**The Theory Practice Sustainable Engineering**

Environmental Education in the 21st Century

Life Cycle Engineering and Management of Products

Sustainable by Design

Handbook of Theory and Practice of Sustainable Development in Higher Education

Risk, Reliability and Sustainable Remediation in the Field of Civil and Environmental Engineering

Assessment for Sustainable Practices in Applied Sciences and Engineering

Education for Sustainable Human and Environmental Systems

Theory and Practice in Heritage and Sustainability

Social Practices, Intervention and Sustainability

Perfluoroalkyl Substances in the Environment

Understanding Structural Engineering

Sustainable Water Engineering

The Theory and Practice of Sustainable Engineering

Sustainable Investing

Sustainability Principles and Practice

Sustainability Education

Sustainable Engineering

Courtyard Housing and Cultural Sustainability

The Theory and Practice of Strategic Environmental Assessment

Elementary Electrical Engineering in Theory and Practice

Contemplative Approaches to Sustainability in Higher Education

Seismic Design of RC Buildings

Transition Engineering

Sustainable Engineering

Environmental Health - Theory and Practice

Urban Sustainability in Theory and Practice

Project Management for Environmental, Construction and Manufacturing Engineers

Sustainability Citizenship in Cities

Permaculture

Imagining Sustainable Food Systems

Sustainable Engineering

Issues in Teaching and Learning of Education for Sustainability

Sustainable Practices

Introduction to Sustainability for Engineers

Sustainable Engineering

Artificial Intelligence for Sustainable Development: Theory, Practice and Future Applications

Politics and the Environment

The Ecological Modernisation Reader

Measuring and Controlling Sustainability

Sustainability Principles and Practice gives an accessible and comprehensive overview of the interdisciplinary field of sustainability. The focus is on furnishing solutions and equipping students with both conceptual understanding and technical skills. Each chapter explores one aspect of the field, first introducing concepts and presenting issues, then supplying tools for working toward solutions. Elements of sustainability are examined piece by piece, and coverage ranges over ecosystems, social equity, environmental justice, food, energy, product life cycles, cities, and more. Techniques for management and measurement as well as case studies from around the world are provided. The 3rd edition includes greater coverage of resilience and systems thinking, an update on the Anthropocene as a formal geological epoch, the latest research from the IPCC, and a greater focus on diversity and social equity, together with new details such as sustainable consumption, textiles recycling, microplastics, and net-zero concepts. The coverage in this edition has been expanded to include issues, solutions, and new case studies from around the world, including Europe, Asia, and the Global South. Chapters include further reading and discussion questions. The book is supported by a companion website with online links, annotated bibliography, glossary, white papers, and additional case studies, together with projects, research problems, and group activities, all of which focus on real-world problem-solving of sustainability issues. This textbook is designed to be used by undergraduate college and university students in sustainability degree programs and other programs in which sustainability is taught.

