

## ***DATA COLLECTION***

1- Ecorium: -

Location: -

part of Ecoplex in seocheon-gun,  
South Korea

Ecorium Site Plan Concept:

composed of Various greenhouses  
& controlled environments in order  
to reproduce the global ecosystem of  
the 5 different climate zones; tropical  
, desert, Mediterranean, temperate & polar.



Figure 2-1: Ecorium view



Figure 2-2: Ecorium Site plan



Figure 2-3: Ecorium Ground floor plan

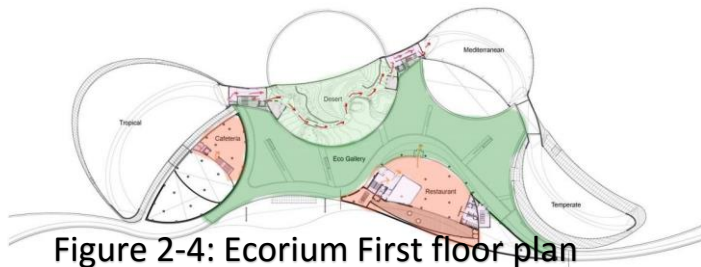


Figure 2-4: Ecorium First floor plan



Ecourim Area Study: -

Exhibitions	Educational	Services	Commercial
Tropical 2830	Education hall	400 General	1500 Outdoor cafe
Desert 1400	Cinema	210 Lobbies	3170 cafe
Mediterranean 1110	Archives	100	Restaurant
Temperate 1470	Eco gallery	4090	
Polar 1040			Total site area 33090 SQM
General 1100			Total floor area 23800 %71
Special 350			Total built area 15000 %45

Table 2-1: space study

Structure: -

large greenhouses supported by a mega-structure main arch which provides stability to the whole structure. It is equipped with horizontal band-truss which provides lateral stability & integrity to the whole structure. Slopped vertical trusses connected to the main arch support the curtain wall as well as resistance to wind.

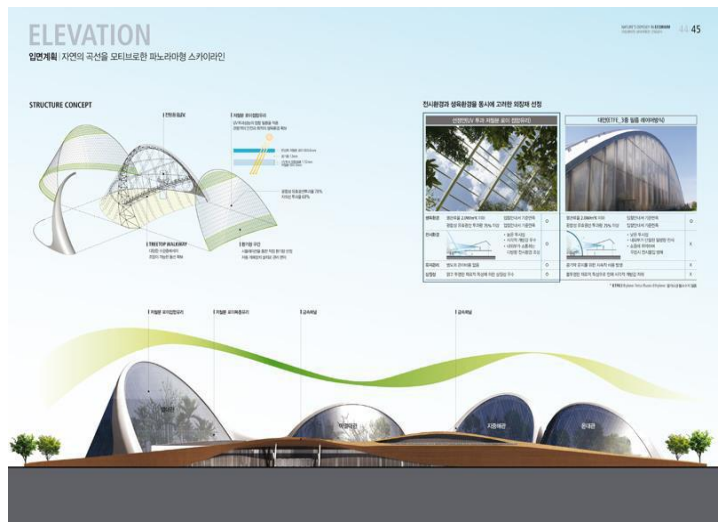


Figure 2-5: Ecorium Elevation

Sustainability: -

1. alignment & orientation of green

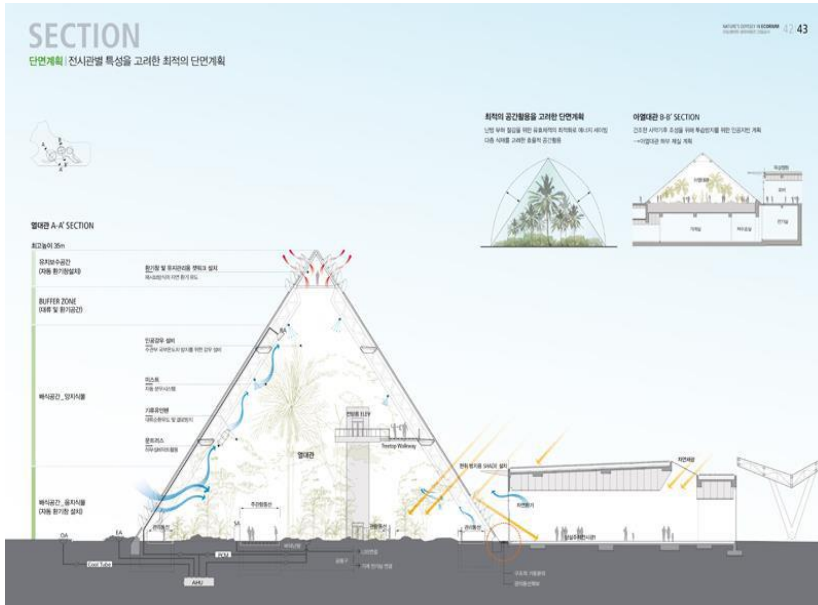


Figure 2-6: Ecorium Section

- ideal environment depending on the climate of each one
- 2. natural ventilation effects could be maintained through the 4 seasons for necessary facilities
- 3. sloped curtain wall gathers rainfall

