A Sustainable Environment: Our Obligation to Protect God's Gift
by
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Gaviotas: A Village to Reinvent the World

You may recall an article I wrote about the base of the economic pyramid. It described the differences between the four billion people earning less than $1,500 per year at the base of the pyramid, the 1.5 billion people earning between $1,500 and $15,000 per year in the middle of the pyramid, and the 900 million at the top of pyramid earning more than $15,000 per year. The people defined living at the base of pyramid certainly don't have the conveniences that we have in terms of housing, energy and food. However, with some perseverance and ingenuity, it is possible improve the lifestyle significantly.

In 1971, a group of Colombian visionaries and technicians decided to prove they could thrive in one of the most brutal environments imaginable: their country's barren, rain-leached eastern savannas. This statement describes what a group of pioneers have been doing for the past three decades in Gaviotas, Colombia, a small village founded by Paolo Lugari. Their experiences have been put to print in a book titled "Gaviotas: A Village to Reinvent the World" by Alan Weisman.

One of the most critical operations for a village in a barren area is agriculture, particularly with limited water. In order to control the volume of water to the plants, they made use of the clay content in the soil that expands when wet. Try to picture a one-foot length of water tube packed in an inch-thick coating of clay inside of a protective porous shell. If the soil is moist, the clay will expand and pinch the tubing shut, cutting the flow of water from the source. As the soil dries, the clay inside the cylinder would dehydrate and contract, allowing water to flow through the tube to the plant's roots. This simple device negated the need of a computerized, electronic valve.

In order to pump water, the team fabricated a device that consisted of a piston inside of a cylinder, something like a manual air pump, which would suck water from some depth and then force it through a tube when the piston goes in the opposite direction. But then, they had to determine how to activate the pump. They attached it to a children's seesaw and let the up-and-down action of the seesaw by the children to activate the piston and thus pump the water.

Another device developed by the Gaviotas citizens was a foot-long stick with a glass ball attached to either end, thus resembling a dumbbell. The stick was suspended by a pin at the midpoint between two parallel uprights, and if pushed, the dumbbell would spin between them, one rising as the other fell. The glass balls were partially filled with an equal amount of water. By placing a lit candle below the lower ball, the water started to evaporate thus making this ball lighter than its mate, and thus causing the

lighter ball to move to the top. As the heated liquid inside one ball vaporized, it grew lighter compared to the other, which eventually fell and came to rest under the candle. As this process repeated itself, it was the beginning of a solar power generator.

The village also took advantage of the waste from the cattle. They built a watering tank for the cattle that was surrounded by a sloping cement floor. As cattle were brought to drink, their cow pies slid down the floor to a gutter. The cow pies were subsequently converted to compost and the released methane was captured to fuel stove burners at their hospital.

It was very important to clean the hospital linens and because of a small inventory, drying the linens rapidly was critical. Consequently, they built a convex parabola out of clear plastic to concentrate the sun's rays inside a small building. The trapped rays converted the building to a greenhouse with a temperature of 130º F. creating a solar dryer.

Although the development of this village may seem to be primitive, it has become an inspiration to many other people living at the base of the pyramid. Perhaps we can even learn something from Gaviotas to help protect our environment.