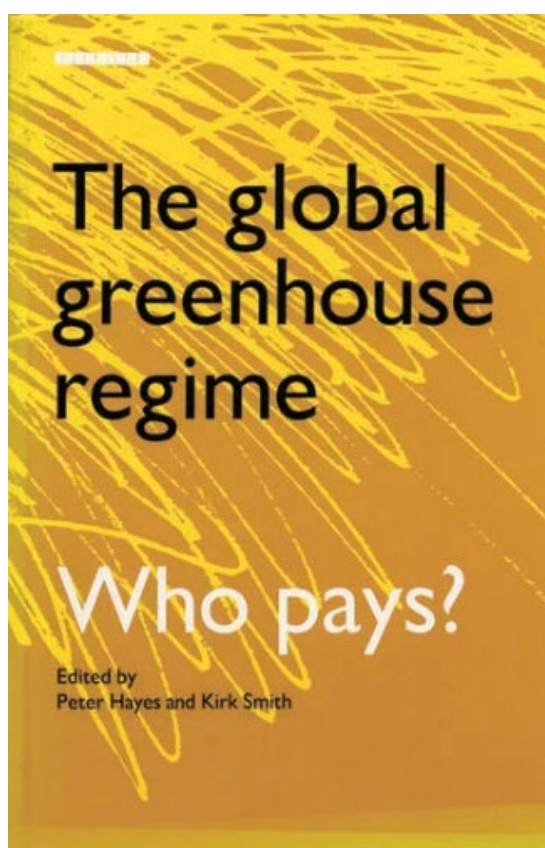


## My 1993 'Climate Book of the Year'

Hayes, P. and Smith, K.R. (eds.) (1993) *The Global Greenhouse Regime: Who Pays? Science, Economics and North-South Politics in the Climate Change Convention*. Tokyo/London: UNU Press/Earthscan. 382pp.

This essay continues my series of monthly posts in which I select one 'climate' book to highlight and review from one of the 44 years of my professional career in climate research (starting with 1984, my first year of academic employment). The series will end in September 2027, the month in which I shall retire. [See here for more information](#) about the rationale for this series, and the criteria I have used in selecting my highlighted books.

This '1993 essay' can be [download as a pdf](#).



The world of the early 1990s was in flux. China's economic growth rate more than doubled to over 10 per cent per annum, economic liberalisation in India in 1991 was bringing the world's second most populous nation into the world economy, and the Soviet Union ceased to exist in December 1991. Early in 1992, the EU signalled its forward path towards greater cooperation and convergence through the signing of the Maastricht Treaty, the apartheid regime in South Africa was beginning to be dismantled, and between 1990 and 1993 twenty-eight new nations were admitted to the United Nations.

It was in this rapidly changing and volatile geopolitical landscape that human-caused climate change began to catalyse new political alignments, institutions and obligations. In June 1992, climate change moved decisively from

being a question of science, and a concern of fringe environmental activists, to one that would henceforth engage the world of international relations and diplomacy. The UN Conference on Environment and Development, held in Rio de Janeiro—'the Rio Earth Summit'—agreed the wording of a Framework Convention on Climate Change (the UNFCCC). By mid-October of that year, 158 nations had signed the Convention and, 18 months later, in March 1994, the Convention came into force following the 50<sup>th</sup> ratification by a national

legislature. The objective of the UNFCCC was to stabilise atmospheric concentrations of greenhouse gases so as to avoid “dangerous anthropogenic interference with the climate system”. What that concentration was remained undefined. And, more importantly, there were no provisions for funding the Convention’s implementation. Considerations of how much it might cost to achieve ‘climate stabilisation’, and who should pay, were assiduously avoided in the agreed text.

The signing of the UNFCCC signalled the world’s willingness to recognise and tackle this challenge. And it was the challenge of creating a new philosophical and practical international framework for arresting climate change—a global greenhouse regime—that my **Climate Book of 1993** confronted. [‘The Global Greenhouse Regime: Who Pays?’](#), published by the United Nations University (UNU) in Tokyo, was the result of a fruitful collaboration between the Australian Peter Hayes, a resource economist, and the American Kirk Smith, a public health physicist. They wanted to put flesh on the bones of the new global climate regime conceived at Rio in 1992. In particular, they wanted to tackle the crucial question avoided in the Convention’s text: who pays? This was a lofty ambition, as recognised by Hayes and Smith when they wrote, “The negotiations to create a global greenhouse regime are a rare opportunity to form a global coalition of interests that transcends national boundaries and historical antagonisms” [p.350].

