

Climate Change, 2nd ed.

Barrie Pittock. CSIRO Publishing, Collingwood, Victoria, 2009. xvii + 250 pp. Price AU\$49.95. ISBN 9780643094840 (pbk).

Barrie Pittock's work in climate change is well known in Australia and internationally. This volume is a substantial update of his 2005 book, with a new subtitle. With 12 chapters in a very readable style, and extensive and authoritative endnotes, it would work well as a university textbook. Broadly speaking, the first half of the book is about the science of predicting climate change, and the second half is about the politics of responding to it.

The scientific half is certainly stronger, but this is not surprising given that it has received much more research attention to date. There are lots of figures and tables extracted from IPCC reports and related publications, and the reader gets the sense of a well-digested and clearly presented body of evidence. The second half, the socioeconomic component, covers relevant issues quite comprehensively, but the depth and detail of data and discussion are significantly less than for the scientific components. Only a dozen pages, out of over 300 in total, are devoted to adaptation, and the analysis is couched in very broad terms. My own view is that it is perfectly possible to identify adaptation pathways in considerable and concrete detail, and even to predict how individual people and social structures are likely to respond to predicted climate changes, at quite a fine spatial scale. Certainly, however, there is far less literature to draw upon in this area than there is in the fields of prediction and mitigation: and indeed, the chapter on mitigation covers 50 pages.

There is an interesting chapter on the physical context for climate change, followed by two chapters on politics. The chapter on context does include a page on population growth, but principally as a factor in measuring emissions intensity. Personally, I found it disappointing that this aspect did not receive more attention. Since all the evidence to date is that atmospheric concentrations of carbon dioxide are continuing to rise essentially unchecked, and the climatic consequences are being felt earlier than previously projected, a number of recent models have examined scenarios with a sudden but very substantial drop in greenhouse gas emissions in a few decades time. There are two possible avenues. Most authors, including Pittock, seem to place their faith in as yet undeveloped technologies. A much simpler approach is for people to stop having so many children. This is technically very straightforward, though socially very difficult. China's one-child policy, however, does demonstrate that it is not impossible. The technological approach favoured by Pittock is biochar, which apparently means growing plants, pyrolysing them, and burying the charcoal residues underground. But if the human population were reduced so that areas used for intensive agriculture could decrease, atmospheric carbon would be sequestered as soil carbon without any need for biochar. Changes in agricultural practices in Russia over recent years have apparently already produced such effects, at large scale.

There are several other minor issues where I should probably disagree with Barrie's conclusions. Having seen the environmental and social consequences of large-scale hydropower dams in western China, for example, I am very doubtful about the supposed gains from broad-scale adoption of hydropower energy (p. 176). I also share Barrie's concerns about the environmental side effects of biomass energy

projects such as oil-palm biodiesel or corn or sugar-cane ethanol production (p. 183). Well-intentioned climate-conscious travellers buying carbon offsets for their flights and rental cars, therefore, may simply be subsidising destruction of remaining tropical rainforest and freshwater ecosystems. Likewise, I am not necessarily convinced that a global switch to a vegetarian diet could bring a significant change, because most of the world's rangelands are unsuited for crop production. Of course, reducing methane emissions from ruminants might still yield significant gains.

These, however, are minor quibbles. In general this is an excellent piece of work, comprehensive and well integrated, and understandable for students of policy and business as well as those in the environmental sciences. I certainly plan to prescribe it for our own undergraduate courses in climate change. The final chapter "accepting the challenge" ends on an upbeat note: "We can do it". Actually, I am by no means convinced that we will: but I certainly agree that it is possible and that we should try. And luckily, amongst the many suggestions in this volume I have found one at least (p. 169) that I can gladly adopt immediately: "dispensing with jackets and ties". Indeed, I already have.

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