
Book Review

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The Globalization of Clean Energy Technology. Lessons from China

by: Kelly Sims Gallagher

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7 Chapters, 5 Appendixes, 261pp

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Since a few years China surpassed the USA as the biggest emitter of greenhouse gases (GHG) worldwide. The Chinese electricity production relies on coal, which to a significant extent is imported. Large facilities firing up to 25,000 tons of coal a day are no longer an exception near megacities such as Shanghai. The coal is hauled over immense distances, e.g., from Mongolia. The over-all efficiency of this system is still limited because of some obsolete plants, but improves rapidly. Despite the use of modern flue gas cleaning, the emissions of fine dust are enormous.

Green technologies generating electricity are on their increase as the country fuels them with ample human resources, financial means, and by stimulating research. Diversification of the resources strives towards the import of natural gas, the use of which should reduce the most serious air pollution in different parts of the country. Wind and hydro-electricity (in spite of mega projects as the Three Gorges Dam) are relatively underused. Although China's energy policy is not dictated by international initiatives, the country is a loyal partner in, e.g., the United Nations Framework Convention on Climate Changes (UNFCCC) as well as in the Stockholm Convention. The increasing energy demand drives China towards offensive actions in both the Chinese and the South China Sea, upsetting its neighbouring countries. These selected aspects illustrate the complex context of the world's largest energy consuming country.

'The globalisation of clean technology' analyses to which extent cleaner energy has been and will be contributing to the energy transition China is facing. The book investigates barriers as well as incentives in the country's strive for clean energy. It contributes to understanding the international transfer mechanisms for cleaner and more efficient energy technologies, not only from North to South, but in all directions indeed.

The book contains seven chapters. The introduction provides an overview of the main findings explains the rationale and the approach of the research and points to the need for the global diffusion of clean energy technology. The focus is on the contribution of these technologies to economic growth (in 2011, \$263 billion was invested in clean energy around the world), energy security, pollution and innovation. This first chapter also summarises some main conclusions of the book, including:

- Energy technologies frequently cross borders.
- China has intellectual capacity to protect.
- Costs are a barrier implementing cleaner energy technologies.
- Policy failure for creating and stimulating an environment for investment.

Chapter 2 explains China's energy situation (here, e.g., the use of coal, oil, gas and renewables is documented) and the link with economic development. It reviews government's policy goals on energy and environment. It focuses on innovation. China emerges from the data as largest energy consumer and largest emitter of GHG of the planet. This brings specific responsibilities in implementing clean energy technologies.

Chapter 3 provides selected stakeholder interviews and focus groups results on how four Chinese cleaner energy companies (active in dissimilar fields, e.g., gas turbines, batteries, photovoltaic, and coal gasification) managed international technology transfer both from the import and the export side. The analysis provides empirical evidence about the barriers and incentives influencing such cross-border transfer of energy technologies. No insurmountable barriers were identified during these transactions.

Chapter 4 offers a comparative study on how different countries develop and enhance the competitiveness of their clean energy sector. It addresses climate change policies, energy security, innovation, promotion, and market formation. It illustrates the strong impact of policy on the deployment of cleaner energy technologies.

Intellectual property is the subject of the next chapter. It analyses the outcomes of China's State Intellectual Property Organization (SIPO), as applied to cleaner energy technologies. The case studies of chapter 3 are further dissected in terms of international transfers. Intellectual property is not a main barrier to cross-border diffusion, as commonly thought. Of interest are the reported court cases on property rights.

The nature and the challenges faced by cleaner technologies in entering the energy market are discussed in chapter 6. It documents some of the market failures and distortions, incremental costs, and access to finance. It concludes that although some of these technologies have become definitely cheaper during recent years, their cost and financial risk are often the most important barriers for their implementation.

Chapter 7 synthesises the theory and evidence regarding the global diffusion of cleaner and more efficient energy technologies. During the 2000s, the sector experienced a pronounced globalisation in both development and deployment. It shows the role of China in this globalisation process.

This book thus treats subjects at the crossroad of important contemporary concerns:

- 1 How does the world's largest energy nation deal with climate changes?
- 2 How does the contribution of cleaner energy fit in this strategy?
- 3 how can this improve energy security and spur sustainable prosperity?

While the focus is less on the environmental and engineering aspects associated with the development of cleaner technologies in China. It is based on numerous local contacts and offers a well-informed and documented view on how China deals with its energy resources. It shows how crucial aspects of the country's centrally planned energy policy are actually implemented by individual companies. The book contributes to nuanced insight and understanding of China's energy-technology innovation system, and provides

an outlook on how the energy determined environmental quality likely will involve in the future.

