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KEY=SOLUTIONS - NICHOLSON CORDOVA

Design for Sustainability

A Sourcebook of Integrated Ecological Solutions

Routledge With radical and innovative design solutions, everyone could be living in buildings and settlements that are more like gardens than cargo containers, and that purify air and water, generate energy, treat sewage and produce food - at lower cost. Birkeland introduces systems design thinking that cuts across academic and professional boundaries and the divide between social and physical sciences to move towards a transdisciplinary approach to environmental and social problem-solving. This sourcebook is useful for teaching, as each topic within the field of environmental management and social change has pairs of short readings providing diverse perspectives to compare, contrast and debate. Design for Sustainability presents examples of integrated systems design based on ecological principles and concepts and drawn from the foremost designers in the fields of industrial design, materials, housing design, urban planning and transport, landscape and permaculture, and energy and resource management.

Sustainable Energy Transitions

Socio-Ecological Dimensions of Decarbonization

Springer Nature This textbook introduces the key concepts that underpin sustainable energy transitions. Starting with the basic biophysical principles, current sources and environmental consequences of existing energy resource use, the book takes readers through the key questions and topics needed to understand, prescribe, and advocate just and sustainable energy solutions. The interdisciplinary nature of the book aims to build bridges across the social and natural sciences and humanities, bringing together perspectives, ideas and concepts from engineering, economics, and life cycle assessment to sociology, political science, anthropology, policy studies, the humanities, arts, and some interdisciplinary thinkers that defy categories. This accessible approach fills the gap for a textbook that integrates sustainability science and engineering studies with strong empirical social science and it will be a useful tool to anyone interested in the socio-ecological dimensions of energy system transitions.

Eco-design in Electrical Engineering

Eco-friendly Methodologies, Solutions and Example for Application to Electrical Engineering

Springer This book addresses eco-design, a major tool for reducing the environmental impacts of products, services and systems in the context of sustainable development. It covers four key aspects of eco-design, applied to electrical engineering. First, it describes current and future methodologies and standards, including regulations, which apply to electrical engineering. In turn, the second chapter is devoted to energy systems and planning, including constraints on the insertion of equipment into the grid. Components such as transformers and cables, their eco-design characteristics and impacts, and their potential to improve the environmental impacts of networks are described in the third chapter. Lastly, the fourth chapter deals with materials in terms of their performance and ecological impact. In the case of electrical equipment, the eco-design approach is also connected to the development of renewable energies and energy efficiency.

Managing Air Quality and Energy Systems

CRC Press Bringing together a wealth of knowledge, the Handbook of Environmental Management, Second Edition, gives a comprehensive overview of environmental problems, their sources, their assessment, and their solutions. Through in-depth entries, and a topical table of contents, readers will quickly find answers to questions about pollution and management issues. This six-volume set is a reimagining of the award-winning Encyclopedia of Environmental Management, published in 2013, and features insights from more than 500 contributors, all experts in their fields. The experience, evidence, methods, and models used in studying environmental management is presented here in six stand-alone volumes, arranged along the major environmental systems. Features of the new edition: The first handbook that demonstrates the key processes and provisions for enhancing environmental management. Addresses new and cutting -edge topics on ecosystem services, resilience, sustainability, food-energy-water nexus, socio-ecological systems and more. Provides an excellent basic knowledge on environmental systems, explains how these systems function and offers strategies on how to best manage them. Includes the most important problems and solutions facing environmental management today. In this second volume, Managing Air Quality and Energy Systems, the reader is introduced to the general concepts and processes of the atmosphere, with its related systems. This volume explains how these systems function and provides strategies on how to best manage them. It serves as an excellent resource for finding basic knowledge on the atmosphere, and includes important problems and solutions that environmental managers face today. This book practically demonstrates the key processes, methods, and models used in studying environmental management.

Water-Energy-Nexus in the Ecological Transition

Natural-Based Solutions, Advanced Technologies and Best Practices for Environmental Sustainability

Springer This volume includes selected contributions presented during the 3rd edition of the international conference on WaterEnergyNEXUS, which was held in Tunisia in December 2020. This conference was organized by the University of Sfax (Tunisia), in cooperation with the Sanitary Environmental Engineering Division (SEED) of the University of Salerno (Italy), the Advanced Institute of Water Industry at Kyungpook National University (Korea) and The Energy and Resources Institute, TERI (India). The WaterEnergyNEXUS series of conferences are supported by the UNESCO World Water Association Programme (WWAP) and the International Water Association (IWA). It also enjoys the patronage of several international scientific societies, associations and organizations and has established a publishing partnership with Springer Nature. With the support of international experts invited as plenary and keynote speakers, the conference aimed to give a platform for Euro-Mediterranean countries to share and discuss key topics on such water-energy issues through the presentation of nature-based solutions, advanced technologies and best practices for a more sustainable environment within the framework of the ecological transition. This volume gives a general and brief overview of current research focusing on emerging Water-Energy-Nexus issues and challenges and their potential applications to various environmental problems impacting the Euro-Mediterranean zone and surrounding regions. A selection of novel and alternative solutions applied worldwide are included. The volume contains over about one hundred carefully refereed contributions from 48 Countries worldwide selected for the conference. Topics covered in the book include: Nexus framework and governance; Economic evaluations for investment projects in the water and energy sectors; Innovation of renewable energies and challenges for the mitigation of climate change impact in the water-energy-food-nexus; Advanced technologies

