

Title: Development of green cities using vertical space available along express highways with alternative energy management and waste disposal systems

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Introduction

Human settlements first started in “Savana” lands in Africa and moved worldwide with the science, technological and industrial advancement. Almost all ecosystems are now dominated by humans causing irreversible changes with decreasing resilience. As humans we developed natural scientific concepts to define habitats of other living beings but same scientific concepts cannot use to define human habitat which is very complicated.

Humans started to develop their colonies horizontally across the ecosystems and land plots were used for residential, agricultural and industrial purposes limiting the land availability for future generations creating massive network of access roads, power and telecommunication lines, sewerage and drainage networks causing environmental destruction including ground and surface water pollution and soil degradation. Sky scrapers are built to manage the limited land availability. But again these buildings are spreading horizontally.

There is a possibility of using vertical space available along the road network to integrate residential and industrial buildings with latest transport technology like hyper loop and other efficient transport technologies. This approach will enable to streamline the power, telecommunication, sewerage and drainage lines efficiently with latest green technology applications using alternative energies accessing aesthetically pleasing environment to live and work and enough lands to increase the bio diversity in natural eco systems while practicing integrated farming systems .

Present concept paper discusses the possibility of using vertical space available along express highways. This approach will direct the human habitat in to a manageable as well as more environmental friendly landscape compared to individual land parcels all over the surface increasing worldwide imperviousness.

Method

As shown in the Figure 1 and 2, any highway running along fairly flat lands could be used to construct these housing schemes.

