

Greenhouse economics: value and ethics by C L Spash; Routledge, London, 2002, 298 pages, £75.00 (US \$110.00) ISBN 0 415127181

Notwithstanding the plethora of books that have been written on the environment, Clive Spash's book, *Greenhouse Economics* is an eloquently written, balanced, superbly documented, and comprehensive 'scientific' overview of climate change and greenhouse effects. Despite the seemingly narrow theme of its title, the book goes beyond greenhouse economics. Spash demonstrates that environmental issues observe no boundaries and he discusses many interrelated issues: the hole in the ozone layer, agricultural impacts, urban smog, sea-level rises, water deficiency, desertification, global energy, and ecosystems. Readers who may be put off by the 'economic' contextualization, will be pleasantly surprised reading *Greenhouse Economics*. Instead of reading like a number-crunching economic endorsement of the polluter-pays thesis, there is a refreshing approach in Spash's discussions of the "inter-relationships between economics, environment and society" (page xiii) within an "interdisciplinary perspective which pulls together science, economics and ethics" (page 22) which deals not only with economic issues but also with broader scientific, ethical, moral, perception, and value choices.

Greenhouse Economics reflects a long gestation of a century of well-grounded 'scientific' and economic research. The book leaves the reader with little doubt about the past, present, and future prospects of climate change and greenhouse issues. Given the importance of climate change to the global community, *Greenhouse Economics* has provided neither an alarmist nor a doomsday prognosis of the issues. With deft erudition, level-headed arguments, and cautious reflection, Spash provides insights into the highly complex and difficult to predict subject matter. The key issue with which the book grapples and seems unable to define categorically is the extent of the anthropogenic contribution to global warming and the greenhouse effect.

Human-induced climate change is defined as "a consequence of unintentionally playing around with global systems" (page 250). The moot question is to what extent have human activities added to climatic changes resulting from natural cycles of glaciation (80 000 to 100 000 year spans) and interglacial periods (10 000 to 15 000 year spans) (page 48). Even in areas such as the relationship between CO₂ and the "infinite carbon sinks" of the deep oceans (page 114), little research has been done. Indeed, Spash leaves the reader in little doubt that predicting climate change (using general circulation modules GCMs) and dealing with greenhouse effects is a major research undertaking (over 100 independent studies are involved) with many doubts and debates. Despite the use of supercomputers that churn out 200000 equations and half a billion operations per second (page 111), GCMs have serious limitations in evaluating climatic change and hence no study can make accurate long-term predictions.

If there is some scope for criticism of this book, it lies in the fact that, given the heavy emphasis of anthropogenic influences on climatic change and greenhouse effects, the book remains silent about earlier studies on the human impact on the environment (Carson, 1962; Marsh, 1965; Thomas et al, 1956). With its litany of impressive statistics, data, tables, and graphs, I would have also preferred debate and discussion on Björn Lomborg's (2001) controversial book, *The Skeptical Environmentalist*, which unfortunately is not even mentioned. The confusion amongst not only the general public but even government officials and researchers is whether global warming and the greenhouse effects are overplayed.

Spash deals with all the inner debates that surround the predictive nature of climate change studies which are expressed in notions of 'bad' and 'good' science and scientists (pages 141 - 143), the dangers of prediction revolving around whether science is delivered "objectively" or interpreted as "subjective probabilities" (pages 144 - 145), and the issues of risk, uncertainty, and ignorance at both the scientific and the social science levels that need to be recognized in formulating policies, evaluating costs, and encouraging public debate (page 146).

Despite the book's 'economic' title, *Greenhouse Economics* is far from an endorsement of environmental economics. Throughout the discussion of economic theories and concepts, Spash provides a litany of criticisms and reasons for the inadequacy of current environmentally related economic theories that is welcome news for environmentalists. He categorically argues that economics has failed to "address the long term adequately because it fails to account for strong uncertainty" (page 266). Specifically, he notes how economics tries to "describe human-decision-making in a rigid model of rationality where value conflict is reduced to risk-taking

and trade-off" (page 252). On the other hand, the ethical concepts of applied philosophers are reduced by economists "to mere shadows of their original" (page 233). With regard to the long-term impacts of climate change and greenhouse effects, Spash states that mainstream economics cannot deal with these issues because the discipline does not "have any conception of history, the past or process, so that the present is taken as the definitive point" (page 225).

Spash also criticizes economists for not considering the ethical implications in the "discount rate" (pages 203 ^ 209) in calculating the future consequences of the greenhouse effect. Indeed, the economic emphasis of climate change seems rather US-centric and displaced. Spash devotes a lot of attention to the economic losses in the USA (estimated at between US \$17 billion and \$108 billion) arising from global warming and possible sea-level rises and leaves one wondering whether this is more important than the large possible loss of human lives (estimated at between 92 and 118 million people) in Africa, Asia, and the Pacific Islands.

Indeed, despite the global perspective in the book, there are very few data that deal with the climatic change impacts on populous countries like China, India, and Indonesia. Although *Greenhouse Economics* unfortunately did not engage in debate on the Kyoto Protocol and the US refusal to be a party to it, the book is the best defense as to why countries should sign the Kyoto Protocol. Although criticisms against the US government and its anti-Kyoto business backers are raised (pages 251, 254), the more troubling issue for the global community is Spash's assertion that the emissions reductions proposed by the Kyoto protocol are "too small to prevent increasing atmospheric concentrations" of greenhouse gases (page 251). Whether from a social science or science viewpoint, I strongly recommend this book to fellow scholars who want a comprehensive overview of climate change, the greenhouse effects, and their impacts.

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