Kelly Sims Gallagher is the director of the Center for International Environment and Resource Policy and associate professor at Tufts University. She provided an important contribution with this well-structured and documented book (41 pages of appendixes; over 300 literature references). The book reads easily, also for people not trained in political or economic sciences. This makes it a must-read for anyone studying or working on these topics: cleaner energy and its relationship to China.

Book Reviews

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- 1 Constructing Green. The Social Structures of Sustainability**
by: Rebecca L. Henn and Andrew J. Hoffman (Eds.)
Published 2013
by MIT Press
55 Hayward Street, Cambridge, MA 02142, USA, 16 Chapters, 399pp
ISBN: 978-0-262-01941-5 (hard cover : alk. paper)
ISBN: 978-0-262-51962-5 (pbk: alk. paper)

Few economic sectors have more opportunities for reusing materials, using energy and other resources more efficient, and emitting fewer pollutants than the building constructions. This is closely associated with better (not bigger) houses and lifestyles which focus on quality rather than quantity, and at the end, a more sustainable society, where both environmental and economic impacts are reduced. This is termed 'green building'. Following the design and community planning movement which advocates quality and sustainable buildings, authorities are pursuing efficiency policies through building codes and other regulations. California is setting the scene with a goal of making all new houses meet zero net energy standards by 2020 and all commercial buildings energy neutral by 2030. The European Union follows.

This book is about the green transition of the construction sector. The focus is on the energy impact of buildings as a social problem. This fits in the concept that better buildings are constructed in ways that people will embrace and enjoy, and lead to socially and environmentally superior outcomes.

The book is structured in five sections, which totalise 16 chapters. The first section deals with the question: 'how do new social concerns for green building create new domains of professional expertise?' It examines industry structures and how engagement among firms changes as a result of concerns for environmental sustainability.

The second section is about market structures and strategies for firms specialising in green building products and services. It provides insight in a variety of strategies handled by the stakeholders in the sector.

Section three is a core part of the book. It deals with operational, organisational and cultural change needed for green building companies. Moreover, the processes by which technical innovations infiltrate the built environment are analysed.

The chapters of section four are on perceptions, frames, and narratives influencing an individual's or organisation's willingness to engage with environmental strategies and practices. They throw light on the stakeholders, their strategic positions, their environmental goals and practices.

The last section is about current trajectories and future potential for research in and on the green building industry. The two chapters in this section point to the potential of

incorporating underused technology that can decrease the negative environmental impact of the building industry.

The strength and the originality of this book is its focus on the social aspects of green building. A green building should not only be environmentally friendly, technically innovative, intellectually attractive and financially affordable. Having with sustainable constructions a significant impact on environmental quality necessitates also a receptive social and cultural environment. This book highlights these dimensions. It shows how sustainable building might benefit from bridging information from multiple fields including organisational studies, architecture, engineering, management, real estate finance, urban planning, and public policy. In this interdisciplinary approach, the book is a unique eye-opener. It equally highlights trends introduced by sustainable building: new professions, new industrial strategies and research lines, and, above all, new operational, organisational, and cultural arrangements.

The book shows minor deficiencies. Just as the 'green building movement' itself the discussion is embedded in the culture and practice of the USA. Most, though not all, information is however also most useful for other industrialised countries. Although the two last chapters are prospective and have concluding potential, a real concluding chapter, summarising, e.g., the principles revealed throughout the book fails.

This book deserves a wide audience. It is primary targeted to architects, sustainability managers, the real estate, the financing and the construction sector. But the book is also essential reading for all those who interested in the reasons why the existing energy resources and materials saving technology is only drop wise applied.

2 Food policy and the Environmental Credit Crunch. From Soup to Nuts

by: Julie Hudson and Paul Donovan

Published 2014

by Routledge

2 Park Square, Milton Park, Abingdon,

Oxon OX14 4RN, UK, 11 Chapters, 227pp

ISBN: 978-0-415-64401-3 (hbk)

ISBN: 978-0-203-07973-7 (ebk)

Food production and supply is a fascinating subject for both economists and environmentalists. The analysis presented in this book anchors on key words including food insecurity and inequality, the global perspective, and the corporatisation of food provisioning and consumption. It starts from the premise that food is economically complex. This economic complexity creates environmental complexity, and the combination of both is the starting point of this book.

According to the authors, the economic and environmental complexity of food shows four main aspects:

- 1 The complexity of food: one should leave the idea that the food we buy is merely related with the agriculture by which it is produced. The price of food is much more determined by processing, transport, quality checks, packaging and marketing the food (80% of the cost), than by the farmer who roughly accounts for 20% of the price at the consumer.