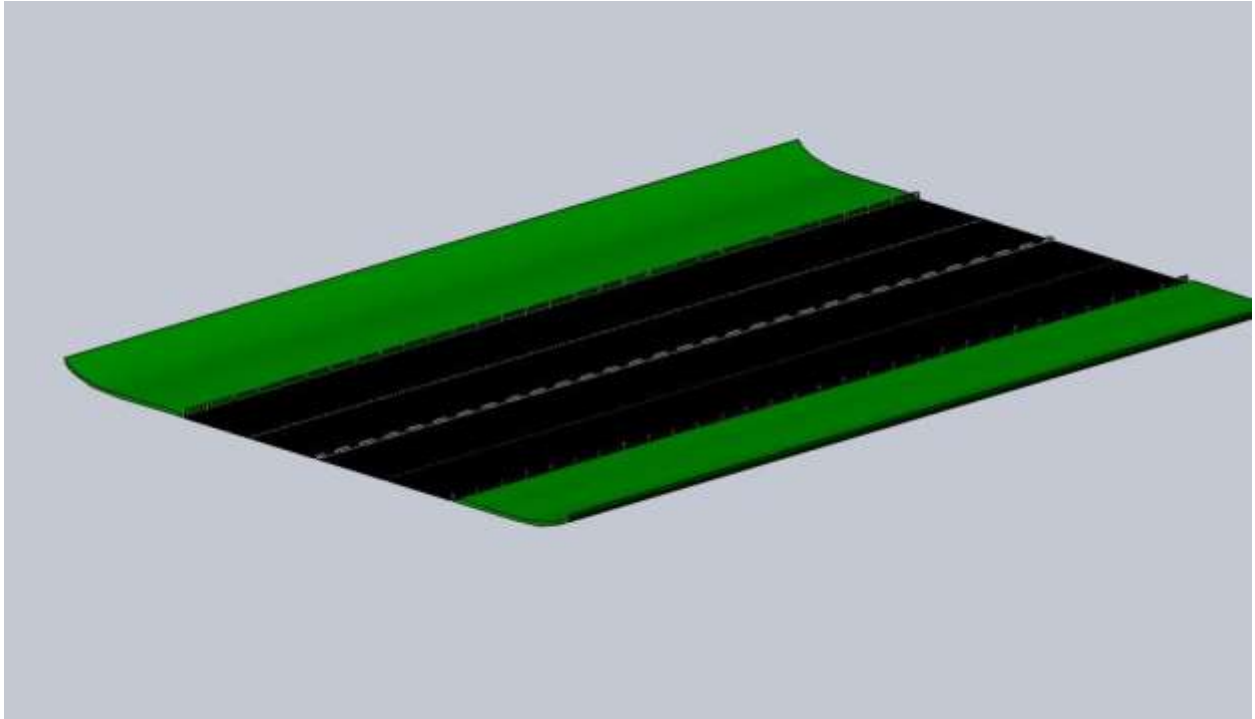


Figure 1: Part of the Highway

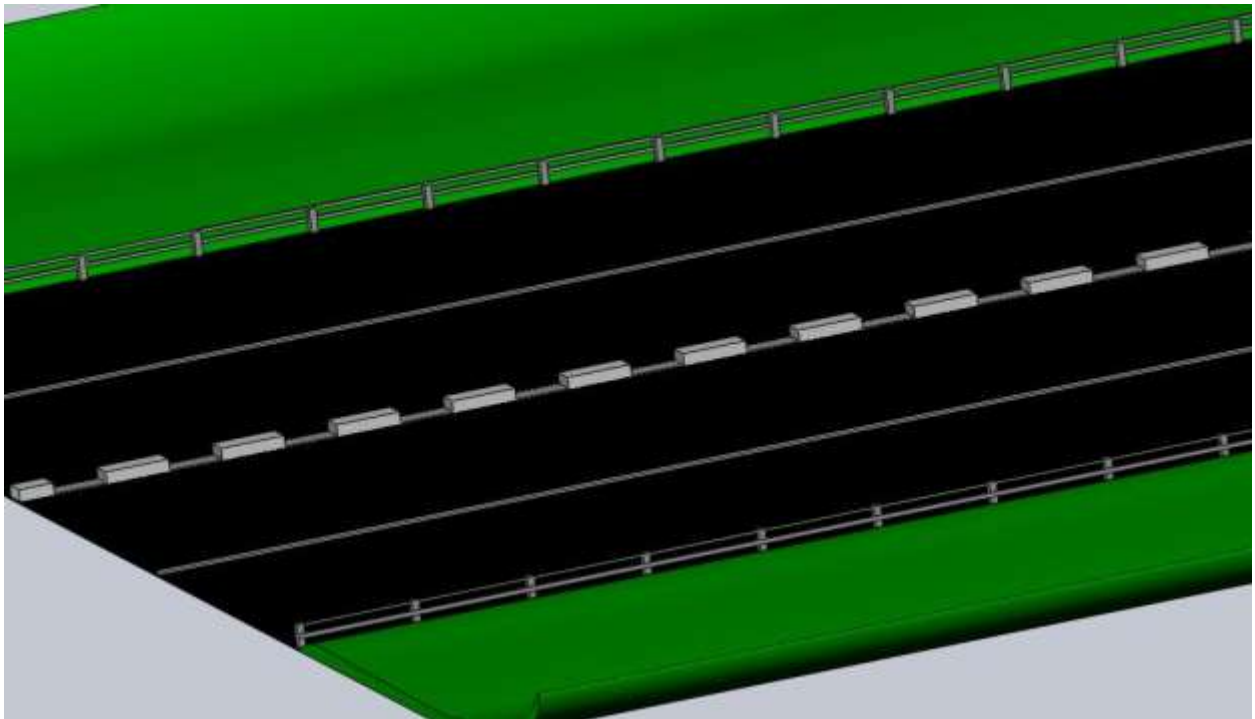


Figure 2: closer view of the Highway

Figure 3 shows the arrangement of concrete beams above the highway to construct the basement structure with one completed compartment.

