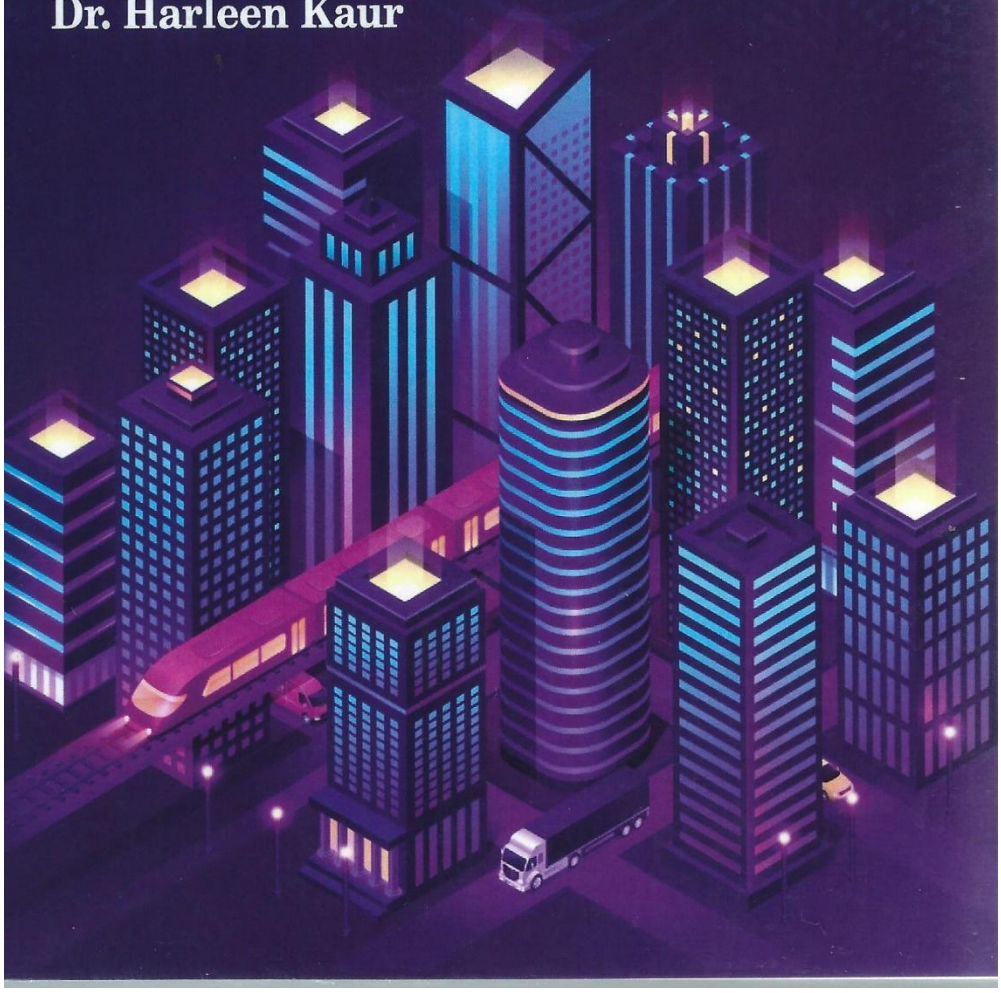
Smart Cities for Sustainable Development

Editors:
Prof. (Dr.) Harpreet Kaur
Dr. Harleen Kaur



Smart Cities for Sustainable Development

Editors

Prof. (Dr.) Harpreet Kaur
Principal,
Mata Sundri College for Women,
University of Delhi

Dr. Harleen Kaur
Associate Professor,
Mata Sundri College for Women,
University of Delhi

KITAB MAHAL

KITAB MAHAL

First Edition : 2021

ISBN : 978-81-953867-6-5

SELLING AGENTS

1. **Kitab Mahal Publishers**
   4655/21, Ansari Road (G. F.)
   Daryaganj, New Delhi-110002
   Phone : 011-23273230/43526875; +91 9810669341
   Email : kitab_mahal@hotmail.com

2. **Kitab Mahal Distributors**
   A-403 Raj Niwas Residency
   22-A, Sarojini Naidu Marg
   Allahabad-211001
   Phone : +91 7355431617, 9350075776

Price : ₹300.00

Published By : Kitab Mahal, 4655/21, Ansari Road, (GF) Daryaganj, New Delhi-110002
Phone : +91 9350075776 Email : kitabmahalpublishers@gmail.com
Visit : www.kitabmahalpublishers.com
Printed By : Avatar Offset, 43/2, Site-IV, Sahibabad Industrial Area, Ghaziabad (U.P.)

