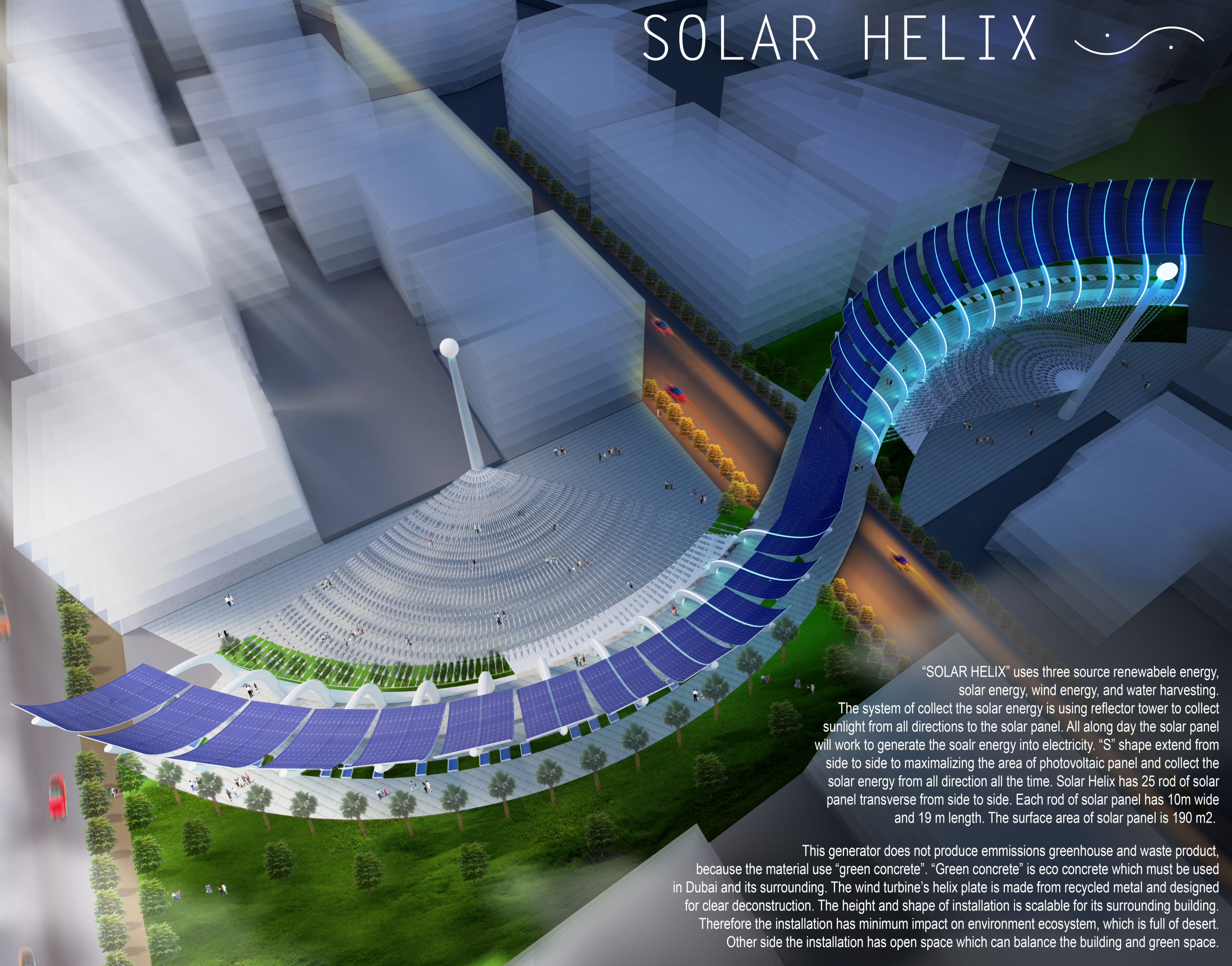