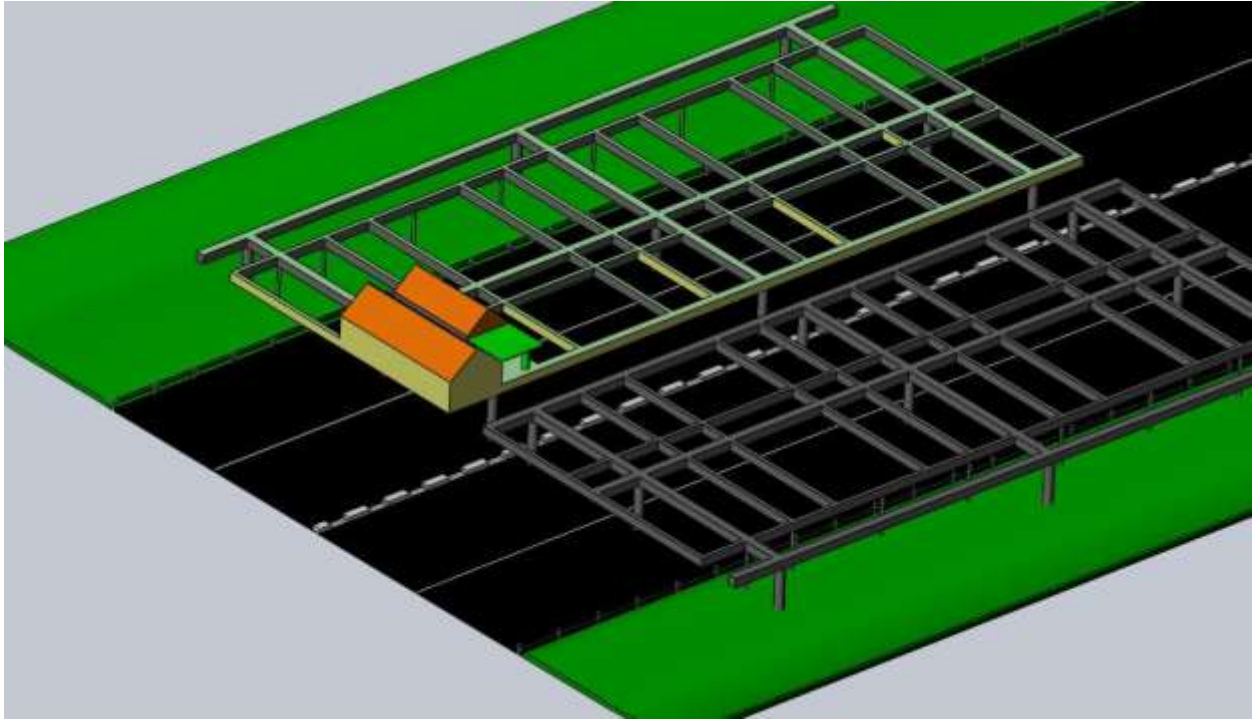
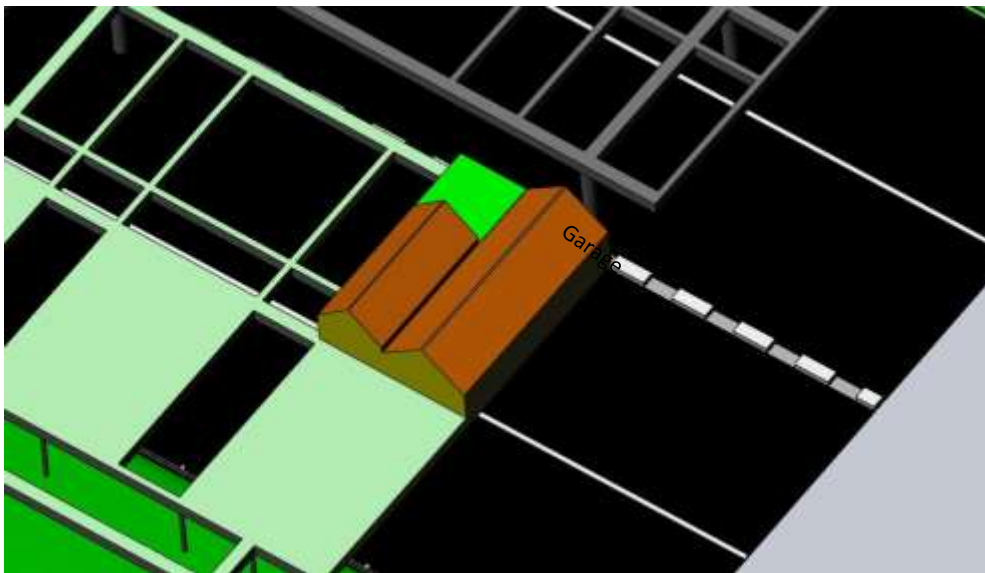


Figure 3: Basement structure and one completed house with a garage

Basement will be constructed with concrete beams and columns. Houses will be constructed over the basement structure.



Open

Figure 4: One completed with front open yard

As shown in the Figure 4, each household will provide area of 16 perch of open ground with 1938 f² for house construction. One array of compartments are shown in the Figure 5.

