

Sustainable Tall Green Building-Context Approaching Bangladesh

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Abstract- Bangladesh is a member of D-8 (Developing 8) countries in the world. But one of the problem is that it is a densely populated country. The population of this country has been increased at such a rate over the past few years that development plans for the country by the government of Bangladesh has undergone many tremendous transformations. Especially in the urban area is highly populated, but the amount of land is relatively very which has put severe pressure on the ecosystem of the urban life. The increased population has impacted the ecosystem of densely populated cities like Dhaka, Chittagong and Narayanganj. The changes in the population were paralleled by the real estate construction and housing industries. Dhaka, Chittagong, Narayanganj are some of the most polluted cities in Bangladesh. This is why sustainable green building-context is approaching Bangladesh.

Index Terms—MDG, UNFCCC, IPCC, LEED.

1 INTRODUCTION

Green building is a structure and using of processes which keeps ecological equilibrium and resource efficiency[1]. Green building design is actually the creation of structure of the building that keeps the environment safe, balances the environmental ecosystem and use the environmental energy efficiently.

To implement the green building, the architect can use the natural ecosystem model for the key structure of the building. Also, they can modify the natural ecosystem model to create a sustainable green building[2]. Even the architects can adopt an existing building model and cope it with the theoretical green building model so that the green building becomes environmentally friendly for the material it uses, the space it consumes and even the electric or solar energy.

Geologically, Bangladesh lies in a region which is prone to face some severe natural calamities like earthquake, storms, cyclones, flow tide. The coastal areas of the country are most affected during these

natural calamities[3]. Also some man made pollutions like emissions from the industries are deteriorating the condition of our environment day by day.

However, these pollutions and natural disaster are badly affecting our invaluable human lives, agriculture, air, water resources, energy resources, food chains and fisheries. Our country is suffering severely for producing enough energy for its populations and industries. The green building approach can somehow decrease the amount of pollution and energy requirement for the people living or working there ensuring the efficient usage of water and energy.

Over populated cities like Dhaka, Chittagong, Narayanganj and cities where industrial and educational development has begun but suffering from lack of energy supplies – the instalment of green building is a must there. Initially it was thought that some governmental aids can be used to bring the green building concepts in an effect. But the miss-concept of cost effectiveness demolished that. It was supposed that our country may not be able to provide the cost and facilities to implement the green building.

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From 2009, the Government of Bangladesh has stopped giving connections of energy like gas, even water due to shortages. Especially these things happened mostly in the capital city Dhaka[4]. It is also notable that most of the times some of the areas of Dhaka city had shortages of gas supply though they had previously existing connections. Energy saving and eco-friendly green building models are needed to be constructed in the situations like this for further use.

Many universities in Bangladesh are trying to add the green building programs in their academic curriculum like BUET, PUST, AIUB, BRAC, NSU, UAP and so on. Also a rating standard for the buildings are required so that the buildings are sustainable and standard. Organization like Bangladesh Green Building Council is working on this concept[5]. The buildings should be designed and built in such a way that they emits less carbon and uses less power energies.

2 GREEN ARCHITECTURE: PROSPECTIVE TO BANGLADESH

Bangladesh is highly populated country in the world, world number eight in the score of population density. Unplanned urbanization and industrialization has increased the pollution of the environment rapidly and intolerably. Moreover, in some cases the country is suffering from the shortages of energy to supply to its people. In this context the green architecture for building is a must in this country. The architects and engineers think it is highly possible to create effective green building in Bangladesh. In some cases the enthusiastic young talented engineers and architects of Bangladesh are trying to construct some projects regarding green architectures.

The architects must define and create their own idea and model for the green building. The structure of the natural ecosystem for example energy sources – sun, human, animal, human-wastes, oxygen, carbon-di-oxide, plants can be taken under consideration while creating the

design of the building. Again the existing building design can be modified for the same purpose to create the green building design.

The clients, architects, engineers and developers must be closely involved during the instalment of the total system. The crucial phase of the development of green architecture is to creating the workable design for the building after listening to all the requirements of the client.

Sometimes the client may not understand the necessity and importance of the green architecture. In that case the architect must be able to consult and convince the client of the green architecture. After all, in most of the cases the constructions are done as per the requirement of the client weather it is suitable or not.

In densely populated cities and organizations like larger universities relative to the amount of students, it can not be thought of living without the multi-storied buildings. It is also desired that the green architecture of the buildings should be tall enough to fit in the construction site to ensure the placement of people. Generally in most of the cases the buildings are highly dense and trees, plants and ponds are being eradicated to replace the buildings. In that case the buildings should be designed in such a way that they keeps the existing environment element to keep the existing ecosystem sustainable. Also some procedures or techniques should be added with the building design to keep growing plants at the building such as at the places like balcony, rooftop and the like.

The building becomes sustainable due to both the design and construction. The architect must visit the construction site and see what the potential environment elements are where the building lies in as mentioned earlier.

As the building raw materials – the elements that are provided by the environment and biodegradable can be used in the construction of the building.

Finally, when the green architecture is completed, it looks like the human beings are actually living in the lap of nature.

