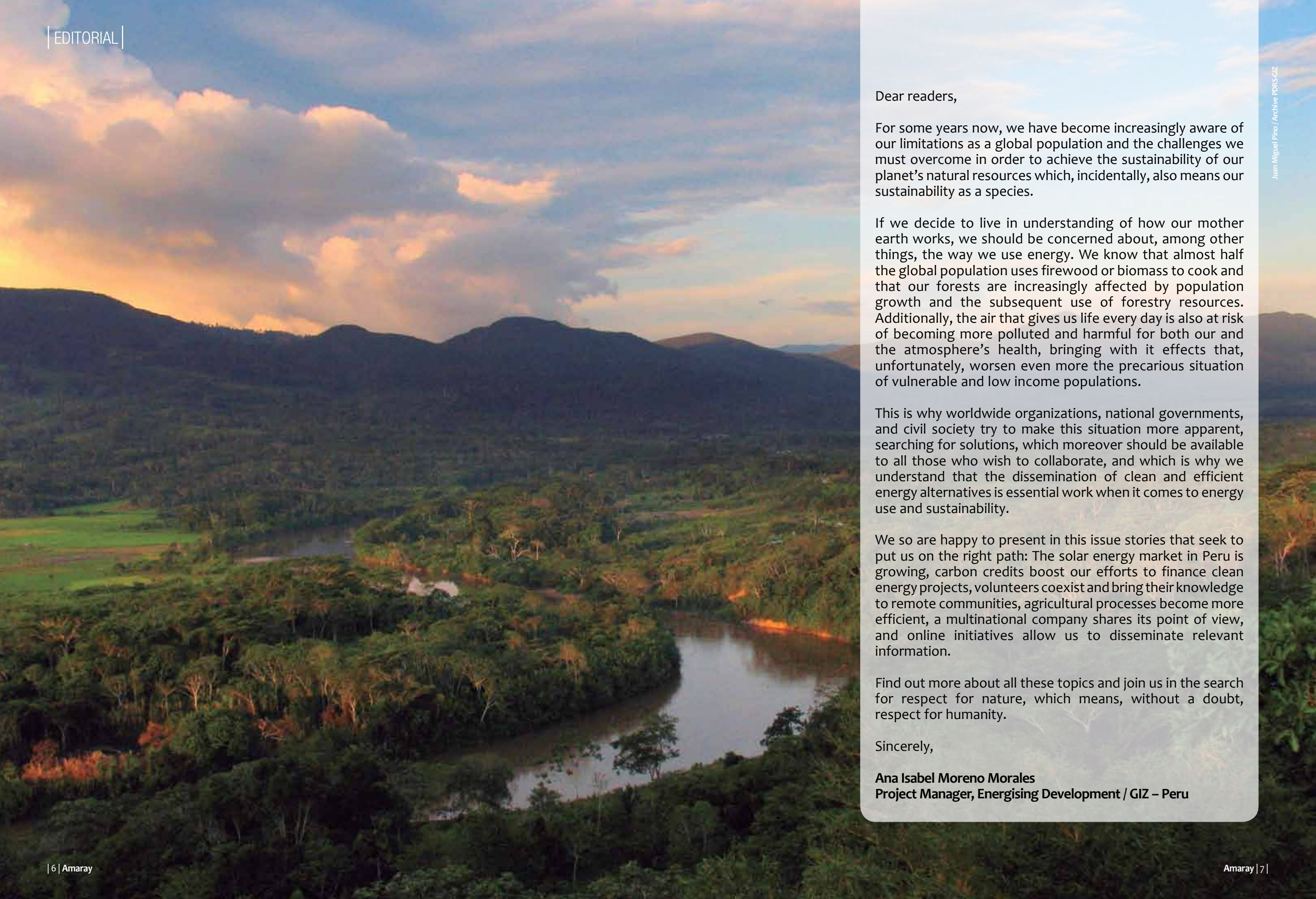
San Juan de Yanacolpa, Huancavelica

A citizen that lacks cooking gas utilizes organic waste as a source of fuel in a traditional cooking stove. In Peru, around two million families don't have access to modern cooking energy, using firewood or biomass for cooking their meals. This is a reality that 2,7 billion people in the world face.

Archive EnDev-GIZ







Dear readers,

For some years now, we have become increasingly aware of our limitations as a global population and the challenges we must overcome in order to achieve the sustainability of our planet's natural resources which, incidentally, also means our sustainability as a species.

If we decide to live in understanding of how our mother earth works, we should be concerned about, among other things, the way we use energy. We know that almost half the global population uses firewood or biomass to cook and that our forests are increasingly affected by population growth and the subsequent use of forestry resources. Additionally, the air that gives us life every day is also at risk of becoming more polluted and harmful for both our and the atmosphere's health, bringing with it effects that, unfortunately, worsen even more the precarious situation of vulnerable and low income populations.

This is why worldwide organizations, national governments, and civil society try to make this situation more apparent, searching for solutions, which moreover should be available to all those who wish to collaborate, and which is why we understand that the dissemination of clean and efficient energy alternatives is essential work when it comes to energy use and sustainability.

We so are happy to present in this issue stories that seek to put us on the right path: The solar energy market in Peru is growing, carbon credits boost our efforts to finance clean energy projects, volunteers coexist and bring their knowledge to remote communities, agricultural processes become more efficient, a multinational company shares its point of view, and online initiatives allow us to disseminate relevant information.

Find out more about all these topics and join us in the search for respect for nature, which means, without a doubt, respect for humanity.

Sincerely,

**Ana Isabel Moreno Morales**  
Project Manager, Energising Development / GIZ – Peru





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Photographs by Karsten Leckbusch

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Jorge Valdez / Archive PDRS-GIZ

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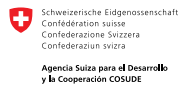
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Ministry of Foreign Affairs of the  
Netherlands



Not only is it important to take care of nature as an indispensable source for human development, such as the wood that can be burned to produce a fire, but it is also necessary to recognize its creative life force and the fascination that it provides us by displaying its beauty (San Martín, Peru).

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Special. Carbon Credits  
Financing Clean Air

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Annabelle Avril



# Solar energy, a growing market

Although Peru is one of the countries with the least expensive electricity in the region, there is an interesting market for clean energy since the difficult geography limits access to the conventional electric grid. Antonio Arauz, General Manager of the company Entelin, tells us what it means to construct a range of photovoltaic solutions for even the most remote areas of the country.

By Carlos Bertello, Communications Officer, Energising Development / GIZ – Peru

## How did Entelin come about?

Entelin is a company that has been in the Peruvian market for four years. It was founded by the Ecos Group, a private investment fund of Swiss origin that has a portfolio of solar businesses in the Latin American region.

Initially, the company was founded with the objective of developing the solar technologies market in the country. In that sense, we have several lines of work in order to offer photovoltaic solutions. One line of work is a diesel substitute, a new type of engineering that we offer to large businesses that currently generate their electricity with diesel motors. We couple this with a solar system that totally or partially reduces the fuel consumption of the company, taking into account that this means a significant saving. It is important to mention that this system can work without batteries, and when more energy than generated by the solar system is necessary, the diesel engine provides all the power required. However, if necessary, batteries may also be installed to expand the solar supply.

These solutions are useful both in areas that are not connected to the conventional electricity grid or where it isn't stable enough, as well as for large consumers connected to the network, but who wish to reduce the economic and environmental cost of their activities.

## How are these technologies promoted to businesses that are in remote zones?

In respect to large businesses, the majority have their corporate headquarters in Lima. We also promote ourselves through events, magazines,

the internet, and a sales team, which has been working in the sector for four years. Furthermore, we are currently developing an alliance with companies that sell diesel generators so that we can also reach their clients and offer them a joint solution, which means savings for the user.

We also provide solar pumping systems in specific zones, which replace conventional water pumps that work with diesel or other contaminating fuels. Moreover, we offer autonomous solar systems, which provide the required energy for telecommunications, lighting, cooling of food or medicine, as well as productive uses in isolated populations. For example, we are currently implementing a project in a village in the Amazon.