- 2 The environmental credit crunch or shortage of food: the wasteful character of food supply is characterised by high inputs of raw materials (energy, water, agrochemicals, a diet with emphasis on meat, the significant proportion of food which is thrown away, and the wasteful eating habits). The authors point to the importance of the resilience (and sudden collapses) of the ecosystems, which in relation to food show major uncertainties.
- 3 The financial credit crunch or shortage of credit provided by the banks after 2008, resulting in changes in consumer and financial behaviour and inclination towards trade protectionism.
- 4 The irrationality of the consumers: food assumes a disproportionate importance in the minds of most consumers. In an average developed economy, a household will spend between 10% and 20% of the income to food and drinks. Nevertheless, people perceive that food takes a higher share of their budget.

This is the starting point to provide an intriguing analysis of the environmental and economic aspects of food, mainly in industrialised countries. The 11 chapters of the book take the reader from the physical to the managerial aspects of the food chain: raw materials, food processing, transport, whole selling and retailing, eating, health and food waste.

The 'human health and food' chapter provides a typical example of the analysis. The environmental part deals the environmental aspects of sugar and fat in a Western diet; the economic section is about the economics of diet, desire ('the food we want'), and distance between the consumer and the food we eat. The chapter points to the importance of the healthy environment-healthy body link and stresses the importance of trade and food processing. The conclusion is that nowadays factory farming realised access to affordable nutrition, but also that the costs include poor animal welfare and potentially significant health risks.

The originality of this book is in its analytical framework. The life cycle analysis approach of the economic and environmental effects of the variety of aspects covered by the contemporary food chain is revealing. The conclusion that food waste must be managed along this whole chain, is a lesson we should learn avoiding going hungry. The reader should not expect a mass of statistics and quantitative figures. The analysis is mainly descriptive and of an inspiring academic standard with a wealth of references to the Anglo-Saxon international literature.

This book is both revealing on the food situation today and has predictive potential. The food chain and its environmental and economic aspects, is of concern for all of us. Therefore, this book deserves a wide audience. It will confirm the ideas of the experts in the area, but it is most indicated for all who are active in the different steps of the food chain: from farmers, over processors and retailers, to concerned consumers and waste managers.

3 Tropical Wetland Management. The South-American Pantanal and the International Experience

by: Antonio Augusto Rossotto Ioris (Ed.)

Published 2012

by Ashgate Publishing Limited

Wey Court East, Union Road, Farnham,

Surrey, GU9 7PT, UK, 12 Chapters, 351pp

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ISBN: 9781409418795 (ebk-PDF)

The 'Patanal' (which means 'wetland') is a unique and extremely biodiversity rich tropical wetland. The area is of international importance such as the Everglades in the USA or the Okavango in Botswana. This inland delta is localised south of the Brazilian Amazon and East of the Bolivian border with Brazil. During the six months long wet period 80% of the land which mainly entails forests and savannah, is flooded. This is followed by an extremely dry period, resulting in a most particular ecosystem with serious treats to the species. The faunal diversity of the area competes with this of the Amazon and Southern and Eastern Africa. The region hosts the highest concentration of reptiles in the world and is the habitat of most of the jaguars in Brazil. Birds, fishes, rodents and mammals, quite a number of which are rare and threatened, are abundant. The 80 metre high and over 3 km wide waterfalls of Foz do Iguacu are the biggest in the world. Indians colonised the area more than 8,000 years ago. Today, the descendants of these original inhabitants are complemented with an increasing number of extensive cattle rangers.

Today, the Brazilian Constitution has declared the Pantanal as National Patrimony. This opened opportunities for a better protection, management, more research and international networking on this most valuable ecosystem. This edited book mirrors this new situation. It provides a critical update of recent scientific development and politico-institutional experiences related to the conservation of the Pantanal. It compares the Pantanal with other wetlands of international importance in North America, Europe and Southern Africa.

The introductory chapter overviews the book as a whole. Seven chapters are about the Pantanal. They deal with the social (perception and the historical role of the traditional rangers in the management of the ecosystem, the economic and welfare pressures, and the need for wetland-friendly activities maintaining low-density cattle ranching), hydrological, and ecological aspects of the Pantanal (Chapters 2, 3, 4, and 5). They provide the basic information establishing a zoning model for the protection of this wetland heritage (Chapter 6). Chapters 7 and 8 provide a detailed analysis of the stakeholders (e.g., how the rangers are affected by globalisation and intensification, and how increasing scales of cattle ranging threaten the ecosystem) and their values. They introduce the concept of socio-natural systems. Comparison with other wetland systems of international importance is made: with the Okavango inland delta in Botswana where the increase of the elephant population and the introduction of alien species are the main treats (Chapter 9); with European wetlands (cases of the UK and Scotland) where the experience with the Wetlands Directive demonstrates that restoration and recovery of deteriorated wetlands is much more expensive than keeping them intact (Chapter 10);

with the US Everglades National Park which supported the rapid economic growth of the area and for which promising restoration projects are expected (Chapter 11).