3 GREEN ARCHITECTURE: DESIGN ISSUE IN BANGLADESH

The green architecture should be sustainable, non-harmful to the environment and built on energy

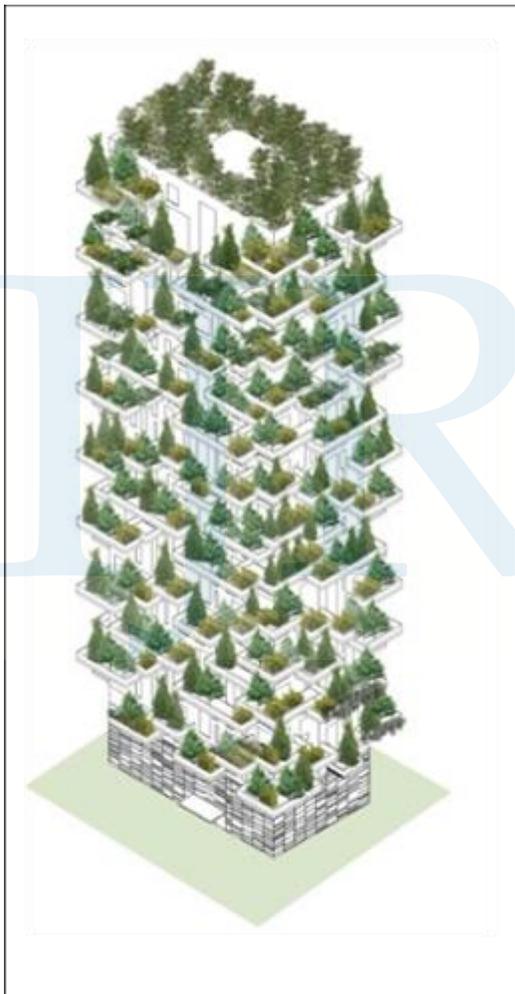


Fig: Green Architecture in Bangladesh efficient lines. The green architecture may use the solar energy as alternative source of electricity. Even to absorb the carbon emitted by the building, the green architecture may use the green plants cultivation with the building.

If the architect wants the design to be completely green as described theoretically, it must use the

principles of ecology in the design and construction. This refers that the resources those are going to be used in the construction will be collected from the nature mostly – such as woods, concretes and the like, and their collection from the environment will not affect the ecology of the environment system.

The normal architect and a green architect has some differences. It is the job of the architect to design the building as per the request of the client, the architect may not be concerned of the environment. But the green architect must watch over the green ecology. Sometimes the client may not understand the efficiency of the green architecture, then the green architecture may need to convince his/her client to adopt the system.

The motivation of the green architecture is to use an energy efficient technique during the design and to make sure the client can provide those facilities. Some of the energy efficient techniques may be using solar energy, geothermal cooling and heating technique. Also using a particular type of wood, stones and so on which are environment friendly.

The particular green energy efficient issue should be discussed with the green architects. Also it should be noticed whether they pay attention or not. The architects may change the original proposed design. The architects recommendations should be taken for the considerable well designs and the reason why the architects choose the design a good one.

If possible, some of the designs should be seen and also the completed work, if any exists, should be seen. Moreover, reviews should be taken from the client of the green buildings who live or work in there.

4 GREEN ARCHITECTURE: MATERIAL USED IN BANGLADESH

Climate change, resource depletion, pollution are the great challenges of our time. All of these issues

are growing rapidly and have impact in building industry. As for example, Taj Mahal has most of its glaze of the white marble stone due to acid rain, and acid rain is a result of air pollution.

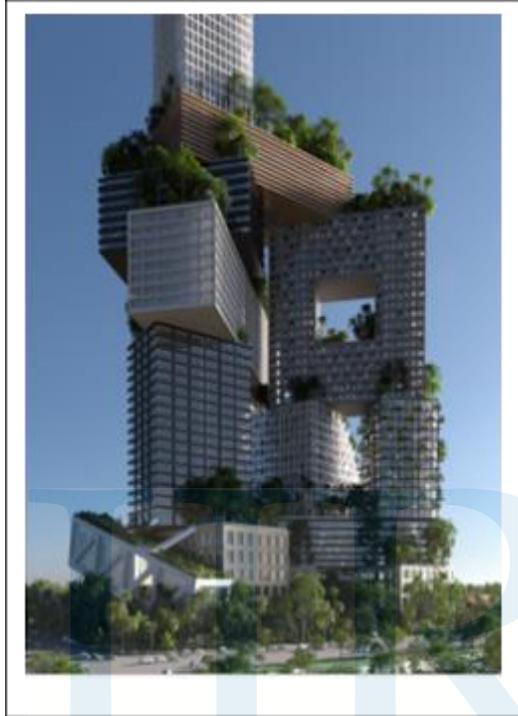


Fig: Complete building with Green Architecture

So green building is both a wise and necessary choice of future. But to build a green building there requires some materials. These can be directly collected from the nature, or some its can be collected from the nature and mixed with the existing industrial materials.

One of the renewable materials in the green construction is the wood, which comes from the forest. Woods can be reused from old plumbing and doors and the like.

Wools and natural polymers can be added with bricks while burning can produce more powerful bricks which is 37% more strong than the normally baked bricks. These bricks are also a good resistor of cold and heat and wet climate.

Paper insulations can be used as a resistor of insects by mixing cardboards, papers and chemical foam. This also work as the fire insulator.

As one of the eco-friendly materials in Bangladesh, the metallic bars in the building construction can be replaced by the use of bamboo.

5 CONCLUSION

There are many good reasons why we should use eco-friendly construction methods and materials. It can improve the health of our planet, and the health of our own lives. It also supports local business and helps strengthen the local economy, which in turn helps to build our communities into vibrant, prosperous and desirable places to live. In Bangladesh Green Architecture is not a myth it is a implementable job for all of us.

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