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Building Performance Simulation for Design and Operation
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Advances in Human Factors, Sustainable Urban Planning and Infrastructure
Urban Engineering for Sustainability
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Computer Modelling for Sustainable Urban Design
Proceedings of the AHFE 2018 International Conference on Human Factors,
Sustainable Urban Planning and Infrastructure, July 21-25, 2018, Loews Sapphire
Falls Resort at Universal Studios, Orlando, Florida, USA
Sustainable Urban Planning
Urban Sustainability
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Sustainable Urban Development: The environmental assessment methods
The Future of Cities and Regions
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Local Sustainable Urban Development in a Globalized World
Sustainable Urban Design
Simulation, Scenario and Visioning, Governance and Scale
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The Environmental Assessment Methods

Routledge

This book presents solutions to address water security in rapidly urbanizing cities, and explores the new paradigms of water security in changing contexts. Highlighting the latest developments in water research, changes in water policy, and current discourses on water security, the book also provides information and tools for local stakeholders, water managers, and policymakers to build the capacity for sustainable water governance. The book discusses a wide range of sustainable solutions and their implementation to ensure that the balance between water supply and demand remains sustainable in the long term, with a focus on local solutions to build

capacity and developing policy awareness for a wide range of stakeholders. As the concept of urban water security in changing contexts is open to multiple interpretations, the authors set out various approaches. Providing an overview of the changing perspectives of urban water security in different contexts, the book is based on findings of the Asia-Pacific Network water security project at the United Nations University, Tokyo, as well as the authors' current research-based at Pokhara University, Nepal, Hosei University, Tokyo, Institute for the Global Environmental Strategies, Japan and the Australian National University, Australia. The book also includes the views of international authorities (such as water experts) on the subject. The solutions are complemented by analysis of case studies of various localized sustainable solutions at different scales. The book is a valuable resource for water professionals and

policymakers around the globe, academics, teachers working in water-related areas, NGOs, think tanks, water research institutes, donor organizations, and international and local water utility services. *Achieving Sustainable Urban Form* IGI Global This guide for tomorrow's urban practitioner systematically explains fifteen best practices across three continents; it explores questions of broad interest for designing and planning the future of cities and regions. Key questions addressed are: Is simulation useful to explore the effects of different design, policy and planning strategies? Which approach will help manage the uncertainties of metropolitan areas both today and tomorrow? What are the strengths and weaknesses of the different simulation practices for city leadership, public and private partnership, and citizen involvement? The book reviews computer models and media, socio-political initiatives,

professional practices which help communicating the future effects of different design, political and planning strategies with a wide range of aims: from information, through consultation, towards active participation. These world best practices are considered according to four leading issues for urban and regional development, respectively Simulation, Scenario and Visioning, Government and Governance, and Scale. The book examines the approaches adopted technically and procedurally. The selected knowledge and the innovative tools used in each case study are among the most advanced and up-to-date in the professional and research fields. This volume successfully illustrates these innovative practices and methodologies in a straightforward and accessible way.

Planning and Evaluation

MIT Press

We are living at the dawn of what has been termed 'the fourth paradigm of science,' a scientific revolution that is marked by both the emergence of big data science and analytics, and by the increasing adoption of the

underlying technologies in scientific and scholarly research practices. Everything about science development or knowledge production is fundamentally changing thanks to the ever-increasing deluge of data. This is the primary fuel of the new age, which powerful computational processes or analytics algorithms are using to generate valuable knowledge for enhanced decision-making, and deep insights pertaining to a wide variety of practical uses and applications. This book addresses the complex interplay of the scientific, technological, and social dimensions of the city, and what it entails in terms of the systemic implications for smart sustainable urbanism. In concrete terms, it explores the interdisciplinary and transdisciplinary field of smart sustainable urbanism and the unprecedented paradigmatic shifts and practical advances it is undergoing in light of big data science and analytics. This new era of science and technology embodies an unprecedentedly transformative and constitutive