Hayes and Smith had very different disciplinary back stories. [Peter Hayes](#), 40 years old at the book’s publication, held a first degree in history from the University of Melbourne. In the early 1970s he helped co-found Friends of the Earth Australia, and between 1989 and 1991 was deputy director of the Australian Government’s Commission for the Future. [Kirk Smith](#)<sup>1</sup>, several years older, held a BA in physics and astronomy and a Master in Public Health, both degrees awarded by the University of California at Berkeley. And it was through the Berkeley’s Energy and Resources Program, set up by John Holdren and colleagues in 1977, that they first met; Smith and Hayes both completed their PhDs through this Program. During the 1980s they had also met at the East-West Center in Hawaii, where Smith was a Senior Fellow on its Environment Program. By the early 1990s, when Hayes moved back to San Francisco from Australia to join the Nautilus Institute for Security and Sustainability<sup>2</sup>, both of them had also established connections with the UN University in Tokyo.

At the heart of the challenge of climate change lie questions of responsibility and accountability, questions which only politics and ethics can answer. This was recognised by the UNU Vice-Rector, Roland Fuchs, in a preface he wrote for the book. He highlighted its

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<sup>1</sup> Kirk Smith (1947-2020) later became a faculty member at the UC Berkeley School of Public Health, where he was Professor of Global Environmental Health, the founder and co-Director of the university’s Global Health and Environment Program, and Associate Director for International Programs at the Center for Occupational and Environmental Health.

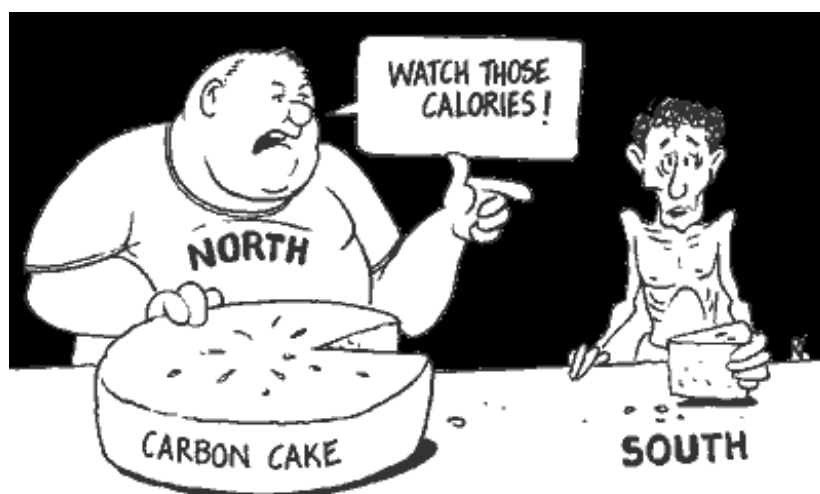
<sup>2</sup> The Nautilus Institute is a public policy think-tank, addressing critical security and sustainability issues in the Asia-Pacific region, such as US nuclear policy, energy insecurity in Northeast Asia, and the effect of the U.S.-China relationship on environmental security. Hayes continues his association with this Institute to the present day.

contribution to “environmental diplomacy debates, which inevitably involve issues of science and technology, politics and economics and, not least, ethics”. Who is (most) responsible for human-caused climate change? To whom are these agents accountable? What obligations do such agents have to mitigate or remediate the harms caused? What principles of justice and equity should guide such remediation? In a nutshell, ‘who pays?’, the framing question for Hayes and Smith’s book.

These remain pertinent and challenging questions for the world community of nations today. And in the early 1990s, they were questions that were beginning to engage a small number of institutions and academics. Notable among these were Indian development economists Anil Agarwal and Sunita Narain based at the Centre for Science and Environment, a Delhi think-tank. Their lacerating report, [‘Global Warming in an Unequal World: A Case of Environmental Colonialism’](#), published in 1991, provoked an important and politically charged debate around the exact same questions that Hayes and Smith were to address in their 1993 book—who is responsible for global warming and, therefore, who should pay to arrest it? Taking strong exception to a recently published report of the World Resources Institute (WRI), ‘World Resources 1990-91: A Guide to the Global Environment’, Agarwal and Narain famously started their polemic thus,

The idea that developing countries like India and China must share the blame for heating up the earth and destabilising its climate, as espoused in a recent study published in the United States by the World Resources Institute in collaboration with the United Nations, is an excellent example of *environmental colonialism* ... the WRI report is entirely designed to blame developing countries for sharing the responsibility for global warming.<sup>3</sup>

And it was this contentious question about responsibility and justice (see the cartoon below, reproduced from their report) that Hayes and Smith’s book was designed to answer.



