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SMART-BUILT ENVIRONMENT: REVIEW

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Abstract: *The purpose of this review is to explain the intelligent built environment. And what are the motives for turning cities into smart cities? In addition, analysis of the aspects that must be made available to achieve this equation at an urban level, from people to infrastructure. In addition, the chapter provides a reference to the role of linking technological modernity in service management on urban scales and buildings (smart cities, smart buildings).*

Keywords: *Smart city –Built environment- Smart City Features*

INTRODUCTION

Inhabited by over 7 billion people, our planet is in the midst of a massive ecosystem transition, climate change, tectonic plate movements, and biological evolution. Among these, climate change is one of the most critical issues affecting our planet and is largely attributable to human activities. Climate change brings with it adverse effects such as threats to biodiversity and ecosystems, risks to human health, rising sea levels due to the accelerated melting of glaciers and ice caps, increased water stress and decreased agricultural productivity.

These issues are driving many economies and cities around the world to focus on mitigating greenhouse emissions to counter climate change impacts. Cities account for the bulk of the world's greenhouse gas emissions and energy consumption. As cities in most nations are drivers of economic growth, urbanization is projected to continue to increase in the near future. This will, in turn, drive the depletion of non-renewable resources and add to carbon dioxide emissions. Innovation and digital technology must be leveraged to tackle rising urbanization and climate change issues to minimize energy consumption and improve the quality of life. To address urbanization challenges and ensure sustainability, innovation must be combined with energy, digital technology and information and communications technology. Sustainability encompasses not only the environment but also social equity and the economy. The globe is witnessing a shift in economic power corridors, as China and India are considered to be the most powerful economies to watch out for. These emerging economic giants need to take precautionary steps to avoid the devastating effects of climate change.

What does the term “built environment” mean?

The term built environment is used when referring to those surroundings created

- for humans,
- by humans,
- to be used for human activity.

Examples would include cities, buildings, urban spaces, walkways, roads, parks, etc.

Smart Environment

Smart Environment: Smart solutions for the environment consist of smart systems for managing environmental quality, irrigation, waste, photovoltaics, lighting, weather station and water supplies. Its objective is **to improve energy efficiency and the quality of the environment in cities.**

Smart Environments for Smart Cities: How do they work?

- Smart cities are a framework, predominantly made up of information and communication technologies (ICT), in which urban planning and sustainable development practices are developed and implemented to address the growing challenges of urbanization.
- IoT applications are fed back by an intelligent network of connected objects and machines that transmit data using wireless technology and the cloud.
- Supported by Big Data, smart cities use this data to implement measures that improve efficiency and the quality of life of the inhabitants.

Smart City Features

In the approach to the Smart Cities Mission, the objective is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions. The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a lighthouse to other aspiring cities. The Smart Cities Mission of the Government is a bold, new initiative. It is meant to set examples that can be replicated both within and outside the Smart City, catalyzing the creation of similar Smart Cities in various regions and parts of the country.

The core infrastructure elements in a Smart City would include - adequate water supply, assured electricity supply, sanitation, including solid waste management, efficient urban mobility and public transport, affordable housing, especially for the poor, robust IT connectivity and digitalization, good governance, especially e-Governance and citizen participation, sustainable environment, safety and security of citizens, particularly women, children and the elderly, and health and education. Some typical features of comprehensive development in Smart Cities are described below:

- Promoting mixed land use in area-based developments — planning for 'unplanned areas' containing a range of compatible activities and land uses close to one another in order to make land use more efficient. The States will enable some flexibility in land use and building bye-laws to adapt to change;
- Housing and inclusiveness — expand housing opportunities for all;
- Creating walkable localities — reduce congestion, air pollution and resource depletion, boost local economy, promote interactions and ensure security. The road network is created or refurbished not only for vehicles and public transport, but also for pedestrians and cyclists, and necessary administrative services are offered within walking or cycling distance;
- Preserving and developing open spaces — parks, playgrounds, and recreational spaces in order to enhance the quality of life of citizens, reduce the urban heat effects in Areas and generally promote eco-balance;
- Promoting a variety of transport options — Transit Oriented Development (TOD), public transport and last mile para-transport connectivity;
- Making governance citizen-friendly and cost effective — increasingly rely on online services to bring about accountability and transparency, especially using mobiles to reduce cost of services and providing services without having to go to municipal offices; form e-groups to listen to people and obtain feedback and use online monitoring of programs and activities with the aid of cyber tour of worksites;
- Giving an identity to the city — based on its main economic activity, such as local cuisine, health, education, arts and craft, culture, sports goods, furniture, hosiery, textile, dairy, etc;

Applying Smart Solutions to infrastructure and services in area-based development in order to make them better. For example, making Areas less vulnerable to disasters, using fewer resources, and providing

cheaper services.

What are Smart Solutions

Before delving into the variety of environments that make up smart cities, we briefly explain what Smart solutions consist of, in charge of turning a city into a smart one.

These Smart solutions are intelligent services to measure and control the basic needs of a Smart City, through a modular and scalable system of connected management systems that facilitate the control and management of different areas of the city. In the case of **Nexus Smart Cit**, there are 4 main areas of solutions to implement:

- 1- **Smart Environment:** Smart solutions for the environment consist of smart systems for managing environmental quality, irrigation, waste, photovoltaics, lighting, weather station and water supplies. Its objective is to improve energy efficiency and the quality of the environment in cities.
- 2- **Smart Mobility:** Smart solutions for urban mobility consist of intelligent monitoring systems for pedestrians, bike lanes, parking spaces, charging stations, capacity control, traffic control and tourist saturation. Its objective is to reduce the noise of cities so that it can function normally.
- 3- **Smart Living:** Smart solutions for homes and everyday life consist of intelligent fire detection systems, video surveillance, air conditioning and management of sports facilities. Its objective is to improve the quality of life of citizens.
- 4- **Smart People:** Smart solutions for citizens consist of optimizing the services offered to them, taking into account that co-habitants are crucial to co-build a better city for all. These solutions include informational Mupis, citizen cards, citizen Apps, and social Wifi. Its objective is to enhance communication between the different parties.

APPROACH

Create solutions for the sustainable and smart design, renovation and repair construction, use, and maintenance of buildings, infrastructure, and cities.

Assist in the making of decisions and choices in urban planning that will benefit future generations.

These are the cornerstones of approach:

Developing new concepts and materials for sustainable new construction and renovation building. develop digital solutions for the entire life cycle of built environments from planning and construction to the use and demolition stages.

Construction of energy-efficient buildings and energy-positive residential areas without compromising on the comfort of the buildings and living environments.

Create development platforms for sustainable and smart urban solutions.