

Land Art Generator Initiative

Art has the ability to Create movements and Stimulate creative dialogue

Introduction

Design will save the world
 We are running out of Time to save our planet. Our sources of Energy are nearly depleted. Global Warming problem is the most threat. The Climate is deeply Affected by the fossil fuels. Unfortunately, Human been are the cause of all those problems and we who should solve all of those for a better future to the upcoming generation.

Concept

Feel the Nature. Love the nature, it will never fail you. In order to solve this problems - by the people - they must first love their nature and know how it's important for the living, life and the future. The art and inspiration must come out from the natural powers it self, with some fancy windscape and sunscape shows all around the form, and by making the nature deal directly with the form and control it. The idea of making the people knows the real use of the sun, wind, water, and green spaces, to make them look from another perspective to the powers of nature that will save the planet, they will surely will take care of it, and protect it at all costs. To have a generation capable of saving the world, open-minded people that know what they can do.

Form Concept

Layers of Dubai
 Dubai and UAE has a unique character from the way they become one of the greatest economic powers in the world, starting from dust to the top. The main design concept is based on the dubai layers of land, earth and nature. the layers of Dubai in the past to this moment that contained a sandy land, plants, sky, sun, winds, buildings ending up high with skyscrapers.

Form Analysis

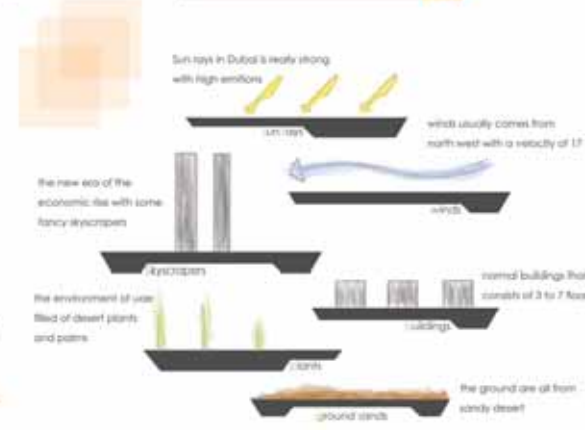
The process of integrating Dubai layers to make the form

1. First layer is the sands that fills the whole city and UAE.
2. Desert plants on all of the lands of dubai with various kinds of plants that needs to be protected
3. Adding the form on the current 2 layers without harming them, a form with nothing inside to keep the environment as it is.



An integration to all those elements to make the

land Art Generator



Integrating Dubai layers to make the form

1. curving the bottom of the towers to receive much more sun rays and let the winds pass it. that curve concept came from the current Dubai finance diagram that shows how the city manage to be one of the best in the world in no time.
2. Adding wind layer to the form, causing the form to be curved and to be shaped by the winds.
3. Taking full advantage of wind power by making a skyscraper in the middle of the form, speeding up winds and generating power.
4. By integrating the sun rays, and to take full advantage of it, a material overlaid on the whole form, a semi transparent, 50% heat gain, and with some photovoltaic cells on the top of the form to take in the solar radiations and convert it into power.

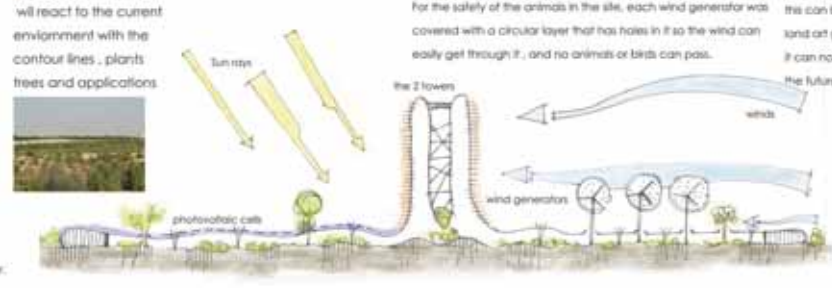
Layers of Dubai



Void of power and inspiration

The 2 towers will play an important role in Attracting people to the site with their strange look and high towering that can be seen from any part of the city, each one is 140 m high, making 2 thin towers is better than making 1 huge mass that blocks the view and this could have harmed the skylines of dubai, with this steel lines on it, it can inspire the attendance with it's visual effects in night, the movement, and the sky view.

