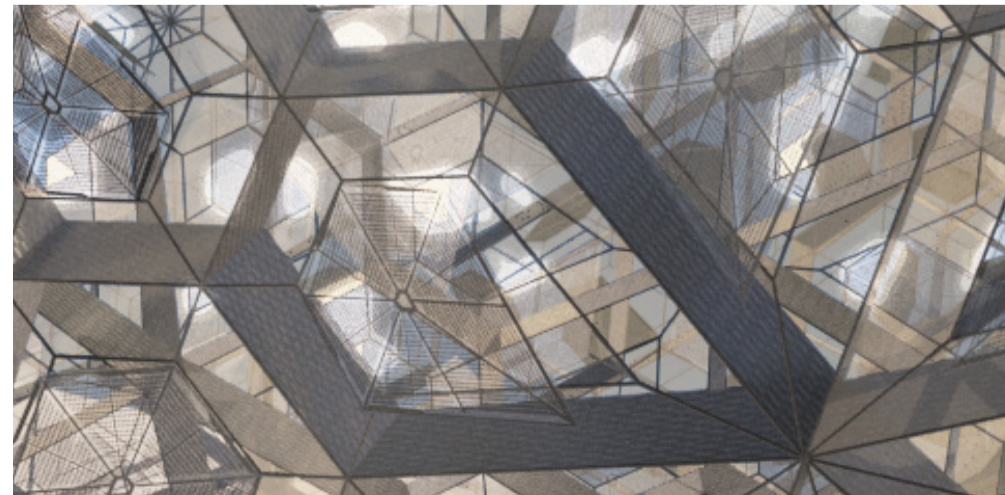
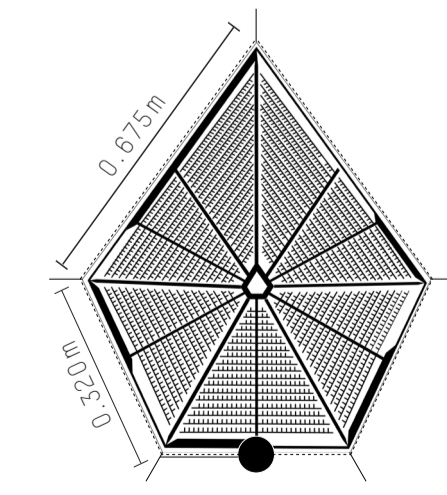


STRUCTURAL FRAMING



The size and depth of the frame is optimized for light penetration, so that the outlines of the shadows are blurry similarly to the tree shadows. The idea is to create a shower of light choreographed by the wind and the movement of the solar leaves.

CUSTOM SOLAR LEAF



Each solar leaf features a piezo-electric sensor that produces electricity out of the trembling caused by the wind. The expected energy generated by that is very low, however the low cost of the piezoelectric sensor in combination with the aesthetic value of the movement of the leaves in the breeze, adds overall to the project as an art piece and sends a positive message about renewable energy.

- Total number of solar leaves/piezoelectric sensors: 17,300pcs
- Total area of solar leaves: **6,000m²**
- Peak output of custom DSSC cell: **45W/m²**
- Peak output of piezoelectric sensor: **500µW/pc** assuming 13km/h windspeed (can be increased due to venturi effect)

OUTPUT ESTIMATE

Peak Solar Power 6,000m ² x 45W/m ²	270kW
Peak Power generated by aeroelastic vibration 17,300pcs x 500µW	8.65W
TOTAL PEAK POWER ESTIMATE	270kW
Total Cost Estimate / Peak Power Estimate \$5,425,025 / 270,000W	
COST PER WATT	20\$/W <i>(Target Value)</i>
Annual Solar Energy Estimate 270kW x 8,760h x 18%	425.7kWh*

