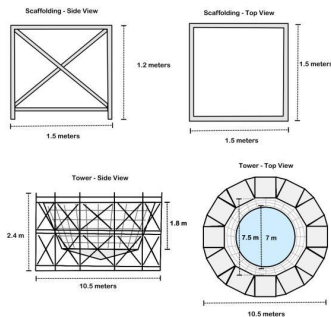
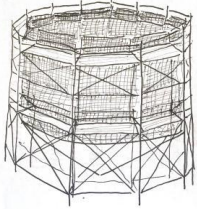


Drop of Hope

Magis

Concept Explanation

Drop of Hope is a structure that captures water from the humid air commonly found in deserts. In these areas, rainfall is infrequent, causing the soil and land to become prone to desertification. Additionally, other sources of water used for vegetation such as groundwater are lacking. Hence, we turn to one constant source of water in these desert areas: the air. Constructed using steel scaffolding and a special mesh, the structure can be easily assembled and disassembled. More importantly, it can effectively collect about 63.4 gallons of water per day even without power.



What is the technology behind this?

The technology behind the mesh takes inspiration from the *Stenocara* beetle¹ that is native to deserts in southern Africa. Through its hydrophilic bumps, the beetle can gather water droplets from the air and fog in the desert. Researchers from the University of Sydney have developed a microstructured polymer surface² that adopts the pattern of the surface structure present in the *Stenocara* beetle. Similar technologies have also been developed by researchers at the Massachusetts Institute of Technology (MIT), who created a mesh panel³ that attracts droplets of water. This mesh will be attached to the scaffolding towers to provide a steady source of water to these dry areas. Hence, the structure will be able to support vegetation yet prevent further desertification of the surrounding areas.

Aluminum scaffolding will be used to create the structure where the mesh filter will be attached. Since steel scaffolding is widely produced, there will be a regular supply of this material at lower prices relative to others. Aluminum scaffolding also allows the structure to be mobile, easily assembled, and disassembled, providing added convenience and flexibility in using the product. Most importantly, aluminum scaffolding is durable which allows the structure to be stable and resistant to fire.

Mission and Goals

Drop of Hope aims to provide a sustainable and environmentally-conscious method of sourcing water. With the product, our main goals are:

1. To prevent land degradation in dry and arid areas by collecting water from sources other than groundwater.
2. To promote land development by preventing desertification in these areas.
3. To provide an efficient and cheap method of water collection compared to the water cycle.
4. To provide an accessible and eco-friendly method of water collection as compared to electric alternatives.

Competitive Advantages

Leading systems in creating water from the air such as Akvo Water System's AWG⁴, Rainmaker's Air-to-Water product line⁵, and Watergen's GENius⁶ technology all rely on electricity to operate. However, the use of electricity may restrict these technologies to more developed areas despite these systems being able to produce proportionally more water. In rural areas where these lands prone to desertification are present, access to electricity still is a pressing issue. Around 17% of the world's population has no access to electricity, and about 80% of these are based in rural areas⁷. Drop of Hope's water collection structure mitigates these issues and provides an efficient and accessible method of capturing water from the atmosphere.

Marketing Strategy

Drop of Hope, a sustainable and eco-conscious method of capturing water from the atmosphere, is primarily catered to three groups: land developers, farmers, and governments. As this product is not targeted towards the general public, it is essential to gain substantial media coverage to get the attention of government agencies, land developers, and non-profit organizations that may assist farmers. To reach these demographics, we plan to undertake a planned marketing strategy. First, we will establish a following on several social media platforms such as Facebook, Instagram, Twitter, etc. Through these sites, we aim to raise awareness about our product and its benefits to these rural areas. Second, we will approach media networks by reaching out to global media companies and local newspapers. By doing so, we will be able to gain the necessary exposure both globally and locally. As such, we will be able to approach governments more easily due to our established credibility and be able to open up talks pertaining to a government contract. Consequently, our credibility will allow us to approach several local land developers and the leadership groups of farmer

Drop of Hope Magis

collectives in different localities such as the Asian Farmers' Association for Sustainable Rural Development in the Philippines, Bharatiya Kisan Union in India, Japan Agricultural Cooperatives, and the Lebanon Farmers' Union.

Financial Plan

Our revenue will primarily come from the selling of the structure per unit. The price breakdown of one structure is seen in *Figure 1*. From the cost price of \$802.00, we will be retailing the product at \$1,000.00 ($\approx 25\%$ markup) to ensure that we will be able to cover the overhead costs in all scenarios. It is unlikely that the selling price will negatively affect the demand of the product as its price is drastically less relative to commercial air-to-water devices. (See *figure 2*)

We plan to collect data in terms of the effectiveness of the mesh technology, as well as weather and climate data in different categories such as temperatures, precipitation rate, humidity, and the like. These can be sold to private firms to aid in their research and development. The benefits of this are two-pronged. First, we are able to gain an additional source of revenue that will aid in the production and distribution of our products. Second, we are able to provide researchers with data that may, in turn, improve the technology behind our product. In the long run, this may consequently enhance the efficiency of the water collection system.

We estimate that there will be 20 installations in the first year. Due to the nature of the data marketplace, it is unclear how much revenue will be generated from data sales. Hence, we have given a conservative estimate of 1 subscriber per unit location. We have established a price point of \$10/year due to the newness of the data source. We expect the sales to increase twofold in the next two years. However, maintenance costs increase as well due to the additional units installed. Marketing costs remain pegged at \$730 to reach an estimated 328,000-950,000 users each year, as per Facebook estimates⁸. We envision sales to grow exponentially past year three, as the product gains greater coverage and traction in public awareness.

Price Breakdown of 1 Tower			
Material	Quantity	Price per unit	Total Price
Aluminum Scaffolding	24	\$27.00	\$648.00
Mesh Filter	60	\$0.90	\$54.00
Data Logger	1	\$50.00	\$50.00
50 Gallon Water Tank	1	\$50.00	\$50.00
Cost Price			\$802.00
Selling Price			\$1,000.00

Figure 1: Budget Plan

Price of Competitors	
Competitor	Total Price
Rainmaker	\$125,350.00
AKVO Water	\$50,000.00
Drop of Hope	\$1,000.00

Figure 2: Competition Comparison

Drop of Hope - Financial Plan			
Time	2021	2022	2023
Revenue	\$20,100.00	\$40,400.00	\$81,200.00
Product Sales	\$20,000.00	\$40,000.00	\$80,000.00
Data Sales	\$100.00	\$400.00	\$1,200.00
Costs	\$17,850.00	\$37,130.00	\$72,450.00
Production Cost	\$16,040.00	\$32,080.00	\$64,160.00
Maintenance	\$1,080.00	\$4,320.00	\$7,560.00
Marketing	\$730.00	\$730.00	\$730.00
Profit	\$2,250.00	\$3,270.00	\$8,750.00

Figure 3: Financial Plan

Funding

To obtain maximum funding for Drop of Hope, we will undertake multiple fundraising campaigns together with our marketing strategies. First, after raising awareness about our product and mission on social media platforms, we will obtain donations from the public through crowdfunding websites like *GoFundMe* and *Kickstarter*. Second, after gaining enough traction, we will reach out to various global non-government organizations advocating to combat desertification, such as the United Nations Convention to Combat Desertification, the Development Bank of Southern Africa under the Global Environment Facility, Permanent Interstate Committee for drought control in the Sahel, Sahara and Sahel Observatory, and similar organizations in different countries.

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