

April 2013

# Amaray

Energy and development for rural areas



## Productive Use

Energy that opens  
the doors of progress

## AGROIDEAS

The future of agriculture  
is in its hands

# Traditional Drying

Inclán, Tacna  
February 14, 2013

Each year several hectares are covered by chili peppers in what appears to be a beautiful orange carpet that lies under an intense heat. However, this traditional practice exposes the product to soil contaminants and animal predators, making it difficult to position it in markets that demand rigorous quality control for the whole agricultural production process.



# Human Energy

Lamas, San Martín  
May 10, 2010

A farmer uses his strength to transport a sack that contains part of his production. Thousands of people all over the country still carry out productive processes like this with human and animal power, that is, with low-efficiency techniques that impede the maximum advantage being taken of their productive potential.



# Electricity and Work

Alto Chaquil, Cajamarca  
January 23, 2013

Leonidas Cerquín Quiliche is an entrepreneur that directs a local carpentry shop. Before, he powered his machines with an old diesel motor that can still be seen at his side; now, the access to electricity permits his production processes to be more efficient and generate a greater economic benefit.



**THERE IS ABUNDANT DOCUMENTED EVIDENCE THAT IN RECENT TIMES NO COUNTRY HAS ACHIEVED ECONOMIC GROWTH AND POVERTY REDUCTION WITHOUT REQUIRING A SUBSTANTIAL INCREASE IN THE USE OF ENERGY**

**Source:** Productive uses of electricity: Experiences and lessons in the rural Peruvian area. Practical Action, 2012.

Drawing: Fabricio Medrano

Dear readers,

I am very pleased to present in this new edition of the magazine Amaray the relation between access to energy and the development of competitiveness in the rural sector.

We believe that it is indispensable that the low resource sectors can count on technologies that permit them to move away from the traditional technologies, which are not very efficient, and that impede the maximum advantage being taken of their productive potential. This is translated into a replacement of animal and human energy by renewable or mechanical energy, all along the production chain.

Like all value chains, the transformation of agricultural products principally requires electricity. However, primary producers often don't access this type of energy, and therefore the profitability associated with this added value frequently slips through their fingers.

The increase of productivity, the improvements in quantity and quality of products, as well as the greater obtainment of benefits through new market opportunities and access to information, are all positive impacts that can be reached from an efficient, productive use of energy. All of this, in turn, generates significant changes in the life of the producers and agricultural retailers. That's to say, it initiates the increase of family incomes and the possibility of improving the quality of life of all the community.

In the last decade there have been significant advances in the rural electrification of Peru. However, for rural families, the use of energy in productive activities keeps on being restricted. Many rural producers still have difficulties accessing and correctly using the energetic resource, since many times it still is not understood that energy generates positive changes in any point of the value chain. Moreover, there is very little information about the alternatives and adequate technologies for each type of production.

For this, the change that we look for in Endev emphasizes consulting and technical assistance so that the population understands and has sufficient information to make the best decisions about access to technologies and modern processes of production and transformation of agricultural products. In addition, they have created public-private alliances that permit extending the use of energy in the rural sector. On the other hand, it is indispensable to foster associativity, a decisive factor in the collective access to the energy.

We hope that you enjoy reading this edition and are able to reflect over the importance of the use of energy in the productive and commercial development of the rural sectors.

Sincerely,

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

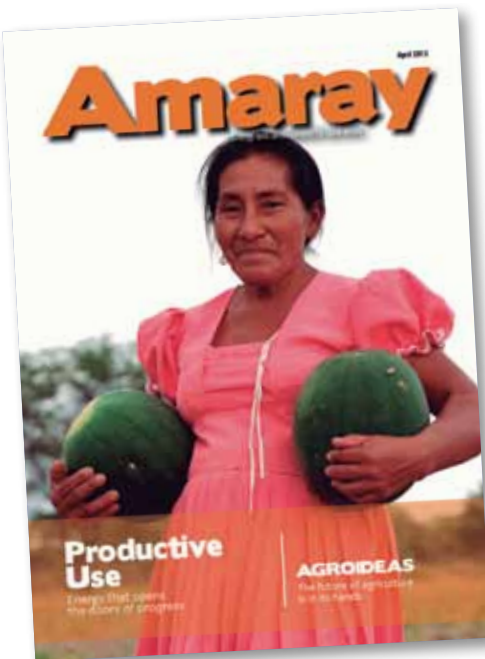


Carlos Bertello

**Special. Productive Use**  
Energy that opens the doors of progress

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Thomas J. Müller - SPDA / Archive PDRS-GIZ



Peru is a country that stands out for its rich variety of agricultural products, diversity of regions, mixtures and colors. This time, an inhabitant from the northern coast of the country reminds of this fascinating and colorful richness.

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**Portfolio. Living Walls**  
Art that grows from the hands of progress

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Photos: AGROIDEAS



## Minister of Agriculture, Milton von Hesse

# Energy Technology

Emphasizes that the efficient use of resources, like energy, permits organized farmers to incorporate technology into their productive processes, increasing their production volumes, reducing their costs, improving quality and accordingly, making them more competitive.

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

**In your opinion, does the AGROIDEAS Program incentivize technological adoption because traditional methods of agricultural production represent an important limitation for the development of agriculture in Peru?**

Effectively. What we seek with this incentive is that the small and medium organized producers incorporate technology into their productive processes, from sowing to post harvest; in the phase of transformation, be it either primary or industrial; or even in the commercialization. In the manner that they increase their production volumes by hectare, they reduce their unit costs; they improve the quality of their products, they accede to certifications, they develop brands as a strategy of differentiation and they make an efficient use of resources that, like energy, are vital throughout all of the value chain. With the assistance of all these factors, added to the favorable conditions of the territory, we want to contribute so that these organizations increase their income through sales, get access to better services and become more competitive in the business in which they are immersed.

**What is the impact that this initiative has, that unifies forces of public and private actors in order to facilitate access to the different incentives that the program offers?**

In the first place, in the specific case of the public-private alliance that AGROIDEAS has developed in order to promote the organization of Certificates in Formulation of Agrobusiness Plans, it is a clear example of what is possible by summing up forces among the three levels of government, international cooperation, and the academia, in order to achieve, in an efficient manner, an objective of common interest. It is a different way of doing things. AGROIDEAS, like many programs of the ministry, sustains its performance through a network of institutional allies.

In the second place, it contributes in a direct manner to the development of the agrarian services market that is so important for the consolidation of the businesses. At the end of the certificate program, there will be 40 participants that will have the capacity of formulating agribusiness plans under the technical considerations that this tool demands. Finally, with the approval of these business plans through the certificate, the investment is assured of important resources of the central government, those that are channeled directly to the

organizations, who also will realize private investments in order to co-finance the approved business plans.

**In this International Year of Quinoa, what challenges are presented in the country for the agriculturalists of this productive chain?**

In the mountainous region of Peru numerous communities cultivate the grain for its demand and high prices, as well as its productivity by hectare, that in our country is double that of Bolivia. In 2012 the total exportation of quinoa from Peru was only on the order of 20% of the national production. To elevate this figure is a challenge that implies the necessity of audacious and coherent policies between the State and the private sector. The UN has declared 2013 as the International Year of Quinoa, and in that we count on the leadership of the First Lady, Nadine Heredia, who was just designated as its special ambassador.

For that, AGROIDEAS offers to the quinoa-producing organizations the possibility of adopting technology through the access to equipment and strategic inputs that permit them to elevate their competitiveness, to export in better conditions, and to be more profitable. The benefits for producers of quinoa include, among others, tractors, furrow openers, motorcycles, scales, humidity meters, technical assistance, and other necessary tools to strengthen their businesses, to elevate their profitability, and to increase their area of cultivation of quinoa, with optimum processes of harvest, post-harvest, and commercialization.

“We hope to help these organizations become more competitive in the business in which they are immersed.”

Milton von Hesse, together with Marco Vinelli – head of AGROIDEAS – in a promotional event for the program.





