THE CATCHER SUSTAINABILITY STRATEGY

Technologies implemented in the project serve two goals. First, they utilize the overabundant resources to produce energy and sustain comfortable climatic conditions within the domes. Second, they create cyclic ecological systems within each cluster that stores and recycles used energy and water.



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WIND

Technologies of the wind catchers and solar chimneys existed for centuries, spreading from the Persian countries to the Gulf. Each tower captures the prevailing wind at the height of 50-60 meters and redirects it to the water reservoir at the ground level. It cools and humidifies air that is then distributed to the domes. When there is no wind, the tower works as a solar chimney, letting the hot air to escape though a separate exhaust chamber. The hot air inside the domes escapes through the louvers that sometimes are also used as lightwells.

SOLAR

The exterior surface of the domes is covered by solar panels. This layer of modern technology complements the vernacular form and warm materiality of the adobe walls. The panels generate three quarters of the electrical energy on site that is stored in highcapacity batteries within each dome. Excessive energy can be redirected to the urban grid.

Carved skylights allow reflected sunlight into the domes, making use of the natural illumination without overheating the interior.



WATER

The area has a consistent supply of underground slightly salted water due to its proximity to the ocean. It is excavated from a well under a wind tower and separated into highly saline and freshwater bodies. Saltwater is redirected underground to the exterior ponds that use heated saline water for 24-hour energy generation.

Freshwater is stored in the underground reservoir at the bottom of the wind tower. It is then redirected to irrigation (interior and exterior), and plumbing systems. Greywater is purified using to a sequence of soil-box planters that organize an interior garden in the core of each dome. Clean water is either stored in a water pool inside a dome, redirected to a reservoir under the wind tower, or back to the water supply system.



