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.

![Ecorium view](image1)

![Ecorium Site plan](image2)

![Ecorium Ground floor plan](image3)

![Ecorium First floor plan](image4)
**Ecorium Area Study:**

<table>
<thead>
<tr>
<th>Exhitions</th>
<th>Educational</th>
<th>Services</th>
<th>Commercial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tropical</td>
<td>2830 Education hall</td>
<td>400 General</td>
<td>1500 Outdoor cafe</td>
</tr>
<tr>
<td>Desert</td>
<td>1400 Cinema</td>
<td>210 Lobbies</td>
<td>3170 cafe</td>
</tr>
<tr>
<td>Mediterranean</td>
<td>1110 Archives</td>
<td>100 Restaurant</td>
<td>1390</td>
</tr>
<tr>
<td>Temperate</td>
<td>1470 Eco gallery</td>
<td>4090</td>
<td></td>
</tr>
<tr>
<td>Polar</td>
<td>1040</td>
<td>Total site area 33090 SQM</td>
<td></td>
</tr>
<tr>
<td>General</td>
<td>1100</td>
<td>Total floor area 23800</td>
<td>71%</td>
</tr>
<tr>
<td>Special</td>
<td>350</td>
<td>Total built area 15000</td>
<td>45%</td>
</tr>
</tbody>
</table>

**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](image)
**Sustainability:**

1. alignment & orientation of green 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 ✓

**Disadvantages:**

- Not enough bathrooms' upstairs ×
- Circulation inside exhibits is confusing ×
- Poor link between last 2 exhibits ×
2. Cooled Conservatories: -

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

Area Study: -

<table>
<thead>
<tr>
<th>Area</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flower dome</td>
<td>10818</td>
</tr>
<tr>
<td>Retail</td>
<td>760</td>
</tr>
<tr>
<td>Fine dining</td>
<td>315</td>
</tr>
<tr>
<td>Services</td>
<td>1200</td>
</tr>
<tr>
<td>Cloud dome</td>
<td>6800</td>
</tr>
</tbody>
</table>

Figure 2-7: Gardens by the bay view
Figure 2-8: Gardens by the bay concept
Figure 2-9: Gardens by the bay Site
Figure 2-10: Indoor waterfall
Figure 2-11: Flower
Figure 2-12: Deployable shades
**Structure:**
Egg-shaped steel and glass grid shell supported by Steel arches to resist lateral wind loads

**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.
CHAPTER TWO {DATA COLLECTION}

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