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### Economics of Nuclear Power

*Routledge* **This book is a unique introduction to the economic costs of nuclear power. It examines the future of the nuclear power industry and unpacks the complicated relationships between its technical, economic and political variables. It does so by modelling the costs, risks and uncertainties of one of the world's most opaque industries using micro-econometrics, econometrics, and cost engineering. Economics of Nuclear Power examines the very important costs of externalities (storing of nuclear waste and the impact of a Chernobyl or Fukushima event) and compares those to the externalities of alternative carbon based energies (oil, coal, natural gas). With over 100 tables and figures this book details nuclear power production around the world - present and planned, providing a completely global focus. It also includes an overview of the past 70 years of international nuclear power developments. This book is essential reading for students, scholars and professionals interested in energy economics, nuclear engineering and energy policy.**

### The Political Economy of Nuclear Energy

### Prospects and Retrospect

*Springer Nature* **Using primarily Russian sources, this book explains the political and economic aspects of nuclear power. The nuclear fuel cycle is described, from the mining of natural uranium to the ultimate power generation, and to reprocessing to produce plutonium which is essential for both electricity generation and for weapons production. Historical aspects of nuclear developments in Germany, the USA, India, China and the**

Soviet Union are also considered and explained. The book then proceeds to argue that Russia is more powerful today in its nuclear weapons system and delivery than ever before, and that it is precisely this which has provoked President Trump to cancel the strategic nuclear weapons reduction treaty.

## The National Politics of Nuclear Power

## Economics, Security, and Governance

*Routledge* This book offers a comprehensive assessment of the dynamics driving, and constraining, nuclear power development in Asia, Europe and North America, providing detailed comparative analysis. The book formulates a theory of nuclear socio-political economy which highlights six factors necessary for embarking on nuclear power programs: (1) national security and secrecy, (2) technocratic ideology, (3) economic interventionism, (4) a centrally coordinated energy stakeholder network, (5) subordination of opposition to political authority, and (6) social peripheralization. The book validates this theory by confirming the presence of these six drivers during the initial nuclear power developmental periods in eight countries: the United States, France, Japan, Russia (the former Soviet Union), South Korea, Canada, China, and India. The authors then apply this framework as a predictive tool to evaluate contemporary nuclear power trends. They discuss what this theory means for developed and developing countries which exhibit the potential for nuclear development on a major scale, and examine how the new "renaissance" of nuclear power may affect the promotion of renewable energy, global energy security, and development policy as a whole. The volume also assesses the influence of climate change and the recent nuclear accident in Fukushima, Japan, on the nuclear power industry's trajectory. This book will be of interest to students of energy policy and security, nuclear proliferation, international security, global governance and IR in general.

## Behavioral Economics and Nuclear Weapons

*University of Georgia Press* Recent discoveries in psychology and neuroscience have improved our understanding of why our decision making processes

fail to match standard social science assumptions about rationality. As researchers such as Daniel Kahneman, Amos Tversky, and Richard Thaler have shown, people often depart in systematic ways from the predictions of the rational actor model of classic economic thought because of the influence of emotions, cognitive biases, an aversion to loss, and other strong motivations and values. These findings about the limits of rationality have formed the basis of behavioral economics, an approach that has attracted enormous attention in recent years. This collection of essays applies the insights of behavioral economics to the study of nuclear weapons policy. Behavioral economics gives us a more accurate picture of how people think and, as a consequence, of how they make decisions about whether to acquire or use nuclear arms. Such decisions are made in real-world circumstances in which rational calculations about cost and benefit are intertwined with complicated emotions and subject to human limitations. Strategies for pursuing nuclear deterrence and nonproliferation should therefore, argue the contributors, account for these dynamics in a systematic way. The contributors to this collection examine how a behavioral approach might inform our understanding of topics such as deterrence, economic sanctions, the nuclear nonproliferation regime, and U.S. domestic debates about ballistic missile defense. The essays also take note of the limitations of a behavioral approach for dealing with situations in which even a single deviation from the predictions of any model can have dire consequences.

