

Energy and the Wealth of Nations: Understanding the Biophysical Economy

By Charles A. S. Hall, Kent A. Klitgaard

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For the past 150 years, economics has been treated as a social science in which economies are modeled as a circular flow of income between producers and consumers. In this “perpetual motion” of interactions between firms that produce and households that consume, little or no accounting is given of the flow of energy and materials from the environment and back again. In the standard economic model, energy and matter are completely recycled in these transactions, and economic activity is seemingly exempt from the Second Law of Thermodynamics. As we enter the second half of the age of oil, and as energy supplies and the environmental impacts of energy production and consumption become major issues on the world stage, this exemption appears illusory at best.

In ***Energy and the Wealth of Nations,*** concepts such as energy return on investment (EROI) provide powerful insights into the real balance sheets that drive our “petroleum economy.” Hall and Klitgaard explore the relation between energy and the wealth explosion of the 20th century, the failure of markets to recognize or efficiently allocate diminishing resources, the economic consequences of peak oil, the EROI for finding and exploiting new oil fields, and whether alternative energy technologies such as wind and solar power meet the minimum EROI requirements needed to run our society as we know it. This book is an essential read for all scientists and economists who have recognized the urgent need for a more scientific, unified approach to economics in an energy-constrained world, and serves as an ideal teaching text for the growing number of courses, such as the authors’ own, on the role of energy in society.

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Editorial Review

Review

From the reviews:

“This is an important book. It should also prove of use to many involved with energy-related issues, and to students … . main strength and argument of the book is indicated by its sub-title. … the importance of energy as a factor of production, its relevance to the rise and fall of past cultures, and the stresses that the provision and use of energy will place upon the world in future are well argued in this book and for that reason it can be recommended.” (Michael Jefferson, Energy Policy, Vol. 42, 2012)

“A centrally important book for sustainability educators, upper division and graduate students, and members of the general public who are interested in understanding and addressing some of the fundamental challenges to socio-ecological sustainability. … Faculty and students from multiple disciplinary and interdisciplinary backgrounds will find Energy and the Wealth of Nations to be a highly accessible, informative, well-argued, well-supported, insightful, and important read. … I highly recommend this book principally as a course text but also as a relevant book for anyone interested in sustainability.” (Tina Lynn Evans, Journal of Sustainability Education, March 2012)

“This book should be brought - free of charge - to the attention of NGOs and political leaders worldwide. It is certainly recommended for college students taking courses in sustainability, the environmental sciences, and sustainable engineering. In particular, it is highly recommended for all leaders involved in Earth Day 2012, the International Year of Sustainable Energy for All, and the Rio+20 Conference on Sustainable Development.” (Luis T. Gutiérrez, Mother Pelican – A Journal of Sustainable Human Development, Vol. 8 (3), March 2012)

“It offers such a compelling story about how our world economy is so completely empowered by the ability to find, extract and consume energy. … Energy and the Wealth of Nations is worthwhile read for anyone who is interested in gaining a deeper understanding of the ‘science’ behind economic growth and the critical yet often misunderstood role that energy plays in our world economy. Engineers involved in the electric power industry may be especially interested in the influence of biophysical economic principles … .” (Jim MacInnes, Today's Engineer, June 2012)

“This book on economics is quite readable, addressing many difficulties that the energy world (including renewable energy) faces … . This book is about the economic facts of life, in renewable energy and in the rest of the energy world. The facts presented are quite revealing, and reading the book is a must if you want to understand the past, current and future problems in energy.” (Francis de Winter, Solar Today, March/April 2012)

“This book is focused on energy and economics. This book seems to be aimed as a text book, or at an audience who is already familiar with some of the issues, and wants to dig deeper. … Readers will find that the Energy and the Wealth of Nations contains a wealth of information and a lot of useful references. There is also an extensive index. … Many sections are more historical in nature, or more narrative, and are easy for anyone to understand.” (Our Finite World, April 2012)

“When our society relies on an understanding of economics that did not predict, prevent, or mitigate the

current economic crisis, and that, more importantly, does not effectively address climate change or resource depletion, it is time for a new and different approach to understanding the economy. That premise is the foundation of *Energy and the Wealth of Nations*, an important book by ecologist Charles Hall and economist Kent Klitgaard, who together are pioneering the new discipline of biophysical economics….Hall and Klitgaard's work has important implications for financial planners....The more planners understand about how the world works, what constraints may be looming, and how to evaluate various scenarios, the better will be the advice we give our clients. Just as planners have embraced behavioral economics for the insights it provides, learning about biophysical economics will add considerably to our skills and our wisdom." (Richard Vodra, Peak Oil Review, June 2012)

From the Back Cover

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- Integrates energy and economics
- Uses predictive tools and measures, such as EROI, to show how the economy is embedded in a biophysical world subject to scientific rules and constraints
- Provides a fresh approach to economics for those wondering "What's next?" after the Great Recession and the recent increases in oil prices
- Assesses energy sources from the perspective of peak oil, the role of alternatives, and potential impacts such as climate change

About the Author

Charles A.S. Hall is a Systems Ecologist who received his PhD under Howard T. Odum at the University of North Carolina at Chapel Hill. Dr. Hall is the author or editor of seven books and more than 250 scholarly articles. He is best known for his development of the concept of EROI, or energy return on investment, which is an examination of how organisms, including humans, invest energy into obtaining additional energy to improve biotic or social fitness. He has applied these approaches to fish migrations, carbon balance, tropical land use change and the extraction of petroleum and other fuels in both natural and human-dominated ecosystems. Presently he is developing a new field, biophysical economics, as a supplement or alternative to conventional neoclassical economics, while applying systems and EROI thinking to a broad

series of resource and economic issues.

Kent A. Klitgaard is Professor of Economics and the Patti McGill Peterson Professor of Social Sciences at Wells College in Aurora, New York, where he has taught since 1991. Kent received his Bachelor's degree at San Diego State University and his Master's and PhD at the University of New Hampshire. At Wells, he teaches a diverse array of courses including the History of Economic Thought, Political Economy, Ecological Economics, The Economics of Energy, Technology and the Labor Process, and Microeconomic Theory, and is a co-founder of the Environmental Studies Program. Kent is active in the International Society for Ecological Economics, and is a founding member of the International Society for Biophysical Economics. Recently, his interests have turned towards the degrowth movement, and he has published multiple papers on the subject for Research and Degrowth. He has two children, and is interested in the outdoors in general: from hiking to beach walking to the occasional round of golf (despite the high energy use of golf courses). Kent is a Californian who still surfs the frigid waters of New England when he gets a chance. This is his first book.

Users Review

From reader reviews:

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