and nature-based solutions for the environmental sustainability of the water sector; Water and wastewater technologies for developing countries; Green technologies for sustainable water and wastewater management; Advanced technologies and nature-based solutions in water cycle; Control of hazardous substances and recovery of renewable/valuable resources; Renewable/valuable resources for recovery and utilization; Control of nutrients and hazardous compounds; Energy-saving technologies and future clean energy solutions; Future urban-energy systems with considerations of water and food security; Environmental Biotechnology and Bioenergy; Implementation and best practices. This volume is also an invaluable guide for industry professionals and policymakers working in the water and energy sectors.

Greenhouse Solutions with Sustainable Energy

UNSW Press A positive, proactive book that proposes a set of policies and strategies for implementing the most promising cleaner energy technologies by all spheres of government, business and community organisations.

How to Go Green and Save Money

320 Great Eco-Friendly Tips to Save Energy and Help the Environment

Independently Published Here's How to Go Green and Save Money, Featuring 320 Extremely Effective Eco-Friendly Tips to Save Energy and Help the Environment. If you are interested in green energy than you need to read this book right now as it may be the most important green energy book you'll read in a long time. Here's just a fraction of what you're going to discover in this book that you simply will not learn anywhere else: * How to best take advantage of the most effective green energy techniques - ideas to make any of your green energy projects a success. * The surprising "little-known tricks" that will help you get the most out of your green energy solutions. * How to find low cost green energy related materials; this best kept secret will save you lots of money on your purchases. * Do's and don'ts for the most important green energy activities: top green energy and reusable ideas. * How to take your green energy projects to the next level; be ready to be surprised when you discover how easy and effective this is. * The simple unvarnished truth about what works and what doesn't work in green energy, this is really crucial! * Extremely effective ways to take advantage of recently discovered green energy related materials and methods. * Green energy myths you need to avoid at all costs. * Golden rules to help you get better at green energy projects; discover simple methods that work perfectly every time. * The vital keys to completing a green energy project successfully. * How to make sure you come up with the most effective solutions to your green and renewable energy challenges. * A simple, practical green energy strategy to dramatically cut down costs, but amazingly enough, almost no one understands or uses it. * The top green energy mistakes people do - and how to avoid them. * How to put together an effective green and renewable energy routine: the golden rules of green and renewable energy practices - find out the easiest, simplest ways to take on the most enjoyable green energy projects. * The exact green energy routine you should be following for every project. * What nobody ever told you about green and renewable energy; insider secrets of avoiding the most bothersome challenges. * All these and much much more.

Sustainable Consumer Services

Business Solutions for Household Markets

Earthscan The goal for consumer oriented business should be to make a profit and to do it without costing the Earth. Yet exactly how to satisfy the needs and wants of consumers without contributing to environmental degradation is proving to be the essential, but elusive goal for businesses in the 21st century. The leading solution is to substitute material consumption with the consumption of services that offer consumers convenience and value but eliminate much of the inefficiency and waste associated with our throw-away society. Sustainable consumer services for households - services that are delivered to consumers at the premises such as home delivery of organic food, appliance leasing, mobile laundry services, internet marketing of homeservices or car pool schemes - provide a key part of the answer of how to reduce material consumption and waste while still turning a profit. Yet until now there has been little information to guide the development of such business models and practices, and to develop ways to make service-based consumption more attractive to consumers than object-ownership-based models. This book, equally a practical business handbook and business course text, provides the missing link in sustainable household service competitiveness by examining the issues, looking at business models, providing dozens of real-life best-practice examples and presenting data from the first large-scale consumer survey that explains consumer behaviour and what they want from home service provision. The book is an essential resource for businesses and public or nonprofit

organizations and housing organizations entering the growing consumer services market. It provides a wealth of business know-how on what works and what doesn't, how to avoid potential pitfalls, and how to provide consumer services at the household level that are profitable, environmentally sustainable and that add to consumers quality of life.

Energy and the Ecological Economics of Sustainability

Island Press Energy and the Ecological Economics of Sustainability examines the roots of the present environmental crisis in the neoclassical economics upon which modern industrial society is based. The author explains that only when we view ourselves in the larger context of the global ecosystem and accept the physical limits to what is possible can sustainability be achieved.

Drawdown

The Most Comprehensive Plan Ever Proposed to Reverse Global Warming

Penguin UK NEW YORK TIMES BESTSELLER For the first time ever, an international coalition of leading researchers, scientists and policymakers has come together to offer a set of realistic and bold solutions to climate change. All of the techniques described here - some well-known, some you may have never heard of - are economically viable, and communities throughout the world are already enacting them. From revolutionizing how we produce and consume food to educating girls in lower-income countries, these are all solutions which, if deployed collectively on a global scale over the next thirty years, could not just slow the earth's warming, but reach drawdown: the point when greenhouse gasses in the atmosphere peak and begin to decline. So what are we waiting for?