4. total energy consumption is reduced by 10%

Advantages: -

- Buffer zones before each exhibit ✓
- Use of contours, plants & animals gives a naturalistic feel ✓
- Good link between floors ✓
- Bathrooms grouped to 4 locations ✓
- Clear & controlled entrances ✓

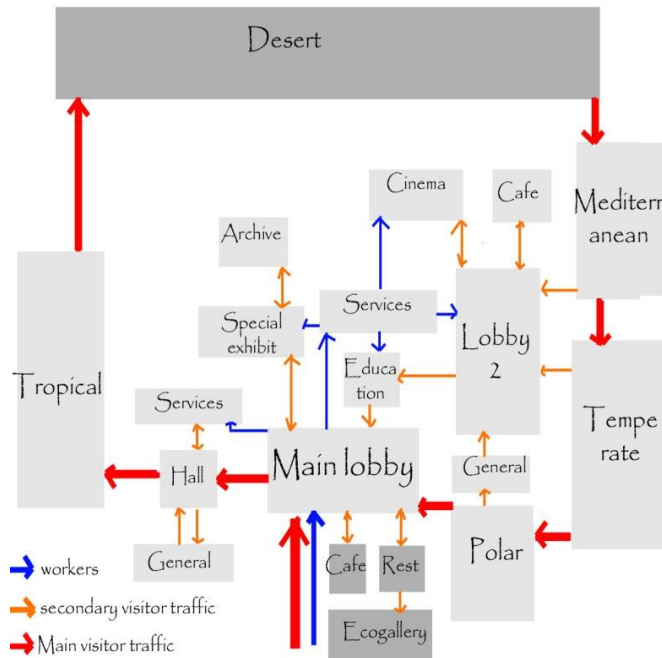


CHART 2-1: Ecorium circulation Diagram

Disadvantages: -

- Not enough bathrooms' upstairs ✗
- Circulation inside exhibits is confusing ✗
- Poor link between last 2 exhibits ✗

## 2. Cooled Conservatories: -



Figure 2-7: Gardens by the bay view

**Location:** -

part of gardens by the bay, Singapore

**Concept:** -

two of the largest conservatories in the world, part of a 54-hectare botanic garden, they imitate the climate of

