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Review of *What Will Work: Fighting Climate Change with Renewable Energy, Not Nuclear Power* by Kristen Shrader-Frechette

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WHAT WILL WORK: FIGHTING CLIMATE CHANGE WITH RENEWABLE ENERGY

KRISTIN SHRADER-FRECHETTE, OXFORD UNIVERSITY PRESS, 2011

In *What Will Work*, Kristin Shrader-Frechette provides a superbly researched and argued rebuttal to advocates of nuclear-generated electricity, and urges the use of renewable sources as the most viable and ethical means for meeting US energy demand in an age of climate change. She accomplishes her goal in eight chapters within which she points to “flawed science, poor ethics, short-term thinking, and special-interest influence” (5) that have prompted the federal government to embrace energy policies, epitomized by President Barak Obama’s specifying an increased reliance on nuclear power, as part of the nation’s energy mix and the government’s making available in February 2010 approximately \$8 billion in loan guarantees to break ground on the first new nuclear plant built in the US in nearly three decades. From her perspective, nuclear power is a mistake that raises ethical questions sufficiently serious to preclude reliance on it in the US.

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Shrader-Frechette begins her book with an analysis of arguments posited by climate-change skeptics. Relying upon a plethora of studies indicating that human activities are behind changes in the global climate system, she insists that these “deniers” and “delayers” are wrong. Yet at times she appears sympathetic to lay people who misunderstand the intricacies of climate science and have been misled by carbon polluters, politicians, lobbyists, media personalities, and scientists paid by to deny human-forced climate change. Shrader-Frechette’s approach to the perils of coal and nuclear power and to the advantages of renewable energy sources should correct lay misunderstanding. Clearly, she aims to help readers comprehend the issues and make better informed decisions about energy use and policies.

Chapters two through four emphasize reasons that nuclear-generated electricity is not an acceptable alternative to coal and other fossil fuels. Among those argued for in chapter two are (a) the massive amounts of greenhouse gases emitted in the fourteen-stage nuclear fuel cycle from mining uranium ore to decommissioning nuclear power plants that, apparently, have been overlooked by the Intergovernmental Panel on Climate Change; and (b) the likelihood of weapons proliferation and terrorism. Shrader-Frechette addresses with impressive knowledge and insight these and other reasons that counter the push for constructing additional nuclear power plants in the US.

Furthermore, as Shrader-Frechette demonstrates in her third chapter, nuclear-generated electricity has been and is projected to be so expensive that governments are virtually compelled to subsidize this “old, expensive, dirty, nonsustainable technology of the past” (109). She reaches such a conclusion after reviewing economic studies funded by the nuclear industry and by those conducted by university professors and nongovernmental organizations. She also identifies cost-trimming strategies that obfuscate the price of nuclear-generated electricity by ping-ponging between “too cheap to meter” hyperbole common in the early stages of the Atoms for Peace program to the rhetoric of “too costly to matter” in the current US energy mix. When such cost-trimming assumptions of nuclear industry-funded studies are amended, she insists, nuclear-generated electricity is revealed to be six times more expensive than alleged.

The exorbitant costs of nuclear-generated electricity are overshadowed by the adverse health and environmental effects that Shrader-Frechette discusses in chapter four. Here she examines studies of accidents at the Chernobyl, Three Mile Island, and Fukushima nuclear power plants, all of which can be explained by flawed science and industry cover-up. She refuses to call these disasters “black swan events” because indications prior to their occurrences in conjunction with intended and unintended nuclear meltdowns in the US and elsewhere in the world should have alerted managers and government regulators that numerous problems existed. One among these is health

effects on humans. Shrader-Frechette is at her best when analyzing epidemiological studies of radiation exposure and identifying weaknesses in studies that underestimate negative health effects. Nuclear-generated electricity is patently unsafe, she concludes, because there exists no safe dose of radiation. All such radiation induces malignant cancers and negative genetic effects, and it causes health problems for present and future generations.

Though ethical concerns motivate the first four chapters of the book, Shrader-Frechette deals explicitly with the injustices of increasing US reliance on nuclear-generated electricity in chapter five. She delves into the adverse effects of radiation exposure on vulnerable people at various stages of the nuclear fuel cycle, including indigenous people where uranium ore is mined and reactors are sited, workers who are not sufficiently protected due to flawed occupational standards, children who are at ten times higher risk than adults to suffer radiation poisoning, and future generations at sites where spent fuel rods from nuclear reactors may be stored for hundreds of thousands of years. She identifies nine ethical problems associated with nuclear waste storage including no benefit to future generations for bearing the risks and the inadequacy of exposure standards for protecting vulnerable populations. Her expertise in assessing risks shines as she analyzes the latest standards promulgated by the federal government. Distraught with the US Environmental Protection Agency's admission that it cannot protect public health from exposure to radiation from spent nuclear fuel rods and other such radioactive material, Shrader-Frechette concludes that "the government should stop generating nuclear waste immediately" (187).

Shrader-Frechette proceeds in the sixth chapter to focus on solutions to meeting US energy needs that don't embrace nuclear and coal energy—energy efficiency, renewable sources, and conservation. She points to a plethora of existing and potential options for efficient use of energy in all sectors of the economy, and for expanding and subsidizing the development and implementation of renewable sources (e.g., wind and solar). She convincingly argues that renewable energy sources are more plentiful, economically desirable, and capable of being implemented quickly than the production of nuclear power upon appreciating that nuclear power has and must continue

to rely upon hefty government subsidies. Drawing on examples of private companies, municipalities, and nations, she specifies some guidelines for transitioning to renewable power sources.

In the final two chapters, Shrader-Frechette identifies the most common and misleading objections used to promote nuclear energy in the name of mitigating human-forced climate change and draws some poignant conclusions. The seventh chapter is especially noteworthy: not only for Shrader-Frechette's responses to the objections, but also for the skill with which she deftly handles hyperbole that only serves to confuse the public and policymakers on complex energy issues.

WHAT WILL WORK



Fighting Climate Change
with Renewable Energy,
not Nuclear Power

KRISTIN SHRADER-FRECHETTE

I am grateful to Shrader-Frechette's critique of the nuclear power industry and for arguing for energy efficiency, renewable resources, and conservation techniques. Though *What Will Work* is an important contribution to the contemporary energy debate, I find it unfortunate that Shrader-Frechette has had to write this book. Misunderstanding and exaggeration surrounding nuclear power today are déjà vu of the 1970s-80s. Problems with nuclear energy have been around since its inception. It is incom-

prehensible that President Obama embraces nuclear energy despite not having a viable solution for safely isolating its radioactive wastes. Memories are simply too short and energy policy decisions too illogical. Perhaps Shrader-Frechette's monograph will stimulate a modicum of responsible thinking about our present and future.

Hopefully, using *What Will Work* in advanced undergraduate and graduate courses will stimulate the kind of thinking and acting that is needed. Though tailored to intelligent readers desirous of becoming better informed about problems with nuclear power and the advantages of moving toward more efficient use of energy and renewable sources to mitigate climate change, the many studies that Shrader-Frechette cites, the arguments she makes, her excellent endnotes, and her integration of knowledge from a variety of disciplines together bode well for scholarly research.

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