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## Fog Farming: Linking Sustainable Land Management with Ecological Renaturation in Arid Areas by Means of Reforestation

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### Abstract

There is plenty of water in one of the driest regions on earth. At vast stretches of South America's Pacific coast below the equator, dense fog is a common phenomenon and has been used for water production since the 1980s. This paper presents the results and the outlook of a pilot project on periurban agri- and silviculture in Peru using fog as a water source. The project is set in the coastal hills (span. “Lomas”) that used to be a self-maintaining ecosystem when the hills were still forested. The trees collected the fog water and irrigated themselves; weeds and bushes also profited from this effect, the surplus water fed wells. Once the trees were cut the natural water cycle was interrupted and today the Lomas resemble a desert. A source for irrigation of tree saplings is the bottleneck for a renaturation of the Lomas. However, structurally improved 4 × 8 m fog collectors produce up to 2.500 liters per day in the area. During the first year of the project this water was used for the irrigation of a pioneer grove on the hilltop as future natural fog collectors and as the initiation of the recovery of natural Loma water cycles. During the second year the water was used for family horticulture and a plantation of 700 Tara (*Caesalpinia espinosa*). After one year, the hilltop trees had reached a mean height of 148,7 cm and thus had grown independent of irrigation by covering their water demand by their own fog collection. By April 2009, the Tara plantation had reached a mean height of 98,7 cm and is expected to give a first harvest by 2010. A key to the successful implementation was the high commitment of the community that volunteered over months on Sundays in the construction of reservoirs and the maintenance of the installations and plantations. People valued fog collection and reforestation uphill as a water supply for cash crops, other villages took the initiative to copy the project. An increase of natural vegetation at the project site entails the assumption that locally the natural water cycles can be restored.

**Keywords:** Climate change mitigation, fog farming, poverty alleviation, renaturation, water cycles