# AGROIDEAS

## The future of agriculture is in its hands

Boosting the process of modernization of agriculture is indispensable for the development of agricultural sector populations and the AGROIDEAS Program works toward this end through three pillars: associativity of producers, business management, and access to cutting-edge technology. All of this financed through non-reimbursable funds in a period of five years. Without a doubt, it is a unique opportunity in Peru.

**By Cecilia Huamanchumo de la Cuba**, Head of the Promotion Unit of AGROIDEAS  
**Photography:** Thomas J. Müller - SPDA / Archive PDRS-GIZ

I have passed the last seven years traveling through distinct zones of agricultural production in the country and I have been able to verify, with malaise, that many processing plants of agricultural or livestock products are inoperative. These places, abandoned to their fates, were converted into the frustrated hopes of many producers. Their inhabitants were motivated and bet on development, projecting themselves to obtain greater economic incomes upon transformation of their products, giving them a higher added value in the same zones of production. They didn't imagine that at some point their dreams would be truncated.

Although it is not the purpose of this article to discuss the diverse motives that explain how said development centers came to be, I have not been able to avoid – with the theme of the present edition of Amaray – that those cases of the rural zones of the country come to my mind, where the cost and access to energy sources were decisive factors that affected the viability, competitiveness, and sustainability of the agro-industrial plants. In said places, that in general don't have access to the latest advances in the global bio-energy sciences, the problem could be the persistence of myths and traditional ideas that obligate rural production to necessarily depend on certain determined sources of energy and not on others, that are difficult to access for their elevated cost.

Fortunately, nowadays, things appear to be starting to change. The world, and Peru, in particular, has more information, infrastructure, and technology that make it possible to broaden the offering of electric and non-electric energy sources. Thus the energy needs of agricultural production started to no longer be seen in a unique and unavailable position, but began to be distributed according to their different productive uses all along the value chain, that is, in a particular

**AGROIDEAS is not a competitive fund and does not award credits. The money that it offers is non-refundable.**

energy that could, for example, require the task of pumping of water; the transformation processes of products, from cleaning, washing and selection, to cooking, grinding, drying, dehydrating, freezing, etc.

Witness to this openness to new knowledge about the use of energy is the Compensation Program for Competitiveness – AGROIDEAS, of the Ministry of Agriculture. A clear example of this new vision are the more than 11 thousand agrarian producers associated in 133 organizations that, committed to improving their position in the market, have received the incentives that AGROIDEAS offers, and they are adopting technologies that demand different forms of energy, among them: electricity, fossil fuels like







petroleum and gas, solar energy, and biomass and the use of agricultural waste as combustibles for cooking processes.

Despite the new roads that are opened towards greater access to energy sources, the vast majority of agrarian leaders, on the one hand, and the specialists that assume the responsibility of elaborating the technical documents, on the other, in addition to those of us who are in charge of evaluating the proposals presented by the organizations, we need to develop capacities and have more information over the advantages and disadvantages of utilizing one, another, or the combination of different sources of energy throughout the different productive processes according to the location of the product, the power necessary, the proper voltage, the type of supply (single-phase or tri-phase), etc.

In this context, one of the strategic alliances that has generated the most satisfaction for us, the AGROIDEAS team of the year 2012, is the alliance that we constructed with GIZ, through the project Energising Development – EnDev. In alliance with said project and with the support of regional and local governments, private enterprise and the University ESAN (Graduate School of Business Administration), we are developing “Certificates in the Formulation of Business Plans” in the southern regions of Moquegua, Tacna, and Arequipa. These courses are aimed at professionals or local technicians who will stimulate the business development of organizations of producers. Our goal is to take these courses to other regions of Peru in order to – along with the promotion

Products from diverse regions currently receive the support of AGROIDEAS.

of the agrarian services market – promote openness to energy plurality and to disseminate adequate strategies for the sustainable development of different rural zones. In this way, it’s hoped to improve their quality of life, that’s what it comes down to, not the ideal goal, but the real stimulus that gives movement to our work.

### The Agrarian Cooperative 9 of October

“I really like the case of an organization that has achieved the certification of organic cheese. A small cooperative, of about a dozen producers, located at 4000 m (13,123 feet) above sea level, at two-and-a-half hours from the city of Arequipa.

They have infrastructure and they work so well, that they have earned a certification that is very difficult to obtain. In the case of the cheese, the requirements come from the grass that the cows eat, that can’t have chemical compounds. They were already working on this, but with the access to AGROIDEAS, they obtained the certification, since they improved the equipment for the processing of the cheese and they could pay for the certification.

They are a population whose economic sustenance relies integrally on its agricultural and livestock production, and the certification now permits them to sell at a higher price in the Arequipan market, for example, to hotel chains or to important restaurants of the city.”

Viviana Valdivia, Coordinator of AGROIDEAS, South Peru

# AGROIDEAS tripled its number of beneficiaries in 2012

The program achieved sustainable growth at the national level, thus reaffirming its commitment to strengthening the agrarian businesses of Peru.

The Ministry of Agriculture, through the program AGROIDEAS, is acting as a strategic partner of agrarian businesses at the national level, awarding non-refundable resources in order to support associativity, entrepreneurial management, and the adoption of technology by organized small and medium agricultural, livestock, and forestry producers.

In order to access these non-reimbursable funds, each agricultural organization – association, committee, cooperative, rural community, indigenous community, or societies in general – must present a business plan to AGROIDEAS, which is subjected to a process of evaluation and is classified as a beneficiary if the request is approved. There are three types of incentives:

- **Associativity:** the eligible costs to establish organizations of agrarian producers are reimbursed.
- **Entrepreneurial Management:** the cost of fees of a manager for an organization of agrarian producers is co-financed.
- **Adoption of technology:** the set of goods and services that may be necessary in order to reach a technological improvement is co-financed, up to 1,095,000 nuevos soles (US\$ 424,420).

The agrarian organizations must comply with three fundamental requirements in order to be beneficiaries:

AGROIDEAS has developed a network that permits the program to reach greater quantity of agrarian organizations in the country.

to be eligible, that is, to comply with the legal and accounting requirements established by AGROIDEAS; to present a profitable, sustainable, and environmentally-friendly business plan; and to have the counterpart to the offered co-financing.

#### Figures at the close of the year 2012

- 71.3 million nuevos soles (US\$ 27.6 million) of investment for the financing of agribusiness plans at the national level.
- 49.2 million nuevos soles (US\$ 19.1 million) will be invested by AGROIDEAS in said agribusiness plans.
- 22.1 million nuevos soles (US\$ 8.6 million) will be invested by the organized producers.
- 11,002 families of agrarian producers will improve their quality of life thanks to the incentives approved by AGROIDEAS.
- 165 agribusiness plans approved and in execution.
- 133 agrarian organizations benefitted in the country.
- 19 regions of Peru affected.

#### Evolution of the Program

In the year 2012, AGROIDEAS showed an important evolution in its results, thanks to a flexibilization of its processes. This permitted an increase in the number of beneficiaries and investment that is realized in the country:

YEAR	2010	2011	2012	TOTAL	Increase 2012 vs 2011	
Business Plans	2	48	115	165	140%	
Hectares	1,761	18,887	27,951	48,449	48%	
Producers	1,036	2,524	7,477	11,002	196%	
Organizations	2	33	99	133	200%	
Investment in millions S/.	AGROIDEAS	2.2	14.2	32.79	49.2	131%
	Organization	1.5	6.5	14.25	22.2	121%
	Total	3.6	20.7	47.04	71.3	127%

SOURCE: AGROIDEAS. / EXCHANGE RATE: US\$ 1 = S/. 2.6 (NUEVOS SOLES).

# “It’s vital to foster associativity”

Viviana Valdivia, coordinator of AGROIDEAS in the southern zone of Peru, tells us about how this program of the Ministry of Agriculture seeks to multiply its impact through a continuously more dynamic association with the agricultural population of the country.

