The role of MEP system in Green buildings in transforming Hyderabad city into a sustainable city.

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Abstract: The worldwide urban sustainability by residents has led to growing demands for green buildings, Property care and sustainable livelihood. In response, many developed countries on the globe took the leading role in green or sustainable building construction and practices by supportive policies and financial support, but country like India is in its starting stage in adapting market, educating citizens and policies to encourage more green building developments. Indian cities are scattering the crisis of civilians with escalating urban population, which is destroying the attraction of historical cities in the states of India. Hyderabad, which is served last 400 years under different regime, is clutching the citizens with its heat-island actions on cool zone of Deccan plateau. This paper is intentional to expose the necessity of green buildings to defeat high expenditure crisis with deprived natural resources for sustainable developments in India. Also, elaborates required actions to control the stress on natural resources like water, energy (energy efficiency), radiation (Temperatures)... under the limits of urban municipalities with proper mechanical attention. It also delivers the required road map for preparing potential government policies and institutional governance to save money of million pockets.

Key words: Green buildings, Urban heat island, Energy conservation, water treatment, Hyderabad.

1.Introduction:Concept of Green Buildings:

Green buildings are designed to reduce the overall impact of the built environment on human health and natural environment by: Efficiently using energy, water and other resources, Protecting occupant's health and improving employee productivity, Reducing waste, pollution and environment degradation. The green building concept is gaining importance in various countries. These are buildings that ensure that waste is minimized at every stage during the construction and operation of the building, resulting in low costs according to the experts in the technology.

2.Structure demanding resources:

Every building structure demands resources water and energy for the inhabitants of the building. To address the most important national priorities which include water conservation, handling waste, energy efficiency, reduced use of fossil fuels, lesser dependence on usage of virgin materials and health & well-being of occupants. The application of National standards and codes such as the NBC, ECBC, MoEF guidelines, CPCB guidelines, and several others. The overarching objective is to be better than the national standards so as to create new benchmarks.

3.Reason for Green buildings:

The United Nations Environment Program celebrates the World Environment Day on June 5 to raise environmental awareness. Environmental awareness has been growing every year in the past few decades. The popularity of green buildings are rising too across the world. In India, LEED (Leadership in Energy & Environmental Design) rated green buildings are in greater demand than ever now.

4.Classification of Indian cities:

The classification of cities should not be according to economics and population but on the sustainability and green building concepts applied by the cities in India. **(please see ref: 03).**

5.Urban development in India

Urban development is not planned and scientific in India and the development is on ad-hoc basis. About 377 million Indians comprising of about 31 per cent of the country's population, live in urban areas according to Census 2011**(please see ref: 01).** This is a smaller proportion compared to other large developing countries, for example, 45 per cent in China, 54 per cent in Indonesia, 78 per cent in Mexico and 87 per cent in Brazil. With the more rapid growth of the Indian economy in recent years, which is expected to continue, the rate of urbanisation will increase. Projections are that by 2031, about 600 million Indians will reside in urban areas, an increase of over 200 million in just 20 years.

6.Heat Island Effect

An urban heat island (UHI) is an urban area or metropolitan area that is significantly warmer than its surrounding rural areas due to human activities. The temperature difference usually is larger at night than during the day, and is most apparent when winds are weak. UHI is most noticeable during the summer and winter. The main cause of the urban heat island effect is from the modification of land surfaces. Waste heat generated by energy usage is a secondary

contributor. As a population center grows, it tends to expand its area and increase its average temperature. The term heat island is also used; the term can be used to refer to any area that is relatively hotter than the surrounding, but generally refers to human-disturbed areas.

7.Resources consumed by buildings water and electricity:

Electricity. Water and natural gas are the most common energy sources used in commercial buildings. Most individual commercial buildings have their own heating and cooling systems. However, there are *district energy* systems that supply heating and cooling to groups of commercial buildings. When many buildings are close together, such as on a college campus or in a city, having a central heating and cooling plant that distributes steam, hot water, or chilled water to multiple buildings is sometimes more efficient. District energy systems may also produce electricity along with heating and cooling energy. District energy systems generally use fossil fuels (coal, natural gas, or fuel oil), although some use renewable sources of energy (biomass, geothermal, solar, and wind energy).

8.Expenditure to bring the resources in the buildings:

The cost of bringing water and electricity for consumption for the occupants of buildings is very high as the urban population is increasing the demand for the resources is increasing due to increase in population and scant supply of resources leading to high price of resources. **(please see ref: 02).**

9. Energy conservation and water treatment:

The energy conservation practices are costly in building services i.,e MEP i.,e HVAC, Electrical and water conservation strategies will help in reducing the consumption of the scant resources. People must be educated the initial cost can be more but the overall cost or running cost or life cycle of building will be less and the initial extra expenditure can be recovered and benefits for remaining lifetime of the building. **(please see ref: 04).** Treating of waste water from buildings in STP is costly before releasing the water in lakes and rivers. In India water is released without treating in the lakes and rivers leading to lot of water pollution. In Hyderabad there are 4 to 6 thousand fresh water lakes which have been turned into sewage dumping site leading to running 200 kms for getting fresh drinking water from river Krishna and Godavari. **(please see ref: 05).**

10.Hyderabad Existing city:

In Hyderabad there are lot of buildings already constructed which can be retrofitted to adopt green building practices and the new building to be constructed the municipality should have strict norms to use green building practices so that they plan well in advance in design stage so that all the guidelines can be incorporated during the construction so that the benefits can be reaped during the full life cycle of the building.

Conclusion: The above explanation is intimating upcoming crisis with high cost of living in urban areas with deprived and contaminated natural resourses (Air, Water, land...) and showcasing new economic (new employment, additional income with taxes, relax from water scarcity,...) opportunities for future sustainability. This need-of-hour requires an alternative solution practices in infrastructure (construction) industry like “green building concept”, which will reduce the consumption levels in water, power and open lands for solid waste stockpile. (please see ref: 06). Also, required ease policies, awareness for citizens under various urban ministry schemes and financial benefits from state or central governments like other countries. Finally it concludes negligence at any side may evaporate peace and lives of people in any urban area.

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