

The Pro-Tortilla programme: modernisation of household tortilla businesses in Nicaragua with the 'Ecostove'

Summary

The Pro-Tortilla programme aims to support small, household, tortilla businesses in rural and semi-rural areas of Nicaragua by supplying them with an improved wood-burning stove called the Ecostove. Tortillas are flat pancakes, made from maize flour and water, and baked on a metal griddle known as a 'plancha'. They are a staple food for all Nicaraguan families.

The Ecostove is the product of several years of development by Prolena and its partners. Traditionally tortillas have been baked on a 'plancha' over fires. These use a lot of wood and fill kitchens with smoke. The key advantages of the Ecostove is its enclosed firebox with insulated walls that increase its efficiency, a chimney that takes smoke out of the home, and the fact that it is portable. Earlier stove models had to be constructed within the user's home, using earth and bricks, but the Ecostove can be manufactured at a central location and then delivered to users in different parts of the country.

The project runs a public promotion programme to attract interest from potential Ecostove buyers, and sells and installs them at a subsidised price of US\$40 each. Communities nominate one or two people to be trained as local stove technicians, who repair and maintain the stoves once they're installed.

The organisation

Prolena has been working to improve the design of wood burning stoves since it began in Honduras in 1993. It started working in Nicaragua in 1996.

In addition to the Pro-Tortilla programme, Prolena is running a project in Nicaragua to commercialise production of smaller woodstoves for poor households (funded by the ESMAP section of the World Bank) and a Forest Replacement Association Programme (funded by Trees, Water and People). The FRA programme is encouraging commercial wood users, like brick makers and lime producers, to join an FRA and contribute money that will be used to establish tree nurseries. Seedlings from the nurseries are distributed to farmers, who plant them, and then harvest the wood within 4-5 years to sell back to the commercial users.

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Context

In September 2001, Prolena conducted a survey in the three major cities of Nicaragua - Managua, Leon and Granada. This survey revealed that over 86% of families in this region buy corn tortillas,

rather than make them themselves, and that over 30 million tortillas are sold every month in these three cities. To sustain this demand there are an estimated 4,000 small household businesses making and selling tortillas, usually to neighbouring households. These businesses are often owned by single mothers, or by a family where the father is unemployed. The formal unemployment rate in Nicaragua is 50%, so tortilla businesses are providing a much-needed source of income for these families.

According to the Nicaraguan Energy Commission, 95% of these tortilla businesses are using traditional open fired stoves, or three-stone fires, with a flat metal plancha on top. None of these has a chimney, so for several hours a day, the tortilla makers are exposed to heat, smoke and flames.

The new Ecostove is much needed, both to protect the health of the women tortilla makers, and to reduce deforestation caused by excessive demand for wood fuel. It uses 50% less wood than the stoves, and produces 35% less carbon emissions. The combination of the enclosed nature of the stove and the chimney dramatically reduce smoke and hence indoor air pollution. Overall, the stove allows more tortillas to be made at less cost.

Technology and use

The Ecostove was devised by Rogerio de Miranda of Prolena in conjunction with the American NGO, 'Trees, Water and People' (TWP) and the Aprovecho Research Centre in Oregon. In effect, it's a portable version of a larger form called the Justa Stove. Both use a 'rocket elbow combustion chamber'. This is a relatively small burning chamber that forms an 'elbow' between a horizontal wood and air inlet and a vertical opening that leads hot flue gases to the base of the metal griddle. The hot gases are forced along the underside of the griddle and then drawn out of the house by a chimney.

Whereas the Justa Stove is built with bricks and earth, the Ecostove has a metal frame and is filled with insulating pumice stone. The small size of the burning chamber, combined with insulation around the elbow, makes the fire burn at a higher temperature. This means that it can achieve nearly complete combustion and so needs much less wood. The efficiency of the Ecostove is further improved by the addition of a shelf inside the combustion chamber that allows better air circulation around the burning wood in the elbow, and encourages the use of smaller sticks that burn more efficiently.

Management, finance and partnerships

Prolena will choose areas to target for the Pro-Tortilla programme by consulting with NGOs and municipal organisations and will then begin the process of promoting the stoves. A field promoter will distribute leaflets, and demonstrate the stove in villages and at public fairs.

Once a community has shown interest, the field promoter will ask the women involved to suggest a person to be trained as a stove technician. These will be taken to Managua and trained in groups at the stove factory, where they will learn how to repair and maintain the Ecostove.

Those who buy the stove will have to sign an agreement with the programme, to make sure that they actually use the stove, and won't sell it on in order to capitalise on the subsidised cost. The community will define penalties for households that fail to abide by the agreement.

Although the cost of the stove is subsidised, users will still have to pay the full cost of its transportation from Managua. In every case, the programme will try to reduce the cost of this by grouping deliveries, but the price may still be out of the reach of the poorest households. Prolena is trying to establish alliances with micro-finance organisations to support those who can't pay.

Prolena is also selling Ecostoves to Maseca, one of the largest corn flour milling companies in Nicaragua. Many people still prefer to eat tortillas made with hand ground flour, so Maseca is giving the stoves to small tortilla businesses as an incentive to persuade them buy their flour.

This report is based on information provided to the Ashden Awards judges by Prolena Nicaragua, and findings from a visit by one of the judges to see their work.

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