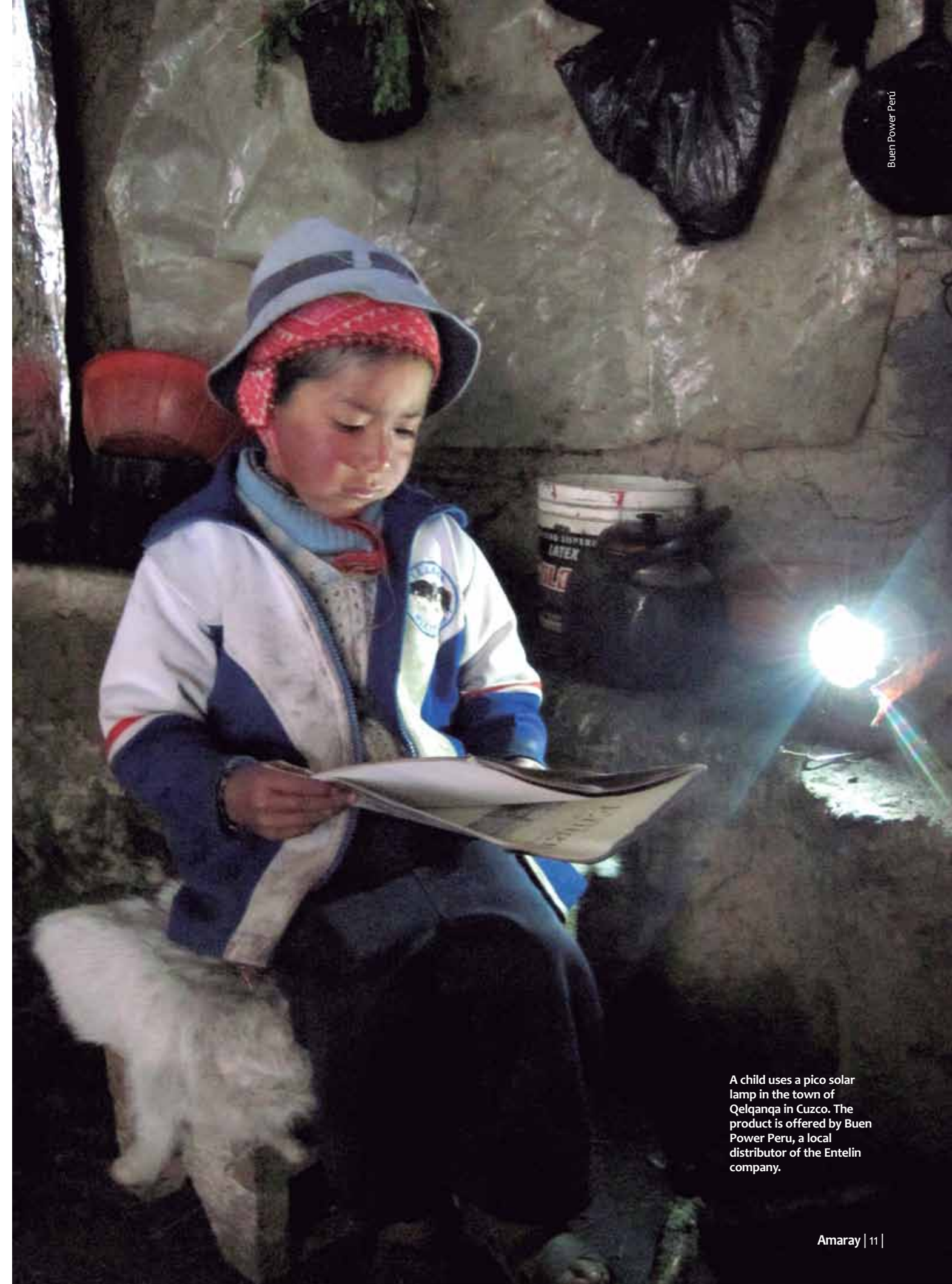
In a similar manner, we have solar refrigeration products that are adapted to diverse climatic conditions. They are used as much for food conservation as for keeping vaccines and medicines cold. We also offer micro-networks, among others.

In addition, we also provide electrical micro-grids. According to local conditions, a central solar system is installed from which electricity is distributed to all users. These networks can be supported by diesel generators for greater safety.

## Do you also have technologies focused toward lower income levels?

Yes, that is another one of our lines of work. For example, regarding the private sector, right now we are working with private companies which

“Last year we executed the largest solar rural electrification project in the country to date. We installed more than 1,250 SHS in rural households in Piura.”



A child uses a pico solar lamp in the town of Qelqanqa in Cuzco. The product is offered by Buen Power Peru, a local distributor of the Entelin company.





have asked us to install solar home systems (SHS) for the populations found in the areas surrounding their facilities. Generally, we first travel to the community, identify the needs, and then present our proposal; all as part of social responsibility policies of the companies concerned.

We also work with the public sector. We participate in the public bid process of the Peruvian state, of the municipalities, and regional governments. Last year we executed the largest solar rural electrification project in the country to date. We installed more than 1,250 SHS in rural households in Piura, which also signified an important learning process for us, as this type of home installation represents a project of considerable organization and logistics since the homes are located in remote areas.

#### How is the sustainability of these systems maintained?

The State asked us to carry out the installation, but for the process of maintenance and equipment management, ownership is transferred to the regional electricity distribution companies.

#### And what about the commercial distribution of solar technologies?

This is our third line of business, in which we have a network of distributors that offer solar energy products nationwide. In some cases they

are individual people and in others incorporated businesses that have branches and sample exhibitors. We have around 25 partnerships in different parts of the country, and the interesting thing is that we have a permanent stock, so that we can supply the technologies to order.

Many of our dealers are focused on social issues. In this context, nearly 70% of our sales are carried out through these distributors and they reach the populations who still lack adequate access to electricity in the home. Similarly, they also buy products from us in order to install them in schools or health centers in rural areas. All of this shows us that in Peru there is a very strong social market for this type of technology.

#### Is previous knowledge required for the installation?

In general, the majority of these products require an installation process. However, we also have a line of products that don't require any knowledge of electrical installation, called "plug and play." In this group are found, for example, the pico solar systems (Pico-PV), which provide basic illumination in the home and can charge a radio or a mobile phone.

Thus, with this range of products and distributors, we can address a social market, offering integral solutions that are easy to transport to the communities, as well as easy to

**A photovoltaic system feeding a network of computers and a printer in the computer lab of a rural school in the Iparia district in Pucallpa.**

use and install. Furthermore, we offer the best brands from around the world.

#### Were you oriented toward this market from the start?

The challenges of each country are different. The company always saw Peru as an interesting market for solar energy, despite it being one of the countries with the least expensive electricity in the Latin American region and there not being much openness regarding the regulation for the solar industry. However, we believe it is only a matter of time until there are favourable schemes in Peru. Because of its size and geography, it is a country that needs alternative solutions, since conventional electrical generation doesn't reach everyone. Therefore, we believe that there is a great opportunity to offer solutions to businesses and people who are outside of the network. Furthermore, we believe that the diversification of different commercial sectors is what will allow the sustainability of the company and that we are competitive in the market.

On the other hand, it seems interesting to us the promotion of the subject, not only from public initiatives, but also from private initiatives seeking to grow the market, and there are already several companies that are established in the sector. Many times community members themselves call us saying, "I want a system for my house," and we put them in touch with the distributors, which is a



manner of "sharing business." The idea is to continue strengthening this network of local distributors and to train their trusted electricians. Also, we are thinking of offering centralized support for telephone consultations.

**The technologies offered to remote areas are easily used and installed. Above, solar lamps d.light in Yanamayu, Puno.**

## Energía Solar con valor agregado



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- Miles de hogares rurales electrificados con energía solar.



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A woman uses firewood for cooking in an improved stove in the Miraflores district of Arequipa.

# Carbon Credits

## Financing clean air

Although the Kyoto Protocol has not been renewed and the official market of carbon credits has stalled, there is a voluntary market which is being increasingly used by national governments and environmentally conscious companies. In Peru, the experience of Microsol certifying these credits through improved stoves has allowed to sustain a series of forestry and social projects.

By Carlos Bertello, Communications Officer, Energising Development / GIZ – Peru



Almost 15 years ago, in December of 1997, the industrialized countries committed themselves in the city of Kyoto, Japan, to execute a set of measures to reduce greenhouse gas emissions. These gases are emitted into the atmosphere, pollute the air, and generate global warming. Thus, the Kyoto Protocol actually realized the aim of the United Nations Framework Convention on Climate Change, reaching an international agreement that established clear measures to combat this reality.

According to the protocol, each country annually received a fixed number of emission allowances. However, actual emissions often exceeded these rights. Thus, if a country wanted to emit more gases, they could buy the rights from another country that had emitted less. Basically, the protocol was aimed at the three sectors that represent the majority of emissions worldwide: construction, transport, and industry.

“The official carbon market appeared along with the Kyoto Protocol and the buyers are highly polluting industries from industrialized countries, which are obligated to reduce their emissions. To do so, they can choose to buy carbon credits, for example, from a country like Peru, which balances out the emissions they have been unable to reduce,” says Paul Raguénès, founder of Microsol, a social enterprise which facilitates the certification process and transaction of carbon credits in Peru.

However, what happens if a country (or a company) doesn’t reach the reduction quota which it has committed to? If industries do not meet the quota, they receive fines for each ton of carbon that has not been reduced. Everything is specified in the protocol established in Kyoto.

