Contents

Part I  Concepts in Sustainability

1  The Problem Is Also the Solution: The Sustainability Paradox ........ 3
   Patricia A. Aloise-Young and Peter M. Young

2  Appreciating the Wicked Problem: A Systems Approach to Sustainable Cities ......................................................... 11
   Barbara Colledge

3  A Theoretical Framework for Circular Economy Research in the Built Environment .................................................. 31
   Francesco Pomponi and Alice Moncaster

Part II  Building Information Modelling

4  Building Information Modelling (BIM) a Paradigm Shift in Construction ................................................................. 47
   Farzad Khosrowshahi

5  Using Agile Project Management and BIM for Improved Building Performance ......................................................... 65
   Mohammad H. Sakikhales and Spyros Stravoravdis

6  Use of Simulation Through BIM-Enabled Virtual Projects to Enhance Learning and Soft Employability Skills in Architectural Technology Education ........................................ 79
   Barry J. Gledson and Susan Dawson

7  Development of a Building Information Modelling (BIM)-Based Real-Time Data Integration System Using a Building Management System (BMS) .................................................. 93
   Muhammad Umar Khalid, Muhammad Khalid Bashir, and Darryl Newport
## Part III  Building Performance and Design

### 9 QUB/e: A Novel Transient Experimental Method for *in situ* Measurements of the Thermal Performance of Building Fabrics

Johann Meulemans, Florent Alzetto, David Farmer, and Christopher Gorse

### 10 Energy Efficiency in Residential Buildings in the Kingdom of Saudi Arabia

A. Al kanani, N. Dawood, and V. Vukovic

### 11 Fossil Fuel Reliant Housing in Nigeria: Physio-climatic Regionalism as an Energy/Cost Efficient Perspective to Providing Thermal Comfort

Alolote Amadi and Anthony Higham

### 12 Predicting Future Overheating in a Passivhaus Dwelling Using Calibrated Dynamic Thermal Simulation Models

James Parker, Martin Fletcher, and David Johnston

### 13 A Method for Visualising Embodied and Whole Life Carbon of Buildings

Francesco Pomponi and Alice Moncaster

### 14 Models for Sustainable Electricity Provision in Rural Areas Using Renewable Energy Technologies - Nigeria Case Study

Abdulhakeem Garba, Mohammed Kishk, and David R. Moore

### 15 Local Energy Mapping Using Publicly Available Data for Urban Energy Retrofit

Rajat Gupta and Matt Gregg

## Part IV  Smart Construction

### 16 Things Change: Exploring Transformational Experiences Within the UK Construction Industry

Alison Pooley

### 17 Comparison of Transient Hygrothermal Modelling Against *In Situ* Measurement for Thermal Transmittance

Cormac Flood, Lloyd Scott, and William Gleeson
18 It’s Housebuilding But Not as We Know It: The Impact of Neighbourhood Planning on Development in England .......................... 259
Quintin Bradley

19 Integrated Façade System for Office Buildings in Hot and Arid Climates: A Comparative Analysis ................................. 273
Yahya Ibraheem, Poorang Piroozfar, and Eric R.P. Farr

20 Decarbonising Construction Using Renewable Photosynthetic Materials ................................................................. 289
Craig White and Oliver Styles

21 The Replacement of Wood or Concrete in Construction Projects: An Industrial Case Study Demonstrating the Benefits of Intrusion Moulded Waste Plastic .......................... 309
Howard Waghorn and Paul Sapsford

Index ......................................................................................................................................................... 319
Building Information Modelling, Building Performance, Design and Smart Construction
Dastbaz, M.; Gorse, C.; Moncaster, A. (Eds.)
2017, XXIX, 326 p. 107 illus., 100 illus. in color., Hardcover
ISBN: 978-3-319-50345-5