By Carlos Bertello, Communications Officer, Energising Development / GIZ – Peru  
Photography: Thomas J. Müller - SPDA / Archive PDRS-GIZ

## How has the process been of adaptation of the program to the reality of agriculture?

The program started to be promoted in the year 2010, but it had very strict requirements. For example, the producers had to present property titles, but we know that at a national level we have problems with the titling of rural properties. In addition, it was also asked that the organization had existed for a certain amount of time.

Thus, after doing an analysis we realized that it was necessary to make the requirements more flexible so that a higher number of associations could access the program. This would signify that we could help not only the better established organizations, but also

**The theme of associativity is vital to be able to obtain a large scale impact.**

those that really need a boost or that are newly formed.

We still ask for property titles, but we offer other alternatives. For example, that the agrarian agencies turn in an agricultural producers’ agreement, or that the municipalities present proof of land possession.

## I understand that you work only with associations...

For us, the only fixed requirement is to work with associations and not with isolated producers, since the vital part of this program is to encourage associativity. Peru is a country of small holders (subsistence farmers) and if we don't change this, we are not going to have much success. Large production



volumes are needed to be able to negotiate prices in the market, in addition to the reduction in the costs of production.

## So you already have guidelines in order to know when a business could be really profitable...

That's right; an organization must manage a minimum of 20 hectares (49.4 acres) in order to justify profitability. Of course exceptions exist, and alternatives are created for isolated cases, for example, for the husbandry of guinea pigs or the cultivation of aromatic herbs.

## The program functions at a national level?

We have nine regional units and each one is in charge of two to three regions, except in the case of Puno, which is alone. We are in all of Peru, but until today there are 19 regions which have been benefited. I am in charge of the unit which includes Arequipa, Moquegua, and Tacna.

## I understand that you are also seeking to develop management capacity...

This program is seeking to elevate the competitiveness of agrarian producers by means of three incentives: First the associativity, that's to say, that we reimburse the costs for becoming associated, be it a lawyer, a

notary, etc. Second, entrepreneurship management, that's to say, that we offer to pay the costs of the contraction of a manager. And third, the adoption of technology, that's to say, the purchase of machinery or the contraction of services in order to modernize the productive process.

## And this machinery also permits the producers to enter into a transformation process?

Clearly, the program permits also the sale of machinery for the transformation of products, but those that enter into the program must always be agriculturists. For example, in Moquegua we support grape producers, which they themselves then transform into pisco.

## And regarding sustainability?

Each association must present a business plan in order to accede to the program, in which it is necessary that they demonstrate that their business is going to be sustainable for a minimum of five years.

That's how the idea of doing certificates in order to train formulators of business plans was born, so that can valid proposals can be generated for those associations that want to accede to the program. Currently, these certificates are realized by the University of ESAN and with them we see that it has generated a strong demand to accede to AGROIDEAS.

**The proposed goal for 2013 is to duplicate all of the results obtained last year, that is, to meet the technological necessities of the management of 10,000 producers while investing another 50 million nuevos soles (US\$ 19,379,850).**



# One way to overcome energy poverty

By Carlos Cabezudo Moreno, Cooking Energy Advisor, Energising Development / GIZ – Peru

In Latin America there are 28 million people that lack electricity in their homes and more than 3 billion people in the world depend on firewood or other solid combustibles in order to cook or to have heating. In addition, according to data of the World Bank, the families with the least resources can spend up to 80% of their income on firewood for cooking food and 20% on combustibles and batteries in order to generate electricity.

So, a relationship exists between the consumption of modern energies and the index of human development, having been demonstrated that developing countries are on par with energy improvements. In other words, in order to achieve significant reductions in poverty, it is necessary to massively increase the use and efficiency of modern energy (United Nations Development Programme, 2005).

One characteristic of families with low resources is that they live in a situation of economic insecurity with minimum incomes of less than 8 US dollars a day, that's to say, they are found in the base of the pyramid. Besides this economic characteristic

there are others, like the lack of access to the basic services of potable water and electricity, as well as education, quality medical attention, and a formal financial system. Likewise, these people have precarious and informal jobs; they are dedicated to agriculture or fishing for auto-consumption, and they pay higher prices for bad quality products and services. That is, these families "spend more" for services and products of very low quality.

Faced with this situation, the alternative arises of orienting this "potential demand" toward the development of a specific market of energy services for the most vulnerable populations. We refer to means to cook, illuminate, or heat, or to productive means that are principally efficient and clean, like for example, improved cook stoves, photovoltaic systems, and heat generation systems, among others (and not cellular phones, radios, or other technologies that are already incorporated into the market).

In this sense, an inclusive market of energy services that incorporate these families into the value chain

**Photovoltaic systems are an alternative for generating electricity markets in rural zones.**



can be promoted, not only as producers or distributors (a pre-existing inclusive business concept), but as final consumers, a model towards which the market could orient itself.

Within this frame, one of the elements that is an obstacle in the development of an inclusive market of energy services is called “information asymmetry”, that’s to say, that in order to develop said commercial space it is necessary to have both informed consumers, as well as effective low-cost technologies included within adequate commercial structures, for example, through payment programs that are in accordance with the income level of the families (see the article Generate Energy Services Sustainable Markets by Angel Verástegui in Amaray magazine N°1 of August of 2012).

However, it’s not enough to just offer the product, but rather it is necessary to promote its use and adoption through strategies of education and communication, that guarantee the appropriation and sustainability of the product on the part of the residents. Equally, it is indispensable to ensure that the space where these technologies are utilized is made dignified, for example, in the case of the improved cook stoves, the room where the food is prepared. Thus, these products appear as a “packet” that offers the holistic improvement of the housing structure, contributing knowledge in order to improve the quality of life of the population (consumers), an element that must be presented during the entire sale process of the energy services.

**A relationship exists between the consumption of modern energies and the index of human development, having been demonstrated that developing countries are on par with energy improvements.**

**Right: Improved cook stoves promote an integral improvement of the dwelling in Paucamayo, Cajamarca. Below: Secure electric connections.**

To that respect, in experiences developed by the Energy, Development, and Life project it was found that the families that had improved cook stoves were maintaining the environment in which they were preparing food in the same manner as they had maintained it when they had an open air cook stove, and that moreover they were not motivated to repair or replace their improved cook stove, when it was necessary.

In this sense, the people that live in conditions of exclusion and vulnerability represent a “demand” that requires specific products and services, which dignify them and elevate their quality of life in a tangible and integral manner.

On the other hand, in the case of the “supply” of products and basic energy services, there exist different types of local entrepreneurs – some have more capital than others – therefore the idea is to drive a value chain in which the small entrepreneurs supply the mid-sized ones, and they, at the same time, supply the big ones, additionally seeking to guarantee an adequate post-sale service. Equally, the big companies, like those that sell photovoltaic systems, must strengthen their chain of local providers and distributors, thus assuring an inclusive market.

In summary, the development of inclusive markets of energy services implies as much the participation of the low resource populations – as consumers – as it does the active participation of producers or distributors, thus creating an “inclusive” market that generates a positive impact on the quality of life of the people.

Carlos Bertello



Carlos Bertello

# Energy that opens the doors of progress

By **Liliana Sánchez**, Advisor of Collective Productive Use, Energising Development / GIZ – Peru  
Photography: Carlos Bertello

To strengthen competitiveness and to ensure that production processes are more efficient and modern, above all for the rural agricultural sector, signifies a challenge for Peruvian agriculture. With the efficient use of energy we can see, before us, the possibilities of a better future.



Members of the NGO El Taller (The Workshop) and local producers together with a solar oregano dryer in Candarave, Tacna.

We find ourselves before the challenge of “innovation for development”, that is, the modernization of production processes that, in many cases, have been maintained in artisanal forms and that currently represent a restraint for improvement of the productive agricultural chain, at all levels.