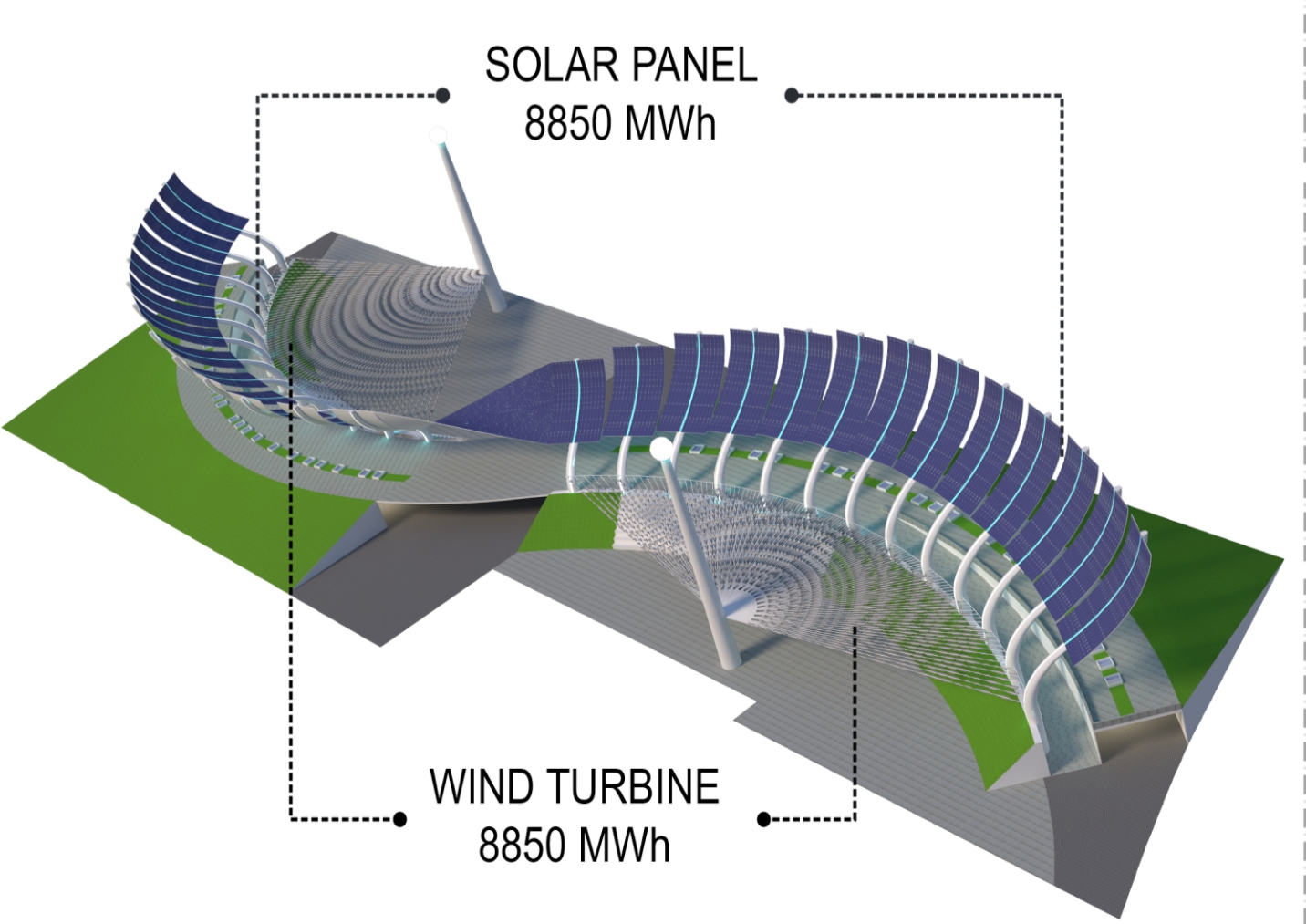