## Nuclear Crash

# The U.S. Economy After Small Nuclear Attacks

The effects of a nuclear attack on a country's society and economy have been the subject of numerous studies based on data from the nuclear bombs used against Hiroshima and Nagasaki, from nuclear tests, and from conventional-bomb damage data (1). Even though these studies have focused on quantitative calculations of the physical damage and have presented only qualitative extrapolations of the effects of this damage on the fate of the survivors, they were instrumental in establishing the fact that a nuclear exchange between two warring nations would result in tremendous devastation. From this fact comes the conclusion that the only actual use for nuclear explosives is to maintain deterrence, that is, to insure that a nuclear opponent does not use his nuclear arsenal against you. Most of these studies have had one of two purposes: either to show that a nuclear war is unwinnable; or to guide military planners in determining the size of their country's nuclear arsenal. Even though many studies indicated that deterrence could be supported by a relatively small

nuclear arsenal, the total number of nuclear weapons deployed by the U.S. and the Soviet Union now approaches 50,000. Dissatisfaction with this development has prompted two reactions in this country. The first is a move to limit the nuclear explosives in each arsenal to the number that would securely deter an opponent that is, towards reduction of the number of nuclear explosives. The other is to try to develop a defensive system that would effectively protect the society and economy of the U.S. regardless of the number of nuclear weapons deployed by the Soviet Union.

# Nuclear Power, Economic Development Discourse and the Environment

## The Case of India

*Routledge* Nuclear power is often characterized as a "green technology." Technologies are rarely, if ever, socially isolated artefacts. Instead, they materially represent an embodiment of values and priorities. Nuclear power is no different. It is a product of a particular political economy and the question is whether that political economy can helpfully engage with the challenge of addressing the environmental crisis on a finite, inequitable and shared planet. For developing countries like India, who are presently making infrastructure investments which will have long legacies, it is imperative that these investments wrestle with such questions and prove themselves capable of sufficiency, greater equality and inclusiveness. This book offers a critique of civilian nuclear power as a green energy strategy for India and develops and proposes an alternative "synergy for sustainability." It situates nuclear power as a socio-technical infrastructure embodying a particular development discourse and practice of energy and economic development. The book reveals the political economy of this arrangement and examines the latter's ability to respond to the environmental crisis. Manu V. Mathai argues that the existing overwhelmingly growth-focused, highly technology-centric approach for organizing economic activity is unsustainable and needs to be reformed. Within this imperative for change, nuclear power in India is found to be and is characterized as an "authoritarian technology." Based on this political economy critique the book proposes an alternative, a synergy of ideas from the fields of development economics, energy planning and science, technology and society studies.

# Economic Requirements for Radioactive Waste Disposal in a Nuclear Power Economy

## The Medical Implications of Nuclear War

*National Academies Press* **Written by world-renowned scientists, this volume portrays the possible direct and indirect devastation of human health from a nuclear attack. The most comprehensive work yet produced on this subject, *The Medical Implications of Nuclear War* includes an overview of the potential environmental and physical effects of nuclear bombardment, describes the problems of choosing who among the injured would get the scarce medical care available, addresses the nuclear arms race from a psychosocial perspective, and reviews the medical needs--in contrast to the medical resources likely to be available--after a nuclear attack. "It should serve as the definitive statement on the consequences of nuclear war."--Arms Control Today**

