

Woodrow W. Clark II *Editor*

The Next Economics

Global Cases in Energy,
Environment, and Climate Change

$$A = P \frac{i(1+i)^n}{(1+i)^n - 1} = \frac{P \times i}{1 - (1+i)^{-n}} = P \left(i + \frac{i}{(1+i)^n - 1} \right)$$



Springer

Woodrow W. Clark II
Editor

The Next Economics

Global Cases in Energy, Environment,
and Climate Change



Editor

Woodrow W. Clark II
Clark Strategic Partners
Beverly Hills, CA, USA

ISBN 978-1-4614-4971-3 ISBN 978-1-4614-4972-0 (eBook)

DOI 10.1007/978-1-4614-4972-0

Springer New York Heidelberg Dordrecht London

Library of Congress Control Number: 2012951413

© Springer Science+Business Media New York 2013

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed. Exempted from this legal reservation are brief excerpts in connection with reviews or scholarly analysis or material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the work. Duplication of this publication or parts thereof is permitted only under the provisions of the Copyright Law of the Publisher's location, in its current version, and permission for use must always be obtained from Springer. Permissions for use may be obtained through RightsLink at the Copyright Clearance Center. Violations are liable to prosecution under the respective Copyright Law.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a **specific** statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

While the advice and information in **this** book are believed to be true and accurate at the date of publication, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

The Next Economics

This book is dedicated to my wife, Andrea, and our son, Paxton, who both supported and will benefit from this book's vision for the future.

Foreword

I have known Woody and his work for two decades, since we initially collaborated on United National Intergovernmental Panel on Climate Change assessment reports. Woody was one of the first guest lecturers in my energy courses at the University of California, Berkeley. What I noticed consistently was that Woody was always looking ahead – sometimes far, far ahead. In *The Next Economics*, his timing could not be more on the money. With the world economies in trouble, in large part due to the failure of the Western economic models, he has provided vision that makes a difference. Central to his analysis of the opportunity for a paradigm shift to a Green Industrial Revolution is the fact that economics itself needs to become a science. As a physicist, I very much appreciate the effort to build a clear analytic foundation for the tools to assess sustainability. And why we need to have these ideas wide spread and included into our programs, research sooner than later.

Professor Dan Kammen
Co-Director, Berkeley Institute of the Environment;
Founding Director, Renewable and Appropriate
Energy Laboratory
University of California, Berkeley

Woody Clark is a prolific author who has been at the forefront of some of the most important issues of environment and the economy confronting the world today. His scope of interest, experience and influence is truly global. As Director of the Institute of Environment and Sustainability (IoES) I have had the pleasure of working with Woody on research and educational initiatives. One recent and exciting aspect of this was Woody's work with Dr. Ren Sun, Director of the Cross-Disciplinary Scholars in Science and Technology program, here at UCLA where Woody developed and taught a course for the IoES in 2012. During my tenure as Director, I have been astounded by Dr. Clark's scholarly productivity. For example, in 2009–2010 he produced and spoke on "Sustainable Communities" with case studies and data

from around the world. These are issues of importance to my Institute certainly. I am particularly excited by his new book *The Next Economics* coming out in 2012. This book argues in part how economics, as practiced in the world of policy, needs to become more scientific in approach and further removed from clouding by shifting public opinions and political biases. The world of scholars and decision makers should consider the recommendations for the ‘Next Economics’ and the need for ‘Social Capitalism’ to help see us through the potentially rough waters of the twenty-first century.

Professor Glen M. MacDonald
UC Presidential Chair and
Director, Institute of Environment and Sustainability;
Distinguished Professor of Geography and Ecology
and Evolutionary Biology
University of California, Los Angeles

Since Woody was a Fulbright Fellow in 1994 at Aalborg University (AAU), Denmark, we have collaborated and been close professional and personal friends. For over two decades, we have taught together, done research and published papers. Among others Woody contributed to my book *Renewable Energy Systems* in 2010. His books on *Sustainable Communities* (2009 and 2010) have included chapters that I have done with my colleagues at AAU. Our work continues today. This book on economics becoming a science is a significant step forward in a world where opinions and political biases tend to dominant and influence the truth. We need to take his ideas and make them into programs, degrees and awards. The implementation of Renewable Energy Systems calls for his insights into the understanding of Economics. We need to act now.

Professor Henrik Lund
Editor-in-Chief of ENERGY – The International Journal
Technology Professor in Energy Planning
Aalborg University, Denmark

A 95 year old Tribal Elder, Archie Mosay, was once asked how he foresaw the future.