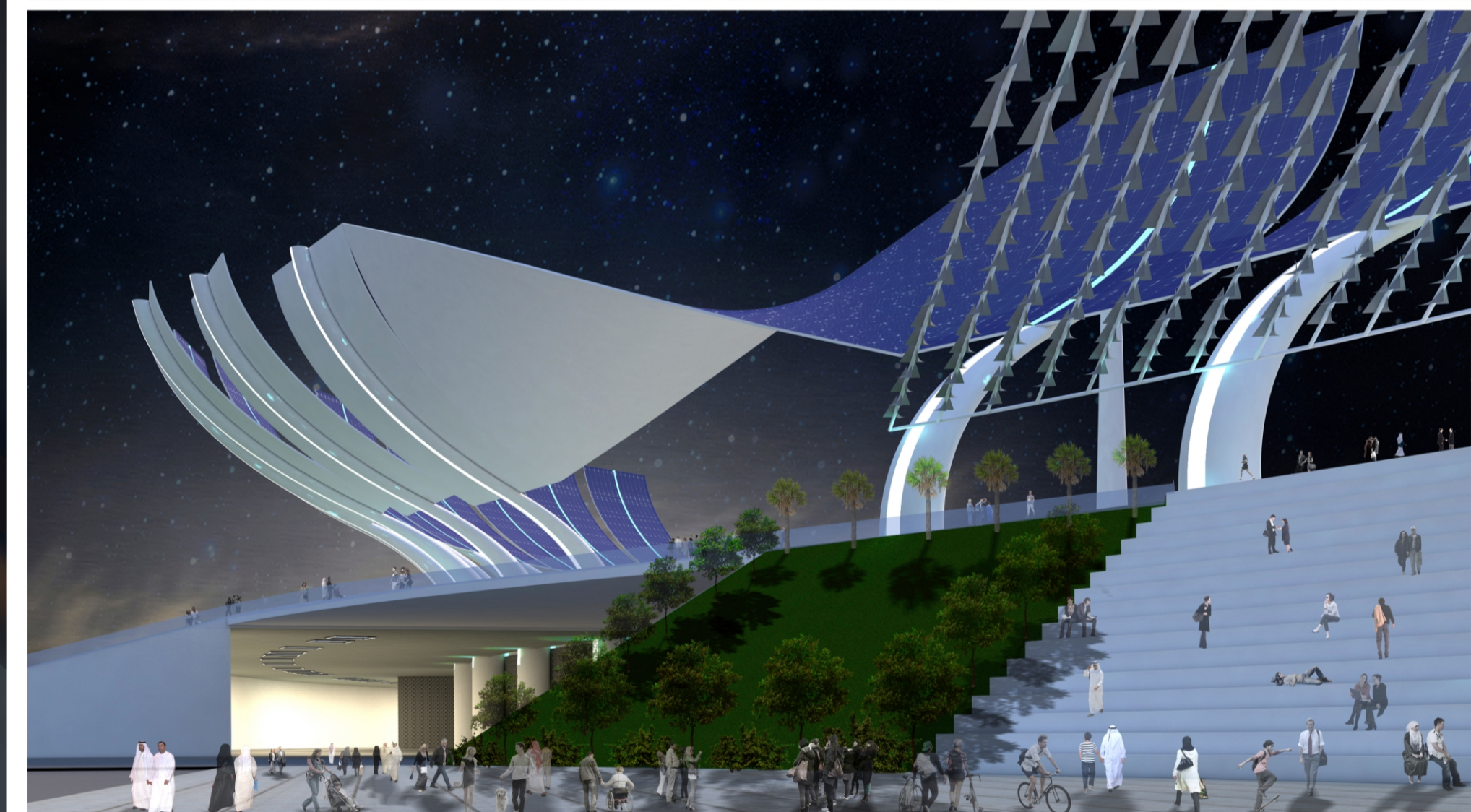