Transition Engineering: Building a Sustainable Future examines new strategies emerging in response to the mega-issues of global climate change, decline in world oil supply, scarcity of key industrial minerals, and local environmental constraints. These issues pose challenges for organizations, businesses, and communities, and engineers will need to begin developing ideas and projects to implement the transition of engineered systems. This work presents a methodology for shifting away from unsustainable activities. Teaching the Transition Engineering approach and methodology is the focus of the text, and the concept is presented in a way that engineers can begin applying it in their work. Structural environmental reform by firms and industries, governmental and
intergovernmental agencies, non-governmental organisations (NGOs), and others is a worldwide phenomenon and the focus of this definitive collection. Includes a comprehensive introduction to and overview of Ecological Modernisation Theory; original, state-of-the-art review essays by distinguished international scholars; a selection of the best published works and debates from a quarter-century of related social science scholarship; an emphasis on environmental issues in Asian and other emerging economies; and an agenda for continued scholarship, policymaking, and practice. Accessible to students, policymakers, professionals, executives, and others interested in deeply understanding contemporary environmental issues and taking effective action for environmental solutions. Rigorous and sophisticated for use in graduate and advanced studies. Appropriate for courses in Sociology, Political Science, Policy Studies, Geography, Environmental Studies, Environmental Planning, Business, Economics, Asian Studies, Development Studies, and other fields. This book highlights the latest advances in the field of artificial intelligence and related technologies, with a special focus on sustainable development and environmentally friendly artificial intelligence applications. Discussing theory, applications and research, it covers all aspects of artificial intelligence in the context of sustainable development. Sustainable Engineering: Principles and Implementation provides a comprehensive overview of the interdisciplinary field of sustainability as it applies to engineering and methods for implementation of sustainable practices. Due to increasing constraints on resources and on the environment and effects of climate change, engineers are being faced with new challenges. While it is generally believed that the concepts of sustainable design must be adhered to so that future generations may be protected, the execution and practice of these concepts are very difficult. It is therefore the focus of this book to give both a conceptual understanding as well as practical skills to apply sustainable engineering principles to engineering design. This book introduces relevant theory, principles, and ethical expectations for engineers, presents concepts related to industrial ecology, green engineering, and eco-design, and details frameworks that indicate the challenges and constraints of applying sustainable development principles. It describes the tools, protocols, and guidelines that are currently available through case studies and examples from around the world. The book is designed to be used by undergraduate and graduate students in any engineering program (with particular emphasis on civil, environmental and chemical engineering) and other programs in which sustainability is taught, in addition to practicing scientists and engineers and all others concerned with the sustainability of products, projects and processes. Specific Features: Discusses sources of contaminants and their impact on the environment Addresses sustainable assessment techniques, policies, protocols and guidelines Describes new tools and technologies for achieving sustainable engineering Includes social and economic sustainability dimensions Offers case studies demonstrating implementation of sustainable engineering practices Environmental education is a field characterised by a paradox. Few would doubt the urgency and importance of learning to live in sustainable ways, but environmental education holds nowhere near the priority position in formal schooling around the world that this would suggest. This text sets out to find out why this is so. This text sets out to find out why this is so. It is divided into six parts: Part 1 is a concise history of the development of environmental education from an international perspective; Part 2 is an overview of the 'global agenda', or subject knowledge of environmental education; Part 3 introduces perspectives on theory and research in environmental education; Part 4 moves on to practice, and presents an integrated model for planning environmental education programmes; Part 5 brings together invited contributors who talk about environmental education in their own countries - from 15 countries including China, South Africa, Sri Lanka and the USA; Part 6 returns to the core questions of how progress can be made, and how we can maximise the potential of environmental education for the twenty first century. How do we foster in college students the cognitive complexity, ethical development, and personal resolve that are required for living in this "sustainability century"? Tackling these complex and highly interdependent problems requires nuanced interdisciplinary understandings, collective endeavors, systemic solutions, and profound cultural shifts. Contributors in this book present both a rationale as well as a theoretical
framework for incorporating reflective and contemplative pedagogies to help students pause, deepen their awareness, think more carefully, and work with complexity in sustainability-focused courses. Also offering a variety of relevant, timely resources for faculty to use in their classrooms, Contemplative Approaches to Sustainability in Higher Education serves as a key asset to the efforts of educators to enhance students’ capacities for long-term engagement and resilience in a future where sustainability is vital. Climate change is widely agreed to be one the greatest challenges facing society today. Mitigating and adapting to it is certain to require new ways of living. Thus far efforts to promote less resource-intensive habits and routines have centred on typically limited understandings of individual agency, choice and change. This book shows how much more the social sciences have to offer. The contributors to Sustainable Practices: Social Theory and Climate Change come from different disciplines – sociology, geography, economics and philosophy – but are alike in taking social theories of practice as a common point of reference. This volume explores questions which arise from this distinctive and fresh approach: how do practices and material elements circulate and intersect? how do complex infrastructures and systems form and break apart? how does the reproduction of social practice sustain related patterns of inequality and injustice? This collection shows how social theories of practice can help us understand what societal transitions towards sustainability might involve, and how they might be achieved. It will be of interest to students and researchers in sociology, environmental studies, geography, philosophy and economics, and to policy makers and advisors working in this field. Per- and polyfluorinated alkyl substances (PFAS), often referred to as per- (and poly) fluorinated compounds (PFCs), have been used for years in many everyday and some lifesaving products. However, their use has been linked to adverse health effects in humans, a problem compounded by their persistence in the environment. This book discusses the various challenges of PFAS in our environment today, including their historical use as well as their chemical and toxicological properties. It also presents robust discussion of analytical challenges and special considerations in sampling. The work goes on to give practical recommendations for dealing with these compounds in today's dynamic regulatory landscape and includes several chapters on various remediation techniques. Key Features: Comprehensive overview of per- and polyfluorinated alkyl substances (PFAS) historical use and chemical/physical properties which help us understand their persistence, transport, and transformation pathways in the environment. In-depth analysis of PFAS toxicology Detailed descriptions of conventional and state-of-the-art remediation technologies Practical recommendations for dealing with PFAS in a dynamic regulatory landscape Robust discussion of important sampling and analytical considerations Perfluoroalkyl Substances in the Environment: Theory, Practice, and Innovation explores the challenges across the topical areas of regulation and management, toxicology, environmental remediation, and analytical sampling and analysis. Readers will find this text