Ecology and Socialism

Solutions to Capitalist Ecological Crisis

Haymarket Books Around the world, consciousness of the threat to our environment is growing. The majority of solutions on offer, from using efficient light bulbs to biking to work, focus on individual lifestyle changes, yet the scale of the crisis requires far deeper adjustments. Ecology and Socialism argues that time still remains to save humanity and the planet, but only by building social movements for environmental justice that can demand qualitative changes in our economy, workplaces, and infrastructure. Chris Williams is a longtime environmental activist, professor of physics and chemistry at Pace University, and chair of the science department at Packer Collegiate Institute. He lives in New York City.

Materials for a Healthy, Ecological and Sustainable Built Environment

Principles for Evaluation

Woodhead Publishing Principles for Evaluating Building Materials in Sustainable Construction: Healthy and Sustainable Materials for the Built Environment provides a comprehensive overview of the issues associated with the selection of materials for sustainable construction, proposing a holistic and integrated approach. The book evaluates the issues involved in choosing materials from an ecosystem services perspective, from the design stage to the impact of materials on the health of building users. The three main sections of the book discuss building materials in relation to ecosystem services, the implications of materials choice at the design stage, and the impact of materials on building users and their health. The final section focuses on specific case studies that illustrate the richness of solutions that existed before the rise of contemporary construction and that are consistent with a sustainable approach to creating built environments. These are followed by modern examples which apply some, if not all, of the principles discussed in the first three sections of the book. Provides a holistic and integrated approach to the issues associated with the selection of materials for sustainable construction Provides a thorough understanding of ecosystem services based on ecology research for built environment design Provides an original review of the impact of materials on human health Provides case studies to illustrate the points above

Environmentally-Benign Energy Solutions

Springer Nature This book provides high-quality research results and proposes future priorities for more sustainable development and energy security. It covers a broad range of topics on atmospheric changes, climate change impacts, climate change modeling and simulations, energy and environment policies, energy resources and conversion technologies, renewables, emission reduction and abatement, waste management, ecosystems and biodiversity, and sustainable development. Gathering selected papers from the 7th Global Conference on Global Warming (GCGW2018), held in Izmir, Turkey on June 24–28, 2018, it: Offers comprehensive coverage of the development of systems taking into account climate change, renewables, waste management, chemical aspects, energy and environmental issues, along with recent developments and cutting-edge information Highlights recent advances in the area of energy and environment, and the debate on and shaping of future directions and priorities for a better environment, sustainable development and energy security Provides a number of practical applications and case studies Is written in an easy-to-follow style, moving from the basics to advanced systems. Given its scope, the book offers a valuable resource for readers in academia and industry alike, and can be used at the graduate level or as a reference text for professors, researchers and engineers.

Photovoltaism, Agriculture and Ecology

From Agrivoltaism to Ecovoltaism

John Wiley & Sons One of the challenges of our modern society is to successfully reconcile growing energy demand, demographic and food pressure and ecological and environmental urgency. This book offers an update on a rapidly evolving subject, that of modern photovoltaic systems capable of combining the needs of energy and ecological transition. Although photovoltaic solar energy is a well-proven technical solution in terms of energy, its development can compete with agricultural land or natural sites. New solutions are emerging: the installation of photovoltaic parks on industrial wasteland; agrivoltaics, which reconcile agricultural activity and energy production on the same surface; and ecovoltaics, which make it possible to make use of the unused surfaces under solar panels by developing ecological solutions capable of providing services to nature. These innovations are part of the response to the need to preserve terrestrial and aquatic ecosystems, halt the decline in animal and plant biodiversity and participate in the development of a new mode of sustainable development and green economy.

Energy

Crises, Challenges and Solutions

John Wiley & Sons Energy Global energy demand has more than doubled since 1970. The use of energy is strongly related to almost every conceivable aspect of development: wealth, health, nutrition, water, infrastructure, education and even life expectancy itself are strongly and significantly related to the consumption of energy per capita. Many development indicators are strongly related to per-capita energy consumption. Fossil fuel is the most conventional source of energy but also increases greenhouse gas emissions. The economic development of many countries has come at the cost of the environment. However, it should not be presumed that a reconciliation of the two is not possible. The nexus concept is the interconnection between the resource energy, water, food, land, and climate. Such interconnections enable us to address trade-offs and seek synergies among them. Energy, water, food, land, and climate are essential resources of our natural environment and support our quality of life. Competition between these resources is increasing globally and is exacerbated by climate change. Improving resilience and securing resource availability would require improving resource efficiency. Many policies and programs are announced nationally and internationally for replacing the conventional mode and also emphasizing on conservation of fossil fuels and reuse of exhausted energy, so a gap in implications and outcomes can be broadly traced by comparing the data. This book aims to highlight problems and solutions related to conventional energy utilization, formation, and multitudes of ecological impacts and tools for the conservation of fossil fuels. The book also discusses modern energy services as one of the sustainable development goals and how the pressure on resource energy disturbs the natural flows. The recent advances in alternative energy sources and their possible future growth are discussed and on how conventional energy leads to greenhouse gas formation, which reduces energy use efficiency. The different policies and models operating is also addressed, and the gaps that remained between them. Climate change poses a challenge for renewable energy, and thus it is essential to identify the factors that would reduce the possibility of relying on sustainable energy sources. This book will be of interest to researchers and stakeholders, students, industries, NGOs, and governmental agencies directly or indirectly associated with energy research.