In this sense, if a foreign company decides to buy credits in Peru, it can also finance a project that allows it to certify reductions which ultimately belong to them and can be used to reduce their own emissions.

#### WHILE KYOTO IS NOT RENEWED... THE VOLUNTARY MARKET

While obligations in the 2008-2012 period have been met, the protocol has not been renewed, which completely paralyzed the official carbon credits market and put on hold expectations regarding new agreements to address global warming. However, the carbon market remains in effect through voluntary agreements from companies and countries with a strong environmental conscience, such as Australia or the European Union. This is the so-called voluntary carbon market, i.e. a market parallel to the official one, but which is handled independently and in which entities that buy credits have no obligations under the Kyoto Protocol.

Continued on page 18

## Microsol

Microsol is a company with social aims which facilitates the development of projects that work towards generating carbon credits in Peru. Stemming from certified technologies, credits generated can be sold on the international carbon market and become financial resources, which promote the sustainability of these same projects.

With headquarters in Paris and offices in Lima and Mexico City, the company has a multidisciplinary team of professionals committed to combating social and environmental problems, as well as promoting sustainable development.

#### THE QORI Q'ONCHA PROGRAM

The World Health Organization (WHO) estimates that each year about 2 million people die prematurely from diseases attributable to indoor air pollution caused by household use of solid biomass fuels.<sup>1</sup> Given this reality, more than 250,000 certified improved stoves have been implemented in Peruvian households by various institutions, benefiting more than a million people. Additionally, saving fuel for cooking contributes to the care of forest resources and the reduction of CO<sub>2</sub> emissions.

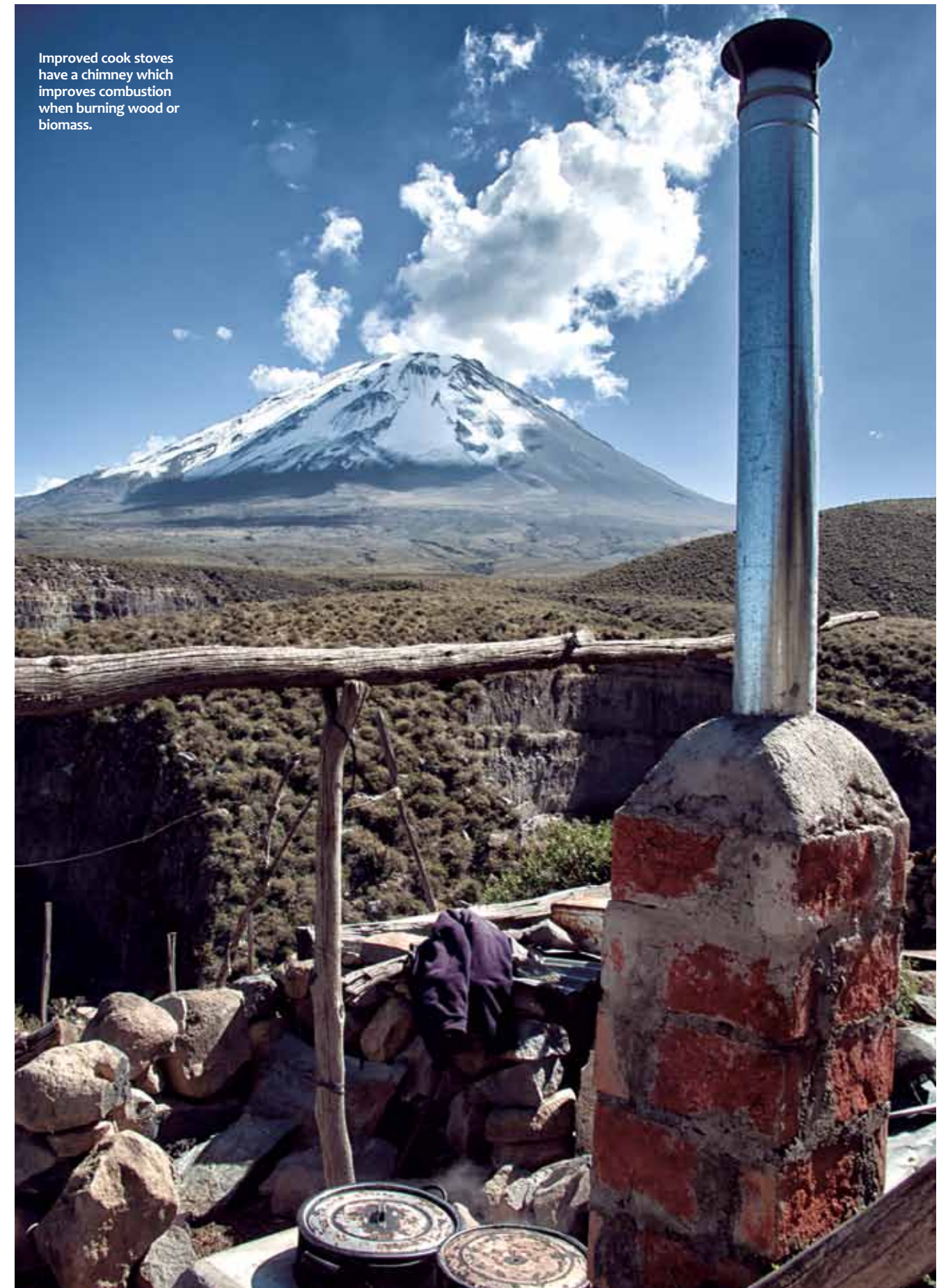
Thus, starting with the certification of over 100,000 improved cook stoves for the remittance of carbon credits, an initial sale of 53,228 credits was achieved, equivalent to 650,000 dollars, which were distributed among the institutions that implemented the improved stoves: Pro Peru and the Work and Family Institute. Also, in the second round a sale of 163,530 credits was achieved, equivalent to 1,850,000 dollars which were divided between the Regional Government of Moquegua, CARE, ProPeru, and the Work and Family Institute. These resources ensure the economic sustainability of the improved stoves project.

“We came from France to Peru because we saw a country where the access to clean cooking is still very low in comparison to the rest of Latin America and saw an opportunity to join the initiatives that seek to fill this need. It is worth noting that we found a very dynamic environment, which allowed us to quickly adapt. Thus, we want to highlight the work of the German Cooperation (implemented by GIZ) through the Energising Development Project (EnDev) as well as the work of Mrs. Pilar Nores, through the SEMBRANDO program, which have done important work in the sector.”

Paul Raguénès, Founder of Microsol

[www.microsol-int.com](http://www.microsol-int.com)

1. World Health Organization (WHO).  
Indoor air pollution and health.  
Fact sheet N°292. September 2011.



Improved cook stoves have a chimney which improves combustion when burning wood or biomass.





Thus, the buyer may be a company that decides voluntarily to reduce their emissions. An example would be a European industry that decides to buy carbon credits generated by an improved stoves project. These stoves reduce consumption (burning) of wood by families and thereby reduce the emission of polluting greenhouse gases, a process that can be certified to access carbon credits.

In general, the organization of this market is very similar to the official one, using international auditors accredited by the United Nations (UN) that certify the projects. But the voluntary market is not regulated by quotas and obligations like the official one. In this sense, the voluntary carbon credits market often becomes a promoter of social projects and programs that work with technologies that can benefit low-income populations. For example, improved stoves projects have been implemented in different regions of Peru by various public or private organizations, which then have been able to certify the reductions to obtain credits, which, in turn, have been sold in the voluntary market, and, finally, this money has been used to sustain the projects, increase their impact, or even finance new social interventions.

“In Microsol, our work is distinguished by promoting a social carbon, focusing on credits to generate social and environmental projects. We work with forestry projects and social infrastructure, for example, through our Qori Q'oncha project for improved stoves, we assess the certification and subsequent credit sale in the voluntary market, which is a process that demands a quality standard for stoves and the visit of international auditors,” says Nadia Wagner, manager of Microsol in South America.

She remarks that the first certification process of credits, in 2008, was quite complicated. However, since 2010, they were generated more rapidly, and currently the number of projects that adhere to the system is still growing.

“In Peru, the Qori Q'oncha program is very developed and may even be considered the most advanced in the world in regards to improved stoves. The basic idea is that an improved stove reduces the firewood consumption required by a traditional stove, i.e. it generates a certain percentage of savings. In this context, we measure the fuel savings made during the last year of improved stove usage in comparison to a traditional

**Beneficiary of the improved stoves project of the regional government of Arequipa.**

stove. Thus, we can certify a proportional reduction of emissions. This process can be repeated the following year to confirm another reduction and so, year after year, generate credits from the same stoves,” Raguénès adds.

#### FUNDING SOCIAL PROJECTS

Generally, NGOs, government programs, international cooperation, or companies with social responsibility are the ones that invest in improved stoves. These initiatives, which seek to certify their kitchens to access credits, assume the commitment – when signing the contract with Microsol – that they will invest the money from the sale of the credits into the sustainability of the stoves, so that the certifications can continue.

