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Sustainable Building

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Abstract

Earth is a world, she is also a complex structure.

Our earth is it a completely sustainable system or is it otherwise?

The previous axiom is correct with the assumption that the sun's light, heat and energy is a free gift from nature, created by the Almighty.

There can be no totally isolated system operating indefinitely without energy provided from the outside world.

Let us take for example a space station, it is not entirely self sufficient. The space station uses energy derived from nuclear power, solar power batteries, etc. and is also dependent on the supplies provided by Earth's spaceships.

What is the coefficient of sustainability of a space station?

The Coefficient of Sustainability of any structure (or of a group of them taken together) is defined here as

$$\text{Coefficient of Sustainability} = \frac{\text{Total Energy required} - \text{Energy from the outside}}{\text{Total Energy required}}$$

$$= \frac{\text{Energy produced within the system}}{\text{Total Energy required}}$$

where Total Energy required is defined as the total of all energy required to operate the system, i.e foods, fuel, water, objects, people, air, plants, trees, animals, soil, tools etc.

Energy from the outside is defined as Energy that is imported to the system from the outside world and is not Energy produced within the system.

The objective is the conservation of energy. Thus the larger our Coefficient of Sustainability is, approaching 1.00, the more energy efficient our system will be.

The Medieval County system

A medieval county consisted of a noble mans' castle-town, the countryside where the peasants lived and farmed the land or raised animals and the forest. This was to a great extent the most self sufficient system ever established. Little was imported from the outside, mainly metals and spices.

The noble mans' castle included the administration, an army unit, servants and a small town.

In the small town you would find craftsman's shops, small industry e.t.c . At the same time the countryside abundantly gave agricultural products and meats. It also gave leisure activities for many.

Thus we observe that the Coefficient of Sustainability of the medieval county system must have been high. Nothing was wasted and everything was used. The greatest decrease of our coefficient of sustainability would come from an invasion from the outside world by a foreign army and from the introduction of new requirements in the life and customs of the original population (i.e new products needed, new inventions imported).

The Green Home

The idea behind creating an efficient sustainable Green Home is to lessen the adverse effects of the structure to the existing ecosystem by not wasting energy while at the same time we achieve a superior way of daily living.

A home built on a parcel of land is presented with all of the following challenges as far as becoming a green home, efficient and sustainable:

A. Energy. Reducing the amount of energy required for heating/ac and electricity. This can be achieved by installing a photo-voltaic panel system , creating an ecological biowaste burning generator and foremost designing our home in an energy efficient manner. Vertical and horizontal gardening is a must, which reduces the energy consumption for air conditioning and heating.

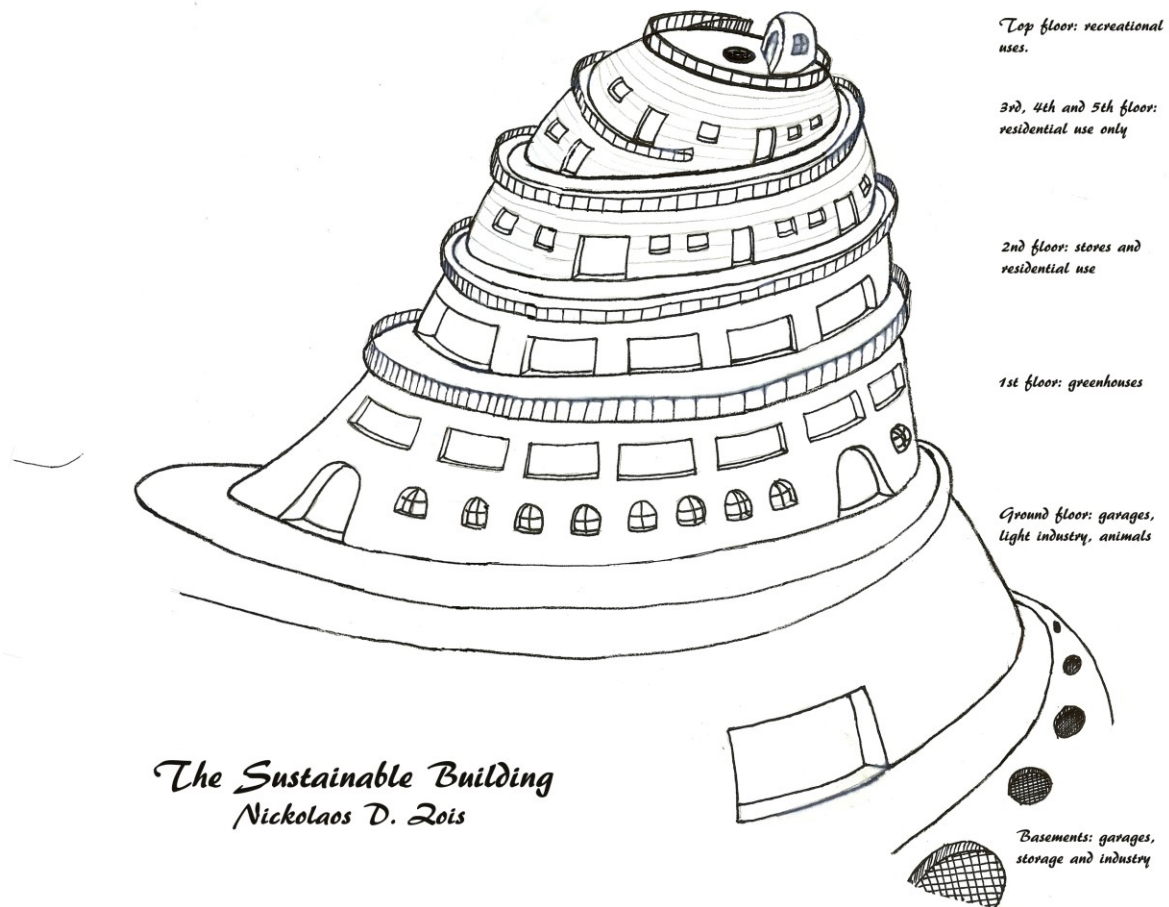
B. Foods Production, of vegetables, fruits, legumes e.t.c shall be done on the open areas of our home – lot or in the balconies and flat roofs as well as indoors. Also some animals will provide milk, eggs and poultry meat (if allowed by the City).

C. Water. Fresh water is supplied either from the city and or from processing rain water, well water etc.

D. Waste water. It is produced after the use of clean water. Waste water can be treated on our site from a filtration system. Treated waste water can be

used for the watering of all plants. Note that in order to effectively treat waste water the soaps used must be ecologically manufactured products.

DESIGNING THE SUSTAINABLE GREEN HOME



The Apartment Building

Intentionally the plants, trees, vegetation and solar panels were not included, in order for the structure to be visible.