



Win drinking-water using radiation exchange

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The delivery of freshwater is one of the greatest problems of a growing population of man on the earth. Actually the situation is very critically in North Africa; there is less than 1,000 m³ per year per person water available. After an assessment of the UN this region with a "catastrophically low" water availability will grow. In 2025 the region from the Middle East to India will fall in the same situation of lack of fresh water. The situation in China, Eastern Africa and Middle Europe will become also critical. [1] For this reason the UN have declared 2003 to the "Year of Freshwater" and the goal of reducing by half, between 2000 and 2015, the proportion of people who are unable to reach or to afford safe drinking water. [2] [3]

The extraction of freshwater normally leads to a consumption of resources. Extensive ground water extraction ruins the deposits and leads to agricultural and geological problems. Sea water treatment is normally not sustainable because it needs a lot of energy and therefore consumes fossil energy sources.

We propose a new system to win drinking-water from the moisture of the air using cooling power harvested by radiation exchange. Such a system needs a cloudless atmosphere because it is necessary to use the "atmospheric window" between 8 and 13 956;µm. But a cloudless atmosphere and the lack of rain is the typical situation of the region of low water availability. Several such systems are claimed. But they are not efficient. We propose a system with an internal regulation of air flow and recycling of cooling power. Our basic ideas, results of modelling the system and economic calculations are shown. First results of the developed absorbers and recent problems are discussed. The project is funded by the German Ministry for Education and Research (BMBF). (FKZ: 02WD0458)

[1] UN: Global water availability

[2] UN: Resolution 56/192 of the General Assembly (7 February 2002)

[3] UN: Resolution 57/132 of the General Assembly (2 July 2002)