power—manifested not only in the form of revolutionizing science and transforming knowledge, but also in advancing social practices, producing new discourses, catalyzing major shifts, and fostering societal transitions. Of particular relevance, it is instigating a massive change in the way both smart cities and sustainable cities are studied and understood, and in how they are planned, designed, operated, managed, and governed in the face of urbanization. This relates to what has been dubbed data-driven smart sustainable urbanism, an emerging approach based on a computational understanding of city systems and processes that reduces urban life to logical and algorithmic rules and procedures, while also harnessing urban big data to provide a more holistic and integrated view or synoptic intelligence of the city. This is increasingly being directed towards improving, advancing, and maintaining the contribution of both sustainable cities and smart cities to the goals of sustainable development. This timely

and multifaceted book is aimed at a broad readership. As such, it will appeal to urban scientists, data scientists, urbanists, planners, engineers, designers, policymakers, philosophers of science, and futurists, as well as all readers interested in an overview of the pivotal role of big data science and analytics in advancing every academic discipline and social practice concerned with data-intensive science and its application, particularly in relation to sustainability.

Advances in Urban Design and Engineering

Routledge
As the study of environmental policy and justice becomes increasingly significant in today's global climate, standard statistical approaches to gathering data have become less helpful at generating new insights and possibilities. None of the conventional frameworks easily allow for the empirical modeling of the interactions of all the actors involved, or for the emergence of outcomes unintended by the actors. The existing frameworks account for the "what," but not for the "why." Heather E. Campbell, Yushim Kim, and Adam Eckerd bring an

innovative perspective to environmental justice research. Their approach adjusts the narrower questions often asked in the study of environmental justice, expanding to broader investigations of how and why environmental inequities occur. Using agent-based modeling (ABM), they study the interactions and interdependencies among different agents such as firms, residents, and government institutions. Through simulation, the authors test underlying assumptions in environmental justice and discover ways to modify existing theories to better explain why environmental injustice occurs. Furthermore, they use ABM to generate empirically testable hypotheses, which they employ to check if their simulated findings are supported in the real world using real data. The pioneering research on environmental justice in this text will have effects on the field of environmental policy as a whole. For social science and policy researchers, this book explores how to employ new and experimental methods of inquiry on challenging social problems, and for

the field of environmental justice, the authors demonstrate how ABM helps illuminate the complex social and policy interactions that lead to both environmental justice and injustice.

Sustainable Solutions for Urban Water Security

CRC Press
Addresses the multi-disciplinary aspects of urban planning, a result of the increasing size of cities, the amount of resources and services required and the complexity of modern society. Innovative tools are required for identifying the high complexity of contemporary cities. It is necessary to provide a more scientific approach to urban studies, inspired by Prigogine's theories of dissipative structures, and to highlight relations between different systems and between systems and the environment. The challenge of placing sustainable contemporary cities lies in considering the dynamics of urban systems, exchange of energy and matter and the function and maintenance of ordered structures directly or indirectly supplied and maintained by natural systems. The task of

researchers, aware of the complexity of the contemporary city, is to increase the capacity to manage human activities pursuing welfare and prosperity in sustainable cities.

Artificial Crime Analysis Systems: Using Computer Simulations and Geographic Information Systems John Wiley & Sons

This textbook provides an innovative pedagogy to students who will be the policy makers of tomorrow. It provides thoughts on sustainability and the complexity among its different dimensions. It guides students through experience, processes of complex decision making, and sharpen their clarity of thought, to enhance their communication abilities and help them develop critical thinking. It provides key competencies to address the complexities of sustainable development. By combining game-based learning with an analytical style of education, supplemental materials are provided to make the definitions of various sustainability aspects more concrete and allows students to experiment in a consequence-free environment, with

scenario examples. Board Game and ahypothetical management course, dealing with various topics like transportation sustainability, societal metabolism, etc. as well as with decision making under those contexts, will formalize the mathematics needed to make robust decisions. Insights from Agent-Based Modeling Taylor & Francis