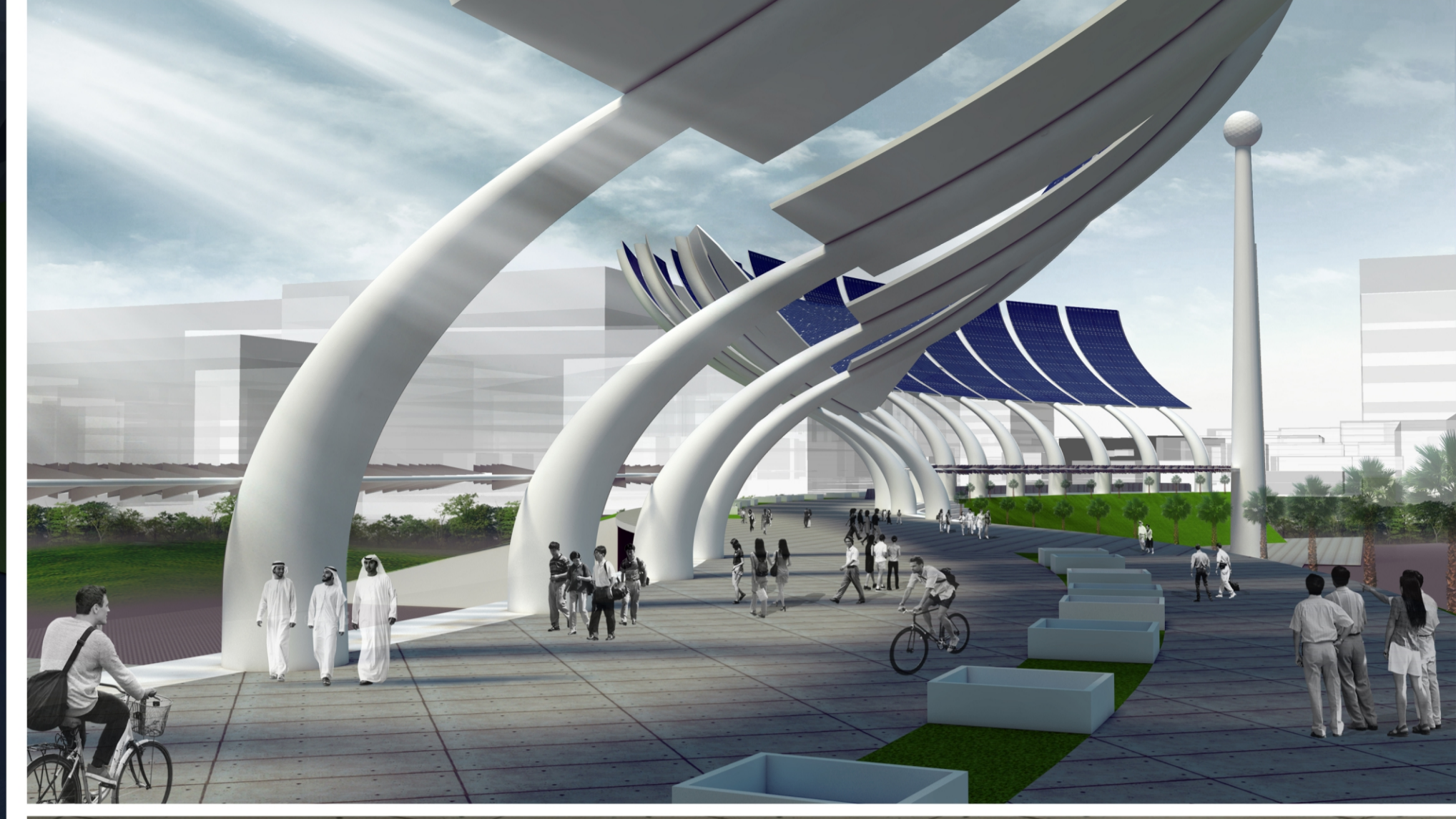