## The Technological and Economic Future of Nuclear Power

*Springer* **This open access book discusses the eroding economics of nuclear power for electricity generation as well as technical, legal, and political acceptance issues. The use of nuclear power for electricity generation is still a heavily disputed issue. Aside from technical risks, safety issues, and the unsolved problem of nuclear waste disposal, the economic performance is currently a major barrier. In recent years, the costs have skyrocketed especially in the European countries and North America. At the same time, the costs of alternatives such as photovoltaics and wind power have significantly decreased. Contents History and Current Status of the World Nuclear Industry The Dramatic Decrease of the Economics of Nuclear Power Nuclear Policy in the EU The Legacy of Csernoby and Fukushima Nuclear Waste and Decommissioning of Nuclear Power Plants Alternatives: Heading Towards Sustainable Electricity Systems Target Groups Researchers and students in the fields of political, economic and technical sciences Energy (policy) experts, nuclear energy experts and practitioners, economists, engineers, consultants, civil society organizations The Editors Prof. Dr. Reinhard Haas is University Professor of energy economics at the Institute**

of Energy Systems and Electric Drives at Technische Universität Wien, Austria. PD Dr. Lutz Mez is Associate Professor at the Department for Political and Social Sciences of Freie Universität Berlin, Germany. PD Dr. Amela Ajanovic is a senior researcher and lecturer at the Institute of Energy Systems and Electrical Drives at Technische Universität Wien, Austria.--

## The Nuclear Economy

# Why Only Nuclear Power Can Revitalize the Economy and Environment

"The earth is finite. Fossil fuels are not renewable. As these fuels run short in years and very short in decades, the global economic system will need to find an alternative source of energy or it will completely collapse. Equally disturbing, fossil fuel combustion produces carbon dioxide--the greenhouse gas attributed to climate change scientists are warning could lead to mass drought, famine and positive feedbacks that increase warming further. Could the entire world be facing the catastrophic culmination of events in human history? As articulately explained in great detail in 'The Nuclear Economy,' none of the purported solutions to the energy problem will work--except one. If you are wondering why the entire global economy is screeching to a halt, why oil prices are extremely volatile, and why nothing seems to change--this books holds all the answers."--P. [4] of cover.

## Nuclear Energy in the National Economy of the Republic of Cuba Beyond Deterrence

# The Political Economy Of Nuclear Weapons

*Routledge* This book is designed for people who wish to increase their understanding of the political economy of nuclear weapon production and proliferation. It explains the role of military, political, and economic incentives in perpetuating the continued growth of worldwide nuclear

arsenals.

## Nuclear Power Economics, 1962 Through 1967, Report

By Philip Sporn. Also includes reprinted articles on Sporn's work and texts of the AEC report "Civilian nuclear power: A report to the President" with appendices and a 1967 supplement.

## The Economics of Nuclear Power Including Administration and Law

## The Political Economy of Nuclear Energy in the United States

## Economic Sanctions Against a Nuclear North Korea

## An Analysis of United States and United Nations Actions Since 1950

*McFarland* **United States economic sanctions against North Korea began on June 28, 1950, three days after the outbreak of the Korean War. Since then, the United States, its allies, and the United Nations have increasingly imposed economic sanctions against North Korea in an attempt to destabilize and manipulate the North Korean regime. This book first provides a thorough historical overview of U.S. and U.N. sanctions against North Korea since 1950. Then, several essays propose ways to make such sanctions more politically effective while limiting their harmful humanitarian consequences. Finally, the book discusses the impact of the newest, six-nation agreement signed in February 2007 which would shut down North Korea's nuclear facility in return for economic aid and a security guarantee. Several appendices provide brief guides to the history of North Korea and the country's nuclear weapons program.**

# Economic Evaluation of Bids for Nuclear Power Plants

**Presents information, advice and recommendations on the different principles, methods and guidelines which should be used and applied when conducting an economic evaluation of nuclear power plant bids. Annex I lists an improved IAEA cost account system for nuclear power plants.**

