Chapter 4
Design
The project is based on nature; how it was, what’s destroying it and how to fix it, so the design should stem from that concept.

I based my design on the petals and leaves of a rose bud (a symbol of new beginnings) & the symbol of biohazards (to represent the hazards that damage living organisms specifically & the environment in general).. I.e. the concept is: “Giving nature a new beginning by healing it from hazards that are damaging it”

- The basic idea combined the concept with the zoning while taking care the orientation is as closest possible to the optimum orientations.
- The design lacked outdoor treatment and the petals direct adjacency causes structural problems.
- The petals where separated but linked to allow visitor flow between them.
- The literal interpretation of the biohazard symbol and the straight entrance break the harmony between the form.

The outdoor was treated to match the rose-bud concept.
The biohazard symbol was abstracted to achieve better harmony with the petals and the main entrance walkway was curved to give it a more natural flow of circulation.
Animal reserves: animals are kept here when young or new.

Bio domes: greenhouses that mimic Sudan's 5 biomes. Structurally, the main arch (dark green) is a mega structure space-truss that holds the sloped curtain walls.

Endangered plants greenhouse: plants for exhibits are grown here.

Safari: for protection it is surrounded by water in all directions and has double gates and a watch post at the middle, electric buses tour visitors through the 5 main areas: gazelles + hippos + leopards and cheetahs + lions + waterhole area (buffalo, elephant, zebra, giraffe, eland, baboons).

Conference hall: major environmental conferences are held here.

Open exhibit: changes according to conference subject and shaded by supertrees.

Botanic gardens: a closed greenhouse & an open garden where plants are sold at reduced prices & then taken directly to the parking.

Green belt: surround site to give natural background & reduce heat.

Main parking: organic design to flow with nature.
1. Cinema: divides people into groups of 100 each with a tour guide

2. Desert biome

3. Grassland biome

4. Safari: uses electric buses that are magnetically charged from pads on the road. All the animals in it are savannah animals

5. Woodland biome

6. Flood biome

7. Montane biome: visitors ride a chair lift & end up in second floor

8. Conference hall with mezzanine

9. Administration

10. Shops: sell items needed to implement from the workshop lessons at home

Research center: animals are reproduced and studied here then raised at the animal reserve when they’re young

Vet hospital: animals are treated here & their food is also prepared here

Figure 4-7 Ground floor plan
1. Desert biome

- Service road: for direct access to animals without crossing visitors
- Animals are above eye-level at one side and below it at the other to mimic sand dunes

2. Grassland biome

- Dry V moats
- Piano wire zone allows close contact with small animals that are hard to see far away

3. Woodland biome

- Circular panoramic lift covered with vines as the supertrees to give it a natural look.
- Elevated pathway provides a panoramic view & protection from carnivores below while adding the element of excitement
- Gradually stepped path lowers visitors to ground level again

Figure 4-9 Desert biome view

Figure 4-10 Grassland biome plan

Figure 4-11 Woodland biome view

Figure 4-12 Woodland biome Plan
4. Flood region biome

A bridge lowers visitors to a sitting area at the same level as the animals to make the visitors connect with them.

Figure 4-13 flood region biome view

5. Montane rainforest biome

A chair lift lifts visitors through the biome where they end up entering the second floor in the building.

The montane area is an artificial mountain that has a small waterfall at its tip. The wall separating it from the rainforest area is covered in plants to hide it.

Under the rainforest area lies the energy center that controls all the biomes environmental controls using sustainable biomass & solar energy produced at the site.

Figure 4-15 montane region biome Plan

Figure 4-14 flood region biome Plan

Figure 4-16 montane region biome View
8. **Present exhibition**: models & presentations of the present state of Sudan’s biomes, and how urban areas affected them; helps visitors understand how their personal actions harm the environment directly and indirectly.

9. **Future exhibition**: models & pictures show the forecast future if eco-problems like global warming are not solved, this helps visitors understand the extent of the problem & how global it is.

**Workshops**: To show visitors how they can become eco-friendly, each workshop has an open demonstration explaining its subject such as recycling, planting, animal preservation, water & energy saving and a closed practical class for those who want to try it themselves to make sure they understood the lesson.

**Kids area**: kids are dropped off on one side and received from the other after their parents finish their tour, one is an arts and crafts room using recycled materials the other is a lecture hall with cartoons about being eco friendly.
Ramp coming from the service road that is linked to the service entrance

Basement for the vet clinic and commisionary stores

An underground tunnel to link the 2 basements and reduce the number of basement entrances

Main kitchen linked to the cafes upstairs using a service lift

Hvac room houses the chiller that sends its hot water to a water tower in the roof

Workshops to make and repair the scenes and models of the exhibits

Ducts to transport the chilled water upstairs

Figure 4-19 Basement floor plan
Figure 4-20 Sections
Figure 4-21 elevations