PREFACE

Last few decades have seen massive urbanisation, especially in countries such as India. This mass movement puts a phenomenal stress on the limited resources available in the cities. Examples of these stresses include depleting Air Quality Index (AQI), insufficient and poor quality of water supply, increasing traffic on roads leading to higher time spent in the commute and mounts of waste that is improperly handled, among others.

As a result, it is important to ensure that the resources in these massively stressed cities are optimally utilised. Data will play a big role in ensuring such optimal utilisation of resources in the cities by both plugging in the wastages as well as increasing the uptake on the supply side. Real time data collection from across different urban infrastructures will translate the cities into 'Smart Cities'.

Recent technological advancements such as availability of cheap and high bandwidth connectivity, low cost and pervasive sensors and cloud infrastructure that can dynamically scale up allow massive volumes of data, generated at the city level, to be appropriately managed and analysed. Advancements in analytical tools allow real time data processing, resulting in intelligent actions that can ensure optimal utilisation of limited and depleting resources that are on offer in the cities. The application of ICT- enabled delivery mechanisms and solutions for a better lifestyle is the major task before the urban planners and hence, infrastructural development throughout the country should be imbued with rejuvenation programmes conceptualised under Smart Cities Mission.

A sustainable future is the one wherein we are passing on, to our next generation, a better version of the world that we inherited. With much of the world's population living in urban areas, 'Smart

Cities' will play a major role in realising the dream of creating a sustainable world. Smartness in these cities will come from putting to good use the new technologies and ensuring that economic, social, environmental and cultural needs of the growing urban population are addressed in a sustainable manner.

In this book, we have attempted to present varied aspects of sustainability within the purview of smart cities. The concept of 'Smart Cities', architectural changes required to make a city 'smart', need to make cities 'smart' with the help of integrated ubiquitous computing, need to create green spaces and walkable localities, innovations in waste segregation and waste management, smart solutions to infrastructure and various services etc. are highlighted in the book. Authors from across the world have contributed to the book with their research based on smart cities and sustainability and technology-led vision of smart cities. This book will be of immense help to the research students and consultants studying urbanisation and sustainability.

We would also like to acknowledge the keen interest taken by our publisher, Mr. Raghvendra Agarwal of Kitab Mahal Publishers for bringing the book in its present form.

Editors
Prof. (Dr.) Harpreet Kaur,
Principal,
Mata Sundri College for Women,
University of Delhi
&
Dr. Harleen Kaur,
Associate Professor,
Mata Sundri College for Women,
University of Delhi

CONTENTS

ENVIRONMENTAL PERSPECTIVE OF GREEN BUILDING INDUSTRY*

***Prof. Harpreet Kaur**
Dr. Kavita Singh

ABSTRACT

Green building industry is environment-friendly and resource-efficient over the life-cycle, also known as green construction or sustainable building: from location to design, construction, operation, repair, restoration, and demolition. Fostering more effective and efficient use of electricity, water and materials currently used, ensuring the avoidance of any kind of waste, practicing environmentally responsive and eco-friendly building design and being ecologically viable in the construction sector are environmental challenges and concerns for sustainability today.

Energy consumption in buildings accounts for 40% of total energy consumption in the world and it accounts for 18% of global emission at present, which is equivalent to 9 billion tons of carbon dioxide emission annually according to the National Building Code (NBC). This highlights an immediate requirement to implement sustainability in every new construction, which helps to create a sustainable environment and a healthy ecosystem.

The objective of this chapter is to familiarize the importance of the green building industry by covering a broad overview of the environmental perspectives of the green building industry in terms of ecological characteristics, human health and productivity and its environmental profits. Aspects of the modification in existing buildings to become sustainable