Society and the Environment

Pragmatic Solutions to Ecological Issues

Hachette UK Society and the Environment examines today's environmental controversies within a socio-organizational context. After outlining the contours of "pragmatic environmentalism," Carolan explores the material world: air, water, biodiversity, and trash. He considers the pressures that exist where ecology and society collide, such as population growth and its associated increased demands for food and energy. Carolan also investigates how various ecological issues, such as climate change, are affecting our very own personal health. Finally, he drills into the social/structural dynamics—including political economy and the international legal system—that create ongoing momentum for environmental ills. This interdisciplinary text features a three-part structure in each chapter that covers "fast facts" about the issue at hand, examines its wide-ranging implications, and offers balanced consideration of possible real-world solutions. Bolstering that analysis, a variety of boxes highlight relevant case studies as well as the value judgments which lurk everywhere in talk about environmental phenomena. New to this edition are "Movement Matters" boxes, which showcase grassroots movements that have affected legislation. Discussion questions and key terms enhance the text's usefulness, making Society and the Environment the perfect learning tool for courses on environmental sociology.

Best Houses

It is Economical, Ecological, Wasteful Zero Energy from the Environment for Its Operation

And of course, when we have in addition to the excellent architecture, decoration, functionality, and the most economical solution to save energy during the construction, renovation, operation of the house, the most important of all for us ecological protection of our planet. The latter, the energy saving, has as a result, the protection of the building from the external conditions of the surrounding area. The latter, the energy saving, has as a result, the protection of the building from the external conditions of the surrounding area. Both during the construction of the building and during its operation, significant amounts of energy are required that burden the cost of the building and do terrible damage to the planet. Therefore, the main goal of a future building, in addition to the very good architecture, functionality, aesthetics, decoration, ecological protection, must be: - The minimization of energy quantities during its construction or renovation.- Zero amounts of energy to achieve ideal living conditions inside the building. When the reader is aware of the above, he has the basic principles of protecting his home from external environmental conditions, and will take care, at least to a certain extent, to apply them. Thus, when it uses insulating materials, it contributes to the non-overheating of our planet, thus saving the human race and the Earth, because in this way, it helps them not to be destroyed. From a young age, I was involved with housing and technical materials. I was helped by my godfather who worked in it and he was one of the best master builders in the area of Evia as he built the best houses of that time, fireplaces in the area and in Athens, he even had a crusher that broke marble stones of different colors to create the then widely used flooring, the mosaic. I liked to deal with the construction, the art of the houses and for this reason I studied civil engineering at NTUA. in Athens. And not only that, I was involved in the specialized study of the house. I carried out the diploma thesis "Dimensioning Hot - liquid - sound insulation of structural structures". The purpose of this work was to accurately measure the coefficient of thermal conductivity of insulating materials and how it is affected by humidity, etc. I did postgraduate studies at the School of Chemical Engineering of the NTUA. and especially in the field of materials technology. In my professional career, I have been involved, both in the design and construction of buildings and with particular preference for their protection from moisture, cold or heat, sound, in general, their energy protection. Thus, I am one of the people who were involved in saving energy in the building for the protection of the building itself and our planet, I have scientific knowledge, experience, more than fifty years, from a young child, until today. And that is the main reason, that is, that I am an authority and I have the necessary qualifications on the subject of energy protection of buildings, to write a book about a better home, for the good of the human race and the our planet. In conclusion, all this knowledge that I gained after tens of years of work, is mentioned in this book and will help you to know how to build a technically and economically excellent house or building and also, at the same time, how to help protect our planet with reduction, minimization of energy waste, operation of buildings. You will help to create better houses and reduce carbon dioxide emissions, while at the same time you will have better living conditions with the best techno-economic solution. When I started designing hot - liquid - soundproofing structures in the early 1970s, there were few factories for insulating materials to build homes.

Challenges and Solutions in the Russian Energy Sector

Springer The book provides a comprehensive overview of the most recent and advanced research findings on energy production and management in the important Ural industrial region of Russia. The authors consider economic problems of energy development, management systems for sustainable energy, and investment mechanisms for energy. Comprised of chapters on energy efficient technologies, environmental aspects of using energy, and personnel for the power industry, the volume is ideal for a range of scientists and engineers interested in innovative approaches to generation and distribution of energy.

Ecologic

The Truth and Lies of Green Economics

Random House Looking after 'The Environment' should be straightforward - no-one wants to destroy the world. And yet in every 'green' area we are either failing to take the essential steps to prevent destruction of the planet or are being deceived - often by ourselves. By using the scalpel of eco-logic it is possible to open up the reality beneath the layers of confusion and deception, turn recognized situations inside out, identify hidden agendas in the so-called Experts, and come up with real solutions to our green problems. Examining issues such as Climate Change Sceptics, Celebrity greens and the charity gig bandwagon, 'Fair' trade, Organics, Renewable energy, Recycling, Carbon offsets, Sustainability and much more, ECO-LOGIC is a book to shake up the green movement and give it a new impetus.

