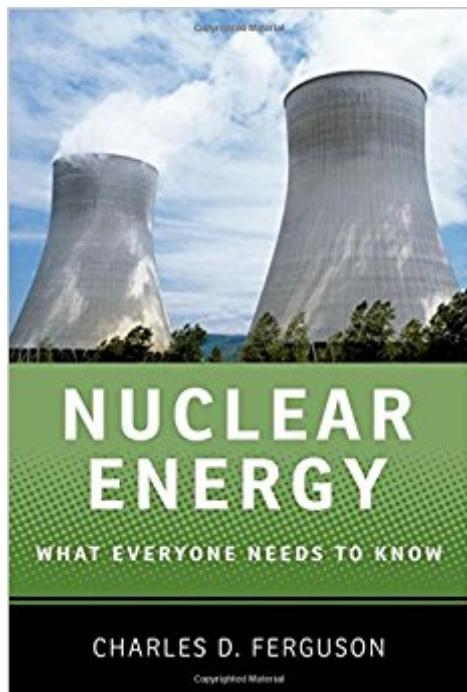


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# Nuclear Energy: What Everyone Needs To Know®



## Synopsis

Originally perceived as a cheap and plentiful source of power, the commercial use of nuclear energy has been controversial for decades. Worries about the dangers that nuclear plants and their radioactive waste posed to nearby communities grew over time, and plant construction in the United States virtually died after the early 1980s. The 1986 disaster at Chernobyl only reinforced nuclear power's negative image. Yet in the decade prior to the Japanese nuclear crisis of 2011, sentiment about nuclear power underwent a marked change. The alarming acceleration of global warming due to the burning of fossil fuels and concern about dependence on foreign fuel has led policymakers, climate scientists, and energy experts to look once again at nuclear power as a source of energy. In this accessible overview, Charles D. Ferguson provides an authoritative account of the key facts about nuclear energy. What is the origin of nuclear energy? What countries use commercial nuclear power, and how much electricity do they obtain from it? How can future nuclear power plants be made safer? What can countries do to protect their nuclear facilities from military attacks? How hazardous is radioactive waste? Is nuclear energy a renewable energy source? Featuring a discussion of the recent nuclear crisis in Japan and its ramifications, Ferguson addresses these questions and more in *Nuclear Energy: What Everyone Needs to Know*®, a book that is essential for anyone looking to learn more about this important issue. *What Everyone Needs to Know*® is a registered trademark of Oxford University Press.

## Book Information

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## Customer Reviews

I bought this because I am interested in the policy debates around energy production. I'm a policy wonk rather than a scientist, but am interested in understanding the science so that I can make more informed judgments about nuclear energy. I've been delighted with this book so far. There is enough science here for a science-literate non-scientist to understand what's going on - i.e. how nuclear energy works, what radiation is, what kinds of radiation present what kinds of problems, how different degrees of uranium enrichment are necessary for civilian and military uses, and so on. The author certainly seems to have a good grasp of the issues, and has the credentials that make you think he ought to. He's also very objective - tells you what's good and not good about nuclear energy vs coal or wind power; whether uranium is in short supply; that nuclear power is very expensive in some ways and relatively cheap in others, etc. So I have confidence that I'm getting balanced information and will therefore be able to come to my own conclusions. There are places where I'd like more detail, and may seek a follow-up book. However, the trade-off is that this book gives you a good introduction to many facets of nuclear energy, and the author has made it interesting enough that I'm keen to learn more. I enthusiastically recommend this book.

This book is an excellent primer on nuclear power. It discusses in an accessible manner the pros and cons of nuclear power generation. If you are looking to go more into the science and technology from a physical perspective this isn't your book as there aren't any equations that can be found in a textbook on this subject. This book is for the generalist who may have questions on this topic.

I have looked for such a book for a long time. The author seems to want to be---and I think is---fair to all sides of the topic not only of nuclear but alternatives. It reminded me of Feynman's comment that each theory should present the good and the bad, not just what you propose. He points out the pro/con of each alternative [focus on nuclear though], costs, time frames to build and operate, benefits, causes of disasters and what has been done to prevent more, etc.. Most of the articles I've seen on nuclear technology are either outdated [several years old] or are advocating for one technology. I'm especially interested in the fast neutron pyrometallic technology and this book does deal with it along with other 4th generation technology. Readers will learn a lot where nuclear stands and comparisons with other technology.

This book is very detailed in the describing the basics of nuclear energy, different methods used to create nuclear reactions, the various types of reactors used in nuclear power plants, their construction, safety considerations and the economics of nuclear power compared to alternative means for generating electricity. If you are looking for a layman's overview of nuclear power this is a good place to start.

While the general public has a wide range of perceptions about nuclear energy, this book proceeds topic by topic and provides actual answers, based on the author's established expertise as a nuclear engineer. In this way, it is very good for the college educated reader who is looking more in depth at a film like "Pandora's Promise", or books such as "Plentiful Energy" or Reese Palley's "The Answer." It is much more of a summary than a treatise on sustainable energy security, such as Prof. Jeff Eerkens' book, "The Nuclear Imperative" (2 editions). My own perspective on this book is that it provides many clear summaries and answers; yet the nuclear energy topic is so technically challenging enough that even its ardent non-profit organization supporters have debates about which type of nuclear energy is ideal for the 2010s and 2020s. A debate continues about Small Modular Reactors (SMRs) vs. Gen. III+ gigawatt level stations, FBRs and ADTRs. Which one is the best? Ferguson says cost is a determining factor.

I read this book from cover to cover; it's an excellent text that is very informative. The Author consistently proves that he has a thorough understanding of the broad subject of nuclear energy; from the science, to the politics, to the future of nuclear energy, and even other "renewable" energy sources that man can, and should, harness and perfect in the future. I even searched online several times to verify that the information the author was explaining were accurate. Personally, politics bore me so I did skip over a few pages and paragraphs that focused a little too much on politics (I estimate there are ~20 pages discussing nuclear politics). However, the author does emphasize several interesting points regarding the political struggle the nuclear energy industry is facing so you will not be disappointed if you want to learn about that. After reading this book, not only am I going to save it for future reference, I'm also going to purchase similar books that discuss nuclear energy. You are bound to learn a lot about nuclear energy after reading this book. Buy it.

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