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**Unpaid Costs of Electrical Energy: Health and Environmental Impacts from Coal and Nuclear Power, by William Ramse**

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# UNPAID COSTS OF ELECTRICAL ENERGY: HEALTH AND ENVIRONMENTAL IMPACTS FROM COAL AND NUCLEAR POWER

by W. RAMSEY

Baltimore: The Johns Hopkins Press for Resources for the Future. 1979.

Pp. 180. \$4.95

In view of the Three Mile Island debacle of April 1979, recent predictions of a turning point in nuclear policy may be understated. The present emotionally-charged atmosphere could use some calm presentations of the relative risks of coal-fired and nuclear-powered electricity. The purpose of this book is to provide such a presentation.

The book does not report new findings on nuclear or coal risks, but it does summarize existing research in an accessible and well-documented fashion. Throughout the book, Ramsey stresses our uncertain knowledge of the potential impacts. Because both technologies contain significant but disparate hazards, Ramsey refrains from either-or recommendations. Instead he defines four "value orientations," broad areas of concern, and sketches the relative magnitudes of impacts arising from the two technologies.

The key impacts associated with coal are: air pollution and mining-related deaths and illnesses; long-run climate modification dangers due to carbon dioxide; and land use disturbances. The key impacts associated with nuclear power are: proliferation and diversion; reactor safety; and nuclear waste, including gases. To the extent possible, these impacts are quantified and then extrapolated to the years 1985 and 2000, based on several scenarios. Ramsey does not try to place monetary values on these impacts, but does discount physical quantities of deaths due to persistent radiation. This, however, is not done blindly.

The four value orientations are: preservation of health; environmental impacts; avoidance of catastrophes; and equity. Coal-related impacts are significantly larger in the first two categories. Both technologies pose potential catastrophic threats; reactor accidents and proliferation must be weighed against possible greenhouse effects. In the equity orientation, nuclear energy is preferable; both technologies pose serious inequities, but those for coal are more likely to be reversible and far cheaper to mitigate.

The book's recommendations are: first, to continue the coal-nuclear mix on the basis of cost and other considerations; second, to implement substantial additional research, particularly in the case of

air pollution; and third, to introduce today further control technologies, without awaiting results from any potentially definitive but as yet undone study of hazards. Specifically Ramsey is concerned with auto-coal train collisions, mining-related accidents and illnesses, and the release of carbon-14 and radon. It is a curious reflection on our society that we have pursued control of nuclear hazards much more intensively than those related to coal. Ramsey points out that we are not spending the \$25,000 which will buy a railroad crossing gate to reduce train-auto collision rates, but the Nuclear Regulatory Commission is pursuing safety features which will potentially save one life for every ten million dollars. How would foreknowledge of Three Mile Island have affected his recommendations? Only he can answer the question, of course, but his nuclear fatalities figure would equal the coal-related figure if multiplied by 200.

To the reviewer, the broader issues involved are: how much electricity do we need? and how should we balance progress toward hazard reduction in energy and non-energy sectors? These questions are posed by Ramsey, but never answered. Since this study is only one element of a broader energy study, presumably the author will address the first of these issues in detail at a later date. The second issue goes beyond energy policy and issues of economic efficiency. This book is an excellent point of departure for the intelligent consideration of both issues, and deserves the wide reading it probably will get.

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