Eco-Friendly Energy Processes and Technologies for Achieving Sustainable Development

IGI Global Rapid changes in technology and lifestyle have led to a dramatic increase in energy demand. Growing energy demand is the main cause of environmental pollution, but the efficient use of renewable resources and technologies for residential, commercial, industrial, and agricultural sectors offers the opportunity to diminish energy dependence, ensure efficiency and reliability, reduce pollutant emissions, and buoy national economies. Eco-friendly energy processes are the key to long-term sustainability. Eco-Friendly Energy Processes and Technologies for Achieving Sustainable Development is a collection of innovative research that identifies sustainability pillars such as environmental, technical, social, institutional, and economic disciplines and explores the longevity of these disciplines through a resource-oriented approach. Featuring coverage of a broad range of topics including environmental policy, corporate accountability, and urban planning, this book is ideally designed for policymakers, urban planners, engineers, advocates, researchers, academicians, and students.

Smart Grids

Fundamentals and Technologies in Electric Power Systems of the future

Springer Nature Nowadays, Smart Grid has become an established synonym for modern electric power systems. Electric networks are fed less and less by large, centrally planned fossil and nuclear power plants but more and more by millions of smaller, renewable and mostly weather-dependent generation units. A secure energy supply in such a sustainable and ecological system requires a completely different approach for planning, equipping and operating the electric power systems of the future, especially by using flexibility provisions of the network users according to the Smart Grid concept. The book brings together common themes beginning with Smart Grids and the characteristics of power plants based on renewable energy with highly efficient generation principles and storage capabilities. It covers the advanced technologies applied today in the transmission and distribution networks and innovative solutions for maintaining today's high power quality under the challenging conditions of large-scale shares of volatile renewable energy sources in the annual energy balance. Besides considering the new primary and secondary technology solutions and control facilities for the transmission and distribution networks, prospective market conditions allowing network operators and the network users to gain benefits are also discussed. The growing role of information and

communication technologies is investigated. The importance of new standards is underlined and the current international efforts in developing a consistent set of standards are updated in the second edition and described in detail. The updated presentation of international experiences to apply novel Smart Grid solutions to the practice of network operation concludes this book.

Society and the Environment

Pragmatic Solutions to Ecological Issues

Routledge Without focusing entirely on what is wrong with the world around us, the third edition of *Society and the Environment* centers its discussion on realistic solutions to the problems that persist and examines current controversies within a socio-organizational context. After introducing “pragmatic environmentalism,” Carolan discusses the complex pressures and variables that exist where ecology and society collide, such as population growth and the concurrent increase in demands for food and energy, and transportation and its outsized influence on urban and community patterns. With further attention given to the social phenomena and structural dynamics driving today’s environmental problems, the book concludes with an important reflection on truly sustainable solutions and what constitutes meaningful social change. Each chapter in this interdisciplinary text follows a three-part structure beginning with an overview of what is wrong and why. This leads into a discussion on each issue’s wide-ranging implications and, finally, a balanced consideration of realistic solutions. Featuring updated and expanded examples, discussion points, and coverage of recent developments including the US withdrawing from the Paris Agreement, “booming” national economies and wealth distribution, growing global interest in environmental justice—with particular focus on the links between injustice and race and inequality—climate change, and renewable energy, this new edition remains an essential companion for courses on environmental sociology and sustainability.

Integrating Ecology and Poverty Reduction

Ecological Dimensions

Springer Science & Business Media In the past, the science of ecology has frequently been excluded from the development agenda for various reasons. Increasingly however there has been a renewed interest in finding more ecologically sustainable means of development that have required a strong foundation in ecological knowledge (for example EcoAgriculture Partnerships, EcoHealth presented at ESA, and EcoNutrition proposed by Deckelbaum et al). Each of these examples has already taken the critical first step at integrating ecological knowledge with agriculture, health and nutrition, respectively. However, this is only the first step; more attention needs to be placed not only on the role that two fields can play towards poverty alleviation, but on the role of a truly integrated, interdisciplinary approach towards development goals that is firmly grounded in ecological understanding. We feel that a critical look at what ecology can and cannot provide to the development agenda, in light of the Millennium Development goals, is timely and crucial. The introduction and the final section of the book will then integrate the lessons and principles outlined in each of the chapters. All chapter authors will be heavily encouraged to focus on how their sub-discipline in ecology impacts overall human well-being and environmental sustainability.