With visionary clarity, his answer was that he saw the earth healing itself, green grass, big trees swaying in the wind and the water clear and blue. We live in a sea of energies joining together all that live on the earth. The way of life of Native America has, throughout the centuries, respected the gifts bestowed by Mother Earth, the primary of which are sun, water and wind. Green technologies employing these gifts help nurture the long-term well-being of the earth and its people. It is time all people listened to the earth with their hearts and come to understand that benefits coming from green technologies are of far greater value than the cost/benefit derived from the technologies; it is the healing and preservation of our

earth for future generations. Native America stands ready to lead the way toward a new beginning that embraces green energy initiatives benefiting all peoples of the earth.

Woodrow Clark envisions the future the same as our Tribal Elders. Humankind for millennia has been wasting the earth's gifts. In our modern world, Woodrow Clark applies the science of economics to help focus attention and bring about earth compassionate public policies for the benefit of all people of the earth.

Rick Hill
Oneida Tribe

Dave Coon
Lake Superior Chippewa Nation

Jennifer Alekson
Citizen Band of the Potawatomi Nation

Preface

The *Special Issue of Contemporary Economic Policy* (CEP) that I coedited with Professor Michael Intriligator had been over 2 years in the making. CEP is one of two major economic publications from the Western Economic Association International (WEAI). These journals are well known for examining contemporary economic issues and exploring new approaches to them. Mike and I worked hard on the *Special Issue*. With 11 peer-reviewed articles that were also reviewed by the CEP editor, Wade Martin, we were proud of the results: five of the eleven articles will be published in 2013 and are now chapters in this book.

The book takes all these papers and includes a few that provides the framework for discussion of economics which is seen a “field of study,” according to a special issue of the *Economist* (2009) with a picture of the Bible melting stating that modern economic theory is failing, about 9 months after the global recession in the fall of 2008. The basic conclusion from this special issue and a series of other articles that turned into a debate among economists is that “economics is not a science”, but needs to become one.

Economics must move “toward a science” was the subtitle of my book with Professor Michael Fast on *Qualitative Economics* (2008) earlier that same year. This book provides new and creative thinking about the field of economics. A special thanks goes to Wade for his encouragement and very diligent oversight of the entire CEP issue and to Mike for his solid and consistent support of looking into new ways to consider economics scientific in order to solve societal problems.

The background for this book and the CEP *Special Issue* are important. Originally, we all wanted to do the special issue along the lines of a reflection of new thinking within the field of economics. We saw this as a point of departure from the western-developed world today that has energy security issues about its future, especially with the impact on climate change. Defining and exploring the depths of economics is at the core of this book and reflected in every chapter.

I spearheaded the *Special Issue* of CEP because I saw economics as being in serious trouble, even before the economic collapse American economic collapse in the fall of 2008 and the global economic crisis that continues today. A year before

global economic collapse, I organized a panel for the annual WEAI conference in Seattle in 2007. The presenters, some of whom contributed to the *Special Issue*, and others that are now in this book were concerned with the “field of economics” in general. They were concerned that it was covering broader societal issues from an economic perspective.

For example, how can communities and nations develop with no political and economic plans and little concern for the environment, people, health, and the climate. Today, America still has no national energy or even mass transportation plans. Yet, every family and business has a plan if not month by month, then certainly an annual one. I have taught business plans and entrepreneurship in graduate business and MBA programs. Every person, group, community, and nation needs a plan. The fact that America today is divided is both a major cause for the nation not to progress and lead what I call in another book with Grant Cooke on *Global Energy Innovation* (2011) the “Green Industrial Revolution” is destructive to everyone and detrimental to future generations. The problem is today’s ideological politicians in every region, state, and country. I had experienced this enormous divide over a decade ago when I was very involved with the UN Intergovernmental Panel on Climate Change (UN IPCC). Nations around the world need to agree upon a plan to mitigate climate change. I personally had to try to get 129 nations to agree upon the executive summary for the third report by the UN IPCC in 1999. While we finally agreed on a report, it took almost another decade to proclaim that climate change was the result of people and that the world needed a plan to stop and reverse climate change. That plan has yet to be done and implemented.

When Al Gore won the Nobel Peace Prize in December 2007, hundreds of us with the UN IPCC shared it with him. However, what was never, even now, really discussed was that Gore identified and dramatically presented in his film, *An Inconvenient Truth* (2007), was that the climate is changing dramatically today. But the UN IPCC did the same with scientific evidence by not providing a plan. The problem of climate change was discussed and proven scientifically. What was not recognized then was that Gore and many members of the UN IPCC, work on the “solutions” to climate change, ranging from sustainable communities, renewable energy, commercialized technologies, and finance.