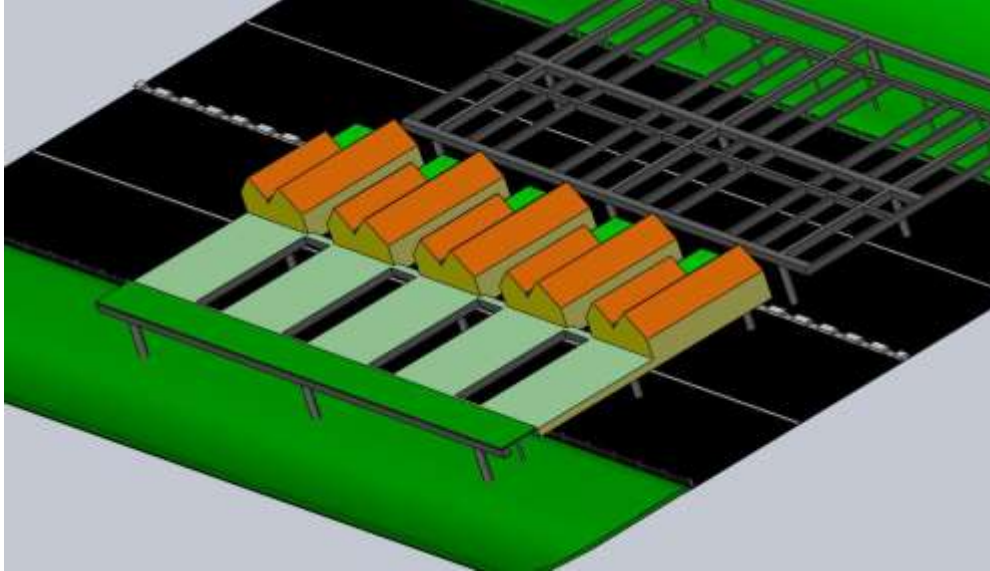


Figure 5: One array of houses having five houses

Protecting measure for earth quacks

Basement structure will not be continuing as one structure and it will continue only for ten houses. This will enable to prevent large damages caused by earth quacks or any other instability.

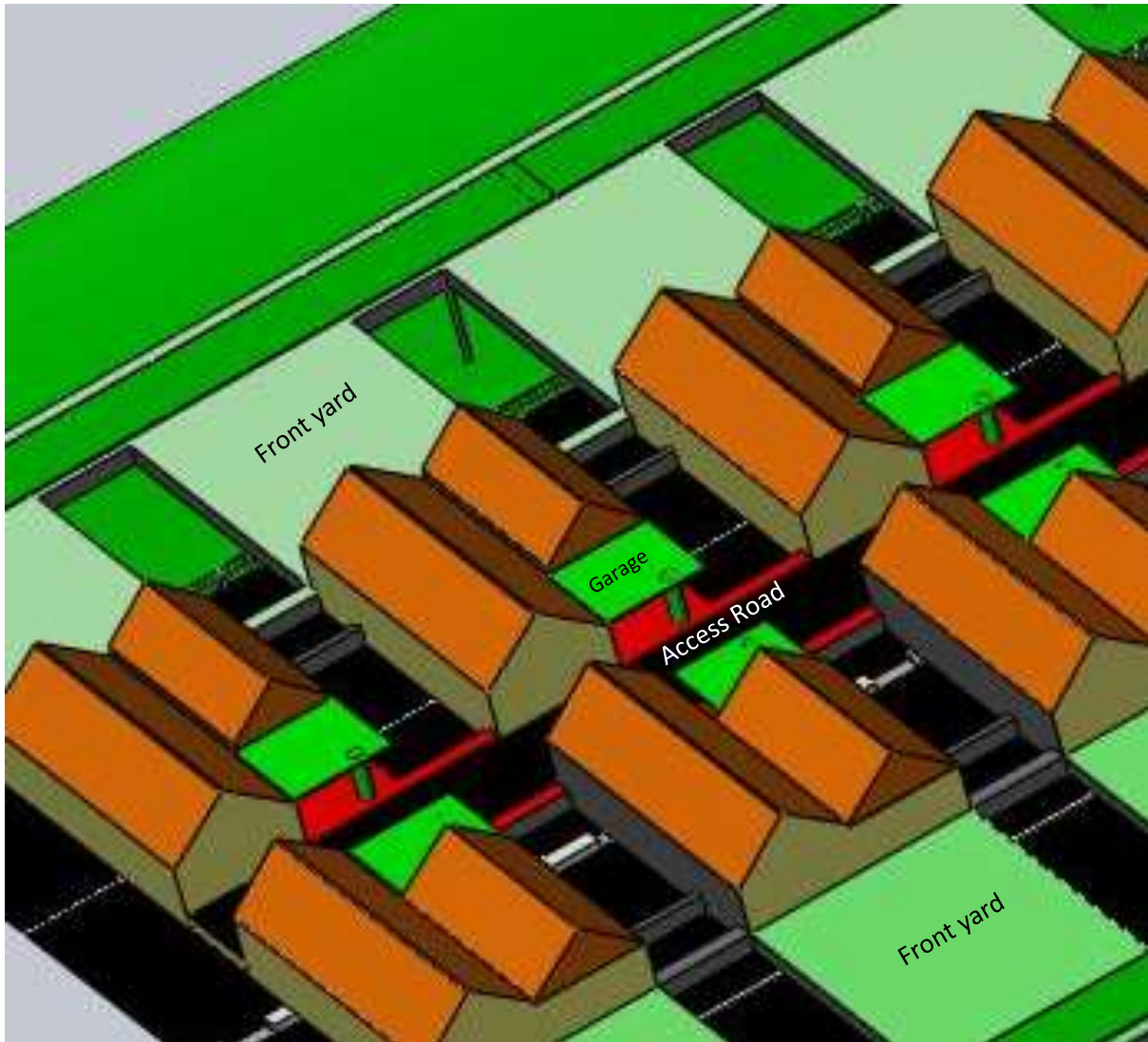


Figure 6: Closer view of the front yard, garage and the access road

As shown in the Figure 6, one block of houses consists of 10 houses and they will have back yard garage faced towards the access road and one front yard faced towards the wetland.