In this context, the relationship between Microsol and the partner implementing the project is basically technical and in the last two years the distribution of more than 2,5 million dollars from carbon credits has been achieved. The companies would not have received these funds if they had not entered the credit market. “We know that the funds received are primarily invested in the sustainability of the stoves and to disseminate the

technology, which is indispensable in order to maintain their social impact over time,” says Raguénès.

In this context, the reality is that although the official market of carbon is virtually stagnant, the voluntary market still remains in force. The price of credits has decreased, but a high quality credit can cost between 12 and 18 dollars. In that sense, demand still stands, especially in the European industrial market. Meanwhile, in Peru and Latin America, there are more and more companies interested in calculating their carbon footprint (level of contamination) and reducing their polluting emissions by financing projects or directly purchasing carbon credits.

This means that in Peru there is also a small domestic demand for credits; this will for social and environmental responsibility on the part of the interested companies allows differentiation from others. And, finally, we are all somehow involved in the struggle for clean air for our atmosphere. Meanwhile, Microsol is also promoting the entry of new clean technologies to the program, be they solar panels, solar water heaters, water filters, biodigesters, and others.

**The Microsol team conducts a survey to certify the benefits of an improved stove.**





# “Our institution is a clear evidence that credits work”

Comments from Ricardo Maraví, executive director of the Work and Family Institute, an NGO that has implemented the program SEMBRANDO with over 100,000 Peruvian families.

Through the SEMBRANDO program, which includes certified improved stoves, we have been able to access the carbon credits topic. We started it in mid-2009 with the help of Microsol, who had already articulated the design of the Qori Q'oncha program.

They had developed a structure adapted to improved stoves projects, which has allowed us to incorporate our projects starting with the monitoring stage. Thus, Microsol prepares the technical dossier supporting CO<sub>2</sub> reductions, information which once assessed and verified by international audits conducted by Gold Standard, gives rise to the remittance of carbon credits: one credit for each ton of CO<sub>2</sub> verified to no longer being emitted due to the use of an improved stove. So, we signed an agreement with Microsol in mid-2009 and the first round of funding arrived in 2011, accomplishing the credits being purchased by the organization Myclimate.

To date, we have managed to add more than 70,000 kitchens to the Qori Q'oncha program and

have received in two cases carbon credits because of them: in 2011 and then this year (2013). In the first phase, 24,000 stoves were installed in La Libertad, and in the second phase, 70,000 cooking stoves were installed, which included the initial 24,000 plus those we later installed in Huancavelica, Piura, and Cajamarca.

It should be noted that the same kitchen can produce credits for several years, so long as it keeps running efficiently, for which we regularly implement a monitoring process. In total, the SEMBRANDO program has come to install over 100,000 kitchens, and we expect all to be able to enter the carbon credits program; to this end, we are currently in our third certification process.

Additionally, the commitment stipulates that the money earned through the sale of credits be primarily invested in the sustainability of the stoves installed, so that they have the impact desired. This means a reduction in environmental pollution, as well as improved health and quality of life for the families. In this sense, we are in a

**Above: Microsol seeks to facilitate access to carbon credits that allow for the sustainability of social projects. Lupuden, La Libertad.**

**Right: A family benefiting from the SEMBRANDO program in the town of Callacat Alto in Cajamarca.**

## The Work and Family Institute

The Work and Family Institute (Instituto Trabajo y Familia - ITyF) is an NGO founded in 2002 by Mrs. Pilar Nores and a group of partners, with the aim of improving the living conditions of the most excluded families, generating productive and educational capabilities that aid to overcome malnutrition and endemic diseases, reducing social and economic exclusion. The institute receives funding from the international cooperation, private institutions, individuals, and carbon credits.

### THE SEMBRANDO PROGRAM

The SEMBRANDO program is an initiative of ITyF that seeks to improve the quality of life of Andean families in extreme poverty, installing certified improved stoves, latrines, gardens, and communal nurseries. To do so, it conducts a series of activities at the family level and others on the community level. In both cases, inputs are delivered that, with the participation of families and authorities, set up elements to improve their life, health, and income.

Implementation work is performed over the period of one year. First, a selection – based on data from the National Statistics and Informatics Institute (Instituto Nacional de Estadística e Informática – INEI) – of the districts with the highest ratings of poverty, child malnutrition, and lack of basic services is made. Then SEMBRANDO coordinates with regional and local authorities the signing of the

Interagency Cooperation Agreements for the program to be implemented and makes the population choose its promoters, each with 25 families in their care.

The activities are aimed at two main areas: social and productive development. On the one hand, each family receives an improved stove, a latrine, and seeds for a home garden, all accompanied with training in health, nutrition, and hygiene (washing hands, drinking boiled water). Additionally, families receive micronutrients, deworming pills, grooming kits, dispensers, and other items.

On the other hand, the program implements community seedbeds for every 300 families, with the aim of improving the quality and quantity of their crops. This community production of certified improved seeds is distributed among families so that they each can sow them in their farms or plots. Additionally, each seedbed comprises a water reservoir system, a drip irrigation system, and fertilizer for an acre of land. As an important part of the strategy, all school teachers are organized and trained to develop these issues with their students and in meetings with parents.

[www.ityf.org.pe](http://www.ityf.org.pe)  
[www.sembrando.org.pe](http://www.sembrando.org.pe)







process of replacing all combustion chambers stoves, since them having been refractory ceramics means they have exceeded their useful life. Therefore, we are replacing them with others made of cast iron, that have greater strength and durability. It is gratifying to see that the stoves are very accepted and families even feel encouraged to paint them as they like and enhance the environment of their housing.

Interestingly, this implies a large effort that is not obviously visible, as it is required to have an updated database of 100,000 families, so that international auditors can find reliable information, considering that families are chosen randomly for certification.

For this reason, we have a team of 35 people across the country that is constantly doing monitoring work, and we have acquired much experience in performing the necessary weighing measurements to calculate the carbon reductions. This process measures fuelwood consumption during three days in each one of the selected families and includes a qualitative survey. Monitoring is essential, as it helps the stoves work properly, reduces environmental pollution, aids families in improving their quality of life, and that they are certified for carbon credits, which eventually funds the sustainability of stoves and will allow more families to benefit from improved stoves.

#### AN ACTION FOR POVERTY AND THE ENVIRONMENT

We are convinced that the carbon credits are a good mechanism, not only to maintain sustainability of the project, but also for the financing thereof. The only drawback is that credits are obtained only after to the execution of the project. Therefore, we are looking for ways to generate a fund which allows social initiatives to access resources to implement improved stoves projects. Then, the credits generated by these stoves, serve to return the money to the fund. In that sense, we are encouraging and seeking to define a proposed loan within a period of four years with international organizations that provide financial assistance to developing countries, highlighting that access to adequate energy for cooking not only means an impact on a family's health and income, but also benefits the environment by reducing CO<sub>2</sub> emissions and deforestation. A traditional stove uses on average 10 kg of wood per day and produces 6 tons of CO<sub>2</sub> per year, while with improved stoves this is reduced by 50 percent.

Finally, I would say that our institution is a clear evidence that credits work. To date, we have received significant amounts of money on two occasions, a third is on the way, and we are confident that there will be a fourth and fifth. Thanks to this, our projects are sustainable and we estimate serving no less than 10,000 new families

The certification process of carbon credits involves representatives from different institutions and of the communities. Above, Above, a training in Tacna.

next year. While it is said that the carbon market has an uncertain future due to the failure to renew the Kyoto Protocol and the official market having disappeared, we think that it simply is a juncture, since the pollution problem continues to grow and the world suffers the consequences. Therefore, there exists a voluntary market, where environmentally responsible countries and institutions continue to stay on top of the issue.

Let us recall, that next year Peru will host the Conference of the Parties (COP20), which will be

the last world summit of the United Nations on climate change before the crucial meeting in Paris in 2015, in which an ambitious agreement to combat global warming is to be born. Decisions must be made, especially since we know that such problems are directly related to poverty. In conclusion, there are two major points of interest for everyone: poverty and climate change. Let us not forget that in the world there are 600 million families who still cook by burning wood or some other biomass, which represents three billion people still affected by this reality.

## The carbon market

The carbon market is the place where the buyers and sellers conduct their carbon credits transactions internationally. According to international conventions, a carbon credit corresponds to a certified reduction of a ton (1000 kg) of carbon dioxide emitted into the air, or an equivalent amount of another greenhouse gas (GHG). To be sellable in the market, the reductions must be certified so that they can become carbon credits.