In my case, I have two books, *Sustainable Communities* (Springer, 2009) and *Sustainable Communities Design Handbook* (Elsevier, 2010) with cases about sustainable communities and how they can be created, financed, implemented, and maintained. In the next year, I am completing a new book on *Global Sustainable Communities Design Handbook* (Elsevier, 2013) with cases of sustainable communities and how they were designed, developed, and planned with resources, finances, and educated workers. The book sets a standard from which a series of books on this topic can be published annually in book, journal, and online formats.

Basically, the problem with the “field of economics” is that for over four decades, it has taken conventional or “neoclassical economic theories” from Adam Smith and tried to apply them. The Smith model for western capitalism, however, was and is today simply a “theory”. There have never been actual cases of neoclassical capitalism. For example, these theories depend on “market forces” that are a balance

between supply and demand, but never work (*ibid.*, 2008). They never account for key issues facing society, such as social revolutions, economic recessions, and climate change. I experienced this in the role as Renewable Energy Advisor to Governor Gray Davis of California (1999–2003) where there was a need to change economics away from the “market forces” that was created in prior state government administrations with their deregulation of the energy sector.

Governor Davis came into office and was immediately confronted with an energy crisis caused (starting in 2000–2003, but that continues today) by the prior two governors before him, because they argued that “deregulation” of the energy sector in 1996 from public utilities should go to private companies to generate power and supply the state with energy. New companies would be competitive and therefore lower prices for energy to consumers. Just the opposite happened. And without very much oversight in the laws for deregulation, the problem had to be taken on by Governor Davis, after he was elected in 1999.

By spring 2000, California had an energy crisis with rolling blackouts and brownouts even though there was plenty of energy supply. I had warned Governor Davis’ senior staff that this would happen 6 months or more before the brownouts started in San Diego. California deregulation was copied in other states and nations which called it “liberalization or privatization.” The national utility-controlled energy systems converted from being public-controlled companies to private businesses. The market forces economic model would create competition and hence reduced energy costs, but did just the opposite of that.

The California energy crisis came without warning as the new private energy companies controlled and manipulated prices, with services through their control of energy. The economic model failed in California and other nations as well. There was something wrong. Private companies manipulated the “energy market” and caused severe problems throughout the state. The California energy crisis was just the beginning, because supply and demand did not work when the state was immersed in brownouts and blackouts that threatened businesses and individual health that all needed power for commerce and medical care.

The economists’ explanation, issued at one point in a public memo to Governor Davis (Spring 2001), argued that “market forces” would prevail and get the state energy needs back on course. In reality, those market forces were “gaming the energy sectors” with illegal and deceptive accounting. These companies were responsible for conducting fraudulent actions. The firms (Enron and many others) and their accounting firms “verified” the economic energy data as valid, when it was not. The state investigated and took those people and their companies to court, where individuals were convicted and sent to jail (Clark, 2003; Clark and Demirag, 2002 and 2006). Several chapters review and discuss economic models and where or why they have failed. But this book also sets out in a number of chapters to create and inspire new economic models. In particular, it strives to turn economics into a science with examples in the different chapters.

The book was first inspired by other work with economists seeking changes in their field. At another WEAI conference in Honolulu in July 2008, the issue about how precise and accurate economics was raised in a different way by a panel that

I chaired and also presented a paper. The topic was modern economic theory and what was wrong with it. I coauthored with Professor Michael Fast from Aalborg University in Denmark the book *Qualitative Economics* (ibid., 2008) that came out just in time for the conference and was a key part of one session there. By that fall, the global economic crisis hit the USA and went around the world, in which much of modern economic theory came to be questioned by economists themselves. If economics was a science, why was it not able to predict the global economic crisis in 2008?

The time was perfect then for the CEP Special Issue. We felt that the “field of economics” was so vast there needed to be a focus on only a few topics for the *Special Issue: Global Cases in Energy, Environment, and Climate Change*. We decided that these areas were a challenge for economists but needed to be studied.

Finally, there is need to be cross-disciplinary areas in order for a fresh look to be given to economics. These areas and how they interacted are a starter. Based on past economic models, these areas have been lost or not fitted into modern economic theory. Clearly, economics needs to research and probe these areas, as they are major determinants in the economics of the future. The challenge is to explore and look deeply into economics, in order to turn “the field” into a science.

