

Drying Peaches with Solar Dryers

BOLIVIA

Project name	Energising Development (EnDev) Bolivia
Project region	Bolivia: La Paz, Norte Potosí, Beni, Cochabamba
Lead executing agency	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
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Productive use of thermal energy

Alongside electricity and mechanical energy, thermal energy plays a key role in processing goods and offering services, particularly in remote areas where biomass and solar radiation are often the only source of energy available. Thermal energy – used for cooking, heating, drying and smoking – is an essential input for production processes in agricultural businesses, small industries and commercial services.

Drying local food in Bolivia

One third of the population in rural Bolivia relies on agriculture for their main livelihood. The mountainous topography of the country combined with poor road infrastructure in rural areas, however, restrains small-scale farmers' access to national and international markets. Large shares of the agricultural produce of small farmers are therefore wasted, notably during peak times of harvest.





Food preservation with thermal energy technologies such as solar dryers, can help improve the income and food security of small farmers in remote areas. Instead of merely drying the products without protection from other environmental influences or weather risks, using a solar dryer allows for a faster and more hygienic drying process. The result is a product with a higher economic value in the market. Dried fruits are also a successful export product for Bolivia: 67,5 tonnes of dried fruits (banana, peaches, mango, pineapple, green tea and anise) were exported in 2011.

Enhancing the energy efficiency of food processing technologies

Since Energising Development (EnDev) was launched in Bolivia, 7,616 families have been supported with access to energy and technologies to improve their productive activities. EnDev promotes food processing technologies such as solar dryers among small and medium enterprises (SME) and farmers. The demand is increasing. Throughout the different regions of the Altiplano (Andean dry highlands), at least 40 solar dryers have been constructed and installed for the production of Andean products such as sweet potato, oca, maca, medicinal plants and meat; in the more humid val-

leys, peanuts, peaches and chillies are grown; and in the tropical region, cocoa, coffee, stevia and jatata leaves are produced. All project activities are carried out in close cooperation with local actors from the public and private sector, and rural associations. EnDev offers technical assistance and capacity building measures on the usage of solar dryers through on-the-job trainings and seminars. In addition, it provides monetary incentives for micro and small producers of agricultural products: Organised groups of farmers can receive financial support of up to USD 25 per family or 60 per cent of the total material costs from the project. EnDev also facilitates links between producers and microfinance institutions. After the completion of monetary transactions and technical training, EnDev maintains close contact with the programme beneficiaries for monitoring and evaluation of the interventions.



Promoted solar dryers

The basic function of a solar dryer is to heat air to a constant temperature with solar energy and extract the humidity from agricultural products. Even under adverse weather conditions the operation of the promoted solar dryer is reliable. This method improves the efficiency of the drying process and the quality of products, thereby increasing the selling power of local farmers.

EnDev supports two kinds of solar dryers: one is completely constructed and delivered by the manufacturer. The cost depends on the size of the solar dryer and the materials used, but is at least USD 150. The other solar dryer model has a simpler design and can be constructed by the farmer using local materials such as wood and bamboo. Farmers thereby develop a good technical understanding and working knowledge of the solar dryer, which keeps maintenance costs low.

EnDev supports either the entire construction of a solar dryer, or the mere acquisition of an UV-resistant plastic foil or a self-made construction. The UV-resistant plastic foil covers the solar dryer and costs approximately USD 260 per roll (4m x 50m). One roll is sufficient to cover two self-built solar dryers for coffee. The foil needs to be replaced or adjusted after 2 years. The project facilitates contacts between retailers of this special material and farmers.

Some of the solar dryers are mobile, or can be disassembled completely to store the parts until the next year. This feature is useful to extend the lifetime of the solar dryers when they are not in use after the harvest season.

Drying peaches: associations increase income substantially through solar dryers

In the North of Bolivia, in the Indigenous Municipal District of Uma Uma, a label for primary and transformed food has been created: 'Uma Uma Products'. Four associations produce and sell their products under this label. Established in 2006, the associations now have 195 families as members. Thanks to the use of solar dryers, they have secured a firm position in the local and regional market, because of the quality and constant availability of their products. They are now in a position to acquire more solar dryers, and also buy more machinery to increase production.

One association is called 'Asociación de fruticultores del Rio Chayanta' (AFRUCH). They dry fruits to make them more durable. Peaches, for example, are dried for conservation and preparation of the traditional soft drink "moco-chinchi", which consists of dried peaches boiled with cinnamon and clove.



In 2011, the association produced half a tonne of dried peaches. Previously they sold dried peaches for approximately BOB 8/kg. After the acquisition of the solar dryer, they have taken a more entrepreneurial approach: after packing the peaches in boxes of 250 or 500 g, they command a sales price of BOB 24/kg. Despite the additional cost of the boxes, 80 per cent of the sales price goes to the producers. All associations were able to increase their income; AFRUCH, for example, increased its income by over 60 per cent over the last three years.

Solar dryers have proven to be a perfectly appropriate technology for Bolivian small-scale farmers, which along with other promotional activities of the association, boost the productivity of the dried fruit sector.

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