This book explores the recent advances in the leading paradigms of urbanism, namely compact cities, eco-cities, and data-driven smart cities, and the evolving approach to their amalgamation under the umbrella term of smart sustainable cities. It addresses these advances by investigating how and to what extent the strategies of compact cities and eco-cities and their merger have been enhanced and strengthened through new planning and development practices, and are being supported and leveraged by the applied solutions pertaining to data-driven smart cities. The ultimate goal is to advance sustainability and harness its synergistic effects on multiple scales. This entails developing and implementing more

effective approaches to the balanced integration of the three dimensions of sustainability, as well as to producing combined effects of the strategies and solutions of the prevailing approaches to urbanism that are greater than the sum of their separate effects in terms of the tripartite value of sustainability. Sustainable urban development is today seen as one of the keys towards unlocking the quest for a sustainable world. And the big data revolution is set to erupt in cities throughout the world, heralding an era where instrumentation, datafication, and computation are increasingly pervading the very fabric of cities and the spaces we live in thanks to the IoT. Big data and the IoT technologies are seen as powerful forces that have tremendous potential for advancing urban sustainability. Indeed, they are instigating a massive change in the way sustainable cities can tackle the kind of special conundrums, wicked problems, and significant challenges they inherently embody as complex systems. They offer a multitudinous array of innovative solutions and

sophisticated approaches informed by groundbreaking research and data-driven science. As such, they are becoming essential to the functioning of sustainable cities. Besides, yet knowing to what extent we are making progress towards sustainable cities is problematic, adding to the fragmented, conflicting picture that arises of change on the ground in the face of the escalating rate and scale of urbanization and in the light of emerging ICT and its novel applications. In a nutshell, new circumstances require new responses. This timely and multifaceted book is intended for a wide readership. As such, it will appeal to researchers, academics, urban scientists, urbanists, planners, designers, policy-makers, and futurists, as well as all readers interested in sustainable cities and their ongoing and future data-driven transformation.

The Sustainable City VI

vdf Hochschulverlag AG
Since the 1990's, researchers, practitioners and public administrations have given more thought to urban logistics. However, their interests and goals are not the

same, and several approaches do not produce efficient logistics systems as a result. This book aims to provide both a conceptual framework for urban logistics planning and management and to create a basis for deploying solutions that aim to reduce the main nuisances related to urban goods. The proposed book is divided in two parts. The first proposes a set of methodological chapters, written by key authors, which aim to support decision makers in their current choices related to urban logistics. In addition to public authorities' aims and goals, the book highlights the importance of private actors, and shows how supply chain management can deal with the problems of the last urban mile and its integration in global logistics chains. The second presents several applied research works that deal with current planning and practice issues in urban logistics, such as the role of city planning, the place of night deliveries in carrier organization, the limits of logistics pooling, and the real estate market, among others. The book was written by key

authors, all having considerable research experience and recognised as experts in their respective fields. Each chapter presents methods and results of research works, written for a broad audience, and more precisely directed to both academics and practitioners.

Sustainable Built Environment (SBE) Regional Conference Zurich 2016 Routledge
'Sustainable development' is a key issue of concern to urban planners across the globe. How it is defined, implemented and measured at the local level remains highly contested and subject to a wide range of external cultural, political and economic pressures. Bringing together leading experts from North America, Europe, the Middle East and SE Asia, this book provides a timely overview of the various methods for understanding and implementing sustainable practices at local levels. In doing so, they present the wide range of local action alternatives available to planners that may be pursued in spite of the constraints generated by globalization processes and highlight the array of public policy options that

could reduce the external pressures shaping the possible local alternatives. The book argues that, while local planners and local authorities are willing to act, many are unaware of the range of options available to them. In bringing together these case studies, not only diverse in geographic terms, but also reflecting very different levels of income, general population education, cultural norms, legal systems and government structures, it points out innovations and examples of best practice.