SOLAR HELIX

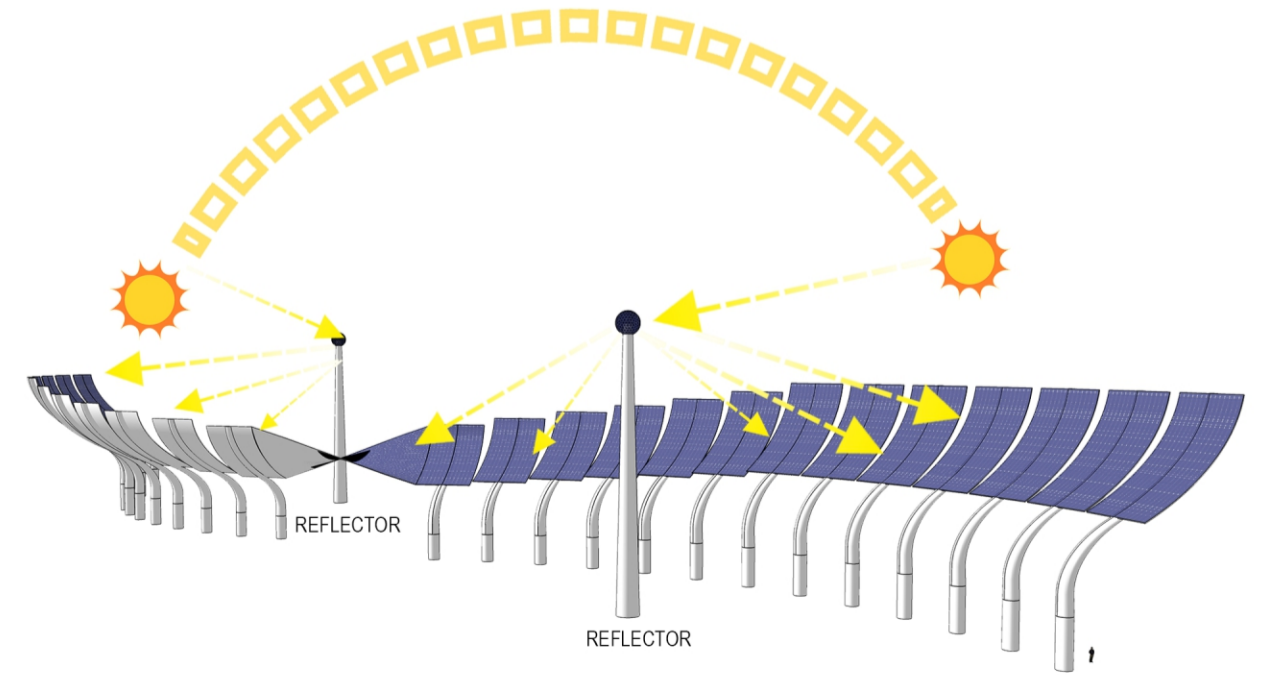


"SOLAR HELIX" uses three source renewable energy, solar energy, wind energy, and water harvesting. The system of collect the solar energy is using reflector tower to collect sunlight from all directions to the solar panel. All along day the solar panel will work to generate the solar energy into electricity. "S" shape extend from side to side to maximalizing the area of photovoltaic panel and collect the solar energy from all direction all the time. Solar Helix has 25 rod of solar panel transverse from side to side. Each rod of solar panel has 10m wide and 19 m length. The surface area of solar panel is 190 m².

This generator does not produce emissions greenhouse and waste product, because the material use "green concrete". "Green concrete" is eco concrete which must be used in Dubai and its surrounding. The wind turbine's helix plate is made from recycled metal and designed for clear deconstruction. The height and shape of installation is scalable for its surrounding building. Therefore the installation has minimum impact on environment ecosystem, which is full of desert. Other side the installation has open space which can balance the building and green space.



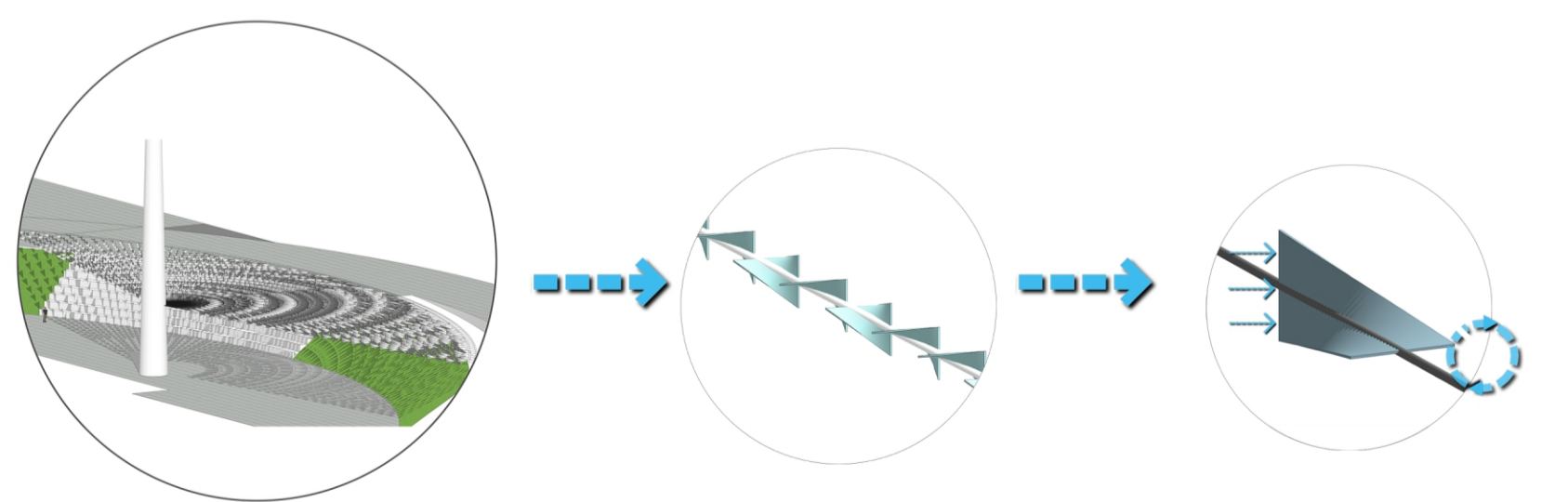
SOLAR PANEL DIAGRAM



Use of reflector tower to collect sunlight from all directions to the solar panel. "S" shape extend from side to side to maximalizing the area of photovoltaic panel and collect the solar energy from all direction all the time.