The Solutions Are Already Here

Strategies of Ecological Revolution from Below

Pluto Press (UK) As the climate crisis worsens, we must look to revolutionary strategy for justice

Building Materials for Sustainable and Ecological Environment

Springer Nature This book uses theories, hypotheses, policies, practical insights and case studies to introduce and elucidate green building materials for sustainable construction. Cement is the most widely used building material in construction; however, it is not sustainable, being responsible for 7% of global carbon dioxide emissions and consuming huge quantities of energy. In order to limit the ecological damage, sustainable building materials are needed. Ecosystems are a source of important lessons and models for transitioning the built environment onto a sustainable path that opens options

for sustainable building material in construction. The book provides a guide for readers seeking knowledge on sustainable building materials with the potential to lower environmental impact by reducing CO2 emission throughout the building's lifecycle. The book is motivated by recent rapid advances in sustainable building materials production, including green building materials made of industrial by-products and recycled wastes, earth materials, plant-based materials, microbial-based materials or supplementary cementitious materials, to reduce the environmental impacts of traditional building materials. Discussing the development and applications of various sustainable building materials, including related case studies, and addressing the environmental issue with a holistic and systematic approach that creates an ecology of construction for sustainability in infrastructures, it offers promising solutions to achieve renewable and sustainable building materials for the future.

IT Solutions for the Smart Grid

Theory, Application, and Economic Assessment

Springer Tobias Brandt outlines how information technology (IT) can be used to integrate sustainable energy technologies into existing infrastructures. The topic is approached from micro, meso, as well as macro perspectives. He first describes how IT artifacts can be used to manage renewable energy sources and energy storage devices in individual households and microgrids for an improved economic and ecological performance. The author proceeds by assessing the economic feasibility of aggregating electric vehicles for large-scale energy storage. The final chapter explores the issue of stability in automated mechanisms. A game-theoretical model is first introduced for financial markets and later transferred to the automated management of energy demand.

Sustainability in Transition

Principles for Developing Solutions

Routledge Sustainability in Transition: Principles for Developing Solutions offers the first in-depth education-focused treatment of how to address sustainability in a comprehensive manner. The textbook is structured as a learning-centered approach to walk students through the process of linking sustainable behavior and decision-making to green innovation systems and triple-bottom-line economic development practices, in order to achieve sustainable change in incremental to transformational ways. All chapters combine theory and practice with the help of global case study and research study examples to illustrate barriers and best practices. Each chapter begins with learning objectives and ends with a 'check on learning' section that ties the main points back to the core themes of the book. Chapters include a section focused on measuring progress and a box comparing international research or case studies to the North American focus of the chapter. A list of additional academic sources for students that complement each chapter is included. Building sustainability tools, techniques, and competencies cumulatively with the help of problem- and project-based learning modules, Sustainability in Transition: Principles for Developing Solutions is a comprehensive resource for learning sustainability theory and doing sustainability practice. It will be essential reading for advanced undergraduate and graduate level students who have already completed introductory sustainability classes.

Ecological Design, Tenth Anniversary Edition

Island Press Ecological Design is a landmark volume that helped usher in an exciting new era in green design and sustainability planning. Since its initial publication in 1996, the book has been critically important in sparking dialogue and triggering collaboration across spatial scales and design professions in pursuit of buildings, products, and landscapes with radically decreased environmental impacts. This 10th anniversary edition makes the work available to a new generation of practitioners and thinkers concerned with moving our society onto a more sustainable path. Using examples from architecture, industrial ecology, sustainable agriculture, ecological wastewater treatment, and many other fields, Ecological Design provides a framework for integrating human design with living systems. Drawing on complex systems, ecology, and early examples of green building and design, the book challenges us to go further, creating buildings, infrastructures, and landscapes that are truly restorative rather than merely diminishing the rate at which things are getting worse.

Issues in Ecological Research and Application: 2011 Edition

ScholarlyEditions Issues in Ecological Research and Application: 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Ecological Research and Application. The editors have built Issues in Ecological Research and Application: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Ecological Research and Application in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Ecological Research and Application: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

Innovative Approaches towards Ecological Coal Mining and Utilization

John Wiley & Sons Discover the most cutting-edge solutions to the environmental problems posed by coal In Innovative Approaches towards Ecological Coal Mining and Utilization, a distinguished team of researchers delivers a comprehensive and fulsome exploration of the ecological problems caused by coal mining and utilization. The book discusses environmental pollution and carbon emissions in the context of modelling coal engineering issues, the design of innovative coal engineering systems, and the evaluation of innovative coal mining systems. The authors consider the technical and economic viability of each proposed solution, making the book ideal reading for environmental and energy researchers in academic and industrial circles. Fully interdisciplinary, Innovative Approaches towards Ecological Coal Mining and Utilization offers readers an integrated look at the management science and policy simulation involved solutions to ecological problems caused by coal mining and utilization. The included resources make full use of expansive case studies to illustrate the concepts discussed in the book, as well as robust economic analyses of the various technologies. Readers will also discover: A thorough introduction to ecological coal mining and developing trends in ecological coal utilization Comprehensive explorations of innovative approaches in coal mining and a multiple coal seams-oriented equilibrium strategy towards coal-water conflict resolution Practical discussions of seasonal change-oriented dynamic strategies towards coal-water conflict resolution and GIS-oriented equilibrium strategies for coal gangue contamination mitigation In-depth examinations of carbon dioxide emission reduction in coal-fired power operations Perfect for environmental and water chemists, mining specialists, and chemical engineers, Innovative Approaches towards Ecological Coal Mining and Utilization will also prove to be an invaluable addition to the libraries of process engineers seeking the latest information on solutions to the environmental problems caused by coal mining and utilization.