Building Performance Simulation for Design and Operation

Springer
The book connects the ICT and the architectural worlds, analyzing modeling, materialization and data-driven visions for design issues at different scales. Furthermore, using sample modeling and materialization tools, it explores the links between performance-driven design approaches and the application of new digital technologies. Intended for architects and urbanists, it provides a theoretical framework to address the implications of the digital revolution in building design and operation. Furthermore,

combining insights from IT and ICT with architectural and urban design know-how, it offers engineering professionals a technology-driven interpretation of the building design field. *The Sustainable City XI* Springer Nature
Because it deals with sustainably supplying cities and reducing congestion and pollution related to goods transport in urban areas, city logistics is an important field in transportation sciences. These logistics systems need to be sustainable and reliable to ensure the continued flow of goods. Logistics and Transport Modeling in Urban Goods Movement is a pivotal reference source that provides vital research on the main approaches and techniques used in urban goods transport modelling while addressing planning and management issues. Highlighting topics such as urban logistics, vehicle routing, and greenhouse emissions, this book is ideally designed for civil/transport engineers, planners, transport economists, geographers, computer scientists, practitioners, professionals, researchers, and students seeking current research

on urban goods modelling.

Advances in Human Factors, Sustainable Urban Planning and Infrastructure MDPI

The third volume of the Sustainable Urban Development Series outlines the BEQUEST toolkit that helps link protocol with the assessment methods currently available for evaluating the sustainability of urban development. It details the decision support mechanisms developed for users of the system to guide them in selecting the appropriate assessment methods for a variety of evaluations. This book provides case studies drawn from locations across Europe, and also provides best practice examples demonstrating those protocols that planners, property developers and design and construction professionals have followed, and how they have selected the assessment methods they need to best evaluate the sustainability of cities, districts, neighbourhoods and buildings. *Urban Engineering for Sustainability* Computer Modelling for Sustainable Urban Design Physical Principles, Methods and

Applications

This book is a printed edition of the Special Issue "Systems Education for a Sustainable Planet" that was published in Systems

Data-driven Visions for Building Design

Routledge

This book is intended to help explore the field of smart sustainable cities in its complexity, heterogeneity, and breadth, the many faces of a topical subject of major importance for the future that encompasses so much of modern urban life in an increasingly computerized and urbanized world. Indeed, sustainable urban development is currently at the center of debate in light of several ICT visions becoming achievable and deployable computing paradigms, and shaping the way cities will evolve in the future and thus tackle complex challenges. This book integrates computer science, data science, complexity science, sustainability science, system thinking, and urban planning and design. As such, it contains innovative computer-based and data-analytic research on smart sustainable cities as complex and dynamic

systems. It provides applied theoretical contributions fostering a better understanding of such systems and the synergistic relationships between the underlying physical and informational landscapes. It offers contributions pertaining to the ongoing development of computer-based and data science technologies for the processing, analysis, management, modeling, and simulation of big and context data and the associated applicability to urban systems that will advance different aspects of sustainability. This book seeks to explicitly bring together the smart city and sustainable city endeavors, and to focus on big data analytics and context-aware computing specifically. In doing so, it amalgamates the design concepts and planning principles of sustainable urban forms with the novel applications of ICT of ubiquitous computing to primarily advance sustainability. Its strength lies in combining big data and context-aware technologies and their novel applications for the sheer purpose of harnessing and leveraging the disruptive and synergetic effects of ICT on forms of city planning

that are required for future forms of sustainable development. This is because the effects of such technologies reinforce one another as to their efforts for transforming urban life in a sustainable way by integrating data-centric and context-aware solutions for enhancing urban systems and facilitating coordination among urban domains. This timely and comprehensive book is aimed at a wide audience across science, academia industry, and policymaking. It provides the necessary material to inform relevant research communities of the state-of-the-art research and the latest development in the area of smart sustainable urban development, as well as a valuable reference for planners, designers, strategists, and ICT experts who are working towards the development and implementation of smart sustainable cities based on big data analytics and context-aware computing. [Computer Modelling for Sustainable Urban Design](#) Springer
This book discusses human factors research directed towards realizing and assessing