### MARKET STRUCTURE

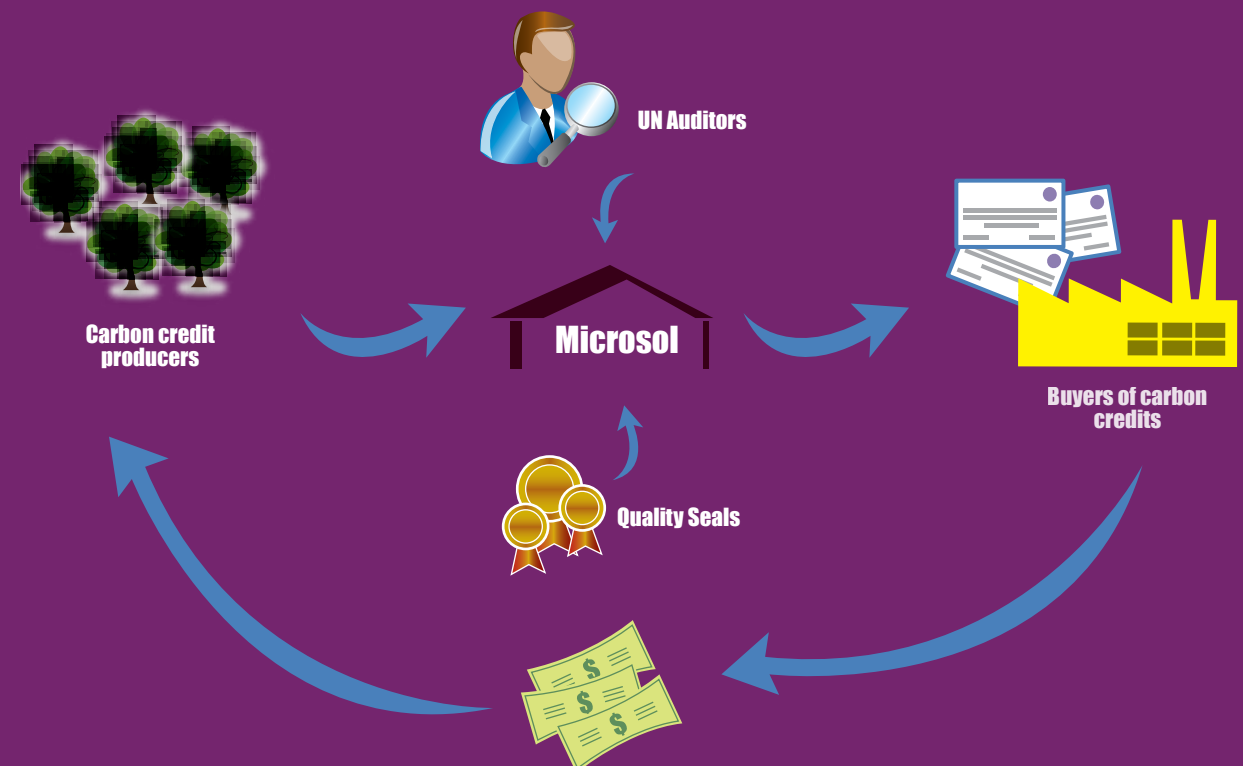
**Carbon credit producers:** Projects with technologies that provide tangible environmental benefits. Thus, a credit producer may be a regional government or a NGO that implements improved stoves projects, biogas plants, etc.

**Buyers of carbon credits:** Companies that buy carbon credits. In the voluntary market, these buyers are characterized by having high social and environmental incentives.

**Microsol:** A company that in Peru advises in the carbon certification process and acts as an intermediary between sellers and buyers, facilitating transactions.

**UN Auditor:** A company accredited by the United Nations (UN) that is responsible for evaluating and verifying the impacts of the project producing the carbon credits.

**Quality Seals:** These are quality standards that certify the results obtained in reducing gases and which ultimately permit carbon credits to be issued.





# Dee Dee and Nicole, volunteers with energy

Peace Corps Volunteers received funding for the installation of a biodigester in Otuzco, La Libertad.





In the two years they have been in Otuzco, they have driven the creation of several projects that develop various environmental technology systems. They promoted the installation of a biodigester that is already having a major impact on the town, and now they are focused on the operation of a water pump powered by solar energy.

By Sara Leavitt, Volunteer Coordinator of Renewable Energy, Peace Corps - Peru

### A BIODIGESTER

Danielle DeVuyst is an optimistic, hard-working young professional living in the provincial capital of Otuzco in the department of La Libertad. Danielle, who goes by Dee Dee, is a volunteer in the Water, Sanitation, and Hygiene program of Peace Corps – Peru. She arrived from the United States in September of 2011 and will complete her two years of service this November.

A year ago, Dee Dee applied for and received funds from ECPA (Energy and Climate Partnership of the Americas) for the installation of a biodigester. This project became a catalyst for other similar projects which meant technological modernization and the strengthening of environmental education, culminating in a great partnership between Otuzco and Peace Corps.

The idea was born when she was helping Nicole Thomas, also an U.S. volunteer, teach classes at the local institute of higher learning (Instituto de Educacion Superior Tecnologico Publico – Otuzco). Some of the students expressed a strong interest in the environmental technologies she had mentioned and formed a small committee to continue to investigate these technologies. Through them, Dee Dee learned of the Institute’s Experimental Production Center, which is a farm that provides experiential education to complement the students’ classroom curriculum.

After visiting the center for the first time, she realized that with such a high supply of livestock manure and demand for cooking gas and organic fertilizers, the Institute could really benefit from a biodigester. This way, they could reduce their dependence on external resources, such as costly chemical fertilizers and cooking gas, as well as reduce surface water contamination.

Dee Dee knew that she could apply for funds to complement the community’s contribution to implementing such a relevant and site-appropriate technology. Combining her personal interests and professional experience with closed-loop technologies in natural systems, she presented the potential biodigester project to the institute. They were eager to learn more about the economic and environmental benefits, as well as the additional educational opportunities it would provide for their students.

After receiving the ECPA funds, Dee Dee and her community partners purchased an 8.5 m3

geomembrane tube. The Institute contributed the necessary labor, adobe mud bricks, and other locally-available materials. Several students provided the labor as one of the practical exercises necessary for graduation. However, the project didn’t just focus on the installation. In addition to training the participants on the function, operation, and maintenance of the biodigester, Dee Dee and her team took the opportunity to provide education on climate change adaptation and mitigation strategies that include alternative energy technologies and practices.

The biodigester is covered with plastic to improve performance and ensure the equipment is not damaged.



Danielle DeVuyst

In the end, this application of renewable energy has had a number of positive effects on the local environment. By collecting the manure of the cows and pigs at the experimental production center, the use of the biodigester reduces surface water contamination. The use of the methane gas for cooking helps decrease the number of trees cut for firewood, which increases topsoil stability and reduces carbon dioxide emissions. The biodigester produces a large quantity of biol, which the institute is using as an organic fertilizer, instead of utilizing traditional industrial fertilizers on their crops. Using biol as a fertilizer is not only safer for the environment, but also for the person applying the fertilizer and for anyone consuming the future product.

### A WATER PUMP POWERED BY SOLAR ENERGY

Soon after, Dee Dee and Nicole began formulating another project combining a different environmental technology and a plan for financial sustainability, taking advantage of Nicole being a volunteer of the Community Economic Development program of the Peace Corps – Peru. Nicole arrived in the country in June of 2011, and will be finishing her service this August. The two volunteers continued to work with the same six students in the environmental technology committee, as well as several others who were interested in developing further projects.

The group wanted to incorporate business and marketing strategies because they felt that the institute was not living up to its economic potential. They already sold the milk and honey that they produced, but without a strong sense of business practices. They decided to grow vegetables in a hydroponic system using a solar-powered water pump. They could then sell the vegetables locally, using the fact that they are hydroponic and organic as marketing points, which would in turn teach the rest of the community about water conservation and



The volunteers at all times work in conjunction with local citizens.

important climate change adaptation strategies. Nicole continued working with the business club to incorporate marketing and business strategies, while Dee Dee began to work on system design with a farming and livestock professor and students at the institute. Nicole then also applied for ECPA funds to carry out the project.

As with the biodigester project, the educational component has been strengthened by real life experiences and the volunteers have been able to expand on previous lessons about alternative energy technologies with a focus on photovoltaics. Additionally, they have provided basic knowledge on climate change and its mitigation and adaptation strategies. The use of solar panels is a widely-accepted climate change mitigation strategy as it



Nicole Thomas



Danielle DeVuyst



decreases carbon emissions. In the likely event of future water scarcity due to changes in global weather systems, users will be able to adapt through the water conservation strategies of the hydroponic system. The students involved will be capable of later designing, installing, and maintaining systems of their own, while the instructors will continue to use the project as a model for future classes.

