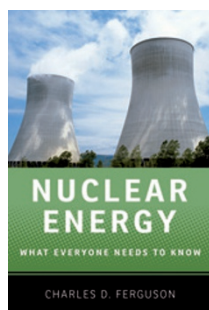


Nuclear power for the masses



Nuclear Energy: What Everyone Needs to Know

by Charles D. Ferguson

OXFORD UNIV. PRESS: 2011. 232 PP. £10.99 / \$16.95

For more than half a century nuclear power has been heralded as a cheap and plentiful energy source that can meet the needs of a growing global population and replace our dependency on fossil fuels to produce electricity. As renewable technologies are not yet able to meet our current energy needs, atomic energy will have an important role in our path to a low-carbon economy (C. Ferguson, *Nature* 471, 411; 2011).

Yet, there are widespread public concerns that the greater use of nuclear power might lead to the proliferation of nuclear weapons. There are also health fears over the risk of radioactive material being released, and about the decommissioning of nuclear plants and the handling of radioactive waste. All these fears have been played out in three major events: the Three Mile Island 1979 incident in the United States, the 1986 Chernobyl disaster in Ukraine and, most recently, the destruction of the Fukushima Daiichi plant in Japan by an earthquake and tsunami in March 2011. Despite these events and other minor incidents, often dramatically publicized by the media, the safety record over half a century of the civil nuclear industry stands in favourable comparison with any industrial activity of a similar scale.

In *Nuclear Energy*, Charles Ferguson has brought together his wide experience of nuclear energy, and the concerns that it raises, to present a broad-ranging account

of the issues. Ferguson is President of the Federation of American Scientists and an Adjunct Professor in Georgetown University's Security Studies Program. Trained as a physicist and nuclear engineer, he has worked on nuclear policy issues (including non-proliferation of nuclear weapons, nuclear safety, climate change and energy policy) at the US Department of State and the Council on Foreign Relations.

Perhaps it is Ferguson's broad interdisciplinary experience that makes *Nuclear Energy* so accessible. The book is written very much for the lay reader — there is not an equation in sight. The style of presentation is discursive rather than analytical. If nuclear energy issues are to be seriously debated it is essential that a mass audience is informed on the relevant topics, and this book is a useful addition to serving that mission.

Ferguson begins with a gentle reminder of the most basic physics, slowly developing the principles of nuclear energy release. There is a brief overview of the development of reactor designs bringing us up to an account of the current generation IV reactors.

He goes on to discuss the security of energy supply and the costs of nuclear reactors, which clearly vary from country to country. However, for most countries, the single most important issue for security of supply is diversity of supply. In this respect, nuclear energy can be seen as a diversification of energy sources and one which also reduces the dependence on fossil fuels. The enthusiasm with which diversification is embraced around the world depends on the relative costs of different technologies and on whether energy is provided by government agencies or private utilities. For example, the way in which different countries use public and private funds to pay for the capital costs of constructing a nuclear plant varies. And for nuclear, the capital outlay forms the vast bulk of the cost of energy production: plant construction is far more expensive than for other forms of electricity, whereas the running and fuel costs are much lower. A number of international studies have shown that over the lifetime of a plant the cost of nuclear electricity is highly competitive compared with fossil fuels.

However, although Ferguson does comment on different national approaches, *Nuclear Energy* is heavily biased towards



Mediating Climate Change

Julie Doyle

ASHGATE PRESS: 2011. 194 PP. £50

Media and communications researcher Julie Doyle uses case studies from science, media coverage, politics and popular culture to explore the gap between our understanding of climate change and our inaction on the problem. This book urges the reader to re-examine the human and cultural relationship with the environment, and offers ways forward for engagement through activism and art.



The Human Face of Climate Change

Mathias Braschler and Monika Fischer

HATJE CANTZ PRESS: 2011. 144 PP. £26.99

Earth's climate is changing, and while experts discuss the possible consequences and politicians grapple with the difficulties of international negotiations, the impacts are already an everyday reality for many. In 2009, Mathias Braschler and Monika Fischer travelled to sixteen countries, taking photographs and conducting interviews with people threatened by climate change. This book shows the human faces and voices of those people.