The average solar irradiance in Masdar in a year is 250 W/m². A 5050 m² photovoltaic solar of monocrystalline silicon glass will produce 2025kWh daily and almost 1000MWh annually.

WIND TURBINE DIAGRAM



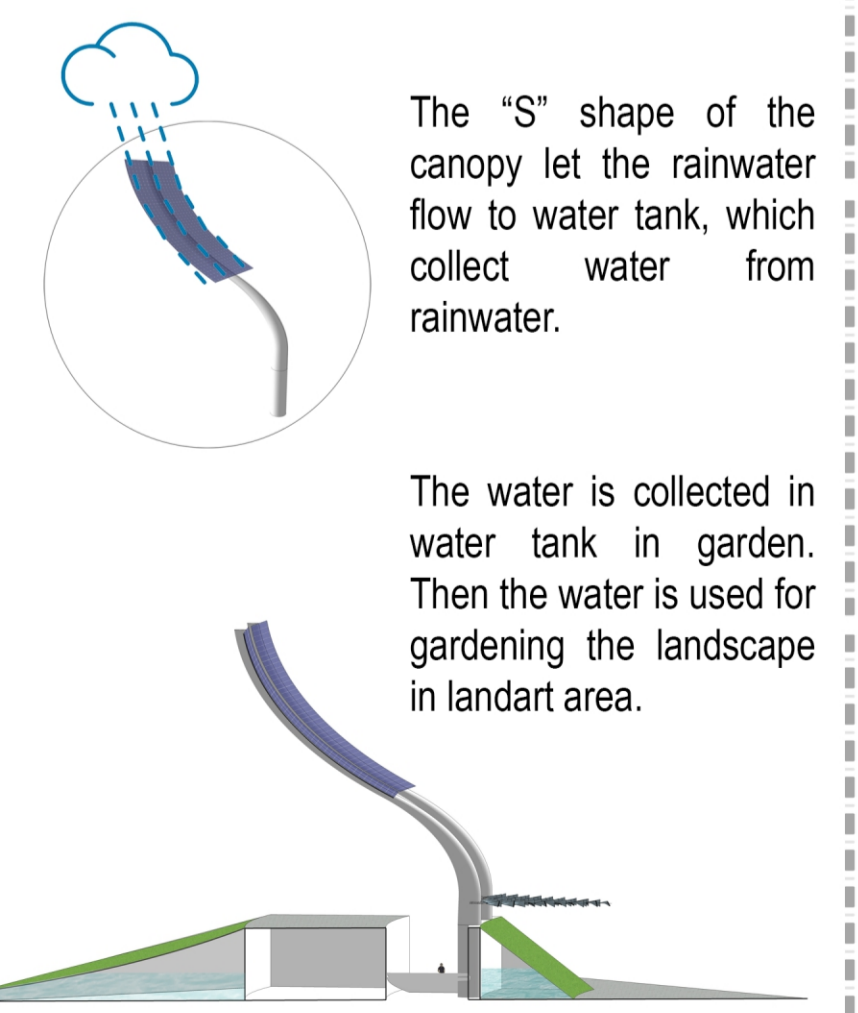
The shelter consist of thousand wind turbine arranged spread into the surface of the shelter

The wind turbine form from helix plate arranged in pipe that connect to generator

When the wind blow the helix plate will rotate the generator and produce the electric energy

The maximum wind velocity in Masdar is 60 km/h, the power of each energy generating unit is 3.0kw/h. We set an energy conversion rate of 80% and each metal blade can generate 2.4kw/h of electricity. With 3,500 helix plate this installation will produce approximately 840kWh daily, and almost 350MWh annually.

WATER HARVESTING DIAGRAM



The "S" shape of the canopy let the rainwater flow to water tank, which collect water from rainwater.

The water is collected in water tank in garden. Then the water is used for gardening in landart area.

- Solar panel

The estimation of solar panel installation is \$10/m². Total area of solar panel is 5050 m², therefore the installing of solar panel requires \$50,500. Beside that for solar panel systems requires at least \$15/MWh. The solar panel system produces 1000MWh with an efficiency of 0.18%, so solar panel systems require around \$2700 per year.

- Wind Turbine

The shelter of wind turbine need cost to generate electricity around \$2.6 per watt. Therefore wind turbine system require cost around \$2685.

COST OF INSTALLATION