Currently, the team is preparing to install the system, which includes a 75 watt solar panel and a 2.5 amp water pump. The ECPA grant is being used to purchase the solar panel and some of the PVC tubes, pumps, and lumber, while the Institute is contributing all of the manual labor and locally-available materials, an indispensable contribution of the community.

Additionally, in order to make this project a sustainable closed-loop system, instead of purchasing nutrients (as is the practice in most other hydroponic projects), the students will be experimenting with the use of biol from the biodigester to nourish the hydroponic plants, so connecting the two existing projects.

#### IMPACTS ON A LOCAL BUSINESS

Dee Dee is in the process of installing another ECPA-funded biodigester. The dairy farm and artisanal factory “The Pearl of Paradise,” which employs the majority of the population of the small town of Vaqueria, heard of the success of the first biodigester and approached Dee Dee about replicating the project.

As a dairy, they will have plenty of manure to feed the biodigester, and the biol will be used to fertilize the plants that the cows consume. In addition, the gas produced by the system will be used to power the small factory’s cheese and yogurt production, which will greatly diminish the cooperative’s expenses.

Nicole Thomas



Dee Dee and her team will take advantage of this opportunity, using the installation of the 10m3 biodigester to train several additional Peace Corps volunteers and their community partners from other regions of Peru. This maximizes the efficiency of the funds received and increases initiative sustainability. The objective is that, by providing much-needed training to interested parties, they will be inspired to continue developing similar renewable energy projects in their own sites in the future, which will provide great environmental, social, and economic benefits to the users.

**The biol generated by the biodigester will serve as fertilizer for the hydroponic plants, thus connecting the two existing projects.**

# Peace Corps

Currently there are over 220 U.S. citizens working as volunteers in 12 departments of Peru.

Janeth Jade



Peace Corps is an international cooperation organization of the U.S. government which supports the development of communities in the countries in which it operates. This support consists of providing human resources for development, professional volunteers who arrive in communities to live there for two years, working in coordination with the local people on projects designed and implemented by the communities themselves.

The Peace Corps' mission is to promote sustainable community development and foster friendships, promoting cultural exchanges between Americans and host country citizens. Also, it is an apolitical and non-religious organization.

Volunteers are U.S. citizens, women and men, professionals graduated from universities, representing the cultural and ethnic diversity of the United States. They are trained in matters relating to the country's reality, cultural adaptation, technical aspects, and language. They live with host families during the two years of service and coordinate their activities with local governments, schools, NGOs, health centers, businesses, and community organizations.

Currently there are over 240 volunteers in 12 departments of Peru working in the programs of Community Environmental Management;

Kail Zuschlag



Community Health; Community Economic Development; Youth Development; and Water, Sanitation, and Hygiene. More than 3,500 volunteers have served in Peru since the program was established in the country in 1962.

Since President John F. Kennedy established the Peace Corps in 1961, more than 210,000 Americans have served in 139 host countries. Currently there are more than 8,000 volunteers working in nearly 80 countries.

[www.peacecorps.gov](http://www.peacecorps.gov)

**Danielle and Nicole had a unique experience and contributed to the development of Peruvian families, sharing their joy and knowledge.**

## Danielle DeVuyst and Nicole Thomas

Before joining Peace Corps, Danielle earned her Bachelor's of Architecture degree from the University of Florida and her Master's of Architecture degree from Washington University in St. Louis. Currently she serves as a volunteer for the Peace Corps – Peru and is writing her thesis for her Master's International degree in Environmental Engineering from the University of South Florida.

Nicole Thomas also was a volunteer for the Peace Corps – Peru and obtained her Bachelor's degree in Finance from the University of Florida. On her return to the U.S., she will enrol in a Master's program in Business Management with a focus on sustainability.



# Respect for Nature

Comments and photographs by Karsten Leckebusch, German reporter residing in Peru.

“I started to work in 1996 as a reporter for a local newspaper in Berlin, and photography was always an important part of my activities. Later on, working in television, I also learned the power of images; from them a story is developed and a message, an idea is communicated.

I arrived in Peru a year ago and I feel that it is a country that offers a great deal for a photographer. I have traveled a lot and I try to give myself the time necessary to get to know a place and its inhabitants well, so that I can obtain a good product. Here, I have had strong impressions of the care of the environment. For example, in a trip on the highway from Puerto Maldonado to Cuzco, we came across an illegal gold mine, where the contamination and harm it does to nature can be clearly seen. Furthermore, the people that work in it continue living in a precarious manner, despite sitting literally on a mountain of gold.

I think that the care of nature is still a luxury for some countries, who first try to obtain economic well-being in order to then treat issues like the care of the environment. In this sense, it seems to me that in Peru the people still have not really internalized the importance of caring for the environment. It is something that I see every day, as much in Lima as in the provinces.

However, fortunately there also exist populations that depend on their ecological surroundings for survival: rural farmers and peoples of the Amazon, who indeed have been able to establish a conscience of greater respect for nature, which they seek to maintain. Although I have also seen many times how the lack of energy affects communities that don't have modern materials for

**Karsten Leckebusch**  
Bonn, Germany, 1970.

Reporter, attended school in Nairobi, Kenya and went on to obtain a degree in Political Science and Philosophy in the Free University of Berlin, in Germany. He has worked as a reporter for the Oranienburger Generalanzeiger and in the television station Deutsche Welle, in Berlin. He has subsequently been an announcer for Radio UNO, in Managua, Nicaragua, as well as an announcer and editor for Bloomberg TV in London, the United Kingdom, and a reporter for the German State Broadcasting Station (ARD) in Frankfurt, Germany. Since 2012, he has worked as an audiovisual consultant for the Goethe Institute in Lima and as manager of the production company Limafilm.

cooking; it obligates them to utilize daily firewood that they obtain from cutting down trees. All of this leads me to think that, even though the media feature this problem, they still lack the necessary information that would contribute to showing alternatives for truly facing this situation.”

In the framework of the Energising Development project of the German Cooperation (implemented by GIZ) we seek to promote information and technologies necessary for confronting this reality. We encourage solutions that provide better access to energy, especially for rural areas, such as improved cooking stoves or photovoltaic systems, which in turn means clean energy for the care of the environment.



Woman of an indigenous community in San Martín.



Altitude of a tree in Junín.



Volcano in the heights of Arequipa.





The Maras natural salt ponds in Cusco are tradition and livelihood for the local populations.





Processing coffee in the Amazon.



Waterfall in Junín.



Tambopata National Reserve in Madre de Dios.



A risk, illegal mining in Madre de Dios.



Farming family in San Martín.



Cumbemayo, rock forest in Cajamarca.



# Let us be aware of our energy use

Schneider Electric Peru has been in our country for fourteen years, playing an important role in the promotion of clean and renewable energy. Its general manager, Guido di Toto, says the company has launched a series of actions, such as training young people in energy techniques and delivering solar kits to illuminate 400 families in the San Martín region.

By Carlos Bertello, Communications Officer, Energising Development / GIZ -Peru

## What is the company's perspective regarding the Energy sector?

Schneider believes that we are facing an energy dilemma because, according to the International Energy Agency (IEA), in 2050 the energy demand will double worldwide. This is due to different factors, such as the development of the new economies (BRICS) and easier access of populations to electricity, parallel with an increased standard of living. On the other hand, the UN is saying that if by 2050 we do not reduce greenhouse gas emissions produced by half, we will see dramatic climate changes.

With this situation in mind, we believe that the key is energy management. On the one hand, clean energy generation is available, which allows us to work with renewable energy such as wind and solar. Nevertheless, these are medium to long-term solutions because the world energy matrix is too focused on fossil fuels and the change forecasts are still quite limited.

Thus, we think that in the short term, the spotlight must be put on energy demand, which means increasing the efficiency of our consumption. Nowadays, using appropriate technologies, we can save up to 30% of energy. Therefore, energy efficiency must be a priority in the short term, helping our clients to make the most of their consumption.

## What is your work like in Peru?

We neither produce nor transmit electricity. Broadly speaking, our equipment is located in the middle of the process chain and allows for improved consumption management, making energy more efficient and safe. Basically, we supply all the protection and measuring elements, for example, meters, boards and switches for a building, as well as elements for a medium voltage substation.

## How is your work in Peru?

In Peru we are 165 people. The branch was created in 1999 in Lima, and we have commercial offices and a distributor network that allow us to be present

nationally. We see ourselves as an important support for the growth of the country since in the last four years we have doubled our branch's size and we aim to do the same in the next four.

## Do you offer renewable energy products?

We have a great range of renewable energy products. For example, one of them is an integral solution to produce electricity for a house with solar energy. These are Solar Home Systems (SHS). In Europe, these systems are attached to the electrical grid, which allows houses to be their own generators and guarantees good consumption and production management of energy. In the future, this could also be implemented in less developed countries.

