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innovations that are healing
our planet

WATER



ISSUE 1

Catching Fog

PHOTOGRAPHY

Aqualonis

On the arid, rocky slopes of Mount Boutmezguida in Morocco, a series of canvas panels clash with the undergrowth landscape. Secured by cables and framed with steel poles, these panels provide a vital element for the region's residents: water.





Many of us already feel the humidity on our skin on foggy days. What some may not know is that fog is considered a low cloud and is strongly influenced by the presence of watercourses and wind.

However, although some coastal mountainous areas face a great shortage of water due to low rainfall and lack of groundwater resources, these regions have something that makes them special, the fog.

In what is just a phenomenon of air condensation, some saw an opportunity to collect drinking water. The inhabitants of the territory today known by the name of “Israel”, for example, used to build small circular honeycomb walls around their vines so that mist and dew could settle close to the plants.

Historically, in Chile’s Atacama Desert, fog was collected with piles of stones and arranged so that condensation dripped into the pile where the water was protected from the sun. The same technique was applied in Egypt, with the collected water stored underground, in aqueducts.

But if fog collectors are not new, why is this technology not being applied on a large scale?

Well, because first it is necessary to see if the conditions of the place are conducive to collecting fog. A preliminary study is carried out with the support of local populations to understand the frequency of fog and to collect meteorological data on wind speed and direction, relative humidity and temperature, precipitation, and accumulated water amounts.



Only then is it possible to decide whether the site is suitable for a fog collection system.

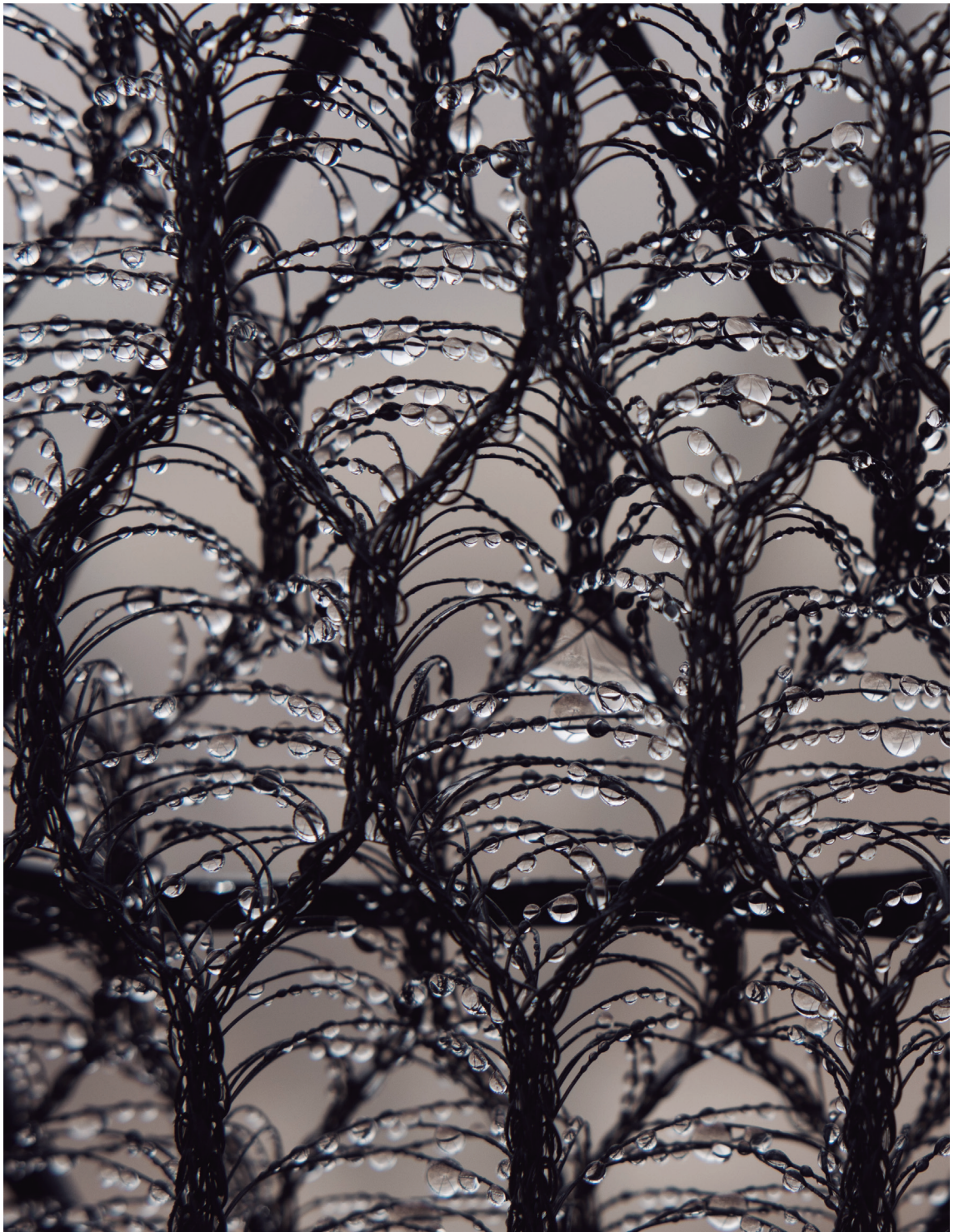
Let's go back to Morocco.

