**• Concept**

The inspiration is to let the impossible true in the UAE.

The concept of the idea is to create the rain from the organic Photovoltaic solar cells. The water it’s made by turning the sun’s energy and Separate water vapor from air into moisture.

The shape of the shelter is inspired from the pigeon (Global tolerance symbol). The pigeon shape is the solar cells.

Creating an Oasis in the middle of UAE desert. The challenge is to have rain all year, and it will help to give the life of the Oasis. The oasis will be having different kinds of trees. The rock of the pottery will be creating a kind of cool air, because the pottery absorbs the water and make it cool. The pottery will help to let the trees grown despite of UAE hot weather and the salt soil.

**Dimension of the site**

Length: 300m. Width: 90m. Height: 25m.

**•** **The average Visitors:**

Around 2,000 apartments are either built, under construction or in design, through Masdar or third-party investors, which will bring the residential population to more than 3,500 in the near term. In 2022, the first residential community of private villas and townhouses is scheduled for completion.

We assume that average visitors to this place will be around 2700 persons daily, which we except around 1million visitors per year.

* **Organic Solar Cell**

Organic solar cells or plastic solar cells are a type of photovoltaic cell that uses organic electronics, a branch of electronics that deals with conductive organic polymers or small organic molecules, to absorb light and transfer the charge to produce electricity from sunlight by optical effect.

* **Amount of water/hour Calculation:**

$$6.5 MW/Shape$$

$$We have around 60 shapes in total$$

$$6.5 ×60=390 MW$$

$$1 MW =27 Gallon$$

$$390 ×27=10530 Gallon/day$$

$$10530 ÷12 =877.5 Gallon/hour$$

* **Wind turbine:**

Wind turbine, as a wind power converter, is a device that converts wind energy into electrical energy. Wind turbines are produced in a wide range of vertical and horizontal axis.

* **Calculation**

$$P=\left(MW\right)P/RT$$

MW: molecular weight = 29

P: wind pressure = 101500

R = 273.15

T= average temperature = 46.6

Wind speed= 45

Air density= 231.2

Efficiency factor= 40

Power P= 330936.9

Radius r = 5

$$P=\frac{π}{2}\*r^{2}\*v^{3}\*P\*n$$

RT = 46.6x273.15=12728.79

**5x45x231.2x40=330936.9 KW**

**• Materials:**

**- Organic solar cells**

**- Fabric mesh**

**- Wood Vinyl (flooring for the pathway)**

**-** **interlock**

**- concrete**

Resilience

Vinyl flooring reduces noise and provides comfort underfoot.

Durability

Vinyl flooring is durable and time-tested, maintaining its beauty under heavy foot traffic and use.

Dimension

22x152x1.2 cm

**- Pottery**

Pottery is formed by forming a ceramic body (mostly clay) to objects of the desired shape and heats them up to a high temperature (1,000-1,600 degrees Celsius) in a furnace and cause reactions that lead to a permanent change from an expression of the increase in strength and the strength of the shape of the object.

**• Types of Trees**

* + Mango Trees

They prefer low rainfall, low relative humidity at flowering, fruit set and harvest, with warm to hot temperatures during fruiting. Mango trees grow best in deep, well-drained soil that is slightly acidic. They tolerate dry conditions, waterlogging and moderate salinity.

* + Papaya tree

Papaya is a tropical, plant, very sensitive to frost. Optimum temperature is 25 -30° C and

Minimum 16° C. The suitable PH value is between 6 and 6.5. The well-drained or sandy

Loam soil with adequate organic matter is most important for the papaya cultivation.

* + Banana tree

Banana is essentially a humid tropical plant, coming up well in regions with a temperature range of 10° C to 40° C and an average of 23° C. In cooler climate the duration is extended, sucker production is affected and bunches are smaller.

Banana comes up in relatively wide range of soil conditions. Two important factors to be looked into are the soil depth and drainage. Soils of at least 50 cm depth, well drained, fertile lands are necessary for banana cropping.

* + Palm tree

Light and well-drained soils are imperative for healthy palm tree growth. Sand-based soil, like sandy loam, provides the best earth environment for spreading palm roots because palms do not like compacted soils with few air pockets, such as clay.

* + Coconut tree

The ideal mean annual temperature is 27° C with 57° diurnal variation.

Coconut is grown under different soil types such as loamy, laterite, coastal sandy, alluvial, clayey and reclaimed soils of the marshy low lands. The ideal soil conditions for better growth and performance of the palm are proper drainage, good water-holding capacity, and presence of water table within 3m and absence of rock or any hard substratum within 2m of the surface.

* + Ghaf tree

The maximum shade temperature varies from about 40 to 46 °C (104 to 115 °F), while the absolute minimum temperature ranges from 9 to 16 °C (48 to 61 °F).

The tree grows on a variety of soils, but grows best on alluvial soils consisting of various mixtures of sand and clay. It is common on moderately saline soils, but quickly dries out where the soil is very saline.

* **Filtration**
* The **trees** drink water through the leaves and let it off in the air as oxygen and water vapor. And of course it will absorb the water and take it to the roots. Filter it and take out the harmful substance from the groundwater also.
* The **tree branch** is also considered as a water filters. It takes it absorb the bacteria and producing fresh, uncontaminated water.
* The **Soil** will absorb the water. The type of soil in UAE it’s a salt water, so it will absorb the water faster than the others. It will purify the water naturally by taking the nutrients and contaminates from the water.

**Sources**

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