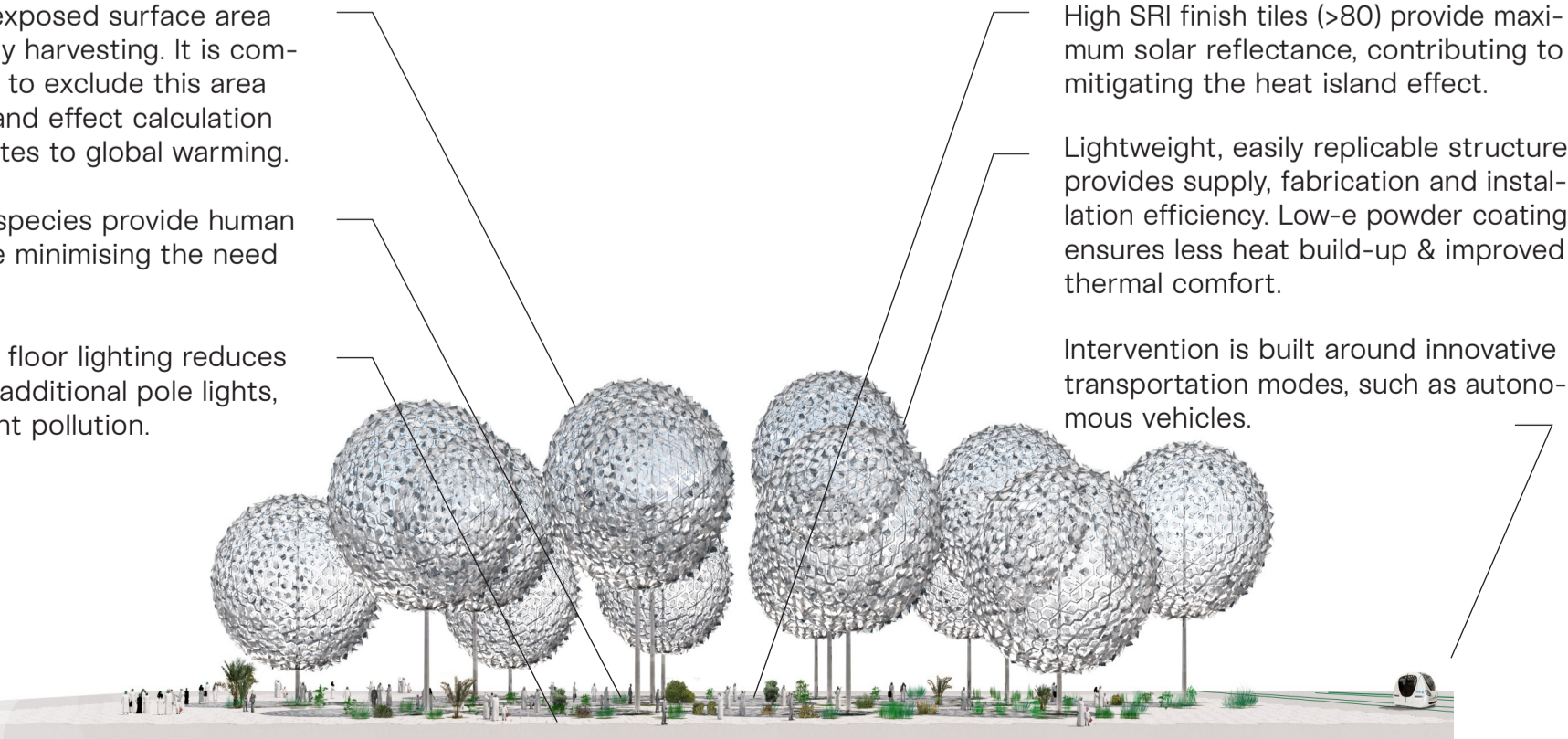
* Example: **425.7kWh** can power **130 LED lights** (10W each) for 5 hours a day, over the course of an entire year.

ENVIRONMENTAL IMPACT STATEMENT

Most of the exposed surface area is solar energy harvesting. It is common practice to exclude this area from heat island effect calculation that contributes to global warming.

Native plant species provide human comfort while minimising the need for irrigation.

Ambient LED floor lighting reduces the need for additional pole lights, mitigating light pollution.



Renewable Oasis aims at conveying a positive message about the use of renewable energy and its impact on the planet. Its delicate lightweight structures create a space focused on human experience, reinforcing the sense of community of current and future inhabitants of Masdar and embracing innovative modes of transportation.

The geometry, 'lightweightness' and materiality of the structures offer reduced material waste, improved material supply logistics, more efficient assembly, and allow for easier deconstruction. The exclusion of the energy generating surface area from the heat island effect calculation in combination with high solar reflectance (SRI) finishes complies with international standards to curtail global warming.

The permeability of the structures in combination with the biophilic design, that features native plant species, provides human comfort while minimizing the need for irrigation. The ambient lighting powered by the PVs reduces the need for street pole lights, minimizing light pollution, a threat for migrating birds.