## Economics of Nuclear Power

### A Bibliography of Selected Literature

## Determining the Economic Value of Nuclear Power in Spain

**The nature of deregulated energy markets in the United States has forced several nuclear reactors into early retirement over the next few years subjecting the energy market and economy as a whole to uncalculated risk. The unforeseen implications of early retirements of nuclear assets has inspired a cause for concern in Spain where nuclear power faces similar problems. In order to assess the danger that Spain's current market structure incentivizes a premature retirement of nuclear assets and suggest possible implications for carbon emissions, this thesis research project analyzed the economic performance of nuclear power generators in Spain and identified the underlying factors driving it. This was done by calculating the short run profitability of each nuclear reactor. Historical data on the generation, operating costs, and marginal price from the Spanish electricity market was gathered to develop a net profit model. The model was then applied looking forward into the future and revealed an average profitability of +32.24523 E/MWh for the nuclear reactors in Spain. These results point to a positive future for nuclear power in Spain and an incentive to extend the licenses of soon-to-be-retired reactors.**

## The Economics of Nuclear Power

*London : Longmans*

# Some International Aspects of the Economics of Nuclear Reactors

## The Economics of Nuclear Energy

*Springer* When we first contemplated a book on this subject we were faced with a number of options: (a) to write it all ourselves, which would have had the merit of internal consistency and continuity of style; (b) to produce a collection of existing papers, which would have given us expert views in the various sub-fields of the economics of nuclear energy and would have put us in the position of knowing from the start exactly what the authors' contributions would be; (c) to commission contributions from individual specialists, chapter by chapter; or (d) some combination of these options. We settled for the last - we have written some of the material ourselves, have obtained permission to use some existing papers that seem to us to be valuable contributions to the subject, and have been fortunate in persuading a number of eminent people in their fields to produce papers especially for the book. This has given us a great deal of work and taken up more time than we planned for but we believe the result justifies this time and effort. It enabled us to design a structure for the book from the outset, recognizing that there are several aspects to the economics of nuclear energy - especially if we take a broad view of what is embraced by the word 'economics'.

## The Economic Status of Nuclear Power in New York

## Atomic Information Technology

## Safety and Economy of Nuclear Power Plants

*Springer* **Atomic Information Technology** reevaluates current conceptions of the information technology aspects of the nuclear industry. Economic and safety research in the nuclear energy sector are explored, considering statistical methods which incorporate Monte-Carlo simulations for practical applications. Divided into three sections, **Atomic Information Technology** covers: Atomic economics and management, Atomic safety and reliability, and Atomic safeguarding and security. Either as a standalone volume or as

a companion to conventional nuclear safety and reliability books, **Atomic Information Technology** acts as a concise and thorough reference on statistical assessment technology in the nuclear industry. Students and industry professionals alike will find this a key tool in expanding and updating their understanding of this industry and the applications of information technology within it.

**Nuclear Power Economies;  
[bibliography].**

**The Impact of Nuclear Energy  
Centers on the Economy of Puerto  
Rico**

**Beyond Deterrence**

**The Political Economy Of Nuclear  
Weapons**

*Westview Press*

**The Soviet Program on Nuclear  
Explosives for the National  
Economy**

**Economic Criteria for Nuclear Power  
Plants**

**The Economics of the Nuclear Fuel**

# Cycle

## A Report

*Nuclear Energy Agency, Organisation for Economic Co-operation and Development ;  
[Washington, D.C. : OECD Publications and Information Center*