## Do you follow a social line of responsibility?

The Schneider Electric Foundation has been active for 14 years, and it counts with more than 630 members in 77 countries. In Peru, we have a delegate who coordinates all the activities.

The Foundation works in three main axes. One of them is the offer of efficient solutions that allow for an improved and adequate use of sustainable energy at a global level. Another axe is the promotion of our perspective regarding an

“Nowadays 1.3 billion people that live in developing economies do not have access to energy.”

## Schneider Electric

As a global specialist in energy management with operations in more than 100 countries, Schneider Electric offers integrated solutions across multiple market segments. It has leadership positions in energy and infrastructure, industry, buildings, and data centers, as well as a broad presence in the residential sector, in order to make energy use safe, reliable, efficient, productive, and clean for their customers. The more than 150,000 employees of the company achieved sales of over 24 billion euros in 2011 through their active commitment to help individuals and organizations achieve the maximum use of their energy (make the most of your energy).

[www.schneider-electric.com.pe](http://www.schneider-electric.com.pe)



Archive EnDev GIZ

adequate access and use of energy. Finally, the third area is for the so-called “pyramid base,” which means creating offers and business models to allow isolated and low income populations to access energy.

Within this context, for example, we offer easy installation and maintenance products, and we promote a business model for isolated towns where, instead of each house having its own solar panel, a charging station is created which is administrated by just one person. This station is in charge of the daily recharging of batteries in order to then distribute them to each house as well collecting used ones. This model allows for the generation of jobs around this initiative, which is already very advanced in India or Africa.

Basically, the Foundation tries to support pilot projects until they can carry on themselves. It is important to be aware of this reality because nowadays 1.3 billion people that live in developing economies do not have access to energy.

## Have you also launched educational projects?

That is right. Another important action is trainings, for which the Foundation has mixed schemes where we associate with local educational organizations to offer certificated courses, additionally seeking to generate employment opportunities. These are technical trainings which allow participants to start working immediately. More than 20,000 people from different countries have already been trained. In addition, many times the donation of material in order to create the labs is necessary.

Currently, in Peru, we are working with the National Service of Industrial Work Training (Servicio Nacional de Adiestramiento en Trabajo Industrial - SENATI) to create a career path as an Energy Efficiency Technology Major, for which Schneider Electric Peru will donate all lab equipment and the French Education Ministry will contribute by sending over a coordinator for two years. We hope to be able to launch this course next year. Likewise, students and professors will have access to all our internal training as well as internships.

On the other hand, we are also working together with the Techo NGO in Lima and providing “solar kits” to the populations of the San Martín region, with 400 families having benefited so far. In certain locations, they even have managed to use these “solar kits” as public lighting.

## In general, do you think we are moving towards a more efficient use of energy?

There is still a lot to do and Schneider is committed to it. Five years ago there probably was a greater awareness about the issue, and, sadly, I see a global regression because, although there is awareness within certain important sectors, five years ago the Kyoto Protocol was still valid. Nowadays we do not have in view any similar system that is to be implemented. Furthermore, back then the world was focused on abandoning petrol dependency, but nowadays it seems there isn't the same urgency. It could be that the economic crisis has diverted attention, and the urgent seems to be covering the important. Nevertheless, we are talking about the world's future, which is no a small matter.

Guido di Toto is general manager of Schneider Electric Peru. His position in the company also means a commitment to the environment.

“In Peru, we are working with SENATI to create a career path as an Energy Efficiency Technology Major.”



# Modernizing olive production

The Inclán municipal district in Tacna is developing a successful experience to strengthen the olive production in the area through associativity and the use of cutting edge technology to process and sell a quality product with added value.

By Víctor Grados Santillán, Regional Advisor of Tacna, Energising Development / GIZ - Peru.

Strengthening competitiveness and developing efficient processes is one of the challenges for the agricultural sector. Thanks to a number of measures adopted by the Inclán municipal district in Tacna, access to technologies that strengthen the whole olive production chain in the coastal valley has been achieved, which is recognized as an important center of olive production. This has been achieved through funding from mining royalties.

The modernization manifests itself in different levels. On the one hand, associativity and the internal management capacities have been strengthened. On the other hand, a municipal nursery has been installed which covers an area of 4,000 m<sup>2</sup>, which also contains a demonstration plot and equipment to attend more than 80,000 olive grafted plants.

Furthermore, a modern plant for the olive processing has been built in Tomasiri, which efficiently attends the needs of the valley population, improving their work quality and economic prospects. The equipment of the plant includes a grader-sorter machine, 130 fermentation tanks of 1,000 kg and 125 fermentation tanks of 750 kg, as well as 400 harvesting crates, 150 drums of 60kg, among other supplies for processing, and lab materials. Additionally, an olive oil extraction machine was acquired, among other equipment for production and transport.

Even training has been provided for the appropriate use of the new equipment, and workers have attended a traineeship regarding technological management



Inclán municipal district

and the generation of added value in regards to olive cultivation within the Azapa valley, in Arica, Chile.

To be precise, these measures represent a modernization of the processes that had been traditionally used in Inclán to process olives, and open the doors to a commercial deployment of local production, maintaining a high quality and a competitive price. Thus, starting with the processing of 13,9 tons of green olives and 66,8 tons of black olives during 2012, 33 farmers in this district have economically benefited. In a similar way, this year more than 192 tons of olives have been processed and 650 liters of extra virgin oil has been obtained, a production which will benefit 75 farmers in the valley.

The municipal nursery covers an area of 4,000 m<sup>2</sup> and currently has 30,000 olive plants ready for grafting.

Right: The processing facility has technologies which enable maximizing production.



Inclán municipal district



# Testimonies

**Javier Mamani, municipal nursery manager**  
 “The nursery’s objective is to promote good quality and pest-free seedlings in order to expand the area under cultivation. Currently, the nursery has 30,000 plants ready for grafting and 50,000 plants that are being replicated. Thus, we will achieve our aim of propagating 80,000 plantations for next year (2014).”

**Miriam Huaycani, field technician**  
 “We are carrying out a washing and fumigation campaign. For washing, we use a spraying tractor and for fumigation we use stationary pumps, equipment which allows us to advance at a pace of 5 hectares per day, in 8 hours of work.”

**Alejandro Carrillo, Inclán valley farmer**  
 “Here we mainly cultivate olive trees. Mine are almost eight years old, and they already produce. This is the future for our

children and for the entire Inclán district. In our vision, we want the district to become an exportation valley of olive and its derivatives.

Before, we sold through intermediates that paid us whichever price they wanted, but now, buyers come straight to the plant and acquire the product for a better price.”

**Wilson Montesinos, project manager, Inclán municipal district**  
 “Our goal is to strengthen the partnerships and the valley farmers in such a way that the structure can be eventually transferred to them and, at the same time, they are ready to manage it properly at both the technical and logistical level.”

## Jorge Rosales, processing plant manager

**Who has benefited from this new processing plant?**  
 Three groups have benefited: two associations as well as a group of independent producers who, with the help of the municipality, are in the process of forming a partnership.

**How are olives processed?**  
 In the plant, we have three fermentation processes. One of them is natural fermentation, through which the olives are ready within a month, in order to later be transported to the Chilean market. A similar process is carried out with black olives, which lasts around four months. In addition, we conduct a process called “sevillano,” in which we attain a green olive with no bitter taste, which is ultimately destined for Brazil.

**What kind of benefits has the plant brought?**  
 Initially, the necessity of implementing a plant of this type for the valley was discovered, both for the current crops and the young ones which are just entering the production process. Before, the farmers themselves used to cultivate and ferment their products using traditional knowledge which resulted in olives of varying quality.

Now, with the processing plant, a unification of the production process has been achieved and the farmer does not have to worry about the fermentation process, which is conducted by specialists. Through this, a product of a more uniform quality is obtained:



an olive that is ready to compete in any international market. This means that a better price is achieved and, in turn, the farmers so economically benefit.

**Jorge Rosales next to the olive oil extraction machine.**

Furthermore, another big advantage that we have now is the olive oil extraction machine. Now, when very small olives are obtained which are not suitable for selling, we opt to use them to produce olive oil.

*Creemos en un crecimiento sostenible respetando la Naturaleza*



*Liderando las microfinanzas Verdes en el Perú*



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# Energypedia connecting knowledge

This virtual platform has become an excellent opportunity to share experiences about the application of clean, sustainable, and renewable energy in developing countries. It has received more than 4 million visitors, has over 850 public articles, and 2,500 registered energy experts.

By Fungai Cecilia Sandamu, Communications Officer, Energypedia

A local technician works on the production of improved stoves in Kenya.





## ACCESS TO ENERGY

Taking advantage of the on-going momentum promoted by the United Nations Sustainable Energy for All initiative, considerable attention has been given to the importance of energy issues for the sustainable development of society. Despite current efforts, some 1,3 billion people still lack access to electricity. Additionally, the rapid growth of electricity demand in developing nations has amplified the gap between electricity supply and demand, thus rendering the challenge of meeting energy demands while simultaneously developing sustainably more complex.