Beverly Hills, CA, USA

Woodrow W. Clark II

References

- Clark WW II (2013) Author and Editor. *Global sustainable communities design handbook*. Elsevier Press, New York
- Clark WW II, Michael I (2013) *Global cases in energy, environment, and climate change: some challenges for the field of economics*, Special Issue of Contemporary Economic Policy (CEP). Western Association of Economics International, Blackwell Publications, Fullerton
- Clark WW II, Gant C (2011) *Global energy innovation*. Praeger Press, New York
- Clark WW II Author and Editor *Sustainable communities design handbook*. Elsevier Press, New York
- Clark WW II (2009) Author and Editor. *Sustainable communities*. Springer Press, New York
- Clark WW II, Michael F (2008) *Qualitative economics: toward a science of economics*. Coxmoor Press, London
- Clark WW II, Demirag I (2006) *US financial regulatory change: the case of the California energy crisis*. Special Issue, *J Bank Regul* 7,(1/2):75–93
- Clark WW II (2003) *Point and counter-point: de-regulation in America*. Utilities Policy, Elsevier, Fall
- Clark WW II, Demirag I (2002) *Enron: the failure of corporate governance*. *J Corp Citizenship* 8(Winter):105–122
- Economist (2009) *Modern economic theory: where it went wrong – and how the crisis is changing it*. Special issue with cover of Bible Melting, London, 18 July 2009
- Gore Al (2007) *An inconvenient truth*. Paramount Studios. Hollywood, California

Contents

1	Introduction	1
	Woodrow W. Clark II	
2	The Next Economics	21
	Woodrow W. Clark II	
3	Market Solutions for Climate Change	43
	Malcolm Dole, Jr.	
4	Qualitative Economics: The Science Needed in Economics	71
	Michael Fast and Woodrow W. Clark II	
5	Energy Planning for Regional and National Needs: A Case Study – The California Forecast (2005–2050)	93
	Gary C. Matteson	
6	Achieving Economic Gains Through the Setting of Environmental Goals: The Case of California	125
	Tracey Grose	
7	Social Capitalism: China’s Economic Raise	143
	Woodrow W. Clark II and Li Xing	
8	The “Cheap Energy Contract”: A Critical Roadblock to Effective Energy Policy in the USA	165
	Michael F. Hoexter	
9	Economic-Environmental Performance of Micro-wind Turbine in Mediterranean Area	185
	Nicola Cardinale, Gianluca Rospi, Giuliano Cotrufo, and Tiziana Cardinale	
10	Energy Conservation for Optimum Economic Analysis	207
	Stephen C. Prey	

11 Blue-Green Agricultural Revolution 237
Daniel Nuckols

**12 Going Beyond Growth: The Green Economy
as a Sustainable Economic Development Strategy 251**
Laurie Kaye Nijaki

13 Conclusions: The Science of Economics..... 275
Woodrow W. Clark II

Index..... 287

Chapter 1

Introduction

Woodrow W. Clark II

Abstract This chapter concerns how economics must change its conventional western- oriented paradigm from Adam Smith and his followers of “the market economy” to a new global economic paradigm that is rooted in societal issues and concerns, ranging from environmental, social, and health issues to more that include the solutions to climate change, medical health, education, and a broad range of concerns for humankind. The problems are vast. However, the solutions often start with innovations and technologies to support and solve societal problems. Hence, there are higher costs as with all solutions to any problem.

However, the basic barrier to stopping climate change rests with economics. The standard reply is that “it” (whatever “it” means) costs too much. The only economic cost-benefit analysis is higher taxes. While that may be true in some ways, according to the standard classical economic model, it raises a fundamental question about economics itself: economics is not a science because no one can predict that higher taxes enhances or hurts economic growth. Almost every scientist agrees with that statement. But most differ to the economic analysis since they are controlled by the corporate CEOs and political leaders, who allocate funds for research and new technologies. Yet as this chapter discusses, economics is not a science, as it cannot predict economic trends or events.

Hence, the chapter discusses what needs to be done to make economics a science, setting the stage for the other chapters in the book with their review of societal issues (primarily environmental) and how economics needs to address the financial costs in different ways ranging from externalities to life-cycle analyses. Each chapter is reviewed and summarized in this chapter to that the reader has a good solid basis for the last chapter that provides a new economic paradigm in detail that is grounded and based on science.

W.W. Clark II, Ph.D. (✉)

Qualitative Economist, Academic Specialist, Cross-Disciplinary Scholars in Science and Technology, UCLA and Managing Director, Clark Strategic Partners, California, USA
Website: www.clarkstrategicpartners.net

Keywords Science • Paradigms • Classical and conventional economics • Case examples

The Next Economics was an idea that I had for a book about 5 or 6 years ago. Then after participating in several Western Economic Association International (WEAI) Conferences, I did one paper and a panel on Status of Economics. When my friend Professor Michael Intriligator was president of the WEAI, I talked to him about doing a special issue for one of the two journals that WEAI published each quarter. After talking with the publisher, Professor Wade Martin, we all decided on Contemporary Economic Policy (CEP) for a special issue to be called “Global Cases in Energy, Environment, and Climate Change: Some Challenges for the Field of Economics.”