Ecological Engineering Design

Restoring and Conserving Ecosystem Services

John Wiley & Sons Ecologically-sensitive building and landscape design is a broad, intrinsically interdisciplinary field. Existing books independently cover narrow aspects of ecological design in depth (hydrology, ecosystems, soils, flora and fauna, etc.), but none of these books can boast of the integrated approach taken by this one. Drawing on the experience of the authors, this book begins to define explicit design methods for integrating consideration of ecosystem processes and services into every facet of land use design, management, and policy. The approach is to provide a prescriptive approach to ecosystem design based upon ecological engineering principles and practices. This book will include a novel collection of design methods for the non-built and built environments, linking landscape design explicitly to ecosystem services.

Regulation and Investments in Energy Markets

Solutions for the Mediterranean

Academic Press Regulation & Investments in Energy Markets: Solutions for the Mediterranean presents the status of advancement and maturity of the Mediterranean energy policy, identifying patterns of development as well as lessons learned. Mediterranean countries are facing unprecedented challenges in the energy sector which affect the entire region. Energy policy and regulation is the key to

tackling energy efficiency challenges, and providing favorable conditions for engineering infrastructures, investments, and improving security of energy supply. The assumption that the normative model, on which the EC energy policy is based, could be adopted outside EU boundaries has proven to be difficult to implement. This book looks at the Mediterranean regions search for a revised model for regulatory convergence and provides answers to those research questions, allowing the reader to understand the different technical, institutional, and financial frameworks for energy policy. Contains a detailed overview of the specificities and institutional frameworks, giving greater clarity on existing energy practice Provides recommendations and contributions from leading scholars and key players in energy policy research Presents information from a region wide interdisciplinary approach based on specific industry information

Ecological Economics

Sustainability in Practice

Springer Science & Business Media In a concise and crisp manner, this book presents the state of the art in ecological economics, an interdisciplinary field focused on the analysis of sustainability of global, national and regional economic systems. An elegant guide, the book offers a range of cutting edge methods used in sustainability research including multicriteria decision aid (MCDA), input-output analysis, and life cycle analysis. This book is packed with references for students with some background in economics, environmental science or mathematics who aim to develop the analytical skills required for redirecting our development path towards sustainability in government, international organisations, academia, non-profit sector and business. As such, the book is primarily aimed at MSc and first year PhD students reading for degrees in Environmental Change and Management, Ecological Economics, Environmental Management, Philosophy, Politics and Economics, and those taking part in similar programmes. The book strives to develop the idea that a significant adjustment of the current economic theories is required, an idea supported by the emerged world economic crisis, the climatic and biodiversity crisis the world is currently facing and the enormously slow progress that has been made in the field of reorientation of the global economy towards sustainability. The practical case studies provided focus on the most pressing topics of today, and the book adopts a positive approach for problem solving and strategic development, which is aimed at educating the future decision makers and business leaders.

Energy Efficient Homes for Dummies

Want to make eco-friendly changes in your house that will save energy? This practical guide is packed with tips and projects for increasing your home's energy efficiency while reducing costs and cutting down on waste and pollution. You'll see how to put together your own energy action plan based on your needs - and make your lifestyle more comfortable and enjoyable.

Social Innovation

Solutions for a Sustainable Future

Springer Science & Business Media Social Innovation is becoming an increasingly important topic in our global society. Those organizations which are able to develop business solutions to the most urgent social and ecological challenges will be the leading companies of tomorrow. Social Innovation not only creates value for society but will be a key driver for business success. Although the concept of Social Innovation is discussed globally the meaning and its impact on the development of new business strategies is still heavily on debate. This publication has the goal to give a comprehensive overview of different concepts in the very innovative field of Social Innovation, from a managerial as well as from a theoretical and social perspective. Over 30 leading thinkers in the field of Innovation, Strategic Management and Organizational Development give a well structured inside on the latest developments and progress in the field of Social Innovation. Thereby the authors not only develop a comprehensive and unique analysis on the state-of-the art of social innovation but also give practical advice and information to business leaders on how to apply the latest management thinking on Social Innovation to daily business decisions. This publication has the intention to become a milestone in the further development of the concept of Social Innovation as well as to further stimulate new business strategies necessary to overcome world most pressing social and ecological challenges.