sustainability in the built environment. It reports on advanced engineering methods for sustainable infrastructure design, as well as on assessments of the efficient methods and the social, environmental, and economic impact of various designs and projects. The book covers a range of topics, including the use of recycled materials in architecture, ergonomics in buildings and public design, sustainable design for smart cities, design for the aging population, industrial design, human scale in architecture, and many more. Based on the AHFE 2018 International Conference on Human Factors, Sustainable Urban Planning and Infrastructure, held on July 21-25, 2018, in Orlando, Florida, USA, it offers various perspectives on sustainability and ergonomics. As such, it is a valuable reference resource for designers, urban engineers, architects, infrastructure professionals, public infrastructure owners, policy makers, government engineers and planners, as well as operations managers and academics active in urban and infrastructure research.

Proceedings of the AHFE

2018 International Conference on Human Factors, Sustainable Urban Planning and Infrastructure, July 21-25, 2018, Loews Sapphire Falls Resort at Universal Studios, Orlando, Florida, USA Routledge

In the last two decades, the biannual ECPPM (European Conference on Product and Process Modelling) conference series has provided a unique platform for the presentation and discussion of the most recent advances with regard to the ICT (Information and Communication Technology) applications in the AEC/FM (Architecture, Engineering, Construction and *Sustainable Urban Planning* Routledge Effective building performance simulation can reduce the environmental impact of the built environment, improve indoor quality and productivity, and facilitate future innovation and technological progress in construction. It draws on many disciplines, including physics, mathematics, material science, biophysics and human behavioural, environmental and

computational sciences. The discipline itself is continuously evolving and maturing, and improvements in model robustness and fidelity are constantly being made. This has sparked a new agenda focusing on the effectiveness of simulation in building life-cycle processes. Building Performance Simulation for Design and Operation begins with an introduction to the concepts of performance indicators and targets, followed by a discussion on the role of building simulation in performance-based building design and operation. This sets the ground for in-depth discussion of performance prediction for energy demand, indoor environmental quality (including thermal, visual, indoor air quality and moisture phenomena), HVAC and renewable system performance, urban level modelling, building operational optimization and automation. Produced in cooperation with the International Building Performance Simulation Association (IBPSA), and featuring contributions from fourteen internationally recognised experts in this field, this

book provides a unique and comprehensive overview of building performance simulation for the complete building life-cycle from conception to demolition. It is primarily intended for advanced students in building services engineering, and in architectural, environmental or mechanical engineering; and will be useful for building and systems designers and operators. Urban Sustainability MDPI
 This book is a printed edition of the Special Issue "Sustainable Freight Transport" that was published in *Sustainability ECPPM 2014* Springer
 This volume discusses a combination of topics dealing with the wide variety of urban planning, authored by well reputed scholars in India mastering disciplines such as architecture, urban design, transportation planning, public policy, urban planning, urban engineering and civil

engineering. It focuses on contemporary problems in metro cities like New Delhi, Ahmedabad, Mumbai, etc. This book also highlights critical aspects of urban developments while considering the aspects of mega infrastructure projects especially related to water, waste water treatment and environmental issues. Sustainable Urban Development: The environmental assessment methods WIT Press
 This book aims at showing how big data sources and data analytics can play an important role in sustainable mobility. It is especially intended to provide academicians, researchers, practitioners and decision makers with a snapshot of methods that can be effectively used to improve urban mobility. The different chapters, which report on contributions presented at the 4th Conference on

Sustainable Urban Mobility, held on May 24-25, 2018, in Skiathos Island, Greece, cover different thematic areas, such as social networks and traveler behavior, applications of big data technologies in transportation and analytics, transport infrastructure and traffic management, transportation modeling, vehicle emissions and environmental impacts, public transport and demand responsive systems, intermodal interchanges, smart city logistics systems, data security and associated legal aspects. They show in particular how to apply big data in improving urban mobility, discuss important challenges in developing and implementing analytics methods and provide the reader with an up-to-date review of the most representative research on data management techniques for enabling sustainable urban mobility

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