Section sketch that shows how the form will react to the current environment with the contour lines, plants trees and applications



-The Contour lines defers from space to another with wide rights in the site, the form is shaped like that in order to fit well in the site and it's Adjacent to the contour lines that is higher than 5 meters.
 -the form lines on site were inspired by the desert sands, the form is like been ran out of the sands and it really suits the whole environment with the lagoons beside it, they look really similar in curves case.
 -the form looks fluid in terms of shaping, this can be a great advantage for a land art generator initiative because it can now fit on any other site in the future.



Land Art Generator Initiative

Sustainability in communities is not only about resources, but it is also about harmony.

Sustainability

Performance: With free resources all around Dubai, the land art generator will distribute clean energy all over the city.
Inspiration: Integrating science technologies with some new artistic shapes and forms to inspire the viewers and make the art from science and natural powers.
Activation: to activate and operate the sustainable technology in accordance with the functional needs of the form and the environment, during all the year.

Concepts

A land art generator needs lots of energy in order to support the city, on a huge site, it needs lots of sustainable techniques in order to take full advantage of wind and sun and not relying on only one power generation method, which can get the viewers bored with the art itself.
 The idea is to integrate the sun techniques with the wind in order to make the required power from sun and wind, all over the year.
 Taking full advantage of the sun and bring the winds until it leave the building.

science

Using the sustainability techniques in power generation with a simple touch of art to each technology.

1-A new era of Solar Chimney

With 2 towers instead of only 1, the solar chimney was designed to take full advantage of hot air and the solar radiation there, as it works on the famous three principles:

1-The use of the sun's radiation to heat a large body of air - the collection area is the main farm that the towers comes out of it - greenhouse effect lets light in, - the greenhouse is made by the plants already in site - direct and diffuse, but does not let heat out, the base form is made from >>>>>> to capture heat.

2-Hot air rises through the chimney.

3-Movement of air as energy source to drive large turbines to generate electricity (basic engine).

How it works ?

At Daylight
 the roof opens up it's glass flies to let in the air, and open it's sides, the power of the sun heats the roof of the model which has high thermal storage then the air is heated and makes it to reach the towers greenhouse, and then it passes by a wind generators to generate electricity.

At Night
 the roof close it's flies to maintain the high temperature of the wind, and again it moves rapidly towards the tower and passes by the wind generators which generates electricity.



Section temperature -scale 1:2000

2-Electric Carbon Shafts

After the air rises on both chimneys, a wind shafts were considered inside and outside of the chimney, the inside air will move the shafts from inside, to be moved outside too, with this wind strikes, the shafts which were made out of carbon, will generate electricity by movement of the electrons and to create a lively inspired tower.



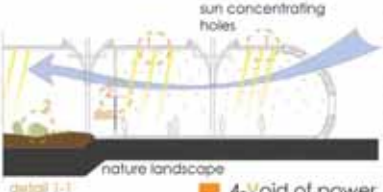
diagram shows the difference between air temperature values inside the form



Elevation -scale 1:2000

2-Natural landscape

Natural plants already in site will make art from it self, viewing stages where made to show the integration of sun rays hitting the plants and the soil to inspire the visitors with the naturally made landscape.



detail 1-1

3-Sunscape

An interior spaces where made in the outer line of the form for the public, making small circular holes in the roof that allow the sun to get inside with a focusing layer on the roof, allowing only the light and forcing out temperature, visitors can see beams of light all around them, get inspired from the sun.

4-Void of power

the steel parts will light up the sky in night, spinning, rolling and making beautiful shows.