### Atomic Audit

## The Costs and Consequences of U.S. Nuclear Weapons Since 1940

*Brookings Institution Press* **Since 1945, the United States has manufactured and deployed more than 70,000 nuclear weapons to deter and if necessary fight a nuclear war. Some observers believe the absence of a third world war confirms that these weapons were a prudent and cost-effective response to the uncertainty and fear surrounding the Soviet Union's military and political ambitions during the cold war. As early as 1950, nuclear weapons were considered relatively inexpensive— providing "a bigger bang for a buck"—and were thoroughly integrated into U.S. forces on that basis. Yet this assumption was never validated. Indeed, for more than fifty years scant attention has been paid to the enormous costs of this effort—more than \$5 trillion thus far—and its short and long-term consequences for the nation. Based on four years of extensive research, Atomic Audit is the first book to document the comprehensive costs of U.S. nuclear weapons, assembling for the first time anywhere the actual and estimated expenditures for the program since its creation in 1940. The authors provide a unique perspective on U.S. nuclear policy and nuclear weapons, tracking their development from the Manhattan Project of World War II to the present day and assessing each aspect of the program, including research, development, testing, and production; deployment; command, control, communications, and intelligence; and defensive measures. They also examine the costs of dismantling nuclear weapons, the management and disposal of large quantities of toxic and radioactive wastes left over from their production, compensation for persons harmed by nuclear weapons activities, nuclear secrecy, and the economic implications of nuclear deterrence. Utilizing archival and newly declassified government documents and data, this richly documented book demonstrates how a variety of factors—the open-ended nature of nuclear deterrence, faulty assumptions about the cost-effectiveness of nuclear weapons, regular misrepresentation of and overreaction to the Soviet threat, the desire to maintain nuclear superiority, bureaucratic and often**

arbitrary decisions, pork barrel politics, and excessive secrecy—all drove the acquisition of an arsenal far larger than what many contemporary civilian and military leaders deemed necessary. *Atomic Audit* concludes with recommendations for strengthening atomic accountability and fostering greater public understanding of nuclear weapons programs and policies.

## The Economics of Defense in the Nuclear Age

A discussion of the contribution of analysis to military policy planning in the nuclear age in terms of the most efficient allocation of available resources.

## The Technological and Economic Future of Nuclear Power

This open access book discusses the eroding economics of nuclear power for electricity generation as well as technical, legal, and political acceptance issues. The use of nuclear power for electricity generation is still a heavily disputed issue. Aside from technical risks, safety issues, and the unsolved problem of nuclear waste disposal, the economic performance is currently a major barrier. In recent years, the costs have skyrocketed especially in the European countries and North America. At the same time, the costs of alternatives such as photovoltaics and wind power have significantly decreased. This work was published by Saint Philip Street Press pursuant to a Creative Commons license permitting commercial use. All rights not granted by the work's license are retained by the author or authors.

## Nuclear Economics and the Price of Coal

## The Economics of the nuclear fuel cycle

# Toward a Sustainable Japanese Economy

## Beyond the Triple Failures of Market, Government and Institutions

**□□□□R&D** This book includes an analysis of Japan's challenges in moving toward an environmentally sustainable society. "Part I: Postwar Japan Pollution and the Fukushima Nuclear Accident" focuses on the history of Japanese pollution after World War II and the situation of the Fukushima nuclear accident. "Part II: Toward Sustainable Development of Natural Resource-based Economies" focuses on the agricultural sector. It introduces the current status of environment-friendly production. There is very little information in English that comprehensively introduces the situation in Japan in this field, and the content meets the needs of readers seeking information. □□□□ Introduction Part I: Postwar Japan Pollution and the Fukushima Nuclear Accident Chapter 1:History and Lessons of Pollution in Postwar Japan Chapter 2:Political Economy of Damage and Reconstruction after the Fukushima Nuclear Accident Chapter 3:Current Status of and Challenges in the Fukushima Nuclear Disaster Compensation Scheme Chapter 4:TEPCO Fukushima Daiichi Nuclear Power Plant Accident and Japan's Nuclear Power Policy Chapter 5:Who Will Pay the Costs of the Fukushima Nuclear Accident? Chapter 6:Locally Initiated Energy Transition Transcends Market, Government, and Institutional Failures Part II: Toward Sustainable Development of Natural Resource-based Economies Chapter 7:Japanese Agricultural Problems and the Multifunctional Roles of Agriculture Chapter 8:Agri-environmental Public Goods and Agri-environmental Payments Based on a UK case study Chapter 9:Management Problems of Inland Water Fishery Resources in Japan Chapter 10:Greening Water Resource Development in Modern Japan Chapter 11:Forest Underuse in Present-Day Japan and Access to Nature Regardless of Ownership (ANRO) Chapter 12:Japanese Policy of Biodiversity and Species Conservation