Change always starts with a vision, an idea that then is “carried to the field” in order to achieve the development of a technology that is adapted to the needs of the citizen. To this end a participative process is initiated with the farmers in order to adjust and standardize the technologies. This fact implies that we find ourselves before a dynamic structure, that is encountered in a permanent process of technological innovation, given that each case is special and presents particular requirements, those that can be influenced are the geography, the resources of the place, the degree of information, and other factors. In other words, it is sought to foster technologies and capacities according to the needs of the producers and the conditions of the zone.

In this sense, it is necessary to have technical advisement that ensures that the traditional processes and artisanal technologies are finally replaced by others, which are modern, sustainable, and protect the environment. The providers of the technologies must offer information services and capacity building, maintenance and changing of parts; in such a manner that they permit a true modernization of the sector, in order for every day to be more competitive.

On the other hand, the possibility is also generated of including added value to the agricultural product, upon inserting it into the value chain. Thanks to access to and adequate use of the technology, a farmer can transform his or her production in such a way that it can be offered not only as prime material, but also as an elaborated product, which can allow access to new markets and generate higher earnings.

#### Seek Associativity

The theme of associativity is vital in order to be able to achieve an impact at a large scale, in as much as it permits small and medium producers to access greater possibilities of organization, production, and commercialization. In that sense, the association of producers in cooperatives, associations, interest groups, or others, diminishes consulting costs by family unit and acquisition or marketing costs by production unit.

Furthermore, the increment of production volumes improves negotiation capacity, facilitates quality control, and diminishes transport costs by unit. Likewise, it facilitates access to cutting-edge technology, as well as to business and commercial advising. In other words, a greater number of possibilities are opened up to the agriculturists in order to reach in conjunction a production that generates great security and economic benefits.

#### Manage our Capabilities

Another fundamental factor in achieving true

development in the agricultural production chain is to have trained personnel in order to position the product and allow farmers access to financing or programs that are beneficial for their development. Many times, the deficiency of trained personnel restricts access to tools that can convert a parcel of land of low productive efficiency, into a profitable business with a profit forecast in the short, medium, and long term. Production and management are two distinct elements, but the first requires the second in order to be able to generate a real market entry opportunity.

We understand then that in Peru the agrarian problem goes through the low competitiveness in the agrarian sector. That is why in the Energising Development Project - EnDev we seek to produce a change in the traditional processes and – over all – in the mentality of the farmers that are still not truly committed to the process of agricultural modernization and to the transformation of their products. Once this happens a real development experience will be generated for the communities that still live on the margins of the progress that Peru is experiencing. They must not waste this time of economic growth and investment dynamism, in which the State also plays a fundamental role in permitting access to programs that allow taking a step forward in the way that Peru works with its agricultural resources. In this sense, the access to non-reimbursable funds apart from those of the AGROIDEAS program – that foster the three pillars of associativity, technological innovation, and business management for the agricultural ventures – represents an opportunity without precedent in the country.

Finally it should be recalled that to improve agricultural practices is a priority in fighting against poverty and satisfying the needs of future generations, given that agriculture contributes significantly to the economic and social composition of the majority of developing countries.

It’s important that producers take advantage of this time of economic growth and investment dynamism.

Inhabitant harvesting oregano in Candarave, Tacna.



Stories that stem from technology, associativity, and good commercial management

# High Altitude Dryers

Tacna is not just coast. Alongside its mountains, in Candarave, a group of farmers seeks to boost their economy with the use of a technology that will permit them to improve the quality of their production of oregano and thus to access the markets of greater profitability.

In Candarave they have dried oregano traditionally for many years. However, the residents have also tried to produce improvised driers (with sheets of mica), but without obtaining the searched for results. In this sense, the dryer is now being worked on by businesses specializing in the development of this type of product, with technicians that are able to make the necessary adjustments. This technology must be specific for each type of product, taking into account the degree of hydration, the level of solar radiation, the positioning, and the air flow, besides using and maintaining it properly. The improvement of the

The solar oregano dryers permit a uniform drying in all the seasons of the year.

product is taken from the proposals and needs of those same agriculturists.

Starting with a coffee dryer, we are seeking to develop a similar model for oregano. We are conducting this process jointly with the farmers of the Central Association of Candarave Province Oregano Producers (CEAPRO). In this context, the model is being adjusted to the needs of the zone and the product.

It must be taken into account, for example, that in order to obtain an optimum drying, in which the oregano doesn't lose its characteristic green color,

it's necessary that the environment is maintained at a certain temperature with a certain degree of ventilation, so that the oregano will not get dehydrated. In this manner, a product of quality, competitive in the market, is attained.

In the same manner, by not being in contact with the soil, the product stays free of impurities and its contamination is avoided. Additionally, advantage can be taken of practically all of the production: with traditional drying a decrease of around 15% was obtained, while with the current process it only reaches 5%.

Once the benefits of these dryers are proven their acquisition will be recommended, a proposal that could be presented to the AGROIDEAS program, of the Ministry of Agriculture, an entity that could help with the financing. In reality, the association must present a business plan, in which all of the technologies that help to better the productive process of oregano are included, that's to say, oregano dryers, cutters, and row-shaping machines would be considered, as well as the machinery necessary for the packaging process. In other words, it must contain everything necessary to elevate the production efficiency and the quality of the product.

Furthermore, it is also possible to define strategic collection points for the drying of the oregano, to where the producers can bring their product and – according to a schedule of turns – take advantage of the dryers in the most efficient manner, besides remaining in permanent contact with the provider of the equipment, in a manner that optimizes the good use and maintenance of the product.

All of this influences in bettering the quality of the product and opens up its commercial possibilities. The exporters consider the degree of impurities present in the product, as well as the color, the aroma, and the size of the cut, that's to say, the elements that permit access to a market that generates greater earnings for the local producer.