helpful in understanding complexities associated with PFAS and informing management strategies to effectively protect this and future generations. Comprehensively covers the definition, methodology, and current applications of the principles of sustainability and resiliency in every engineering discipline. This book contains detailed information about sustainability and resiliency principles and applications in engineering practice, and provides information on how to use scientific tools for sustainability assessment that help engineers select the best alternative for each project or activity. Logically organized around the three pillars of sustainability—environment, economy, and society—it is a primary resource for students and professionals alike. Sustainable Engineering: Drivers, Metrics, Tools, and Applications offers numerous ways to help engineers contribute towards global sustainable development while solving some of the grand challenges the world is facing today. The first part of the book covers the environmental, economic, and social impacts associated with project/product development as well as society as a whole. This is followed by a section devoted to sustainability metrics and assessment tools, which includes material flow analysis and material budget, carbon footprint analysis, life cycle assessment, environmental health risk assessment, and more. Next comes an in-depth
examination of sustainable engineering practices, including sustainable energy engineering, sustainable waste management, and green and sustainable buildings. The book concludes with a look at how sustainable engineering may be applied to different engineering (i.e. environmental, chemical, civil, materials, infrastructure) projects. Some of the key features of this book include the following: Provides a complete and sensible understanding of the important concepts of sustainability, resiliency, and sustainable engineering Offers detailed explanations of sustainable engineering practices in waste management and remediation of contaminated sites, civil construction and infrastructure, and climate geoengineering Presents a set of case studies across different engineering disciplines such as bio/chemical, environmental, materials, construction, and infrastructure engineering that demonstrate the practical applicability of sustainability assessment tools to diverse projects Includes questions at the end of each chapter as well as a solutions manual for academic adopters. The depth of coverage found in Sustainable Engineering: Drivers, Metrics, Tools, and Applications makes it an ideal textbook for graduate students across all engineering disciplines and a handy resource for active professionals. Risk, Reliability and Sustainable Remediation in the Field of Civil and Environmental Engineering illustrates the concepts of risk, reliability analysis, its estimation, and the decisions leading to sustainable development in the field of civil and environmental engineering. The book provides key ideas on risks in performance failure and structural failures of all processes involved in civil and environmental systems, evaluates reliability, and discusses the implications of measurable indicators of sustainability in important aspects of multitude of civil engineering projects. It will help practitioners become familiar with tolerances in design parameters, uncertainties in the environment, and applications in civil and environmental systems. Furthermore, the book emphasizes the importance of risks involved in design and planning stages and covers reliability techniques to discover and remove the potential failures to achieve a sustainable development. Contains relevant theory and practice related to risk, reliability and sustainability in the field of civil and environment engineering. Gives firsthand experience of new tools to integrate existing artificial intelligence models with large information obtained from different sources. Provides engineering solutions that have a positive impact on sustainability. This book is intended to serve as a textbook for engineering courses on earthquake resistant design. The book covers important attributes for seismic design such as material properties, damping, ductility, stiffness and strength. The subject coverage commences with simple concepts and proceeds right up to nonlinear analysis and push-over method for checking building adequacy. The book also provides an insight into the design of base isolators highlighting their merits and demerits. Apart from the theoretical approach to design of multi-storey buildings, the book highlights the care required in practical design and construction of various building components. It covers modal analysis in depth including the important missing mass method of analysis and tension shift in shear walls and beams. These have important bearing on reinforcement detailing. Detailed design and construction features are covered for earthquake resistant design of reinforced concrete as well as confined and reinforced masonry structures. The book also provides the methodology for assessment of seismic forces on basement walls and pile foundations. It provides a practical approach to design and detailing of soft storeys, short columns, vulnerable staircases and many other components. The book bridges the gap between design and construction. Plenty of worked illustrative examples are provided to aid learning. This book will be of value to upper undergraduate and graduate students taking courses on seismic design of structures. Introduction to Sustainability for Engineers aims to incorporate sustainability into curricula for undergraduate engineering students. The book starts with an introduction to the concept of sustainability, outlining core principles for sustainable development to guide engineering practice and decision making, including key tools aimed at enabling, measuring and communicating sustainability. It also describes concepts as life cycle assessment, environmental economics, related institutional architecture and policy framework, business context of sustainability, and sustainable buildings and infrastructure. Appendices at the end of the book presents a summary of key concepts,
strategies and tools introduced in the main text. Five Key Benefits: A comprehensive textbook for engineering students to develop competency in sustainability. Presents a framework for engineers to put sustainability into practice. Presents the link between sustainability and the design process. It shows the application of a sustainable engineering design process for putting sustainability into practice. There are well woven case studies and links to websites for learning in various engineering disciplines. Includes challenging exercises at the end of each chapter that will inspire students and stimulate discussion in the class. This book presents the role of life cycle engineering and life cycle management of products and services and their contributions to corporate environmental sustainability and the circular economy. It addresses the main techniques, tools, systems and practices for improving the environmental performance of business products and services throughout their life cycles. The book covers the main topics and concepts related to life cycle engineering and life cycle management applied to the business context. It presents the themes through basic and in-depth theories. In addition, all chapters provide examples of real and hypothetical case studies for discussion and assimilation of theoretical content and its contextualization in the real and practical business scenario. The chapters are complemented by quantitative exercises. This Handbook approaches sustainable development in higher education from an integrated perspective, addressing the dearth of publications on the subject. It offers a unique overview of what universities around the world are doing to implement sustainable development (i.e. via curriculum innovation, research, activities, or practical projects) and how their efforts relate to education for sustainable development at the university level. The Handbook gathers a wealth of information, ideas, best practices and lessons learned in the context of executing concrete projects, and assesses methodological approaches to integrating the topic of sustainable development in university curricula. Lastly, it documents and disseminates the veritable treasure trove of practical experience currently available on sustainability in higher education. A seminal shift has taken place in the world of investing. A clear and overarching reality has emerged which must be solved: financial considerations must factor in sustainability considerations for ongoing societal success, while sustainability issues equally need to be driven by a business case. As a result, investment practices are evolving, especially towards more positive philosophies and frameworks. Sustainable Investing brings the reader up to speed on trends playing