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Guatemalan Indigenous Pedal Their Way To Mechanization

by LADB Staff

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With some help from afar, rural indigenous Guatemalans have discovered that the bicycle can get them from here to there in more ways than one. Bicitecnologia, as it is called in San Andres Iztapa, Chimaltenango, can pump their water, wash their clothes, sharpen their tools, and do a lot more.

The Asociacion Maya Pedal collects old bicycles and has built an impressive number of machines that are useful, sometimes essential, to rural life in this and other communities. Maya Pedal gets help from bicycle-related organizations in the US and Canada and engineering expertise from the Massachusetts Institute of Technology (MIT). Maya Pedal started in 2001 creating prototypes from used bikes and now makes an impressive line of pedal-powered machines. Maya Pedal president Rubelcy Molina said the low-cost machines that use no electricity are now in use not only in San Andres, but also in Salama, Rabinal, San Pedro Jocopilas, Ixcán, and Patzicía.

A biciblender costs around US\$40, a corn mill about US\$185, a specialized machine that vibrates air bubbles out of concrete used in making roof tiles goes for US\$250. All can be bought on installments. The association is currently working on a washing machine. Maya Pedal is the Guatemalan organization that took over from the Canadian organization Pedalpower, which began the appropriate-technology project from 1998 to 2001 with Canadian International Development Agency (CIDA) funding. The indigenous organization now functions under a Mayan board of directors and volunteers from Guatemalan nongovernmental organizations (NGOs).

Used bikes from the north

In the beginning, Pedalpower trucked used bicycles in from Canada, but this proved unsatisfactory because corrupt Mexican officials and Guatemalan customs agents helped themselves to equipment or demanded money. Now, Bikes Not Bombs, a volunteer group in Boston, sends old bikes by the hundreds and bike parts in shipping containers. Maya Pedal rebuilds many of the bikes for sale, in addition to making the pedal-driven appliances. The bike sales subsidize the other machines for distribution to community groups, mostly indigenous women's organizations. The various devices are integrated into agricultural and other operations that increase production for consumption and sale.

The devices, tools really, become the moving parts of larger projects that Maya Pedal coordinates with local NGOs. For example, a women's group might start a chicken-raising cooperative to sell chickens at a local market. The co-op will get a bicimolino (grain mill) to grind corn and other ingredients to make feed mixes for the chickens. The mill will lower their costs compared to buying commercial feeds. They control the ingredients and thereby become more self-sufficient. The local NGO will provide the necessary technical training for operating a chicken farm.

Pedalpower estimated the devices improve productivity about five times over the commercial alternative. Maya Pedal and the associated local NGOs provide technical assistance, which includes recipes for feed mixes and recommendations on how to increase egg production by changing the mixes. Expanded production, new partnerships

In the summer of 2004, Maya Pedal expanded its own productivity through a relationship with Accion Contra el Hambre, a Guatemalan NGO that will buy devices at an unsubsidized price in quantity for its projects. The group moved into larger facilities and began to offer devices to individual buyers. Pedalpower continues to subsidize group projects where the people cannot afford the needed bicitools. Pedalpower's CIDA funding is running out, however, and it now accepts donations. Maya Pedal now produces and sells the following items:

Blender a kitchen blender adapted to a stationary bike. It does everything an electric blender does, spins at up to 6400 rpm.

Water pump can pump 5-10 liters per minute from depths of up to 30 meters. A comparable electric pump will only pump to 12 m. It is used both for irrigation and drinking water. Technically called the bicibomba de lazo, it pulls a rope studded with washers through a pipe, forcing the water ahead of the washers and creating a steady stream.

Concrete vibrator vibrates the bubbles out of concrete molded into roofing tiles. Vibration is a necessary step in making these widely used tiles to make them waterproof, uniform, and strong.

Trikes and Trailers front- and rear-loading tricycles for hauling cargo or people. They are used as taxis, for selling ice cream or newspapers, for hauling water and firewood.

Coffee depulper removes the outer meat and separates the bean for drying. The latest model of this device can process a quintal in 15 minutes.

Metal sharpener a grinding tool to sharpen all kinds of agricultural tools

Washing machine this is still in the prototype stage.

Electricity generator also in development, this generator will charge 12-volt batteries or can be used directly to power lights or electric appliances.

Plow/tiller pushed like a wheelbarrow, blades behind the wheel till or plow the soil.

Nut sheller removes macadamia-nut shells at the rate of 1 quintal per 15 minutes. An improved model will allow for adaptation to other nut sizes.

Wood saw a pedal-powered table saw for artisans and builders. Pedalpower supplied the original designs for the machines. Bikes Not Bombs donated over 500 used bikes to Maya Pedal last October. Designs include gear-shifting capability where necessary to take full advantage of the fact that leg power can produce up to five times the output as can the upper body. In some communities, women have been reluctant to use bicycle seats for cultural reasons. Models have been adapted to women's preferences, using chairs.

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