Most interesting is the concluding chapter by Junk and Cunha. The authors do not only summarise the conclusions of the previous chapters, but they equally offer perspectives on the future of the Pantanal. They advocate a comprehensive and integrated management plan, embracing the different bio-physical (hydro-ecological) and socio-economic processes of the entire basin as a main instrument safeguarding this area of high biodiversity value.

More fundamentally, this book is a well-documented illustration of the main contemporary science-policy paradoxes: while the intricacy and magnitude of environmental impacts are increasingly documented by science and more and more recognised by society and decision-makers, the reactions to these problems remain fragmented and inadequate. Therefore, in depth studies as the one presented in this book remain of utmost importance. Moreover, the book provides a most interesting polychromatic, kaleidoscopic but scientifically well founded picture of this area which is important for wetland management worldwide.

The 12 chapters of this book have been written by over 50 experts. Their manuscripts show how they lived a dedicated life of researching, characterising, campaigning and promoting sustainable management in this unique part of the world.

This book deserves wider attention than this of wetland management experts alone. It has documentary and didactical value for students in environmental, interdisciplinary and management sciences. It offers excellent material for decision-makers in nature conservation issues. It provides intriguing examples for all those dealing with involving local stakeholders in constructive environmental debates.

4 Climate Adaptation Futures

**by: Jean Palutikof, Sarah L. Boulter, Andrew J. Ash,
Mark Stafford Smith, Martin Parry, Marie Waschka and
Daniela Guitart (Eds.)**

Published 2013

by Wiley-Blackwell

The Atrium, Southern Gate Chichester,

West Sussex, PO 19 8SQ, UK, 374pp

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The longer an effective policy on preventing and mitigating climate changes is delayed, the more the focus will shift to adaptation. For science, this results in more case studies, more research, more theory, and more conferences and publications on the issue. This book is part of this intellectual wave. The chapters are based on the selected contributions to the 'First International Conference on Climate Change Adaptation', which was held in Queensland, Australia in 2010. The 33 chapters of the book reflect the state of the research art by the end of the last decennium. Interestingly, the book succeeds going beyond presenting proceedings.

It starts from an analytical framework of the five principal challenges for adaptation to climate changes today. They deal with the extent of the adaptation challenge, the degree to which transformation is required, the barriers encountered in implementing

knowledge and experience on adaptation, the varying organisational scale of the implementation, and the monitoring and evaluation of adaptation actions. What comes out is a complex and multifaceted picture of strong and efficient adaptation approaches (to over +3–4 degree centigrade scenarios), which are proactive and anticipatory, build on successful existing cases of adaptation, cover a wide array (from local to international) of special scales dealing with, and deal with new methods of monitoring.

These are the anchor points for the nine sections of the book. They address: uncertainties in adapting to 4°C plus scenarios, frameworks for adaptation research and policy, engagement of stakeholders (decision-makers, indigenous people), challenges in adaptation and development, ecosystem (natural and agricultural) impacts, and adaptation to extreme conditions and disaster management. The different chapters are not limited to the physical aspects of climate change adaptation. Communication is a cross cutting issue through the 33 chapters which also deal with cultural, legislation, disaster risk management, and normative-ethical aspects of adaptation to climate changes. In this way, the book offers a wide and most interdisciplinary approach.

No doubt, the book succeeds in providing an excellent overview of the most relevant core issues on adaptation. It addresses the research on the topic and provides an in depth report on the current state of the knowledge. It advocates a complex, integrated and interdisciplinary research agenda. It extends research results into practice and policy. This documentary and overview value is more important than its reflection on new insights and moving the research borders on adaptation. The promising title which refers to reflections on the future is not a main guiding theme all over the book. The book illustrates that research on adaptation to climate changes is primarily an issue in Western, industrialised countries. Cases and examples are mainly derived from Australia, New Zealand, Canada, the USA and other OECD countries. This contrasts with the finding that developing countries will as a whole even stronger influenced than the industrialised ones. The book compensates this with case studies and chapters on Vietnam, China, Mongolia, Indonesia, Mexico, Brazil and Botswana.