out in each region and asset class, drawing on contributions from leading practitioners across the globe. Implications abound for financial professionals and other interested investors, as well as corporations seeking to understand future investment trends that will affect their shareholders’ thinking. Policymakers and other stakeholders also need to be aware of what is happening in order to understand how they can be most effective at helping implement and enable the changes arguably now required for economic and financial success. Sustainable Investing represents an essential overview of sustainable investment practices that will be a valuable resource for students and scholars of sustainable banking and finance, as well as professionals and policymakers with an interest in this fast-moving field. Permaculture design has been the bedrock of the growth of the worldwide network of Ecovillages since the mid 1990s. A well-developed set of educational programmes has evolved too, including the Permaculture design foundation course. This invaluable source book brings together everybody students on such courses need to know about ecovillage design. Starting with a historical survey of the tradition of intentional community, the book also covers topics ranging from the size of community, gardening and farming, building and technology, to economics, and tools for helping communities to grow and develop. Additionally, the book features a number of richly-observed Ecovillage case-studies with photographs, alongside lots of tips for facilitators and self-study groups. This comprehensive book will also be of interest to those wishing to contribute to the founding and building of Ecovillage communities for a sustainable future. Cities are home to the most consequential current attempts at human adaptation and they provide one possible focus for the flourishing of life on this planet. However, for this to be realized in more than an ad hoc way, a substantial rethinking of current approaches and practices needs to
occur. Urban Sustainability in Theory and Practice responds to the crises of sustainability in the world today by going back to basics. It makes four major contributions to thinking about and acting upon cities. It provides a means of reflexivity learning about urban sustainability in the process of working practically for positive social development and projected change. It challenges the usually taken-for-granted nature of sustainability practices while providing tools for modifying those practices. It emphasizes the necessity of a holistic and integrated understanding of urban life. Finally it rewrites existing dominant understandings of the social whole such as the triple-bottom line approach that reduce environmental questions to externalities and social questions to background issues. The book is a much-needed practical and conceptual guide for rethinking urban engagement. Covering the full range of sustainability domains and bridging discourses aimed at academics and practitioners, this is an essential read for all those studying, researching and working in urban geography, sustainability assessment, urban planning, urban sociology and politics, sustainable development and environmental studies.In our world of seemingly unlimited computing, numerous analytical approaches to the estimation of stress, strain, and displacement-including analytical, numerical, physical, and analog techniques-have greatly advanced the practice of engineering. Combining theory and experimentation, computer simulation has emerged as a third path for engineeringTo advance the subject of design one has to engage in the activity of designing. Sustainable by Design offers a compelling and innovative, design-centred approach that explores both the meaning and practice of sustainable design. Walker explores the design process in the context of sustainability, and challenges conventional ways of defining, designing and producing functional objects. He discusses the personal design process, tacit knowledge, ephemeral design, experimental design, and the relationship between intellectual design criteria, physical expression and aesthetic experience. This book will introduce vital concepts to students and will inspire designers by providing a well-articulated basis for understanding the complexity and potential of sustainable design, and extolling the contribution of design to the creation of a more meaningful material culture. How do we equip learners with the values, knowledge, skills, and motivation to help achieve economic, social and ecological well-being? How can universities make a major contribution towards a more sustainable future? Amid rising expectations on HE from professional associations, funders, policy makers, and undergraduates, and increasing interest amongst academics and senior management, a growing number of higher education institutions are taking the lead in embracing sustainability. This response does not only include greening the campus but also transforming curricula and teaching and learning. This book explains why this is necessary and – crucially – how to do it. Bringing together the experience of the HEFCE funded Centre for Sustainable Futures (CSF) at the University of Plymouth and the Higher Education Academy's Education for Sustainable Development Project, the book distills out the curriculum contributions of a wide range of disciplinary areas to sustainability. The first part of the book provides background on the current status of sustainability within higher education, including chapters discussing interdisciplinarity, international perspectives and pedagogy. The second part features 13 chapter case studies from teachers and lecturers in diverse disciplines, describing what has worked, how and why - and what hasn't. Whilst the book is organised by traditional disciplines, the authors and editors emphasise transferable lessons and interdisciplinarity so that readers can learn from examples outside their own area to embed sustainability within their own curricula and teaching. Subject areas covered include: geography, environmental and Earth Sciences, nursing/health, law, dance, drama, music, engineering, media and cultural studies, art and design, theology, social work, economics, languages, education, business and built environment. Sustainable Engineering: Principles and Implementation provides a comprehensive overview of the interdisciplinary field of sustainability as it applies to engineering and methods for implementation of sustainable practices. Due to increasing constraints on resources and on the environment and effects of climate change, engineers are being faced with new challenges. While it is generally believed that the concepts of sustainable design must be adhered to so that future generations may
be protected, the execution and practice of these concepts are very difficult. It is therefore the focus of this book to give both a conceptual understanding as well as practical skills to apply sustainable engineering principles to engineering design. This book introduces relevant theory, principles, and ethical expectations for engineers, presents concepts related to industrial ecology, green engineering, and eco-design, and details frameworks that indicate the challenges and constraints of applying sustainable development principles. It describes the tools, protocols, and guidelines that are currently available through case studies and examples from around the world. The book is designed to be used by undergraduate and graduate students in any engineering program (with particular emphasis on civil, environmental and chemical engineering) and other programs in which sustainability is taught, in addition to practicing scientists and engineers and all others concerned with the sustainability of products, projects and processes. Specific Features: Discusses sources of contaminants and their impact on the environment Addresses sustainable assessment techniques, policies, protocols and guidelines Describes new tools and technologies for achieving sustainable engineering Includes social and economic sustainability dimensions Offers case studies demonstrating implementation of sustainable engineering practicesPolitics and the Environment has established itself as the most comprehensive textbook in this area. This new edition has been completely revised and updated while retaining the features and theory-to-practice focus which made the first edition so successful. The book is designed to introduce students to the key concepts and issues vital to the understanding of environmental problems and their political solutions. The authors investigate the people, movements and organizations involved in the shaping of environmental policy and the barriers hindering the development and introduction of successful solutions to environmental problems. This new edition has been expanded to include: a reorganized structure divided into three thematic sections a wide range