



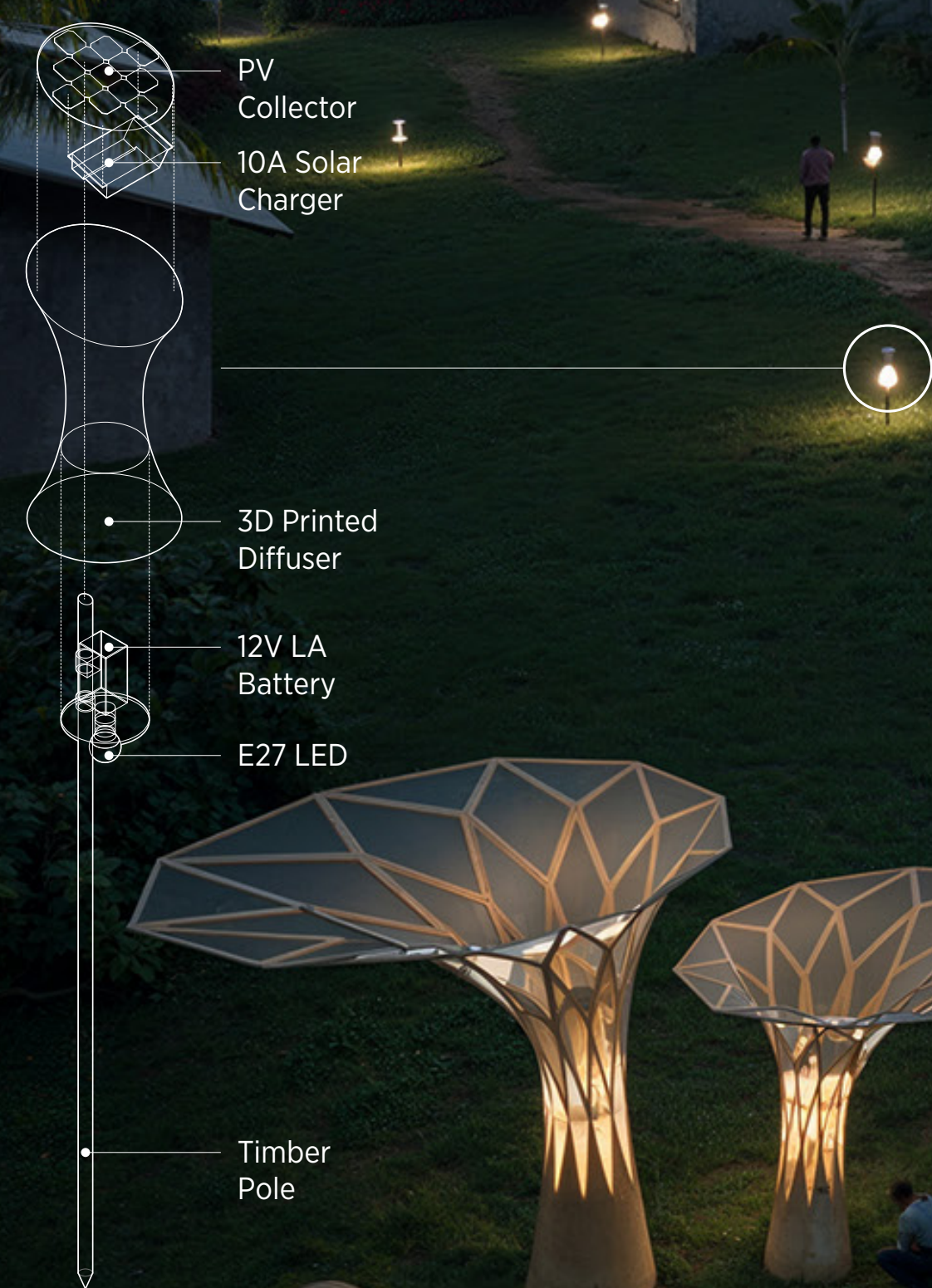
CATCHMENT ENERGY STORAGE SCHEME

Complementing the solar canopy, a water pump storage system provides a reliable way to store large amounts of energy within the landscape itself. Adjacent to and uphill of the Solar Canopy, a series of water catchments take advantage of the village's existing hydrology to collect water running down from the mountain, forming an energy storage system. These work with the natural terrain so that extensive regrading will not be needed. In addition, the surface area of the canopy will funnel water into a catchment. Energy can be drawn from the significant water elevation changes between catchments. The energy input is electrical to power pumping the water, is then stored as potential energy, and outputs as electrical energy via turbines. These water catchments can be phased in gradually over time.

