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Fog harvesting on the verge of economic competitiveness

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Water scarcity is the bottleneck for agriculture and development of Peru's coast and subject to aggravation due to climate change. Until present day, Peru's coast in general and the Lima Metropolitan Area (LMA) in particular have enjoyed to a great extend the effect of the country's high altitude glaciers that serve as a buffer for the capital's water demand during the highland dry season. However, climate models predict the disappearance of this buffer system below 5.500 masl by 2015, leaving one of the driest places on earth with yet another decrease in freshwater supply (Zapata 2008). The deviation of water resources from the highlands has led already to allocation conflicts. Peru is in urgent need of new concepts for water management.

Fog harvesting was introduced to South America in the 1980s and has since been implemented at various locations in North and Central America, Europe, Africa, Asia and Australia. The Standard Fog Collector (SFC) as described by Schemenauer and Cereceda (1994) has proven to be a successful instrument for this purpose. Apart from a number of small scale investigations, the design of the collector has barely been changed over the past three decades (e.g. Gioda et al. 1993). Within the framework of the presented project, financed primarily by the Global Exploration Fund of the National Geographic Society and Bayer AG, new fog collectors were designed at pilot and full scale.

Best results in terms of simplicity of construction and water yield were obtained by a metal frame structure called Eiffel. While covering the same amount of space as an SFC and using the same Raschel 65% shadow net, the Eiffel collector harvested up to 2.650 liters of water within a frame of 8x4m compared to up to 600 liters of water harvested by a SFC at the same location. In combination with a simplified maintenance concept, our collectors present an economically competitive alternative to water supply by truck delivery in a region that is not likely to be connected to a centralized water supply system within the next two decades. At the given water price and a given location, we calculate a break-even point after 8-9 years following the investment.