Ecological Dimensions for Sustainable Socio Economic Development

WIT Press This book fills a gap in the literature on environmental sustainability by addressing the topic from the perspective of social and economic development. Progress in understanding and achieving sustainability requires the integration of scientific, social, economic, and legal issues. Yet progress in understanding and achieving sustainability will only be achieved through integration of scientific, social, economic, and legal aspects. A treatise on environmental sustainability should raise the current state of knowledge by proposing and recommending decision-making efforts and breaking new ground with agendas aimed for the younger generation. These younger scientists will be confronted with future uncertainty related to the set of crises that characterise the 21st Century (e.g. ecological, social, food, energy, environmental, climatic, financial, etc.). Currently, there are a number of indicators that demonstrate that ecological conditions are being compromised globally. These include reduced primary productivity, reduction in biological complexity, spreading pollution such as eutrophication, ecological degradation in any continental/basin/coastal/sea ecosystem, reduction in biodiversity, lowered resilience and slow recovery of damaged ecosystems, and reduced ecological integrity. All of these problems are related to social and economic pressure. The challenge for most ecological systems is not only to establish the baseline for current ecosystem conditions, but also to explore options for recovery and sustainability. The latter involves ecological restoration where ecosystem and environmental services are maintained and enhanced. These services are essential to social integration and economic development. This book not only introduces a theoretical and conceptual framework for the topic, but also analyses the uncertainty for sustainability because of dwindling natural resources. It includes contributions providing a basis for public policies, case studies integrating concepts and tools for solutions, and a set of position papers addressing new agenda topics that will shape the 21st century. The book will be useful for researchers, professors and students alike, as well as for all stakeholders from social, economic and academic sectors.

Thermodynamics and Ecological Modelling

CRC Press Thermodynamics is used increasingly in ecology to understand the system properties of ecosystems because it is a basic science that describes energy transformation from a holistic view. In the last decade, many contributions to ecosystem theory based on thermodynamics have been published, therefore an important step toward integrating these theories and encouraging a more wide spread use of them is to present them in one volume. An ecosystem consists of interdependent living organisms that are also interdependent with their environment, all of which are involved in a constant transfer of energy and mass within a general state of equilibrium or dis-equilibrium. Thermodynamics can quantify exactly how "organized" or "disorganized" a system is - an extremely useful to know when trying to understand how a dynamic ecosystem is behaving. A part of the Environmental and Ecological (Math) Modeling series, Thermodynamics and Ecology is a book-length study - the first of its kind - of the current thinking on how an ecosystem can be explained and predicted in terms of its thermodynamical behavior. After the introductory chapters on the fundamentals of thermodynamics, the book explains how thermodynamic theory can be specifically applied to the "measurement" of an ecosystem, including the assessment of its state of entropy and enthalpy. Additionally, it will show economists how to put these theories to use when trying to quantify the movement of goods and services through another type of complex living system - a human society.

Ecological Design and Building Schools

Green Guide to Educational Opportunities in the United States and Canada

The only directory of its kind in North America, this comprehensive guide features an annotated listing of schools and educational centers offering programs in ecological architecture and construction. Included also are a 10-year overview of sustainable design education, tables comparing school programs, and listings of instructors, green building organizations, selected textbooks, and publicly available curricula. Sandra Leibowitz Earley is a registered LEED®-accredited architect. She founded Sustainable Design Consulting and provides green design specifications for commercial, institutional, and multi-family residential projects throughout the country. Earley has coauthored several guidance documents, including the HOK Guidebook to Sustainable Design and the US Green Building Council Toolkit.

Energy Systems of Complex Buildings

Springer Science & Business Media The production and consumption of energy carriers in complex buildings take place within the network of interconnected energy processes. For this reason, a change carried out in one energy process influences other energy processes. Therefore, all balance equations of energy carriers should be investigated as a whole, and energy management of complex buildings creates a large energy system with internal relationships between energy installations and the equipment, as well as external relationships with the environment. Energy Systems of Complex

Buildings presents the system approach to the energy-ecological analysis of energy management in complex buildings. Mathematical models of balancing the direct energy consumption, as well as cumulative energy consumption and cumulative emission of noxious substances are based on input-output analysis. Algorithms devoted to system analysis in the exploitation of energy management of complex buildings are included. In the case of ecological analysis, a new approach is presented basing on the idea of thermoecological costs. In this way, two groups of noxious influence (depletion of non-renewable energy resources and emissions of noxious substances) are taken into account. The LCA energy-ecological analysis of complex buildings has also been presented. Students, building designers, energy auditors, and researchers will learn the methodology of evaluating the energy and ecological effects by applying new technologies and devices in buildings, which influence future investigations concerning the energy and ecological analysis of complex buildings.

Ecological Wisdom

Theory and Practice

Springer This book offers an introduction to the theory and practice of ecological wisdom (EW). EW is the integration of robust contemporary science with proven cultural and historical practices to identify long-term, sustainable solutions to problems of environmental management and urban design. The book combines theoretical concepts with specific case studies, illustrating the opportunities for interdisciplinary approaches combining historical experience, cultural context, and contemporary science as effective strategies for addressing complex problems confronting metropolitan and rural environmental and resource management in areas such as land use, water management, materials and building engineering, urban planning, and architecture and design. EW transcends the limitations in these fields of the normative approaches of modernity or traditional wisdom by offering a new, synthetic strategy to address socio-ecological issues. By presenting these ideas both theoretically and through existing case studies, the book provides researchers, practitioners and students with a powerful new perspective in developing long-term, resilient solutions to existing socio-environmental challenges. It is intended mainly for those working or interested in the fields of sustainable environmental and resource management, city and regional planning, architecture and design, civil engineering, landscape architecture, and the philosophy of science, particularly those with an ecological or sustainability focus.