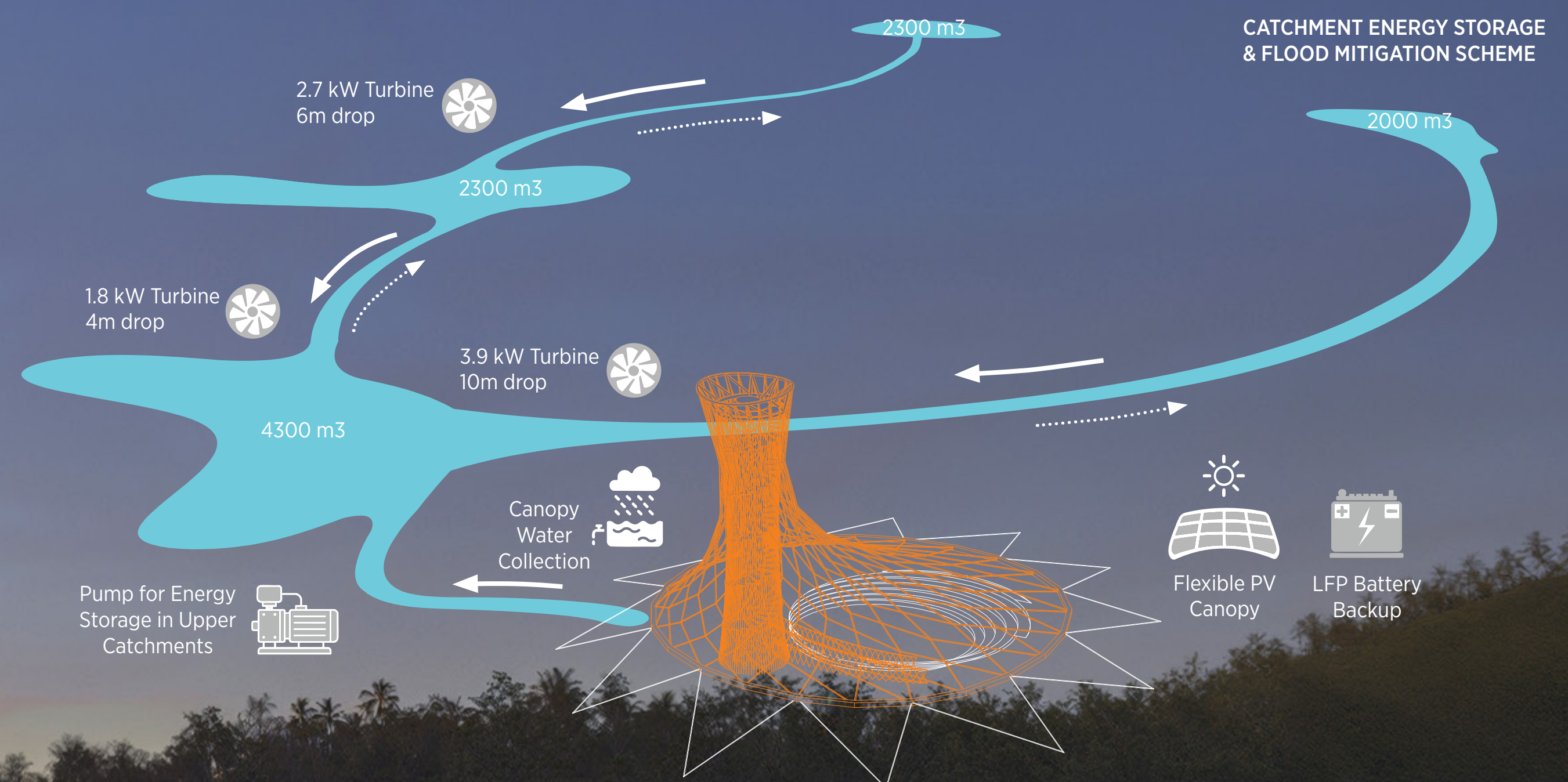
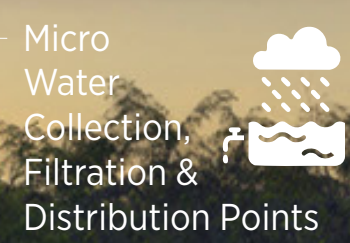
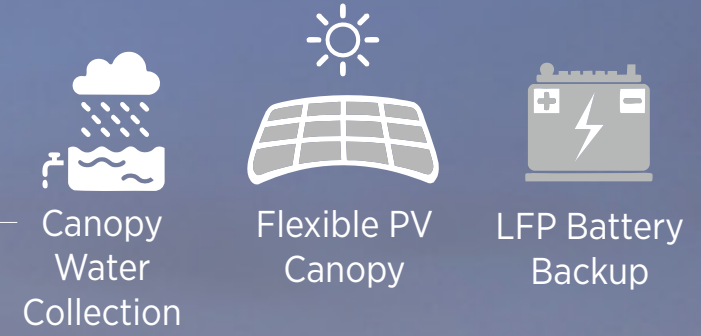
FRESHWATER SUPPLY SYSTEM

Collecting rainwater from the mountain runoff can achieve the freshwater volume required to supply the village through the dry season. Based on the current population, it is estimated that a minimum of 1,500 m³ of catchment volume is needed as seasonal storage capacity to endure the dry season. The tower can be used as the filtration medium for rainwater by pumping water to the top and allowing it to channel through sand and charcoal filters into a cistern below. The system shall have the capacity to process approximately 10 m³ per day which is equivalent to the average daily demand from the village.

