SUSTAINABLE BUILDING AND OCCUPANT WELL-BEING

SUSTAINABLE BUILDING AND OCCUPANT WELL-BEING

Edited by LOW SHEAU TING RAZLIN MANSOR



First Edition 2024 © LOW SHEAU TING & RAZLIN MANSOR 2024

Hak cipta terpelihara. Tiada dibenarkan mengeluar ulang mana-mana bahagian artikel, ilustrasi, dan isi kandungan buku ini dalam apa juga bentuk dan cara apa jua sama ada dengan cara elektronik, fotokopi, mekanikal, atau cara lain sebelum mendapat izin bertulis daripada Timbalan Naib Canselor (Penyelidikan & Inovasi), Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor Darul Ta'zim, Malaysia. Perundingan tertakluk kepada perkiraan royalti atau honorarium.

All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical including photocopying, recording, or any information storage and retrieval system, without permission in writing from Deputy Vice-Chancellor (Research & Innovation), Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor Darul Ta'zim, Malaysia. Negotiation is subject to royalty or honorarium estimation.

Editor: LOW SHEAU TING & RAZLIN MANSOR

Editor Penyelaras/Acquisition Editor: ZALINA PARENG & RASYIQAH ABD RANI Pereka Kulit / Cover Designer: NORIZAN YAACOB

Diatur huruf oleh / *Typeset by:* LOW SHEAU TING & RAZLIN MANSOR Faculty of Built Environment and Surveying UNIVERSITI TEKNOLOGI MALAYSIA 81310 UTM Johor Bahru Johor Darul Ta'zim, MALAYSIA

Diterbitkan di Malaysia oleh: **PENERBIT UTM PRESS** UNIVERSITI TEKNOLOGI MALAYSIA 81310 UTM Johor Bahru Johor Darul Ta'zim, MALAYSIA (PENERBIT UTM ahli MAJLIS PENERBITAN ILMIAH MALAYSIA–MAPIM dan MABOPA dengan no. keahlian 9101) Dicetak di Malaysia oleh: JASAMAX ENTERPRISE No. 16, Jalan Kebudayaan 2, Taman Universiti 81300 Skudai, Johor, MALAYSIA



Cataloguing-in-Publication Data Perpustakaan Negara Malaysia A catalogue record for this book is available from the National Library of Malaysia ISBN 978-983-52-1966-5

Contents

Contributors Preface		vii ix
Chapter 1	Introduction Low Sheau Ting and Razlin Mansor	1
Chapter 2	Occupant Well-being Consideration in Sustainable Building Assessment Tools Razlin Mansor and Low Sheau Ting	21
Chapter 3	Louvres Geometry of Window on Natural Ventilation in Residential Building with Solar Chimney Pau Chung Leng, Gabriel Hoh Teck Ling, Mohd Hamdan Ahmad, and Dilshan Remaz Ossen	47
Chapter 4	Responsibility of Building Manager to Improve Occupant's Well-being <i>Fitriyah Razali and Siti Zaleha Daud</i>	77
Chapter 5	Personal Adaptive Strategies for a Good Thermal Comfort in School Classroom Nurul Syakima Mohd Yusoff, Nurul Aina Ibrahim, and Nurul Hana Adi Maimun	101

Chapter 6 Energy Conservation Behaviour 123 Through Gamification Elements in Sustainable Building

Wee Siaw Chui and Choong Weng Wai

Index

145

Contributors

Choong Weng Wai Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Johor Bahru **Dilshan Remaz Ossen** Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Johor Bahru Fitriyah Razali Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Johor Bahru Gabriel Hoh Teck Ling Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Johor Bahru Low Sheau Ting Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Johor Bahru Mohd Hamdan Ahmad Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Johor Bahru **Nurul Aina Ibrahim** Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Johor Bahru Nurul Hana Adi Maimun Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Johor Bahru Nurul Syakima Mohd Yusoff Faculty of Built Environment

and Surveying, Universiti Teknologi Malaysia, Johor Bahru **Pau Chung Leng** Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Johor Bahru

Razlin Mansor Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Johor Bahru

Siti Zaleha Daud Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Johor Bahru

Wee Siaw Chui Faculty of Built Environment and Surveying, Universiti Teknologi Malaysia, Johor Bahru

Preface

The design and construction of sustainable buildings play a critical role in shaping the health, comfort and well-being of the occupants. With growing concerns about social sustainability, it is becoming increasingly necessary for architects, engineers and building professionals to consider the impact of their work on occupant well-being. The concept of the well-being of building a widely recognised occupants has become aspect of sustainability in the building sector. The development of sustainable buildings should be systematically optimised to promote positive well-being among building occupants. This book provides a comprehensive global overview of the occupant well-being concept, wide-ranging implications of the built occupant on well-being and conceptual environment approaches that contribute to the successful development of sustainable buildings. This book covers the entire spectrum of factors that affect the health, comfort and well-being of building occupants, from thermal comfort to indoor air quality and ventilation systems. This book is an essential resource for anyone involved in the building industry, it serves as a valuable guide for architects, building scientists, building engineers, facility managers and health professionals seeking to create healthy, sustainable and habitable environments. We invite you to read this book to gain a deeper understanding of the essential of occupant well-being in a sustainable building. Enjoy reading!

Low Sheau Ting Razlin Mansor

Universiti Teknologi Malaysia **2024**