of case studies from around the world at the end of each chapter more boxed examples and concepts further detail on ecological modernization an extended further reading list including useful websites.This Handbook approaches sustainable development in higher education from an integrated perspective, addressing the dearth of publications on the subject. It offers a unique overview of what universities around the world are doing to implement sustainable development (i.e. via curriculum innovation, research, activities, or practical projects) and how their efforts relate to education for sustainable development at the university level. The Handbook gathers a wealth of information, ideas, best practices and lessons learned in the context of executing concrete projects, and assesses methodological approaches to integrating the topic of sustainable development in university curricula. Lastly, it documents and disseminates the veritable treasure trove of practical experience currently available on sustainability in higher education. The Theory and Practice of Sustainable Engineering is appropriate to use in sustainable engineering classes for both majors and non-majors. This textbook was designed as the basis for a course in itself, but it can be used to provide modules in existing courses, or as a supplementary text in sustainable engineering, green engineering, industrial ecology, sustainability law and policy, and environmental courses. Sustainable engineering is learning how to engineer responsibly and professionally in the Anthropocene: the Age of the Human. This textbook sketches out the cultural, social, institutional, and environmental context within which engineering and, more broadly, technology systems are now situated. It provides frameworks to facilitate understanding, communication, and the solving of highly complex problems with significant technological dimensions — all in the name of generating more capable professionals competent in their chosen field, who are able to integrate other disciplines to address complex adaptive systems. In an era of dramatic environmental change, social change is desperately needed to curb burgeoning consumption. Many calls to action have focused on individual behaviour or technological innovation, with relative silence from the social sciences on other modes and methods of intervening in social life. This book shows how we can go beyond behaviour change in the pursuit of sustainability. Inspired by the ‘practice turn’ in consumption studies, this interdisciplinary book looks through the lens of social
practice theory to explore important and timely questions about how to intervene in social life. It discusses a range of applied sustainability topics including energy consumption, housing provision, water demand, transport, climate change, curbside recycling and smart grids, seeking to redefine what intervention is, how it happens, and who or what can intervene to address the growing list of environmental calamities facing contemporary societies. These issues are explored through a range of specific case studies from Australia, the UK and the US, providing theoretical insights that are of international relevance. The book will be of interest to researchers and students in the fields of sociology, consumption studies, environmental studies, geography, and science and technology studies, as well as policy makers and practitioners seeking to intervene in social life for sustainability. As a companion to books on project-management theory, this book illustrates, in a down-to-earth, comprehensive style, how to put that theory into practice. In addition to the many examples that illustrate procedures, the book includes over 25 case studies, each one addressing a specific theme. Key topics, such as project selection, negotiations, planning and scheduling, cost and budgeting, project control, human resources, environmental impacts, risk management, and financial evaluation, are discussed, using a step-by-step approach. Beginning at the grassroots level, some cases are solved by hand to illustrate the mechanics of a procedure, while others are solved using advanced computer programs. In this way the reader has a clear idea of the problem, how and when to raise the issue, information needed (and who can provide it), how to solve it by hand, when possible, and also its resolution using the latest informatics tools. This two-volume work discusses environmental health, the branch of public health concerned with all aspects of the natural and built environment affecting human health, and addresses key issues at the global and local scales. The work offers an overview of the methodologies and paradigms that define this burgeoning field, ranging from ecology to epidemiology, and from pollution to environmental psychology, and addresses a wide variety of global concerns including air quality, water and sanitation, food security, chemical/physical hazards, occupational health, disease control, and injuries. The authors intend to provide up-to-date information for environmental health professionals, and to provide a reference for students and consultants working at the interface between health and environmental sectors. Volume 2 covers the technological, legislative, and logistical solutions for coping with environmental health issues. The principles of environmental legislation are explained in national and international contexts, and assessments are mapped out to craft informed governance plans for health and environmental management. Mitigation measures are introduced to control wastewater and solid waste management and air and noise pollution, and adaptation strategies for emergency preparedness and disaster recovery are discussed. The goal of Sustainable Human and Environmental Systems (SHES) education is to prepare students to facilitate social learning in communities that builds knowledge of, capacity for, and commitment to sustainability to facilitate the emergence of sustainable societies. The SHES approach to sustainability education relies on complexity-based systems thinking that transcends disciplinary boundaries. This book provides a comprehensive guide to the SHES approach, including its rationale and theoretical foundation, its pedagogy and practical applications in curricula, and ways to support the approach through institutional administration. This book will be of great interest to academics and students of education, environmental sciences and studies, sustainability and sustainable development, natural resource management, conservation, environmental policy, environmental planning, and related fields in higher education. Educators can use this book as a guide to SHES pedagogy, curriculum design, sustainability, environmental studies, sustainable development, and sustainable well-being. Administrators will find the book useful in establishing, evaluating, staffing, and promoting programs based on the SHES approach. This book explores cultural sustainability and its relationships to heritage from a wide interdisciplinary perspective. By examining the interactions between people and communities in the places where they live it exemplifies the diverse ways in which a people-centred heritage builds identities and supports individual and collective memories. It encourages a view of heritage as a
process that contributes through cultural sustainability to human well-being and socially- and culturally-sensitive policy. With theoretically-informed case studies from leading researchers, the book addresses both concepts and practice, in a range of places and contexts including landscape, townscape, museums, industrial sites, every day heritage, ‘ordinary’ places and the local scene, and even UNESCO-designated sites. The contributors, most of whom, like the editors, were members of the COST Action ‘Investigating Cultural Sustainability’, demonstrate in a cohesive way how the cultural values that people attach to place are enmeshed with issues of memory, identity and aspiration and how they therefore stand at the centre of sustainability discourse and practice. The cases are drawn from many parts of Europe, but notably from the Baltic, and central and south-eastern Europe, regions with distinctive recent histories and cultural approaches and heritage discourses that offer less well-known but transferable insights. They all illustrate the contribution that dealing with the inheritance of the past can make to a full cultural engagement with sustainable development. The book provides an introductory framework to guide readers, and a concluding section that draws on the case studies to emphasise their transferability and specificity, and to outline the potential contribution of the examples to future research, practice and policy in cultural sustainability. This is a unique offering for postgraduate students, researchers and professionals interested in heritage management, governance and community participation and cultural sustainability.