Professor Intriligator became the coeditor, and we gathered 11 papers covering this topic. In the CEP special issue, only five of the papers are to be published. Two of the papers are changed and published here in The Next Economics, along with the other six that were not accepted for the CEP. The editorial opinion about the six papers left out of the CEP, but published here, was basically that these six papers were not traditional papers in economics. Hence, the purpose of this book is to expand traditional economics by examining and providing cases of economics as this field, but applied to environment, energy security, and climate change topics. The issue for everyone today is that the costs for saving the environment and solving climate change are unknown and often given as an excuse to do nothing. The most common comment from traditional neoclassical economic paradigm is that the “market” will find solutions. This book directly counters that assumption with solid data and findings in order to create economics based on science, rather than politic opinion and unfounded policies.

Without doubt, economics needs to be applied to these global societal areas. What was not done in the CEP was an analysis of the philosophical history of economics in terms of how it has impacted global environment and climate change issues. The paper that addressed that issue from Professor Michael Fast and myself is revised as a chapter in this book and argues for a looking at economics in a far different manner and theoretical paradigm than the field has had over the last two centuries and especially the last 40–50 years. Therefore the next step needs to be a far more comprehensive examination of what, where, and why economics has come only one western philosophical paradigm base and not others. Adam Smith was not the only economics philosopher over 200 years ago. There were others. And there were many economists who were from different cultures and wrote in different languages with positive results from their approaches to economics. Japan and now China are cases proving that point.

What is more concerning, however, is that Adam Smith and his classical economics became propagated as an ideology, from only one particular perspective and point of view, especially in the last four decades. Yet while Adam Smith prided himself in taking ideas and concepts from physics and mathematics, he did not use either science as the base in calculations and formulas for economics. Instead, Adam

Smith used the concept of a balance between physical forces, which in the end would work in field of economics as the balance between supply and demand. However in reality, physics is not only about balance or only as mathematics. What the world has witnessed in the last decade, is that market forces as western capitalism, certainly does not demonstrate such as a balance. The global economic collapse in the fall of 2008 continues today and is documented proof of that. Science is far more than the balance of physical forces. Nor for that matter, any science, be it chemistry, engineering, mathematics, or others, is not based on balances alone. And clearly, no science has an invisible hand. The fact is that science historically demands heavily on government from research funds to tests and technological applications.

So what is science? Consider “Physics (which) is often described as the fundamental science, as it seeks to understand the ‘rules’ or ‘laws’ by which the universe operates” (Perkins 1996). What *The Next Economics* (NE) does is to set the stage for a far more in-depth and global investigation of economics than the CEP special issue did. Consider now a summarization of the issues in each chapter of NE so that they can provide background and guidance to further study, research and tests for analysis in order to create a science of economics.

Let us start with Rifkin, who is a well-known environmental Economist in his book, *Entropy* (1980) which discusses the extension of economics beyond the neo-classical theoretical paradigm of Adam Smith to include social issues such as the environment. Perkins, a physicist, notes that “entropy” is a scientific way to describe how “the universe is running down and getting more disordered” (op.cit., Perkins, p. 3). That concept might apply to neoclassical economics but certainly does not provide a direction in which economics must move, due to its consistent failure over the last few years to become a science.

In Rifkin’s last book, *The Third Industrial Revolution* (2011), he tries to make the case that economics needs to be connected to climate change. And in order to do that, he argues that thermodynamics is the key as it was the basis for making neoclassical economics into a science. Rifkin describes then how thermodynamics explains the balance between inputs and outputs as that can apply to the environment and other externalities, which make up the Third Industrial Revolution (TIR).

While this is an attempt to explain economics as a science, and in particular to address the concerns for the environment and climate change, the arguments fall short. Four basic issues remain with economics which Rifkin and others fail to address. The primary one is the acceptance of Adam Smith’s theoretical basis for economics being scientific. The theories of the seventeenth and eighteenth century are dated due to the use of science in a limited manner and rooted in this historical century knowledge of science. Since then, science has developed and expanded with new theories and extensive research.

Second is the focus on science in a limited manner. While the traditional link between Adam Smith and Sir Isaac Newton remains the basic barrier for revolutionizing economics, it is the wrong approach rooted in the wrong assumptions. What is wrong are the particular and limited aspects of science that Smith used from Newton. In other words, Smith and his economic paradigm was based on his creation of an ideal world that never existed then; nor does it today.