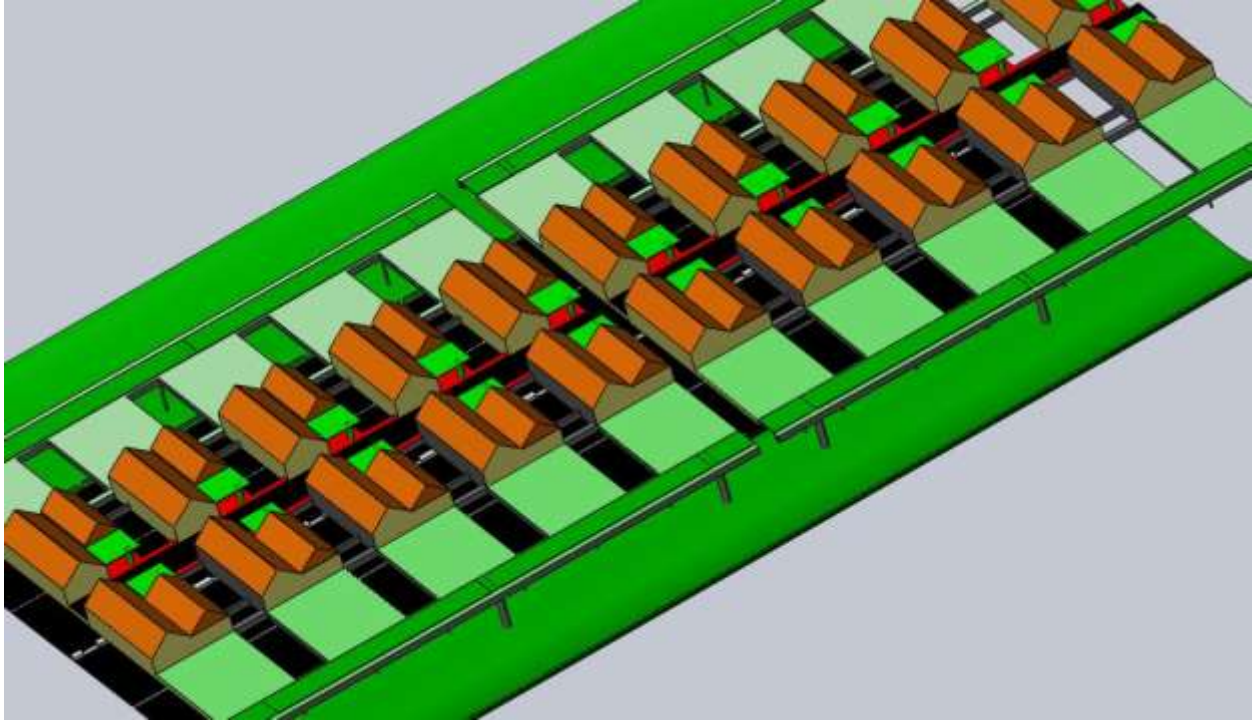


Figure 7: Two double arrays of houses with 20 houses

As shown in the Figure 7, ten houses will be constructed as one block and such blocks will be arranged along the express highway. Blocks will be connected using rubber based material. This will discontinue the large construction and weight of the structure will be absorbed by the earth surface locally. This will provide long term protection as well as protection for earthquakes.

Multiple layering

It is proposed to construct multiple such layers on top of the basement up to desirable heights.

Transportation, power, telecommunication, sewerage, solid waste and drainage lines

Hyper loop systems and other latest transportation systems could be implemented very easily along these green cities. All power lines, telecommunication lines, sewerage and drainage lines could be easily managed with green technology applications to minimize environmental damages with the community participation.

Direct and indirect benefits

Direct benefits

1. Increase land availability for resettlement in aesthetically pleasing rural environments
2. Land in high ground could be saved for natural forests and farm lands
3. Alternative energies could be used optimally

4. Employment generation for both skilled and other services

5. Research and development

Indirect benefits

1. Save the ecologically sensitive areas in buffer zone of the downstream of rivers

2. More lands for primary production

3. Can avoid annual flood hazards in downstream flood plains and save millions of national expenditure