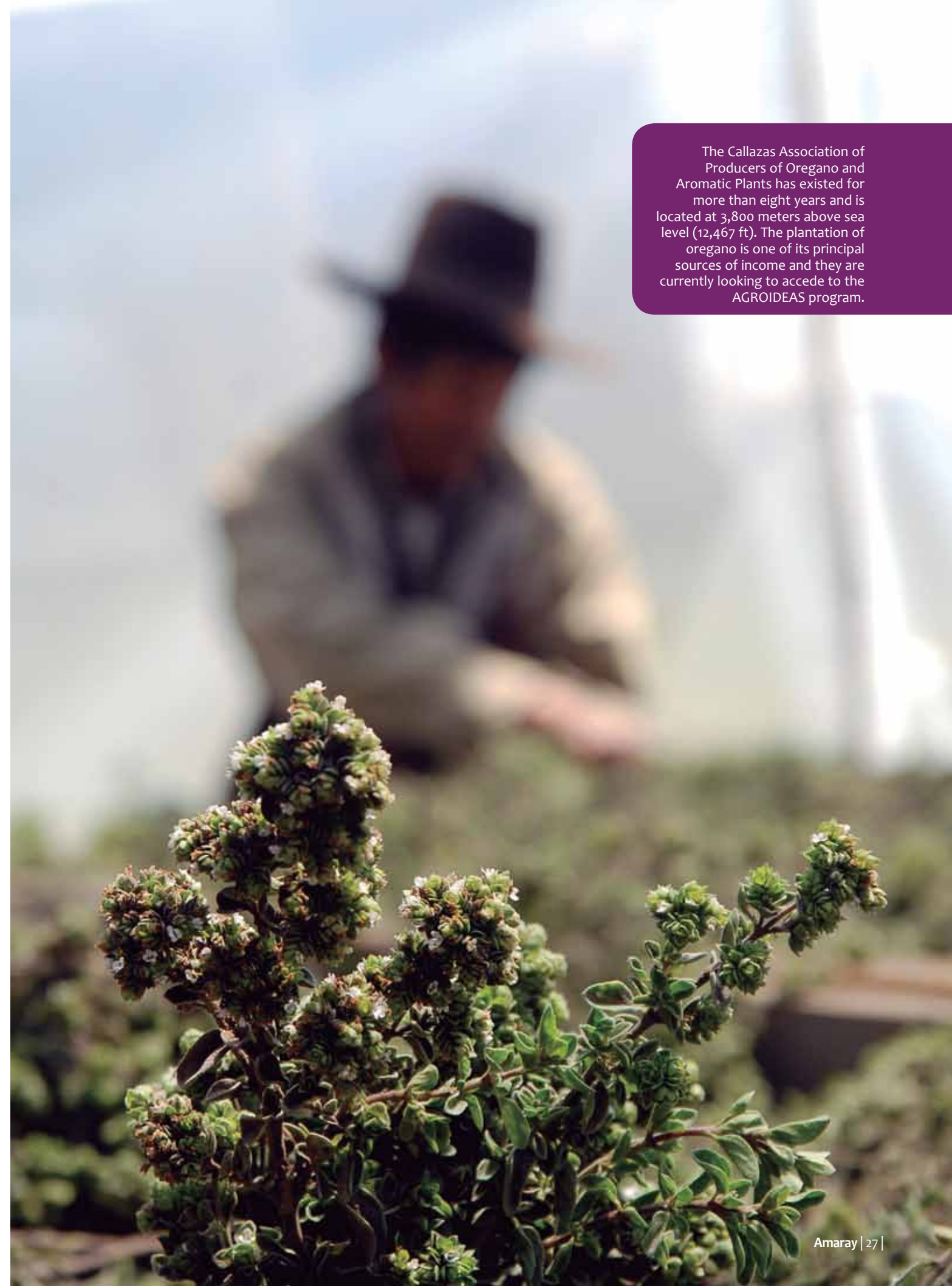
### Juan Tenorio Perez, local farmer

“We have been trying out the dryer for the past two months, making some modifications to it in order to adapt it to the product. We have been producers of oregano for the past 15 years and it is our principal source of income. Each small farm is worked individually, but we have formed an association in order to improve sales. For the moment, the greatest benefit that it gives us is the dryer; it's that the oregano is protected from the rain, since if we normally dry the oregano in the sun in 4 days, when the rain comes it takes us up to more than two weeks. Also, with the downpour the oregano turns black and we must sell it at a very low price.

We are still looking to find the optimum drying point, so that we can get the result and the quality that we need. In the future we will be able to regularly utilize the dryer for all of the harvests, so that we can guarantee a uniform product of higher quality. Each producer has a hectare or less and each one has to dedicate themselves to it in order to get a good product, for example by utilizing fertilizer. In this sense, through the association we can get better prices in the purchase of inputs”.

The Callazas Association of Producers of Oregano and Aromatic Plants has existed for more than eight years and is located at 3,800 meters above sea level (12,467 ft). The plantation of oregano is one of its principal sources of income and they are currently looking to accede to the AGROIDEAS program.

The traditional drying of oregano restricts the entrance of the product into quality-certified commercial chains



# In the coast chili peppers are sown

The Association of Agricultural Producers of Chili Peppers of Inclán is looking to enter into the program AGROIDEAS in order to finance technologies that would permit it to elevate its productivity. This process is participatory and seeks to generate a change in the manner in which the challenges of agricultural production are affronted. Looking to the future on the large scale is what we need.

The principal advantage of using a dryer is that the product is not contaminated. Normally, the drying process is carried out on the soil and the product is exposed to the impurities of the earth and to the birds and other animals that loiter around the product. Additionally, with the dryer, time is saved and a uniform product quality can be obtained.

The dryer permits the product to enter into a quality certification process or to ingress as prime material into other productive chains in which it is necessary to guarantee the purity and adequate management of the product. In other words, the product would have an added value that would permit it to position itself in the high quality markets, which in turn would generate a greater economic benefit for the farmers of Inclán.

We are working to provide technologies that can be adapted to the productive chain that the agriculturists manage, reason for which the dryer is being developed from a participative process with them.

Therefore, it is necessary that both parties collaborate, as much the provider of the technology, who must be completely available in order to give technical assistance and be disposed to modify the product, as the farmers, who must furnish the necessary information in order to develop a product that adequately covers their needs, while also using the dryer in the proper way.

Moreover, from this experience, it will be possible to validate a technology that can be included in the business plan that the association is developing for the AGROIDEAS program.

The technologies for the drying of chili peppers are developed in conjunction with local producers.

In Inclán, we the chili growers have the necessity of having a great quantity of dryers, because we can fill up to 10 hectares (24.7 acres) with chili peppers, which normally we put to dry in the sun. Thus, we would be able to, for example, avoid the propagation of certain plagues that appear precisely because of the intense heat, like the whitefly”.

Farmer of the Association of Agricultural Producers of Chili Peppers of Inclán





# A pisco of 12 bloods

Originally there were 12, but now there are 17 vineyards that contribute the best of their production in order to give life to a product that hopes to represent on a large scale the Moquegua tradition: the “12 Blood Pisco”. With a brand in hand and with access to modern technologies, this group of producers is taking important steps for their business to take off with a product of excellent quality.

**Alberto Jiménez, partner of APPIM:**

“We are an association of pisco producers. Each one has an artisanal winery, some of which are more than 120 years old, but also there are new wineries, which are recently starting up.

Currently we are 17 partners, but initially we were 12 producers, those that, in 2003 formed a group in order to create the Moquegua Pisco Producers Association (APPIM). Likewise, we have tried to ensure that the production of pisco does not vary and that we remain united as the only association of Moquegua pisco producers.

Originally, each producer was dedicated to producing pisco individually, from distinct varieties of grape like Quebranta, Negra criolla (Black Creole), or Italia (Italian), in the same way as wine or brandy. This method was maintained until the year 2009, in which, due to the market conditions, we found it convenient to unite our production into

just one product, given that individually we weren’t managing to supply the existing demand or to generate a product of competitive quality.

We agreed to create a collective brand that represents each one of the families of the group, the reason for which our product carries the name of ‘12 Blood Pisco’. Additionally, we seek to fulfill the productive vocation of Moquegua, which traditionally has been known as pisco producing region”.

**Victor Paredes, President of APPIM:**

“From the year 1981, with the regional irrigation project Pasto Grande (Big Grass), viticulture was reborn in Moquegua. Small producers are reappearing all along the valley, apart from those who managed to remain in existence, like the vineyards Biondi, Villegas, and Valdivia.

We had been growing individually until the year

**The wineries look to modernize their productive processes, but without losing their air of tradition.**



Two partners of APPIM accompany us on a visit to the “El Mocho” vineyard.

2003, in which life was given to the APPIM. We had the task of organizing the 4th National Pisco Conference in 2005; it was our first big event, for which we had the support of various private businesses, as well as the Municipality and the Regional Government of Moquegua.

Thereafter, we understood that it was necessary to consolidate ourselves more and more as an association and to conjointly promote our production. Hence, we want all the producers to have the denomination of origin certification, to be in the sanitation registry, and to progress in the theme of associativity, as a strategy to better position our product. So, wanting to know the degree of acceptance of the product, we presented it in the Congress of the Republic as well as in the Mistura fair, in Lima, in the year 2010. We stuck with the idea of presenting a pisco coming from 12 piscos.

We had good acceptance, but we are still working to position the product in the market, looking to strengthen our commercial management. This is the only way we can offer our pisco in the competitive market, since individually we are very small producers. Additionally, we are growing; now we are 17 partners, but we want to maintain the original name of 12 Blood Pisco.

If we want to boost the production of pisco in Moquegua, it is necessary to think holistically. If we seek to augment production, it is also necessary to find new markets that will receive the product and not limit ourselves to the local market. The association plays a decisive role in connecting producers with potential markets, and we do it by introducing our brand, the 12 Blood Pisco”.

**Carlos Farje, partner of APPIM:**

“Currently, we have a production of eight metric tons (16,224 pounds) of grape per hectare, which in reality is a very low figure. We seek to improve productivity with technological innovations; however, many producers still don’t have the capital necessary to invest in these technologies, reason for which many still maintain artisanal production practices. In this sense, we are working to develop more efficient production processes. On average we use around 8 to 8.5 kilograms (17.6 to 18.7 pounds) of grapes to produce a liter of pisco, which represents a loss, since the process could be much more efficient.

