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Alternative Systems of Drinking Water Supply Using Rainwater Harvesting for Small Rural Communities with Zero Greenhouse Emissions

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Abstract : In Mexico, there are many small rural communities with serious water supply deficiencies. In Chiapas, Mexico, there are 19,972 poor rural communities, 15,712 of which have fewer than 100 inhabitants. The lack of a constant water supply is most severe in the highlands of Chiapas where the population is made up mainly of indigenous groups. The communities are on mountainous terrain with a widely dispersed population. These characteristics combine to make the provision of public utilities, such as water, electricity and sewerage, difficult with conventional means. The introduction of alternative, low-cost technologies represents means of supplying water such as through fog and rain catchment with zero greenhouse emissions. In this paper is presented the rainwater harvesting system (RWS) constructed in Yalentay, Chiapas Mexico. The RWS is able to store 1.2 M liters of water to provide drinking water to small rural indigenous communities of 500 people in the drought stage. Inside the system of rainwater harvesting there isn't photosynthesis in order to conserve water for long periods. The natural filters of the system of rainwater harvesting guarantee the drinking water for using to the community. The combination of potability and low cost makes rain collection a viable alternative for rural areas, weather permitting. The Mexican Institute of Water Technology and Chiapas University constructed a rainwater harvesting system in Yalentay Chiapas, it consists of four parts: 1. Roof of aluminum, for collecting rainwater, 2. Underground-cistern, divided in two tanks, 3. Filters, to improve the water quality and 4. The system of rainwater harvesting dignified the lives of people in Yalentay, saves energy, prevents the emission of greenhouse gases into the atmosphere, conserves natural resources such as water and air.

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