Inspiration

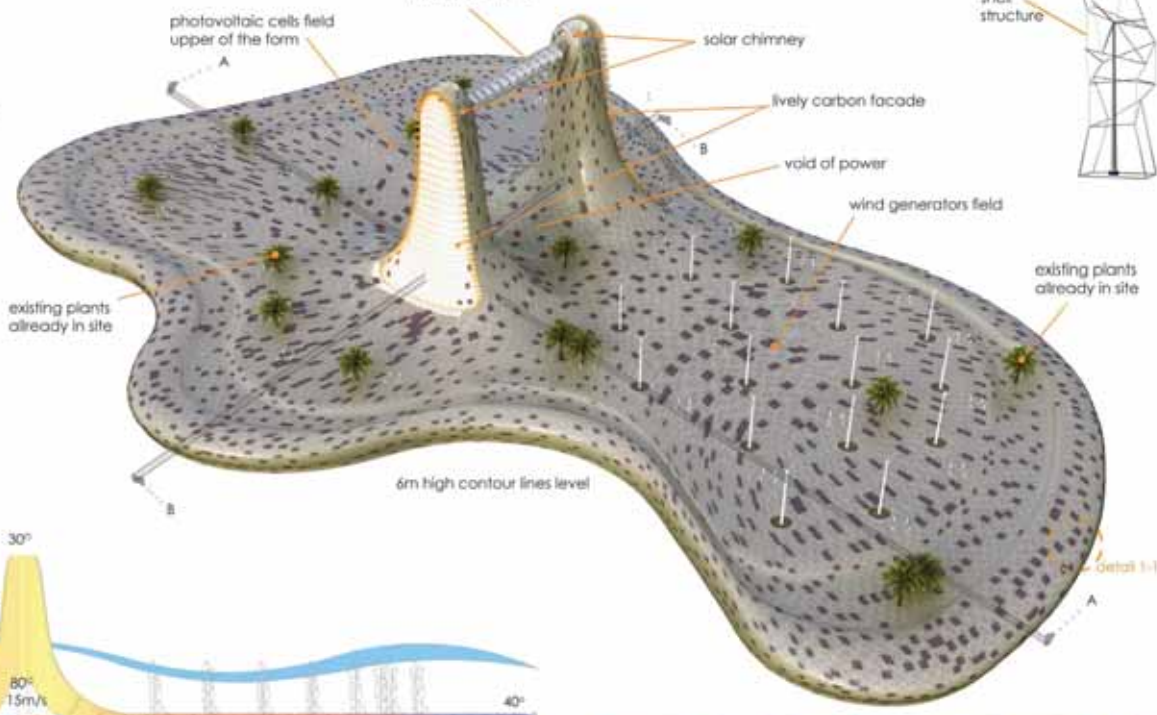
1-Windscape

A lively tower, shafts are moving with no roles, only with wind control, get inspired from the wind.

The wind shafts were inspired from the nature itself that is already there, the look of the green plants, coming out of the lands.



wind wave power



● sustainability
 ● science
 ● inspiration
 ● concept
 ● illustration medial

3-Wind turbines



-The wind turns the wings of the generator, which spin the fan, which connects to a generator and makes electricity.



-wind generators are easy integrated with the form like the other natural elements in site.

-The wind generator is covered with a parametric structure that protects the blades in this area from being shattered by the shafts.

4-Photovoltaic cells

-Photovoltaic (PV) cells are made of silicon semiconductors similar to those used in computer chips. When sunlight hits these materials, it knocks electrons loose from their atoms, which flow through the material to produce electricity.

-Photovoltaic cells were placed on top of the farm to receive most of sun rays.



5-Wind waves

Inspired from water waves, the same techniques were used to generate power from waves, but not water waves, it's Wind, hits the elements between el 2 towers, which makes the inner circular cylinder spins fast, and generate electricity.



6-Piezoelectric

While the Piezoelectrical system is a self sustainable energy system embedded into the interior spaces that recycles and reuses the evanescent nature of sound and vibrational energy collected from the numerous passing during the border crossing as a cast-off form of energy.



7-power roof

An outer zinc-lithium membrane shell on the form will feature one layer covered by solar photovoltaic panels, as well as a second translucent layer that lets in 50% of all light while preventing water from hitting the ground.