Nearly one hundred authors, all eminent actors and/or witnesses of climate change adaptation, but with a wide variety of backgrounds (universities, research centres, ministries, and NGOs), consultants contributed to this book. Jean Palutikof, the leading editor of the book, is the director of the Australian National Climate Change Research Facility, where she has built a programme of adaptation research, communication and partnership.

Adaptation research and its application is a matter and a book for scientists, students, policy makers at all levels, communities, and people from a wide array of societal sectors (agriculture, tourism, industry, banks, insurance companies, to list only a few examples). Moreover, it appeals to adaptation practitioners of NGOs, aid agencies, and the environmental consultancy sector.

Book Review

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An Introduction to Human-Environment Geography: Local Dynamics and Global Processes

by: William G. Moseley, Eric Perramond, Holly M. Hake and Paul Harris

Published 2014

by John Wiley and Sons Ltd.

The Atrium, Southern Gate, Chichester,

West Sussex, PO19 8SQ, UK, 14 Chapters, 648pp

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ISBN: 978-1-4051-8931-6 (pbk)

Many linkages exist between human and physical geography, human ecology and environmental sciences. This statement concerns concepts, contents and methods. Content because these disciplines are interested in urban, cultural, political, developmental and economic ecology, population dynamics, environmental resources, climatology and geomorphology, to list only a selected number of examples. Methods and techniques, e.g., because they are all interested in interdisciplinary approaches, bringing together information of different nature. Geographic information systems, remote sensing and cartography are widely used.

This textbook offers in a most didactical and elegant way an introduction to the main aspects of human-environment geography. It is structured in four parts. The first one is a broad overview of the basic information needed to understand human-environment geography. It entails chapters explaining the fundamentals of human-environment geography: the basic concepts, politics of nature, and the biophysical environment. The second section is on the rich theoretical traditions and the contemporary perspectives in human-environment geography. The four chapters in this section deal with cultural-political ecology, environmental history, hazards and vulnerability, and environmental justice. The third part is on environmental themes and is common to many textbooks: it deals with climate, pollution of the atmosphere, population, agriculture, food, biodiversity, and water. The last part shows the student how geographers undertake fieldwork and collect and analyse data. It entails a chapter on geographic research and a concluding chapter makes suggestions for using the concepts explained in this remarkable textbook.

The core text introduces the concept related to the chapter subjects in a clear and precise way which points to the essence of the issues at stake, often balancing the arguments pro and con. On the other hand, the user should realise this is an introductory

text. One should not look for the most recent details. Sometimes the edge between general aspects and detail is vague: while the book provides an extended description of biomes, more sophisticated approaches as gradients allowing to describe the complexity of ecosystems and landscapes in a more realistic way, are not mentioned. Well selected photos, figures and maps illustrate the contents. Users of the textbook are not overloaded with complex tables.

This book is excellent from a pedagogic point of view. Each chapter is structured in the same way and uses a splendid variety of instruments attracting the attention of students and keeping it throughout the text. Chapters start with an 'icebreaker' which allows catching the attention: the consequences of the privatisation of the water distribution in Central Bolivia introduces the water chapter, the disappearing islands in the Pacific illustrate the significance of climate changes, while the global food crisis during the 2007 to 2008 period introduces the chapter on the environmental issues related to agriculture. All 'icebreakers' combine science with human interest and environmental policy.

Each chapter also entails a description of its objectives, a summary, a list of critical test questions targeted at self-evaluation, a list of 'key' terms (the reader should be able explaining after going through the text), and references entailing the historical literature landmarks of the issues addressed in the chapter. These elements contribute not only at describing and echoing the main elements of the core text, but simulate students thinking about the 'why's' (problems) and the 'how's' (mechanisms) raised by the text.

This textbook is an impressive, nearly encyclopaedically work on the human geography-environment interphase. Although it entails a wealth of international examples from five continents, it is determined by North-American influences in the selection of the chapter themes (e.g., environmental justice), the concepts the book deals with, and the illustrating examples. This is a limitation as a textbook with this scope has a huge potential in developing countries as Vietnam, where the issues dealt with in the book are even more tangible than in industrialised countries.

The book is not only impressive, it is also unique. It provides an original, clear and scientifically well-documented view on the nowadays issues on humans and their environment. It occupies a niche that is not completed by books taking a more narrow perspective.

This is a great textbook, which introduces students to fundamental concepts in environmental geography and science. It explores core theoretical traditions, along with major contemporary environmental discussions. It is warmly recommended to bachelor students in human ecology and to master degree students in environmental sciences and geography.