This Plant-Based Water Filter Works Like A Tiny Amazon Rainforest

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We take water for granted far too often. Whole civilizations have fallen as a result of over-exploiting water sources, according to Royal College of Art (RCA) graduate student Pratik Ghosh, so it's imperative that we treat what we have with care. So Ghosh designed Drop by Drop, a plant-based water filtration system that explores more sustainable methods of obtaining water. The system is capable of cleansing home wastewater, and growing herbs at the same time.

Designer Pratik Ghosh said Drop by Drop "is indeed a mini version of the Amazon."

Drop by Drop filters water much like transpiration processes in the Amazon rainforest. According to Ghosh, his prototype is a mini biosphere that operates by keeping four factors crucial for transpiration – humidity, light, heat and wind – at optimal levels. "The moisture-laden air is strategically pulled out of the system and condensed to form pure distilled water," Ghosh said on his website.

A glass dome covers a plant in Drop by Drop, and greywater can be added to the system via pipes. Then, purification is up to the plant itself: a light in the system sets off photosynthesis, and the plant gives off water vapor that can ultimately be condensed to become distilled water. A pump controls airflow and helps speed up the process. Added salt can turn the distilled water into drinking water.

Drop by Drop fosters transpiration similar to processes in the famous rainforest.

The system doesn’t require much maintenance. If the owner’s away, Drop by Drop becomes a self-sustaining biosphere after pipes are stoppered thanks to microbes in the soil and insects providing carbon dioxide. The system puts oxygen into the surrounding air.

Right now, the prototype takes 12 hours to filter one glass of water. But Ghosh said the system could be scaled up to cover a typical home rooftop, and could then filter around 42 gallons in 12 hours.

Drop by Drop filters greywater from home kitchens or even bathrooms.

The distilled water can become drinking water by adding salt.

Ghosh told Dezeen, “The idea is to change the way we procure and consume water at a larger level. In order to do that, there needs to be a change in the value system and what better place to start than the home? One can pour dirty water collected from the kitchen or even the bathroom into the system and the plants help you filter it.”

The system requires little maintenance.