Urban sustainability citizenship situates citizens as social change agents with an ethical and self-interested stake in living sustainably with the rest of Earth. Such citizens not only engage in sustainable household practices but respect the importance of awareness raising, discussion and debates on sustainability policies for the common good and maintenance of Earth’s ecosystems. Sustainability Citizenship in Cities seeks to explain how sustainability citizenship can manifest in urban built environments as both responsibilities and rights. Contributors elaborate on the concept of urban sustainability citizenship as a participatory work-in-progress with the aim of setting its practice firmly on the agenda. This collection will prompt practitioners and researchers to rethink contemporary mobilisations of urban citizens challenged by various environmental crises, such as climate change, in various socio-economic settings. This book is a valuable resource for students, academics and professionals working in various disciplines and across a range of interdisciplinary fields, such as: urban environment and planning, citizenship as practice, environmental sociology, contemporary politics and governance, environmental philosophy, media and communications, and human geography.

Pollution Assessment for Sustainable Practices in Applied Sciences and Engineering provides an integrated reference for academics and professionals working on land, air, and water pollution. The protocols discussed and the extensive number of case studies help environmental engineers to quickly identify the correct process for projects under study. The book is divided into four parts; each of the first three covers a separate environment: Geosphere, Atmosphere, and Hydrosphere. The first part covers ground assessment, contamination, geo-statistics, remote sensing, GIS, risk assessment and management, and environmental impact assessment. The second part covers atmospheric assessment topics, including the dynamics of contaminant transport, impacts of global warming, indoor and outdoor techniques and practice. The third part is dedicated to the hydrosphere including both the marine and fresh water environments. Finally, part four examines emerging issues in pollution assessment, from nanomaterials to artificial intelligence. There are a wide variety of case studies in the book to help bridge the gap between concept and practice. Environmental Engineers will benefit from the integrated approach to pollution assessment across multiple spheres. Practicing engineers and students will also benefit from the case studies, which bring the practice side by side with fundamental concepts. Provides a comprehensive overview of pollution assessment Covers land, underground, water and air pollution Includes outdoor and indoor pollution assessment Presents case studies that help bridge the gap between concepts and practice Ensuring safe and plentiful supplies of potable water (both now and for future generations) and developing sustainable treatment processes for wastewater are among the world’s greatest engineering
challenges. However, sustainability requires investment of money, time and knowledge. Some parts of the world are already working towards this goal but many nations have neither the political will nor the resources to tackle even basic provision and sanitation.