## Nuclear Energy Today

**OECD** As energy demand increases in line with the expansion of the world's leading economies and the growth of developing economies, a key challenge remains of how to provide the energy levels required while

protecting our environment and conserving natural resources. Nuclear energy is a complex and controversial technology but also has the potential to provide considerable benefits. This publication explores a range of issues involved in the use of nuclear energy, including safety aspects, whether its use is economically competitive, its role in meeting greenhouse gas reduction targets, how to manage the radioactive waste it generates, whether its use increase the risk of proliferation of nuclear weapons, security of resources, and its potential role in the future.

## The Economics of the Shoreham Nuclear Plant

### Resurgence of Nuclear Power

### Challenges and Opportunities for Asia

*Springer* This book focuses on the issue of ‘resurgence of nuclear power’ and discusses the feasibility of nuclear in the energy mix of Asian economies. It discusses nuclear energy sector in detail in the context of India, a country where currently overseas supply of hydrocarbon fuels plays a major role in meeting the domestic energy needs. The book presents an in-depth analysis of nuclear energy policy as well as regional and global politics surrounding the nuclear industry, and the relevance of nuclear energy from the low-carbon energy perspective. To do so, it explores three different perspectives. To start with, the resurgence of nuclear power is discussed from a global energy perspective to understand whether and how it has been increasingly gaining policy attention among Asian economies. Secondly, it highlights the role of nuclear power in Asia and examines how the collaboration with the global nuclear sector is influencing that role. While the epicentre of nuclear power growth can be seen shifting to the Global East, there is a growing need for strengthening the industry, its legal and regulatory infrastructure and knowledge management. The third perspective focuses on the challenges and opportunities for the nuclear power industry and explores, to what extent the public perception is in favor of nuclear sector in the region. The perceived risks of nuclear power, public perception related to legal and regulatory issues, and concerns regarding land acquisition for nuclear facilities are also discussed. The book contains contributions from specialists in the global energy and nuclear sector, and examines some of the most sought-after topics related to the energy policy studies, especially in the Asian context.

# Economic and Environmental Impacts of a U.S. Nuclear Moratorium, 1985-2010

*MIT Press (MA)* Major stakes hang on how the issue of nuclear energy is ultimately resolved. As this study points out, "the outcome is consequential in terms of this generation, but also will affect the lives and life styles of generations to come. The wrong decisions could be costly and difficult to reverse. Clearly, Americans are now facing one of the most profound choices in their history." Specialists in energy analysis, policymakers, and readers who are seriously involved in the nuclear energy debate will find this book provides an objective and analytical discussion of an emotionally charged subject. It focuses on the question, What would happen to the economy and environment of the United States if there was a moratorium on construction of new nuclear plants beginning in 1985? Based on a projection of economic growth and energy production during the next thirty years, the book examines five possible economic implications of a nuclear moratorium--future costs of electricity, regional dislocations, impact on the nuclear industry, effect on the coal industry, and impact abroad. It also discusses four levels of environmental tradeoffs as a result of shifting the additional fuel requirements from nuclear to coal after 1985--proliferation of nuclear weapons and greatly increased carbon dioxide (CO<sub>2</sub>) from fossil fuel on a global scale, probability of reactor and coal-mining accidents, impact on public health of reactor radiation emissions and coal-fired emissions, and the impact of uranium and coal mining on land use. An entire section of the book speculates on the distant nonfossil future when nuclear or solar energy may be the only major long-term energy options. One of the book's major findings is that the rate of growth in energy demand is likely to be significantly lower than the projected estimates in most published studies. "Economic and Environmental Impacts of a U.S. Nuclear Moratorium" is the work of a study team coordinated by Charles E. Whittle at the Institute for Energy Analysis, Oak Ridge Associated Universities. Sensitive to the necessity for an impartial study, both pro and antinuclear consultants were asked to review the work as it progressed.