Land Art Generator Initiative

the existing site is a mixture of white sand and loose soil with a number of native desert plants.



site 1
 Located at the end of Dubai Creek at the edge of the Ras Al Khor Wildlife Sanctuary. The site offers beautiful views into the Wildlife Sanctuary and to the long skyline of Dubai's financial district beyond.



Site Scale 1:4500



site 1



Dubai

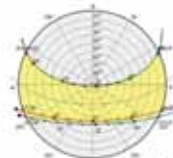


UAE

- Site analysis
- weather
- functions
- plants
- soil



Wind diagram



sun diagram

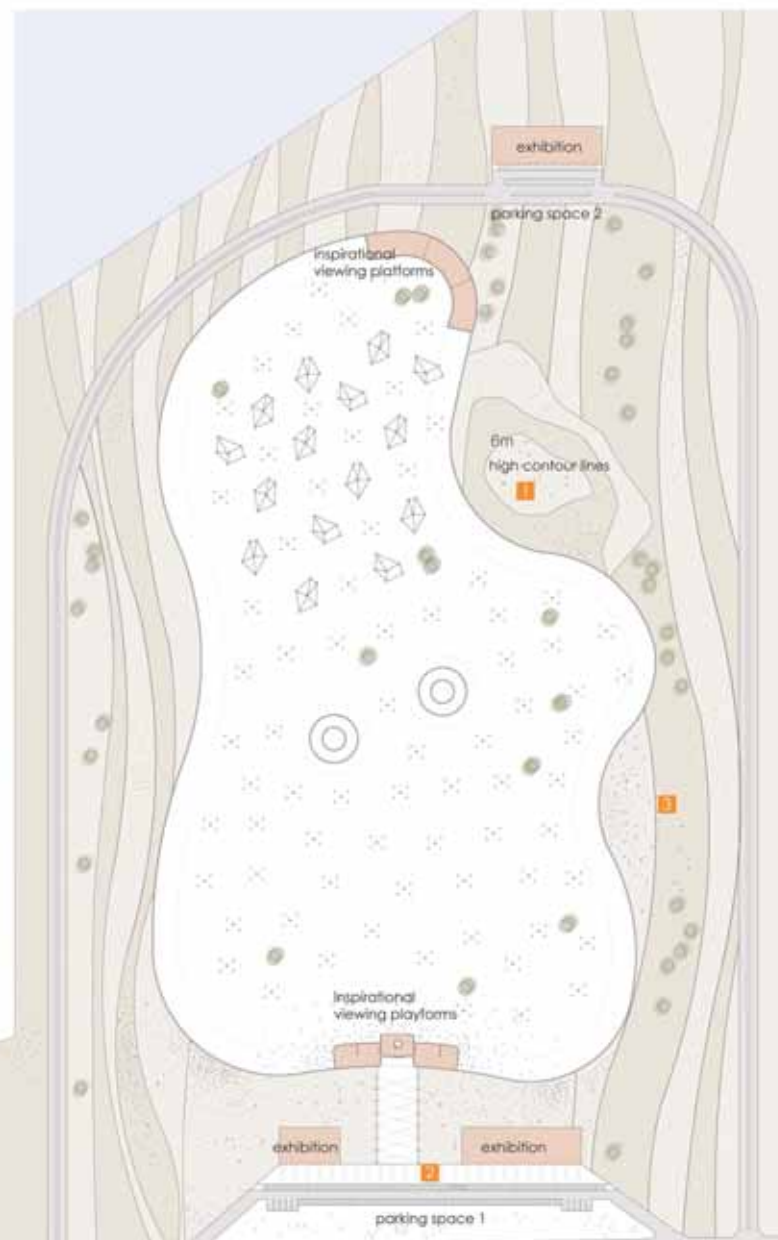
- staff zone
- visitors zone
- existing plants
- existing plants
- solar chimney core
- main roof structure
- shaded areas
- hardscape

visitors will have a four around the whole site, the roads were made to cover the model space.

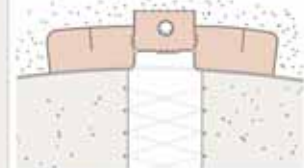
1 the models stands on the ground in a space that is nearly 700m length and 350 width and that to gain much amount of solar rays to heat the air and generate electricity over the photovoltaic cells.