In summary, if we consider our production in the field, as well as our productivity in the winery, one hectare of grape in Moquegua represents 1,000 liters of pisco. In contrast, one hectare of grapes en Ica represents 3,000 liters of pisco. All this due to the management of technology”.

The 17 vineyards that comprise the APPIM can be visited in the promotional tour denominated “La ruta del Pisco” (The Pisco Route).



# Cookies of Light and Kiwicha

Luz Marina Cusi Caceres is one of the beneficiaries of Practical Action, a project that has promoted the better use of electricity in her town. Due to that experience she magnified her production of kiwicha and now she sells to all of Peru in the most important gastronomic event of the year.

By **Gabriel Reaño**, Publisher Editor, Practical Action

It is a Thursday morning in September and the Mistura fair, the mega gastronomic event that fills Peruvians with pride, has been reaping its visitors little by little. In a few hours the place will be packed with hungry guests and everything will be decorated with long lines in the diverse food posts. Luz Marina Cusi Caceres (Luz means light in English) is not given respite.. She just returned to her stand, located in the organic products sector, in a circular space in which foods produced in diverse regions of Peru are offered, like cheese, potatoes, quinoa, tamarind, cocona, etc. Luz Marina sells products elaborated from kiwicha; rapidly what she has in the stand is running out, for that she is coming back with more.

But what is special about Luz Marina? Or in any case, in what way is Practical Solutions responsible for her story? The case is that a few years ago Luz Marina participated in the project Development of the Productive Uses of the Electric Energy in the Cusco Region (Desarrollo de los usos productivos de la energía eléctrica en la región Cusco), and part of the help that she received served her in order to guide her

product and professionalize her work with kiwicha.

While it is true that the participation of Luz Marina in Mistura is not a direct product of Practical Solutions, the better quality and presentation of her products indeed has a relation to the experience that she had in the project. She – together with a group of four women of the community of San Salvador, primarily housewives – worked her kiwicha products by hand, but that changed with the arrival of Practical Solutions: they discovered the benefits of electricity.

“Before, we didn’t know about the machinery,” Luz Marina tells us. “With the help of the engineers of Practical Solutions we started to use the machines that we already had but without knowing how to utilize them. Also, they taught us the technique of the grounding well, because in our zone it rains a lot and with the grounding well we are safe from electrocuting ourselves,” she adds.

Luz Marina and the group of women that accompany her in this adventure have always worked with

“Before, we didn’t know about the machinery.”

The adequate use of production machinery is one of the motors of progress.



kiwicha, but they commercialized it by selling it in bulk. Micaela Virginia, an Italian woman that lived near their community, got to know them, and in one opportunity took courses in order to train herself in the preparation of cookies. She shared with them the idea of giving added value to their product.

Luz Marina achieved the promotion of her cookies in the Mistura fair in Lima.

“She taught us that we could sell the kiwicha in cookies,” relates Luz Marina. “We were selling the kilo at one sol fifty, and she told us that it seemed very cheap to her, and she incentivized us to make the cookies in order to be able to sell them at a higher price.”

Once they learned to prepare them, they started to give cookies away to people, and the approval was automatic. “The people were eating and then buying. We have been bettering our product, and although we still have room to improve, we are better than ever,” says Luz Marina.

“Before being partners we were each selling separately. We were selling in the fairs to which they were inviting us. In 2009 we got together and we presented to Agroemprende (Agricultural Enterprise), there we decided to work together and we formed the association of women. To be in a group is a support. We have a lot of trust in each other, we know each other, and we keep the group united,” she points out.

The breaking point of the business occurred when Luz Marina encountered a man named Hugo, who was

working in the Office of Commerce and Tourism (Dircetur). “He became interested in our products. He put them in the sanitation registry and he told us that we were already ready for commercialization in the most important markets. In one week he told us that we were ready to exhibit the product in all of the stores, including in Ayacucho and in San Geronimo. We sell a thousand packets every 15 days,” she relates.

Without a doubt the promotion of the productive use of electricity in the town, under the charge of Practical Solutions, was a very positive incentive. In the words of Luz Marina, “Without electricity what would we do? We have to use the beater, seal our products. It helps us save time,” she affirms.

In any manner, still there is a long way to go. “We lack the support of the municipality to promote us more,” comments Luz Marina. “At least they could give us publicity and tell the people that we sell a good product; we need more promotion,” she signals.

Besides the cookies, Luz Marina and her association of women sell alfajores (sandwich-style cookies) and honey, all with a base of kiwicha. In Mistura their products are a success. “We have sold 6 thousand products in 3 days, a quantity that in Cusco we would have sold in two or three months,” she tells us, without losing her humbleness. And she culminates by saying that she is very thankful to Practical Solutions, because “in addition to having made the machines that we had for nothing work, electricity has permitted us to have a better quality of life”.

## Practical Action

Practical Action is an organism of technical international cooperation that contributes to the sustainable development of low resource populations through the investigation, application, and dissemination of appropriate technologies. It has offices in Africa, Asia, Europe, and Latin America. The regional office for Latin America has its headquarters in Lima and coordinates the work in the region of the offices of Peru and Bolivia. It works through its programs of Production and Market Access System; Energy, Infrastructure, and Basic Services; Risk Management and Climate Change Adaptation; and the areas of Quality Control, Administration, Finance, Communications, and the Consulting Unit Political Action Committee (PAC).



# Living Walls

Art that grows from the hands of progress.

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

What do we understand about art and development? Are they two independent concepts or are they connected in some manner? Because if one thing is certain, it is that no civilization exists that has not driven the artistic expression in its moments of cultural expansion. In other words: every society that enters in the path of progress, inevitably lights up also the paths of creativity and artistic expression.

We say that Peru is getting better, but we are encouraged to reaffirm it when we also see that people and minds are changing, when we see that creative space is given and cultural initiatives are inspired. In this context, graffiti is more than capturing images on a wall, it is the live expression of a culture that is being reborn, discovering more and more of its past, and putting its expectations into the work of the present.

The influences of the contemporary world – along with the internal cultural migrations – are shaping the Peruvian cultural environment; waking a new globalized dynamic of the Peruvian identity and also permitting Peru to show itself to the world, not only through its pre-Hispanic past, but also with the creation of new cultural initiatives.

And that is how an art of a global character appears in Peru, graffiti, which is reinvented within the currents and mixtures present in the country, in order to consolidate itself into a new Peruvian graffiti, which has a space in this new social construction called Peru.

Thus, this time we want to show development – the work of all Peruvians – through an artistic expression that we believe is increasingly present in the national imagination. An art that evidences a process of change, in which new artists find a tool of expression, in addition to a way of subsistence.

“This movement has a strong social content of migration and transformation of generations, since those that develop this art are not of the first generation that arrived in Lima, but that represent a cultural mix, something similar to what has

happened with Peruvian food, which is now something being talked about in all the world,” Faber tells us.

“It is a graphic aesthetic that initially sought to publicize the Andean and Amazonian music events in the city, but that in reality speaks of a fusion of cultures and races, a principal characteristic of our country. The emerging Peruvian culture, the inhabitants and their customs, just like the disorder and the ephemeral quality of daily life, they generate a need in me, of returning all that energy converted into forms and colors on the walls. That source of inspiration is changeable, dynamic, and infinite, in as much as the nature of society itself implies evolution,” he shares with us.

As artists we all seek to fulfill a role. It is as such that in the EnDev project we seek to carry that energy that generates development to all the nooks and crannies of Peru. So – why not say it? – we want art to be created in every corner of the country, if we don’t “create” art, we remain without the true air of the progress that we pursue.

