

Green Buildings

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Abstract: This paper presents an overview on green buildings.

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1. Introduction

In our country, today, the building sector is growing at a very rapid pace. It is the third largest consumer of energy, after industry and agriculture. India, being a developing nation, has a severe energy shortage and the rate at which the energy sector is growing is not sufficient to match the rate at which energy is being consumed. Add to this the fact that the processes from which energy is produced are dependent on natural resources, our increasing energy consumption equates to depletion of our natural resources and an increase in pollution. Therefore, we need to look towards environmentally benign technologies in the construction sector, so that we may contribute towards the conservation of natural resources, reduction of pollution and a saving on operating costs involved through a building's life.

2. Need for building green in India

Globally, it is being observed that the rate of growth of total energy consumption has been greater than the population growth rate. In the developed countries, the energy consumption growth rate is only marginally higher compared to the population growth rate, but in developing countries such as India, the difference is much higher. For example, according to a study conducted by the US Department of Energy recently, the energy consumption rate in the US is growing at 1.3% while population is growing at 0.8%. Contrast this with India, where the energy growth rate is 4.3% against a population growth rate of 1.3%! This trend will put a severe strain on the energy sector. The building sector, being one of the largest consumers of energy, can help ease this strain by adopting green construction practices. It is generally estimated that 'Green Buildings' have the potential to save anywhere between 30-40% of energy over conventional buildings.

3. Potential for 'green buildings' in India

There is a tremendous potential for green buildings in India. The overall investment towards building construction is estimated to be Rs. 5000 crores annually (as per NICMAR data). Even if 5% of this is utilized for constructing 'Green Buildings', the potential is huge. It will open up a plethora of opportunities for several stakeholders such as the construction

industry, the architects, the material and equipment manufacturers, and so on. The CII Sohrabji Godrej Green Business Centre in Hyderabad is pioneering the development of green construction practices in India. It is rated as a "Platinum" building by the US Green Building Council's LEED rating system.

4. Green building concepts



Fig. 1. Green building concepts

Green buildings are constructed just like regular buildings. The difference is in the various decisions made during the construction process with regard to materials and the design of the lighting and ventilation systems, and so on. An in-depth analysis of green construction techniques is beyond the scope of this report. Volumes can be written on each of the following topics, and it is not possible to cover every aspect. Many topics such as "Energy Efficient Windows", "Construction Waste Management" and "Financial aspects of building green" have been deliberately left out of this report. This report merely attempts to provide the reader with a very broad and very general idea on the overall aspects of 'building green'.

5. Elements of green building

- Albedo paint
- Sky lights
- Double glazed windows
- Automatic sprinklers
- Wind ducts
- Infiltration wells (rain water harvesting)
- Terrace garden

- CFL (chloro florescent lights)
- Natural leterite stones
- Natural stones for flooring (khadapa, tandoor, marble etc.)
- Poly urithine polish for walls
- Big ventilators
- Water less urinals
- Furniture from recycled materials
- Solar lighting system

6. Conclusion

“The essential design challenge is to make things that fit, onto a planet that has a biosphere. Nature is the standard for this: nature has been at this design problem for 3.8 billion

years.”

Nature is the world’s greatest and wisest engineer, having worked on this problem for over 3.8 billion years. As engineers when something doesn’t fit, we take it out of the equation. We must strive to fit into nature’s equation for the world. We must evolve to a stage where all our activities synchronize with nature, and a balance is established. That is the goal of ‘building green’.

References

- [1] IGBC (Indian Green Building Council), www.igbc.com
- [2] USGBC (US Green Building Council), www.usgbc.com
- [3] www.geopolymer.org
- [4] Best Practices; The American Institute of Architects
- [5] M Selvarasu, Counsellor, LEED Accredited Green Building Professional, Confederation of Indian Industry (CII) – Sohrabji Godrej Green Business.