2 parking was placed in front of the form (shaded) and with another parking in the north to cover the whole area, another parking was made to service the staff.

3 With the consideration of making a (non-irrigation system) as a landscape, no plants, all are hardscape with wood and hard elements covering the lands.



Plan Scale 1:2225



Zoom Plan Scale 1:1125

Land Art Generator Initiative



Elevation Scale 1:2000

Energy calculations

Energy saving

- **Solar Chimney**
With a height of 140m each, they can produce up to 50 MW.
- **Wind shafts**
Waving all the time when there is enough air to do so in both towers, generating about 3 MW.
- **Wind Generators**
each one will generate about 700 KW, there are 15 wind turbine to generate 10 MW.
- **Photovoltaic Cells**
large space of photovoltaic cells with sun rays directly concentrated on it, will produce 25 MW.
- **Wave power**
roiling all the time, enough wind will make it produce up to 3 MW.
- **Titanium Sheets**
the layer photovoltaic cells will take lots of sun rays during day time, with the whole model been covered with this material, it will produce about 30 MW.



Energy consumption

- **Lights**
Lots of light sources differ in usage from the lamps, palm lights, wind turbines lights, interior night lighting, middle metal beams lights and carbon shafts lights.
- **Piezoelectric Flooring**
wouldn't create much power, but will help in decreasing the power consumption of the project, will make about 200 KW.

The Land Art Generator Will Produce About 120MW
It will Cover up to 45000 Homes

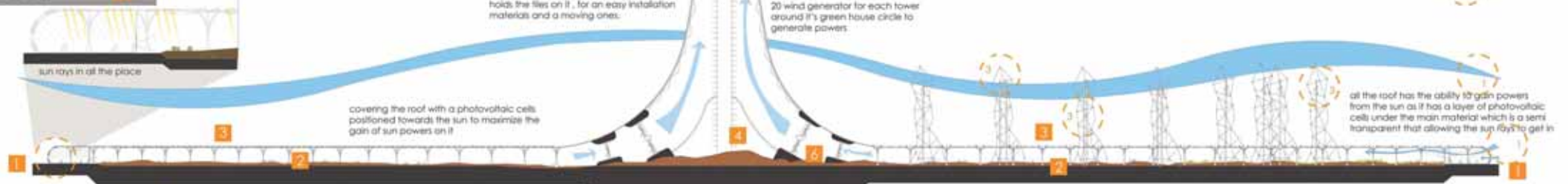
Materials

- 1 **Zinc-Titanium Shell**
2 layers, first is a photovoltaic cells to cover the whole model and the second is 30% transparent to let in light rays and heat intake.
- 2 **Transparent Tiles**
easy installation, movable and can let the sun rays in to heat up the wind in it's way to chimney.
- 3 **Carbon Wind Shafts**
made from carbon to generate electricity by movement.
- 4 **Metal Beams**
used for the (beams of light) between the 2 towers.
- 5 **Light Metal**
to be used for the wave power elements.
- 6 **Photovoltaic Cells**
blue cells on top of the model to generate electricity from sun rays.
- 7 **Wooden landscape columns**
natural landscaping elements with light sources on top of them.
- 8 **Piezoelectric Flooring**
tiles of metal cladding on the ground with some light sources, all with movement of the people.

Structure System

- 1 **Space truss**
that will cover the whole curved model from outside, about 20m to inside.
- 2 **Steel column**
2 types of steel columns, one of them will hold the roof in a constant mode and the other one will carry up a tile that will be placed when needed.
- 3 **Steel parts**
will feature on the roof to make it easy for the moving material elements to change direction and move from tile to tile.
- 4 **Concrete core**
the solar chimney structure is based on a big concrete centered core to carry the model.
- 5 **Steel ribs**
will feature on the towers skin to hold up the materials.
- 6 **Steel foundations**
under the tower to hold the curved structure and materials down there.

Section Study



- 1
- 2
- 3
- 4

Section Scale 1:1000

- Structure system
- section Study
- materials
- Night shot
- energy calculations