Mount Boutmezguida is one of the driest regions in the country. Located in the Atlas Mountains, not far from the coastal town of Sidi Ifni, it is shrouded in fog and clouds pouring in from the Atlantic. For many years, the villages in the region have lived with the threat posed by drought, but in 2013 hope emerged in the form of a billboard.

Peter Trautwein, a German industrial designer, saw fog collectors for the first time on a trip to Eritrea and was fascinated by the simplicity of the idea, but disillusioned with the poor cons-

truction and necessary maintenance. Determined to improve the concept, Trautwein created CloudFisher®, – developed by the designer for the German Water Foundation, where he is a volunteer, with the support of a team of researchers from the Technical University in Munich – which is a more efficient, resistant, and sustainable fog catcher with billboard shape and reinforced mesh, with an intricate 3D pattern of interwoven fibers.

Mount Boutmezguida was chosen for the pilot test and for two years Trautwein's team was on site optimizing the design and the prototypes. The way CloudFisher® works is simple: the wind blows the fog into the vertically suspended nets, the drops are captured in the 3D mesh and merge into larger drops which then fall into a gutter





placed below. From there, the water is piped to a kilometer-long underground piping system, through which the water flows into several cisterns, directly to local homes.

On average, 22 liters of water are collected per square meter. A CloudFisher® has 24 m² in mesh area, corresponding to a volume of 528 liters collected per day.

Mount Boutmezguida currently has the largest fog collector park in the world. With 31 CloudFisher® installed, on a foggy day the park can produce up to 37 thousand liters of water, something like 18 liters of drinking water for each of the approximately one thousand three hundred inhabitants in the region, and the rest for livestock and agricultural crops.

Thanks to the fog collectors, the Berber natives who live in the Boutmezguida valley have a water tap at home for the first time in their lives! The immediate provision of water has enabled residents to grow more fruits and vegetables, with health improvements associated with a more diverse diet and opportunities for trade and to generate income.

The project has an associated cost to ensure its maintenance. Billing is done through a prepaid card system, with symbolic prices and scaled according to consumption, ensuring a cost significantly cheaper than Moroccan tap water.

A new reality for women and school-aged girls in the region, whose main task until then was to spend hours fetching water in remote locations. With clean, piped water at home, they can now spend more time learning to read and write. •

The name CloudFisher® is a registered trademark of the Water Foundation.

To sell the collector, Peter Trautwein founded a company named Aqualonis. The company has ongoing projects in Morocco (new one in Taloust), Bolivia and Tanzania, currently on pause as the pandemic does not allow travelling. Trautwein hopes the work can continue in early 2022.