Access to energy is more than just access to electricity. Worldwide 2,7 billion people in developing countries depend on firewood, charcoal, dung and crop residue for cooking and heating, especially in rural areas. This has negative consequences on the quality of life, health, education and income generation opportunities of those affected. Although more efficient and modern cooking energy systems are under continuous development, access to affordable, sustainable and clean cooking energy still remains a challenge for a third of the world population.

Further exacerbating the situation is the fact that practical knowledge on modern and sustainable energy technology use in developing nations is often only available in fragments, restricted to a certain region or not publicly available at all. Taking note of this situation, energypedia is filling this gap by facilitating and expanding the diffusion of information on renewable energy technologies and energy efficiency in developing nations through

practical knowledge sharing on the open wiki platform [www.energypedia.info](http://www.energypedia.info).

## BE A LIGHT – SHARE YOUR KNOWLEDGE

Energypedia is a wiki platform offering free access to expert information on renewable energy and energy efficiency in developing countries. Registered energypedia users can easily create, modify, and share content on the platform. As of June 2013, Energypedia has been viewed over 4 million times and includes over 850 freely usable articles, contributed by the growing community of more than 2,500 registered energy experts.

At energypedia, we believe that sharing knowledge is power. Our vision is to become a living platform

Energypedia seeks to disseminate knowledge so that new technologies are available to rural communities.

## Where did it all begin?

Originally energypedia was conceived in 2007 as an internal knowledge and project management wiki within the multi-donor funded Energising Development (EnDev) program, which is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Since then Energypedia has evolved and began to operate as an independent non-profit organisation in April 2012.

Energypedia founder Robert Heine believes that Web 2.0 applications like [energypedia.info](http://energypedia.info) can deliver benefits by multiplying the opportunities for collaboration and by allowing knowledge to spread more effectively. Heine also emphasises that using such applications “can make development cooperation more effective, transparent and efficient by connecting experts and promoting knowledge exchange.”

on renewable energy and energy efficiency in the development sector by offering free, relevant, and high quality information. Lisa Feldmann, our General Director, elaborates that energypedia strives to “create the right environment and provide the right tools for stakeholders engaged in the energy sector to collaborate, create and share knowledge and practical experiences, in order to drive a swift expansion of renewable energy use in developing nations.”

While Energypedia is playing a part in the efforts to extend and secure access to reliable, efficient and sustainable energy services and resources for sustainable development, it is also focused on connecting people. By bringing energy experts, universities, civil society, as well as the public and private sector together, theoretical knowledge can benefit from the lessons learnt by practitioners and vice versa to catalyse innovative sustainable energy technologies and services. For this reason, the platform also offers users features to share events, news, and connect to each other in thematic discussions.

## GET CONNECTED

The content available on Energypedia spans a wide range of topics including renewable energy technologies, cross-cutting issues such as grid extension and impact monitoring, as well as topics on energy use including improved cooking, productive use of energy, and eco-mobility.

For instance, the Solar Portal on the platform hosts information on the technological aspects of solar energy, the costs of solar, financing, business models, policy framework, social and environmental

## Prospects for the future

Energypedia aims to provide articles of increasingly higher quality about renewable energy and energy efficiency in the future. A new portal on funding and fundraising is in preparation. As a living platform, energypedia welcomes anyone wishing to register as a user and to share their knowledge in promoting sustainable energy for all.

[www.energypedia.info](http://www.energypedia.info)

impacts, as well as climate change related issues. The Solar Portal also hosts the PicoPV Database, which is one of the first databases created on [energypedia.info](http://energypedia.info). The PicoPV Database encompasses a unique collection of more than 90 small photovoltaic systems, covering the full spectrum of mini solar appliances as well as micro-solar home systems.

The Improved Cooking Portal on [energypedia.info](http://energypedia.info) also hosts a wealth of information. It includes the GIZ (HERA) Cooking Energy Compendium, which is a comprehensive manual for programs and projects to implement cooking energy interventions. The aim of the Cooking Energy Compendium is to share the knowledge that the GIZ has gained from many projects and provide information that supports the large-scale dissemination of energy efficient technologies for cooking and baking. The portal is one of the most viewed on [energypedia.info](http://energypedia.info), and as a “living” document, users with experience in the field update articles in the Compendium with their relevant knowledge.

The portal has information that covers a range of solutions for efficient energy use in the home or for productive uses.





# Access to energy for 10 million people

In its eight years of operation, the EnDev program has been installed in diverse countries in Africa, Asia, and Latin America. Its goal is to ensure that 14 million people have access to electricity through clean energy.

By Carlos Bertello, Communications Officer, Energising Development / GIZ – Peru



Michael Janke



The international initiative Energising Development (EnDev) promotes access to energy throughout three continents. In only eight years the program has benefitted 10.3 million people at a cost of less than 30 dollars each, an experience that can be converted into the foundation of the fight against energy poverty.

Since its inception, in the year 2005, EnDev has achieved that:

- More than 10 million people have obtained sustainable energy services in countries of Africa, Asia, and Latin America.
- More than 11,000 social institutions (schools, health posts, communal centers, among others) and 24,000 small businesses are benefitting from sustainable access to energy services with modern and efficient technology.
- More than 30,000 builders of improved cooking

stoves, artisans, local vendors, electrical technicians, and solar energy technicians have been trained.

EnDev will continue combating energy poverty and seeking to increase the number of beneficiaries until more than 14 million users have access to electricity, as well as clean and efficient energy for cooking.

The program is an initiative jointly financed by the Federal Republic of Germany, the Netherlands, Norway, Australia, the United Kingdom, and Switzerland, with additional funding from Ireland and the European Union. The German Cooperation - Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH - is the entity in charge of implementing the project, in close cooperation with the Dutch Agency NL.

[www.endev.info](http://www.endev.info)

EnDev is present in 23 countries worldwide, including Honduras, Nicaragua, Bolivia, and Peru.



A young man displays an LED lamp in Bangladesh.

Archive EnDev-GIZ



# The Energising Development Project in Peru

Close to one million Peruvians have been benefitted with access to modern energy services through improved cooking stoves, safe electrical connections, photovoltaic technologies and equipment for productive use.

By Carlos Bertello, Communications Officer, Energising Development / GIZ – Peru

Adding its efforts to the global initiative, EnDev has been executed in Peru since the year 2007 by the German Cooperation (implemented by GIZ) under the name "Proyecto Energía, Desarrollo y Vida" (EnDev – Peru).

In Peru, more than two million households use firewood or animal and plant waste for daily cooking. In addition, more than three million people still don't have access to electricity and are forced to spend their income on batteries, candles, and diesel-fuel burners for illumination.<sup>1</sup> Beyond this, contaminating gases from the burning of firewood and fossil fuels are produced inside the homes, which represent a risk to the health of the people.

Confronting this reality, the project seeks to promote adequate access to clean and sustainable energy, principally for rural populations that are located outside of the network of conventional energy services. Furthermore, the fight against energy poverty is converted into an important tool for economic and social development, as well as care of the environment.

## HOW WE WORK

It is necessary to develop strategies for reaching the most remote communities and homes, as well as small and medium productive enterprises. The energy services promoted mainly comprise lighting and energy for cooking. However, the push toward energy services also aims to address the productive activities of small businesses and agricultural associations, as well as the training and strengthening of technicians and local business-owners.

In addition, at the local and regional level (municipalities and regional governments) the program seeks to advise public officials so that they can take appropriate actions intended to improve the energy situation of their localities. In a similar manner, EnDev also works in conjunction with the agribusiness program AGROIDEAS of the



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Ministry of Agriculture and with micro-finance organizations that facilitate economic resources in order to acquire technologies.

## WHAT WE HAVE ACHIEVED SO FAR...

Until June of this year, access to modern energy services in the home has been provided to 931,305 people in the whole country: 720,885 people have improved cooking stoves, 30,600 people are benefitting of photovoltaic technologies for lighting, 176,590 people have safe electrical connections and 3,230 people possess solar water heating technologies.

A significant number of schools, health posts, and community centers have also been equipped with efficient technologies, adding up to a total of 3,308 social infrastructure facilities. Furthermore, 5,441 small and medium businesses have obtained an improvement in their production equipment.

On the other hand, the publication of the magazine Amaray is promoted, where all kinds of people and organizations can show their experiences in the field of energy access.

Adequate access to energy brings benefits to people of any gender and age. Above, residents of the community of San Juan del Abiseo in San Martín

1. National Rural Electrification Plan 2012-2021 of the Ministry of Energy and Mines. 11th National Census of Population and 6th National Census of Housing from 2007.

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