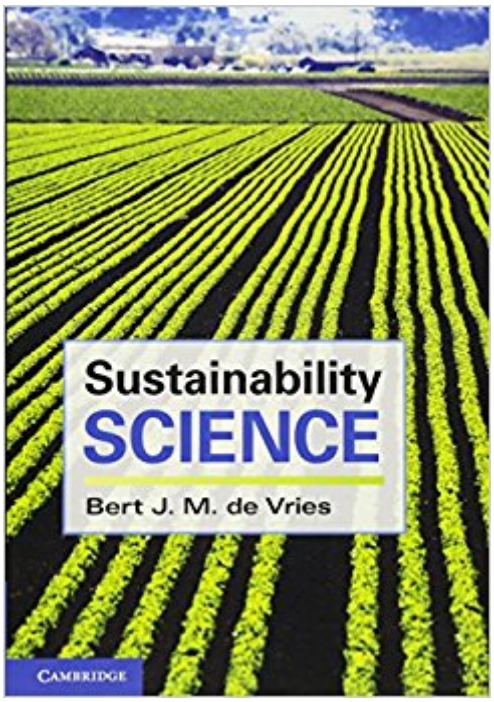
Sustainability Science



Synopsis

Sustainable development is becoming the guiding principle for the 21st century. This textbook - based on the author’s course and rigorously class-tested by his students - provides an introduction into patterns of past and present (un)sustainable development and into the emergence of the notion of sustainable development. It systematically surveys the key concepts, models and findings of the various scientific disciplines with respect to the major sustainability issues: energy, nature, agro-food and resource systems, and economic growth. System analysis and modelling is introduced and used as an integrating tool. Stories and worldviews are used to connect the quantitative and the qualitative and to offer the reader an understanding of relevant trends and events in context. Sustainability Science is an ideal textbook for advanced undergraduate and graduate level courses in sustainable development and in environmental and resource science and policy.

Book Information

Paperback: 605 pages

Publisher: Cambridge University Press; 1 edition (December 17, 2012)

Language: English

ISBN-10: 0521184703

ISBN-13: 978-0521184700

Product Dimensions: 7 x 1.1 x 10 inches

Shipping Weight: 2.7 pounds (View shipping rates and policies)

Average Customer Review: 4.8 out of 5 stars 6 customer reviews

Best Sellers Rank: #64,838 in Books (See Top 100 in Books) #95 inÃ Â Books > Engineering & Transportation > Engineering > Civil & Environmental > Environmental #101 inÃ Â Books > Textbooks > Science & Mathematics > Environmental Studies #125 inÃ Â Books > Business & Money > Economics > Environmental Economics

Customer Reviews

"Achieving some sort of sustainability will be THE focus of global societies in the 21st century. To be successful, our leaders will need a perspective of centuries, the full breadth of scientific insights, system thinking skills, great cultural sensitivity, and an awareness of spiritual values. All of these are offered in this wonderful, unique text, which will be useful for decades." - Dennis Meadows, co-author of The Limits to Growth"This textbook is one of the first truly all-encompassing introductions to sustainability science. It is methodical, clearly written and well-illustrated, truly a

pleasure to handle and to read. It sets a standard for the discipline and solidly educates the generation of students that will most directly have to deal with the challenges of creating a sustainable Earth system." - Sander van der Leeuw, Dean, School of Sustainability, Arizona State University"In this important new book Bert de Vries has adopted a systems approach to examining all the issues that collectively amount to the determinants of sustainability. It is an excellent, comprehensive and up-to-date text dealing with not only the underlying biophysical science but also human behaviour. His use of interesting examples throughout makes it both instructive and enjoyable to read. I highly recommended it." - Brian Walker, CSIRO Ecosystem Sciences, Australia"Bert de Vries Sustainability Science is particularly welcome as it breaks ground in a new field, which so far lacks a proper systematic treatment. No wonder! The challenge is overwhelming: the book covers a series of disciplines and fields - geography, social and economic sciences, physics, chemistry, and biology - using a systems description and system dynamics as the main tool. De Vries not only succeeds in this overwhelming task but spices up the text with multiple excursions into history, philosophy, literature, not to forget the key issue of ethics. Justice and how we would like a future world to look like is always present. Bert’s book is impressive, rich and inspiring." - Lars RydÃƒÂ©n, Centre for Sustainable Development, Uppsala University

Sustainable development is becoming the guiding principle for the 21st century. This textbook surveys the key concepts, models and findings of various scientific disciplines concerning major sustainability issues and associated worldviews: energy, nature, agro-food and resource systems and economic growth. An ideal textbook for advanced undergraduate and graduate level courses.

If you are teaching Sustainability Science of Science for Sustainability, this text helps you start over and keep your students busy the whole semester. I found it as an excellent companion to other I got from Harald Heinrichs.

Good book for study sustainability.

Quality was great

This is a very comprehensive, well written and exhaustively researched book on the scientific basis of sustainability. The material is extremely well presented and content is superbly rich and deep. The book offers a very wide view where, besides the excellent mandatory chapters on system

dynamics, epistemology, energy, history, agriculture, etc, it also offers a unique summary of each chapter from the point of view of four "worldviews", cleverly chosen models to represent the way a large portion of people think. The wonderful manner in which the author managed to present the links between all physical, economical and industrial concerns to cultural theory, and the human dimensions of the problem of sustainability, is sufficient reason to get this book. It really improved the way I think about the subject. The book also contains extensive references to articles, books, databases and websites.There are a few glitches though, all forgivable but worth a thought for a next edition. Too many typos appear every now and then, possibly more often than I would like to see in a Cambridge book. In table 7.4. CCS (carbon capture and storage) is mentioned but nowhere introduced before, nor the acronym spelled. Also the choice of color schemes in the the color plates is often unhappy, as represented by the world soil map in which the tones are so similar that the map is for all purposes useless.All in all a 5 star book. Indispensable for students and practitioners of sustainability.

