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Book Title: DESIGNING HIGH-DENSITY CITIES
FOR SOCIAL AND ENVIRONMENTAL SUSTAINABILITY

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"Designing High-density Cities for Social and Environmental Sustainability" is an edited book with four parts containing twenty two chapters written by various authors. The objective of the book is to provide the necessary tools for designing high-density urban environments and high-rise buildings for social and environmental sustainability. This objective has been achieved by covering all related issues to sustainability, such as climate, thermal comfort, urban ventilation, acoustic problems, daylight problems, waste minimization, fire engineering, effects of greenery, energy in general, and social and psychological issues. All chapters in the book study Hong-Kong as a high-density city. This makes this book a very scientific book and also very interesting.

Each chapter is outlined as follows:

PART 1: Understanding high-density

Understanding Density and High-density by Vicky Cheng

Various concepts of density are studied and the concept of high-density is related to infrastructure, transportation system and social and personal issues.

Is the High-density City the only Option? By Brenda Vale, Robert Vale

Discusses the low and high-density cities by considering production of food and sewage disposal.

The Sustainability of High-density by Susan Roaf

Discusses the sustainability of high-rise buildings and considers rate of increase of health problems, security problems, social problems, inequality, need for water and energy problems.

Density and Urban Sustainability: An Exploration of Critical Issues by Chye Kiang Heng, Lai Choo Malone-Lee

Discusses the relevance of density to the sustainability discourse by considering diversity, flexibility, types of expansion and opportunities of local employment.

PART 2: Climate and high-density

Climate Changes Brought about by Urban Living by Chiu-Ying Lam

Explains how the urban temperature raised, winds slowed, visibility deteriorated, solar radiation reaching ground decreased and evaporation rates have gone down with the urbanization in Hong Kong.

Urbanization and City Climate: A Diurnal and Seasonal Perspective by Wing-Mo Leung, Tsz-Cheung Lee

Presents the effect of urban development on the “urban heat island effect.”

Urban Climate in Dense Cities by Lutz Katzshmer

Gives information about the concepts of “urban heat island,” psychological equivalent temperature in relation to urban density and explains the use of urban climatic maps and ways of achieving ideal urban climate.

PART 3: Environmental aspects of high-density design

Thermal Comfort issues and Implications in High-density Cities by Baruch Givoni

Discusses the issues of conduction, evaporative cooling and radiation; introduces the comfort issues in high-density cities; focuses on methodologies of comfort research for a given population in a given location.

Urban Environment Diversity and Human Comfort by Koen Steemers, Marylis Ramos

Tests the hypothesis about the correlation between environmental diversity and reported comfort data through monitoring, surveying and modelling of 14 urban sites in Europe and a data base of 10.000 respondents to outdoor comfort surveys; relates this data to high-density cities.

Designing for Urban Ventilation by Edward Ng

Introduces Air Ventilation Assessment System and develops some design guidelines for high-density cities.

Natural Ventilation in High-density Cities by Francis Allard, Christian Ghiaus, Agota Szucs

Considers lower wind velocity, noise and pollution in relation to natural ventilation in dense urban environments and introduces some natural ventilation strategies for this type of environments.

Sound Environment: High versus Low-density Cities by Jian Kang

The sound environment in high-density cities is examined by considering sound distribution, sound perception and noise reduction. Condition in high and low density cities are compared through a series of case studies.

Designing for Daylighting by Edward Ng

Proposes and explains the concept of ‘unobstructed vision area’ (UVA) as a daylight design tool for high-density cities as a fundamental change in guiding parameter in comparison to low-density cities.

Designing for Waste Minimization in High-density Cities by Chi-Sun Poon, Lara Jaillon

Introduces ways of reducing construction waste due to construction and demolition activities.

Fire Engineering for High-density Cities by Wan-Ki Chow

Explains the new fire safety concerns due to new architectural features which take place in high-density cities.

The Role of Urban Greenery in High-density Cities by Nyuk-Hien Wong, Yu Chen

Presents a research about the effect of urban greenery on temperature by analyzing effects of urban parks, road trees, landscape around the buildings, roof top gardens and vertical landscaping and then discusses the possible effects of greenery in high-density cities.

Energy in High-density Cities by Adrian Pitts

Analyzes the appropriateness of various energy solutions for high-density cities and considers demand for and supply of solar and wind energy, use of biofuels, waste, hydropower, heat pumps and nuclear power.

Environmental Assessment: Shifting Scales by Raymond J. Cole

Discusses the methods of building environmental assessment in the context of sustainable urban development.

PART 4: High-density spaces and living

Social and Psychological Issues of High-density City Space by Bryan Lawson

Covers the social and psychological problems due to architectural design and introduces the issue of high-density design in relation to social and psychological satisfaction.

Sustainable Compact Cities and High-rise Buildings by Sung Woo Shin

Gives examples of sustainable high-rise buildings and explains how sustainable high-rise buildings can lead to sustainable compact cities.

Microclimate in Public Housing: An Environmental Approach to Community

Development by John C.Y. Ng

Explains the experiences of HKHA (Hong-Kong Housing Authority) in microclimate studies through the use of advanced simulation technology.

Designing for High-density Living: High-rise, High Amenity and High Design by Kam-Sing Wong

Presents the changes in the urban environment during the last 20 years of Hong-Kong including the phases of 'density as an aesthetic outcome,' 'wall effect' which eliminates ventilation and causes health problems, outbreak of severe acute respiratory syndrome (SARS) in March 2003, and the rise of 'green sense.'

The book can be useful for architects, urban designers, and students of architecture and urban design. Chapters are full of recent research. Most of them are well referenced. Subjects are interesting. Graphic design of the book is good, and the book is very well illustrated.