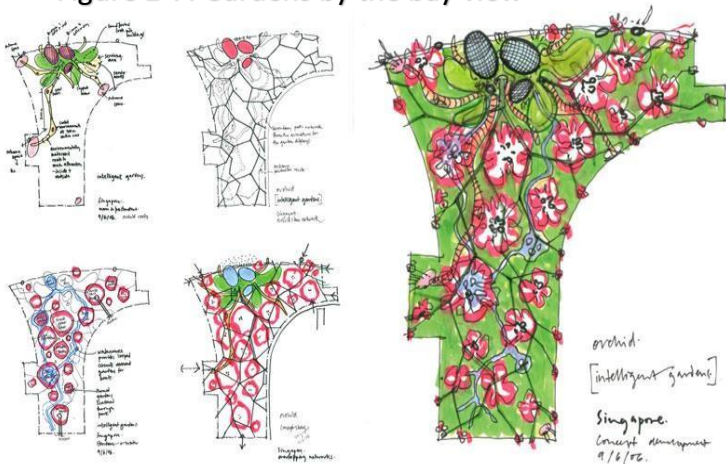


Figure 2-8: Gardens by the bay concept



Figure 2-9: Gardens by the bay Site

### Area Study: -

10818	Flower dome
760	Retail
315	Fine dining
1200	Services
6800	cloud dome



Figure 2-10: Indoor waterfall



Figure 2-11: flower



Figure 2-12: Deployable shades

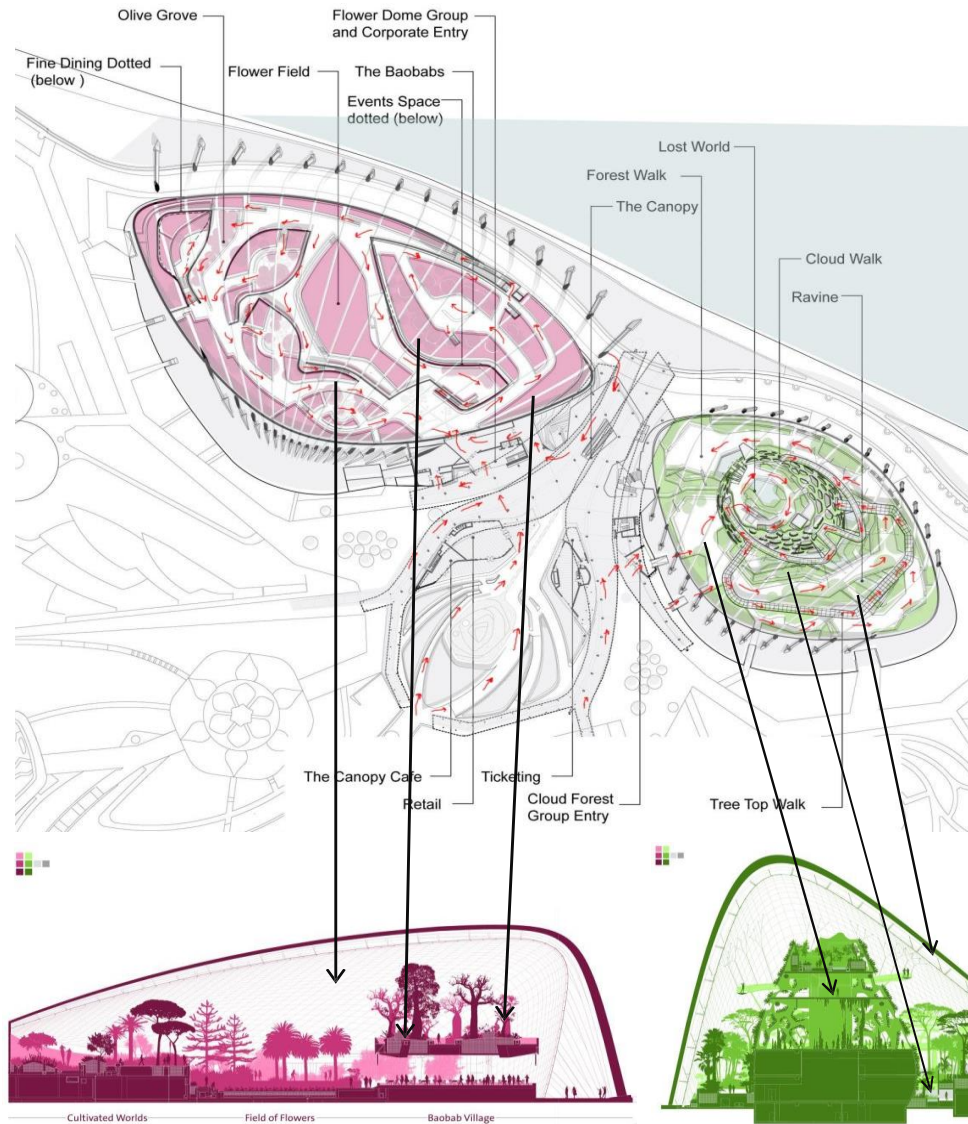


Figure 2-13: Gardens by the bay Section A

Figure 2-14: Gardens by the bay Section B

**Structure: -**

Egg-shaped steel and glass grid shell supported by Steel arches to resist lateral wind loads



Figure 2-12: Deployable shades

**Super Trees: -**

That expel the hot air from the conservatory & produce energy via solar panels while also providing shade. because this project is also the hot climate, same technical sustainability solutions are used in my design.

Deployable Shades Effect: -

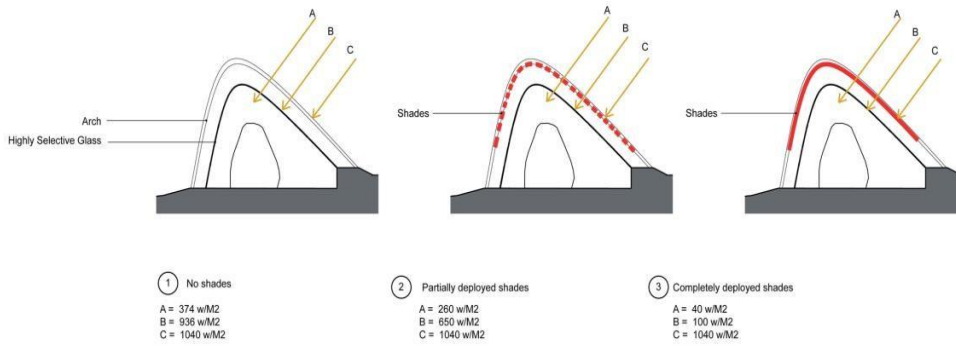


CHART 2-2: Deployable shades effect Diagram

Recycling: -

of rainwater to be used in irrigation & of waste to make fertilizer & burn it to produce energy.

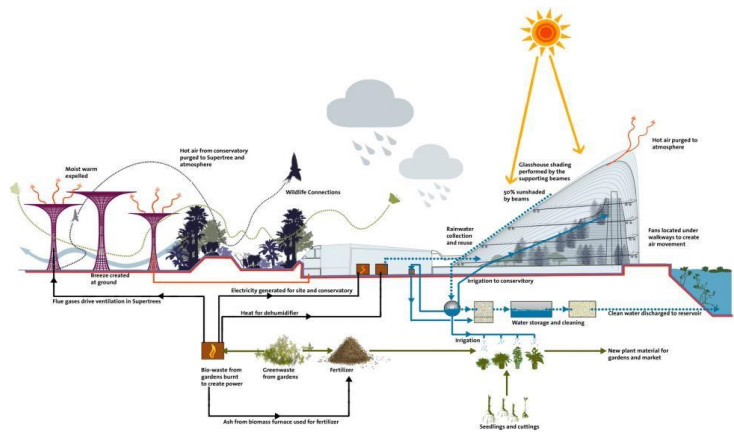


CHART 2-3: Gardens by the bay ecosystem Diagram