Combining theory and practice from the developing and developed worlds with high- and low-tech, high- and low-cost solutions, this book discusses fundamental and advanced aspects of water engineering and includes: water resource issues including climate change, water scarcity, economic and financial aspects requirements for sustainable water systems fundamentals of treatment and process design industrial water use and wastewater treatment sustainable effluent disposal sustainable construction principles With integrated theory, design and operation specifications for each treatment process, this book addresses the extent to which various treatment methods work in theory as well as how cost effective they are in practice. It provides a nontechnical guide on how to recover and reuse water from effluent, which is suitable for those in water resource management, environmental planning, civil and chemical engineering.A multidisciplinary introduction to sustainable engineering exploring challenges and solutions through practical examples and exercises.Efforts to establish the measurement and control of sustainability have produced notable tools, but those instruments lack applicability in practice. Increasing the level of standardization of such tools also seems difficult to achieve, because the contexts surrounding the focal organizations differ considerably. Therefore, what we need is a systematic, interdisciplinary assessment of how to measure and control sustainability, so that we can establish an essential definition and up-to-date picture of the field. Measuring and Controlling Sustainability attempts to provide such an assessment in 17 chapters, organized into four main topic sections: (a) organizations and social value creation: Concepts, responsibilities, and barriers; (b) accounting, measurement, performance, and diffusion of social value; (c) practical and managerial insights from real-life cases; and (d) choices, incentives, guidance, and ethics. This research anthology provides a comprehensive collection of cutting-edge theories and research that will further the development and advancement of measuring and controlling sustainable efforts in theory and managerial practice.