**Fabrizio Medrano “FABER”.** Lima, Peru, 1980. Studied Art with a major in Graphic Design in the Pontifical Catholic University of Peru (la Pontificia Universidad Católica del Perú) and has almost ten years’ experience in graffiti art. He paints independently and he has exhibited collectively in galleries and urban art events since 2008, in Argentina and Peru. He has been a muralist and exhibitor in the group show of urban art “Living Walls, the City Speaks” in Atlanta, United States, in 2010, and recently formed part of a collective exhibition “Comparaisons 2012” (Comparisons 2012), organized by the Museum “Grand Palais” (Grand Palace) in Paris, France. Additionally, he has done an individual exposition in the art gallery and cultural bar “Art und Weise” (the way something is done), in Berlin, Germany. His work has been published in the graffiti and urban art book “Nuevo Mundo (New World): Latinamerican Street Art”, officially presented in Barcelona and London in 2011; and in the book “Graffiti 365”, presented in New York and Miami that same year.

Boy playing with top. Intervention in Ate, on the Central Highway, Lima.



Mother Nature.



Intervention in La Molina, Lima.



Magic.



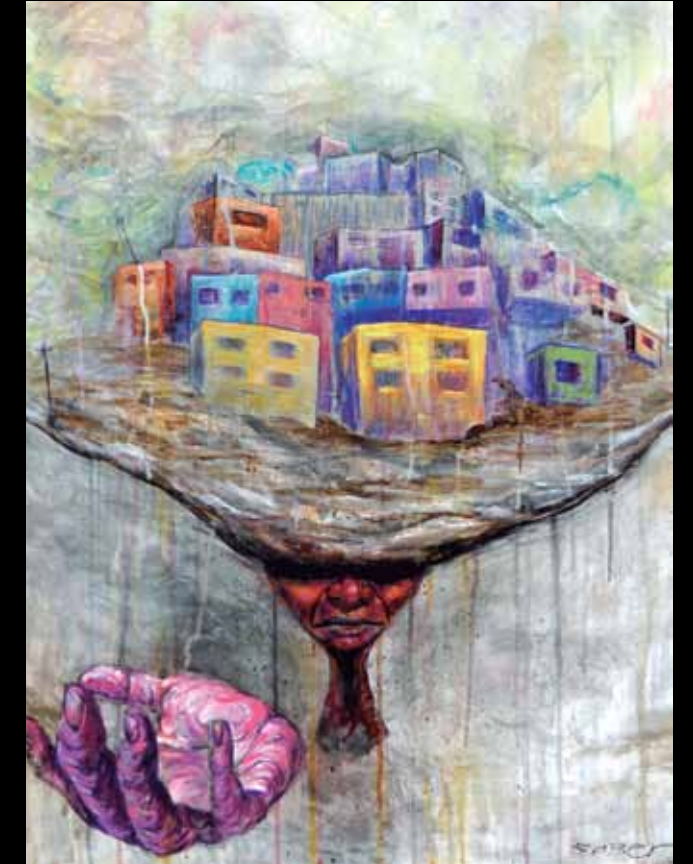
Mother and child.



Sad look.



Looking for a home.



Lima, my city.



# Small farmers, big business

With the goal of a higher number of associations of producers benefitting from the incentives of the star program of the Ministry of Agriculture, the university of ESAN has created a certificate that allows the development of sustainable business plans for those associations that desire to accede to the program AGROIDEAS.

By **Elliot Arteaga**, Coordinator of the Master's Program in Agrobusiness at ESAN

It's important to understand the origin of the program. AGROIDEAS was created as a consequence of the necessity of compensating the costs of the Free Trade Agreement with the United States as it was estimated that this treaty would have negative effects for the farmers that would have planted "sensitive crops" to the FTA. Products such as corn, cotton, and sugar, which are subsidized in the United States, would ingress into Peru with much lower prices, originating loss for the farmers that cultivate them.

It was for that reason that in 2009, with Legislative Decree 1077, the Compensation Program for Competitiveness – AGROIDEAS was formed. The principal characteristic of this program is that it brings producers non-refundable credits through the presentation of a business plan that demonstrates its viability. This program fosters associativity (the process of individual producers forming associations) and can disburse up to 1,095,000 nuevos soles (~\$424,420) for each business plan.

However, since its creation, AGROIDEAS encountered a critical reality upon seeing that associations lack experience in formulating business plans, which are indispensable in order to ingress into the program. Equally, there is also a deficit of formulators throughout Peru.

In contrast to this reality, the university of ESAN has vast experience in the training of business plans and it's under these circumstances that synergies were

created in order to integrate the experience of ESAN and the resources of AGROIDEAS, focused on fulfilling a common objective: improving the business capacity of the producing organizations, that are in the base of the pyramid, and therefore contributing to improving the quality of life of their families.

To this alliance were united other government and private institutions with the same objective. The first ones to bet on this experience were the Regional Government of Moquegua; its province Mariscal Nieto; and the Energising Development Project of GIZ. Since then, the regional governments of Tacna and Arequipa have also been added.

It is worth emphasizing that the outcome of the first certificate program in Moquegua is more than positive: 13 business plans approved, 39 formulators trained in the region, and the possibility of the participating associations receiving up to 13 million nuevos soles (US\$ 5,038,760) altogether, which, let's not forget, are non-refundable.

Finally, the characteristic sui generis (uniqueness) of this certificate is that upon elaborating the business plan and finalizing the program, the participants will have to defend said plan before a jury that will be composed of the Board of Directors of AGROIDEAS, that's to say, the people truly responsible for approving the business plans. In this sense, if the business plan is approved in that moment, the release of funds for the organization will also be approved, while at the same time the student that represents the organization will be academically approved by ESAN.

The certificates seek to improve the business management capacity of producing organizations.



## Interview with Elliot Arteaga, Coordinator of Master's Programs in Agribusiness at ESAN

# Promoting Management of Rural Agriculture

The university ESAN has educational initiatives that seek to promote the agricultural sector by strengthening the management of agribusinesses, a proposal that comes alive with the programs of AGROESAN.

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

### How did ESAN become interested in the agricultural sector?

ESAN (Graduate School of Business Administration) is celebrating 50 years as an institution, and during this time it has served an objective public, mainly managers and businesses, working with its back turned a little bit to the rural reality. It's for that reason that four years ago a master's in agribusiness was created, which encompasses a diversity of agricultural realities: small and large businesses, associations, and small farmers.

The master's program is concentrated in modules, each one specialized in a different theme. The program starts with a general module of training in management, and then opens up to the interests of the student. For example, we have modules specialized in rural development, agro-exportations, or focused on quality and certification of processes.

### During the past four years, have the results that were hoped for been obtained?

The master's has had great acceptance, but it continues being focused toward a certain public and it's not accessible to everyone. For that reason, it was decided to broaden the concept under the framework of AGROESAN, which offers various products. One of these is the certificate, which addresses a concrete problem, but also we have more reduced programs, like the Program of Agricultural Specialization (PEA), equivalent to a single course. Specifically, we want ESAN to support agriculture, at all levels, through its experience in management.

### It's in this context that the Certificate in AGROIDEAS appears?

That's right. The program is approximately five months long and is carried out during the weekends, to date, in Moquegua, Tacna, and Arequipa. The

"We want ESAN to support agriculture."



objective is to form formulators of business plans, with the goal of presenting them and having them enter into the program of AGROIDEAS, given that the reality is that most agriculturists don't know how to comply with this requirement.

The initiative was born between ESAN and AGROIDEAS, counting previously on the support of the EnDev project – GIZ, which seeks to finance these certificates so that a greater number of associations can access them. Likewise, regional governments, municipalities, and private businesses have also been contributing to this initiative.

### How then is this certificate organized with the agricultural associations?

The first thing that is selected are the associations. Between 50 and 60 associations are presented, of those we select 20; the criteria is that they are eligible for AGROIDEAS. Then, these associations must present themselves to two formulators who will in turn work to earn the certificate or, in any case, the association will contract independent formulators.

Thus, upon finalizing the training, the formulators must present the business plan under the format of AGROIDEAS, by whom they will be evaluated according to the plan presented. If the plan isn't accepted, the student isn't approved either. On the

other hand, if AGROIDEAS approves the plan, the student is also approved and their association will automatically receive the incentives.