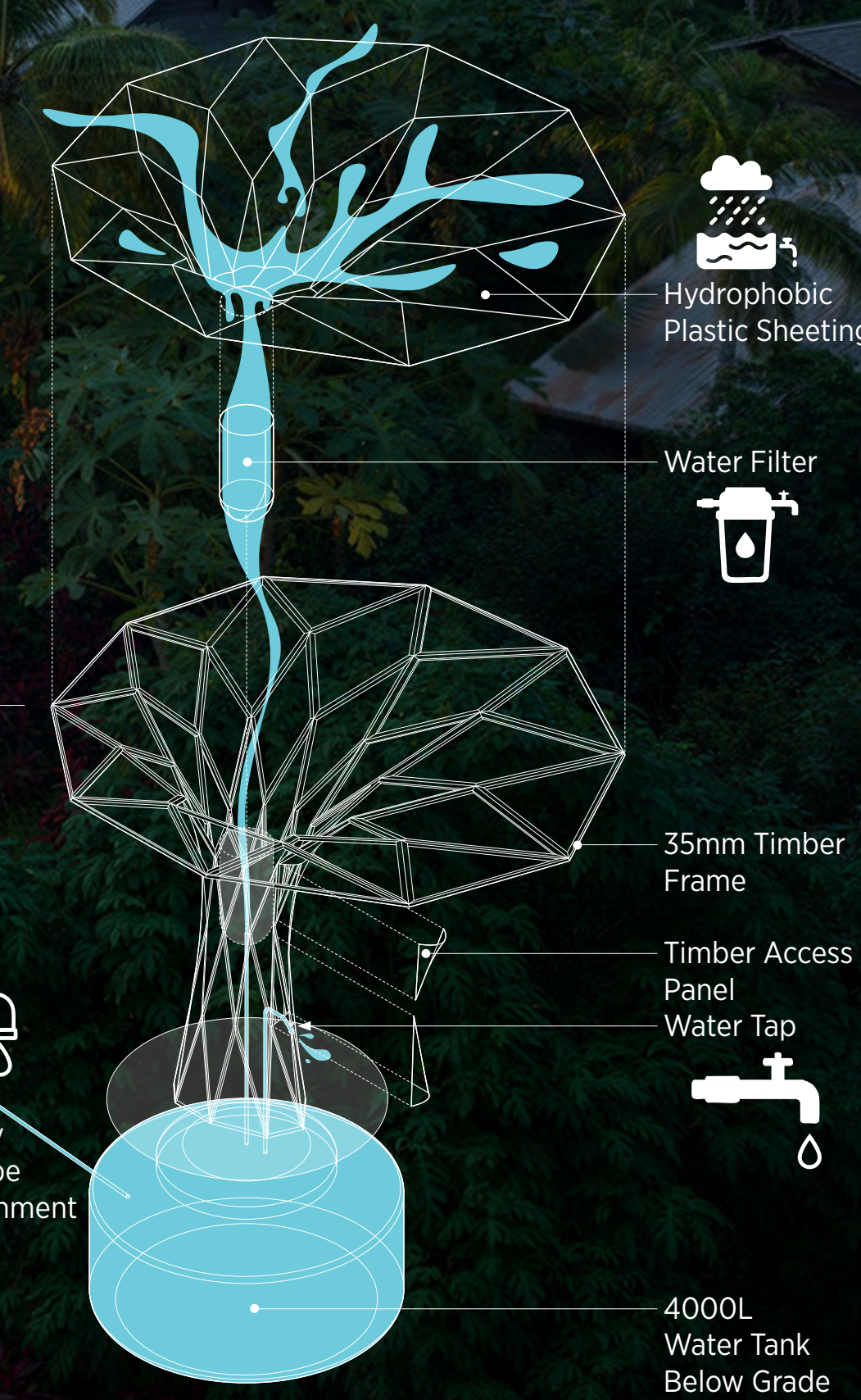
To distribute clean freshwater, a mini grid would be implemented with small distribution piping taking water to locations throughout the village. These distribution lines require minimal infrastructural work, as the capacity is only the daily water demand of 10m³/day or 0.42 m³/hour which only requires a 15–20-millimeter diameter pipe. The distributed centers are used to collect and store the freshwater closer to the final use points and have storage capacity of about 10–20 m³/day. We have proposed six of these units across the village to store water for 5–10 days. This system can be easily scaled, and more modules could be added over time.



SOLAR PATH LIGHTING



CATCHMENT ENERGY STORAGE & FLOOD MITIGATION SCHEME



WATER COLLECTOR, FILTER, & DISTRIBUTER