What defines a sustainable food system? How can it be more inclusive? How do local and global scales interact and how does power flow within food systems? How to encourage an interdisciplinary approach to realizing sustainable food systems? And how to activate change? These questions are considered by EU and North American academics and practitioners in this book. Using a wide range of case studies, it provides a critical overview, showing how and where theory and practice can converge to produce more sustainable food systems.

In a fast-changing, globalising world, the teaching and implementation of a curriculum for Education for Sustainability (EfS) has been a challenge for many teachers. Issues in Teaching and Learning of Education for Sustainability highlights the issues and challenges educators and academics face in implementing EfS and gives examples of what an EfS curriculum may look like and how some institutions translate the theory into practice. Organised into three parts, the volume looks at: the who (EfS for whom), the what (EfS curriculum) and the how (translating from theory to practice). The concluding chapter provides ideas and directions on where the world can proceed regarding sustainability education and how it can help in the teaching and learning of sustainability. Considering social issues such as poverty, education, health, culture and the use of natural resources, this book proposes a different path towards Education for Sustainability. Providing concrete data on the realisation of sustainable development, Issues in Teaching and Learning of Education for Sustainability will be of interest to geographers, geography educators and professionals concerned with Education for Sustainability.

Cultural sustainability is a very important aspect of the overall sustainability framework and is regarded as the ‘fourth pillar’ alongside the other three: environmental, economic, and social sustainability. However, the concept is neither fully explored, nor widely accepted or recognized. This book elicits the interplay of ‘nature-culture-architecture’ and theorizes the concept of ‘cultural sustainability’ and ‘culturally sustainable architecture.’ It identifies four key themes in Chinese philosophy: Harmony with Heaven, Harmony with Earth, Harmony with Humans, and Harmony.
with Self, along with Greek philosopher Aristotle’s physics: form, space, matter, and time, it sets them as criteria to evaluate the renewed and new courtyard housing projects constructed in China since the 1990s. Using an innovative architectural and social science approach, this book examines the political, economic, social, and spatial factors that affect cultural sustainability. Supported by a multiplicity of data including: field surveys, interviews with residents, architects, and planners, time diaries, drawings, photos, planning documents, observation notes, and real estate brochures, the book proposes new courtyard garden house design strategies that promote healthy communities and human care for one another, a concept that is universally applicable. The volume is a first opportunity to take a holistic view, to encompass eastern and western, tangible and intangible, cultures in the theorization of ‘cultural sustainability’ and ‘culturally sustainable architecture.’ It is a comprehensive contribution to architectural theory.Anyone serious about integrating environmental factors into planning and policy making will gain new insights and ideas from Fischers book on SEA; and students, teachers and practitioners of the subject will find the book essential. Leonard Ortolano, Professor at Stanford University, USA Fischers book demystifies the process and substantive analytical dimensions of SEA. Offering solidly documented empirical evidence of the value of SEA to development, the knowledge captured in this book is a great contribution to the practice. Linda Ghanime, Environmental Operations and Policy Adviser, United Nations Development Program This book is an invaluable reference text for SEA practitioners. I recommend it to everyone! Xu He, Professor and Director of the Strategic Environmental Assessment Center at Nankai University, China Fischer gives a concise and wellstructured account of SEA as it is used today. Readers thus will gain important insights into SEA: why it is important, how it works, and what it can and should achieve. Professor Thomas Bunge, Federal Environment Agency, Germany Strategic Environmental Assessment (SEA) is a fast-growing and rapidly evolving professional field driven by both advances in theory and practice and by regulatory requirements in Europe, North America, Australasia, South Africa and increasingly across Asia. However, to date, analysis of existing practice and associated reporting has remained far from systematic and there has been a clear need for a comprehensive textbook to facilitate teaching, learning and practice in this burgeoning field. This textbook, the first of its kind, provides for a state-of-the-art review of SEA theory and practice and promotes a more systematic approach to SEA. It is written for a wide student, professional and academic audience and aims particularly at supporting the development of SEA modules in undergraduate and postgraduate planning, environmental assessment, engineering and law courses. It provides an overview of the fundamental principles and rules of SEA, reports systematically on international SEA practice and theory and pushes the envelope by developing the theory. Supporting material includes boxed examples and case studies from around the world, extra reading suggestions and a glossary of terms. This is the essential book for all students, professionals and academics in SEA and EIA and follow-up worldwide.

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