### And how is the management panorama at the national level?

We see that the panorama is varied. For example, in Piura there is the association CEPIBO (The Central Piura Associations of Small Producers of Organic Bananas) that has 1,300 farmers and 1,300 hectares (3,212 acres). They export 20 shipping containers a week, a direct benefit of the organizational theme and of the associativity for which they have opted.

This is the model that we try to show to the agriculturists of other regions of Peru, with the hope that the idea is contagious at the national level: that small farmers form associations in order to do big business.

### You hope then to generate a great impact in the agricultural sector...

We are breaking paradigms. For example, by showing families that they can export although they have only a hectare (2.47 acres) – like in the case of CEPIBO. Likewise, some think that they can't invest for lack of money, but now we have AGROIDEAS, that can finance up to 80% of the capital necessary in non-reimbursable form, that's to say, free. Of course, it is vital to develop a good business plan and ensure good management.

This year the University ESAN celebrates 50 years of academic experience.





## Energy for the high plains

To achieve sustainable access to the modern energy that improves productive processes in rural Bolivian areas is one of the most important mechanisms driving the integral development of the South American country. In this manner, the EnDev Bolivia project looks to generate a positive impact on the thousands of families that work every day in diverse productive activities.

By **Boris Ardaya**, Senior Technical Advisor of Production – EnDev Bolivia and **Natalie Pereyra**, Senior Technical Advisor of Transformation – EnDev Bolivia

In 2006, GIZ / Project EnDev Bolivia started its activities with the goal of offering access to modern energy to rural enterprises dedicated to productive activities. The program was focused, from the start, on a strategy of co-financing and technical assessment based on the minimization of direct subsidies and an elevated local participation. All of this has developed in the framework of new and/or existing initiatives that attend to the needs of productive rural development.

In this sense, Energy for Productive Uses intervenes with specific projects that achieve visible and measurable attainment of results and impacts through two work units: Energy for Primary Production and Energy for Transformation.

In the case of Energy for Primary Production, the objective is to provide access to modern energy in

order to facilitate the provision of water and stable energy directed toward distinct productive initiatives, thus bettering agricultural production in view of local and national markets.

Meanwhile in Energy for Transformation, the added value of production is incentivized, by means of access to modern energy with the employment of appropriate technologies in productive processes, achieving their commercialization.

### Intervention Strategy

The strategy in both units consists of achieving sustainable access to modern energy through technical advisement in order to determine that the use of a specific technology is made adequate to the needs of the producers. Support is also provided through trainings on good use and maintenance of

To date, more than 14,000 producing families have been benefitted with access to water and stable energy.





Medicinal herb dryers in Llalagua, to the north of Potosí. The families take turns with their use.

the equipment, organizational strengthening in order to assure the adequate administration of the technologies, and an economic incentive (co-financing of the technology) of 23 to 26 US dollars for each family to producers grouped in associations or organizations.

The technologies that are co-financed are: electric and gas pump equipment, voltage transformers, solar or hybrid dryers, toasting or bakery ovens, cereal mills, forage choppers, rice peelers, quinoa ventilators, and industrial stoves.

For the selection of the technologies, technical, social, economic, and environmental criteria are utilized. For example, in places where an electric network doesn't exist or where mobile irrigation equipment is required, it is most appropriate to work with portable motor pumps that function with gasoline. Where a network exists, support is provided with electric pumps or voltage transformers in order to guarantee energy stability. In the dimensioning of technologies for transformation, data of production volumes, characteristics of the product to be processed, and climatic conditions are considered, among others. In all cases, local conditions and the needs of the producers are evaluated.

In parallel, the project accompanies the execution process of complementary works for the proper functioning of the technologies and work in the

strengthening of “water-irrigation committees” with the goal of achieving the development of necessary capacities in order to assure sustainable access to energy like, for example, the payment of the use of electricity.

Additionally, with the purpose of assuring more integral support, the project formalized multiple strategic alliances with the public sector (departmental and municipal governments), NGOs, foundations, micro-credit entities, etc. that permitted it to work directly with the final beneficiaries, in order to articulate the project to their activities and bring their results to full potential.

**Impacts**

This strategy is presented as an answer to the needs of the producers that work in unfavorable situations due to the lack of access and quality of energy services. Furthermore, it helps those rural families that find themselves trapped in a regimen of “subsistence agriculture” due to technological limitations for the development of productive activities.

The work developed demonstrated that access to energy through the introduction of adequate energy technologies contributes positively to the sustainable economic development of the zone and augments family incomes. In alliance with the actors that work in the actual activity of agricultural development, getting

Right: Windmills in the site of Laja.

closer to the producers at local and national markets has been accomplished, in the same way it has been achieved approaching the providers of agricultural inputs and of other necessary technologies in the productive process; thus potentiating still more the effects of the access to energy.

The interventions have benefitted producers in the sectors of: dairy, peanut, anise, cereals, medicinal herbs, fruit trees, coffee, cocoa, garden vegetables, tubers, forages, flowers, etc. at the same time bringing them nearer to local and national markets, providers of agricultural inputs and of other technologies.

To date more than 14,000 producing families have benefitted with access to water and stable energy; they registered a decrease of up to 89% in labor costs related to crop irrigation; the authorization of new extensions was also evidenced, up to 200%. On the other side, they lessened the losses from prolonged droughts and dependence on the rains, thus advancing the sowing and the harvest of crops. This access made it possible for them to obtain high prices and secure production.

For example, in the organic production of onions, the activities of the strategic alliances (introduction of varieties, organic fertilization, determination of the optimum point of harvest, etc.) have guaranteed yields and brought them closer to their potential, thanks to the use of the submersible electric pumps that help EnDev in deep wells. This situation increased

A tri-phase voltage transformer benefits 15 communities producing chili peppers and peanuts in the processing center in Padilla, Chuquisaca.



even more the price of the onion in the national market and its consumption in the local diet.

Of a similar form, producers of milk, that were delivering their daily production at a low price under big businesses, now use a voltage transformer, thanks to the support of EnDev, and they acquired milk cooling tanks that reduce losses by improving the





management of the product, and therefore they obtain greater daily yields. Moreover, they achieved an increase of up to 10% in the price by liter of better quality milk.

Additionally, through the access to technology for transformation, more than 7,800 families were benefited in associations in various rural zones of Bolivia. Said associations of producers, and other local actors like NGOs and municipalities, inserted technological and energy aspects into their budget planning processes in order to boost productive chains.

An important impact is the augment of production volumes and sales for the associations, given that the added value of various transformed products makes competition in local and national markets possible. The producers of anise, for example, after being benefitted with threshing machines lowered their costs of production by 48% and started to acquire more machinery with micro-credit and even managed to export their product to other South American countries and to Germany. The producers of chili peppers and peanuts also presented increases of 47% and 200%, respectively, in their incomes.

Another impact is the insertion in the market and the augment in the demand of new, high-quality technologies, developed and improved on by national fabricators, like peanut toasters, quinoa ventilators, and wheat peelers.



Furthermore, the contribution to food security in remote communities through the implementation of simple technologies causes a great impact in the consumption of new products, enriching the local diet of the rural populations. This aspect was also observed in the feeding of livestock, where upon receiving a mill the producers introduced new local ingredients of high nutritional value that provoked an increase of 38% in milk production.

Entire communities are benefitted from the use of gasoline-powered motor pumps.

THERMAS SOLARES

D'SOL



TECNOLOGÍA SOLAR DE ÚLTIMA GENERACIÓN



THERMAS DE TUBOS DE VIDRIO AL VACIO DE FABRICACION INDUSTRIAL CON CERTIFICACIÓN ISO 9001 - 2000, ISO 14001 DISEÑADAS PARA TRABAJAR EN CLIMAS FRIOS Y LLUVIOSOS LLEGAMOS A TODO EL PERÚ

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