Many people agree that sustainability science is a legitimate field of research, teaching, and practice, and that it is interdisciplinary and requires system thinking. Much less agreement exists regarding what body of knowledge and what analytical tools constitute it. The new book by Bert de Vries from Cambridge University Press is a grand effort to define what sustainability science is.The book has evolved from a course de Vries has taught for many years at Utrecht University in the Netherlands. The author is a physicist by training and a highly accomplished expert in dynamic modeling of complex systems. The book has two organizing themes: One is complex system dynamic modeling, which is used throughout the text, both quantitatively and qualitatively (the latter as a conceptualizing device). The second is the assumption that people have very different understandings of sustainability and quality of life, and that this plurality of views needs to be acknowledged in developing sustainability policies. This is a sophisticated text for a demanding course aimed at advanced undergraduate and graduate students who have already mastered basic natural sciences and quantitative skills.Having a technical model as an organizing theme of a textbook is risky. It can lead one to see the society as basically a complicated machine ÃƒÂ¢Ã â ¬Ã â œ an assembly of known causal relationships and scientifically-determined parameters -- moving according to a set of rules and producing predictable outcomes. De Vries avoids this trap by giving a lot of space to the historical accounts of human interactions with nature, by including in each chapter interesting empirical stories, and by emphasizing values and worldviews. Specifically, following the introduction to systems dynamics in chapter 2, chapters 3 and

4 and 5, respectively, focus on the relationship between humans and nature in past civilizations, in the past three hundred years, and in the modern era of environmental movements and sustainable development debate. Chapter 6 draws on the cultural theory to put the scientific analysis in the context of human values and worldviews and to support the bookÃƒÂ¢Ã â ¬Ã â„¢s opening statement that the concept of sustainable development is essentially ÃƒÂ¢Ã â ¬Ã Å“about aspirations of human beings for a good quality of life while respecting the plurality of worldviews.ÃƒÂ¢Ã â ¬Ã Â•Chapters 7 through 13 are the most technical and data driven. In these, the book covers specific domains that are central to the conversation about sustainability: agro-food system, human population dynamics, renewable water resources, and non-renewable resources (energy and minerals). In each case dynamic modeling is a central analytic tool. At the end of each chapter students are presented with what amounts to a jumpstart for a classroom debate about policy alternatives. Several normative statements are made and each is followed with four very different responses by hypothetical individuals, each representing a contrasting worldview. Although these opening statements and responses do not directly follow from the main body of each chapter (which is rather technical) they nevertheless open the door for individual instructors to bridge the scientific analysis with a conversation about policy alternatives.This is a beautiful and carefully edited book: the graphics are superb and the langue is free of jargon. Each chapter ends with an extensive list of additional readings and websites.Students completing this course will have analytical tools and fundamental knowledge to understand complex interactions between the natural and social systems, and will be sensitized to the importance of values in policy process. But when I tried to put myself in the place of a graduate who is eager to put this knowledge into action I realized that something is missing. Suppose that this student wants to understand the root causes of our current overuse of the earthÃƒÂ¢Ã â ¬Ã â„¢s life support systems? What if she wants to understand why, with so much scientific knowledge and such urgency, governments have taken so little action? Why have the traditional policy approachesÃƒÂ¢Ã â ¬Ã â •regulations, economic incentives, information disclosureÃƒÂ¢Ã â ¬Ã â •been used so sparingly, and when they have been used, why have they produced so little progress? What are the main obstacles to a sustainability transition in individual countries and globally? What if, after graduating, this student wants to focus her just-acquired knowledge toward weakening these obstacles? What can he do in the private and professional life to affect future change?To help students confront these core questions the book would need to be somewhat more normative. For example, economic growth ÃƒÂ¢Ã â ¬Ã â œ in my view a principal force behind the huge stress on EarthÃƒÂ¢Ã â ¬Ã â„¢s life supporting systems ÃƒÂ¢Ã â ¬Ã â œ is discussed in one of the two final chapters (entitled

ÃƒÂ¢Ã â ¬Ã Å“Toward Sustainable Economy?ÃƒÂ¢Ã â ¬Ã Â•) as a theory, not as an ideology (as currently practiced it is more the latter than the former). The book, and the students, would greatly benefit from being exposed to a critique of economic growth from the perspectives of power relations, institutions, consumerism culture and geopolitics. Another conspicuously missing piece is a discussion of renewable energy technologies from through the lenses of science, institutions and human behavior. Topics such as energy returns on energy investments (EROI), rebound effect, and other strengths and limitations of technological interventions in essentially economic problems, would be part of such an additional chapter.Perhaps the next edition of this excellent but still incomplete textbook will address these topics.

Im glad I picked this book up at my college library. It covers many different aspects of sustainability and recommends other resources for interested readers Its hard to provide an in depth evaluation of all the topics covered in the book, but the author discusses in great detail energy analysis, ecology, topics of industrial ecology, ecological economics, network theory, how different worldviews relate to sustainable development... to name a few.

Commerce Revised Edition: A Declaration of Sustainability (Collins Business Essentials)