<sup>3</sup> p.1 in: Agarwal,A. and Narain,S. (1991) *Global Warming in an Unequal World: A Case of Environmental Colonialism*. Delhi: Centre for Science and the Environment. 36pp.

By 1992, Kirk Smith had obtained a grant from the UNU's Human and Policy Dimensions of Global Change programme to produce a book on the topic of global equity and the distribution of the costs to mitigate emissions and to adapt to impacts. As Peter Hayes explains,

When I landed back in Berkeley with a backpack and a baby in 1992 from Manila, we were already well along the road to commissioning experts on each aspect of how to generate a quantitative index that incorporated both responsibility for past emissions that occupied atmospheric holding capacity, and an obligation to pay based on per capita income as a proxy for the rich and poor states with differential capacity to mitigate their own emissions.<sup>4</sup>

The centrepiece of their book was a proposal for an index which could be used to apportion responsibility for global warming. They were critical of other approaches circulating at the time, such as the '[contraction-and-convergence framework](#)' that had recently been proposed by Aubrey Meyer of the newly created Global Commons Institute. For Hayes and Smith, an emissions per capita approach was too simple; it didn't recognise the economic inequality and self-interest that they correctly observed would dominate the *realpolitik* of international negotiations in years to come. Instead, they proposed an index based partly on historical responsibility for emissions—pragmatically adopting 1950 as the start year for accounting purposes—and partly on ability to pay as measured by a nation's economic wealth. As Hayes remembers,

We prefigured what became the common but differentiated responsibility [CBDR] framework that came out of the 1992 UNFCCC and [we] gave some indicative estimates of the magnitude of cost burden to different parties to mitigate emissions and to fund the already inevitable adaptation costs.<sup>5</sup>

Hayes and Smith utilised their international networks to solicit contributors to their analysis from around the world—from India, West Africa, Brazil, Thailand, eastern Europe, Australia. These regional authors contributed substantive chapters, each of which explored the development economics of greenhouse gases, and the data available to underpin a quantitative index along the lines Hayes and Smith were proposing. The regional coverage was uneven and incomplete—there was no coverage of China or Russia for example. Nonetheless, these efforts grounded their arguments about 'common but differentiated responsibility' in diverse geographical contexts.

The thinking of Hayes and Smith in their 1993 book was influential for the development some years later of the Greenhouse Development Rights (GDR) framework of Paul Baer of the Stockholm Environment Institute.<sup>6</sup> GDR evolved from per-capita frameworks—that

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<sup>4</sup> Peter Hayes, personal communication, 29 September 2024.

<sup>5</sup> Hayes, *ibid.*

<sup>6</sup> The Greenhouse Development Rights framework was developed and modelled by Paul Baer, Tom Athanasiou of EcoEquity, and Sivan Kartha and Eric Kemp-Benedict of the Stockholm Environment Institute.

conceived of fair-shares global effort-sharing in terms of equal rights to emit greenhouse gases—and from the entitlement to ‘atmospheric space’ for developing nations based on historical emissions. The GDR itself led to the founding of [EcoEquity](#) and the subsequent 2002 book, ‘Dead Heat: Global Justice and Global Warming’, co-authored by Tom Athanasiou and Paul Baer.<sup>7</sup>

The thinking put forward in ‘**The Global Greenhouse Regime: Who Pays?**’ also prefigured later debates about equity and justice in the context of adaptation, as articulated for example by Neil Adger and colleagues’ in their 2006 edited volume, ‘Fairness and Adaptation in Climate Change’,<sup>8</sup> originating from the Tyndall Centre in the UK which I was directing at the time. These debates were to inspire, inform and, finally at COP27 in 2022, solidify the ‘loss-and-damage’ mechanism of the UN’s climate regime. Hayes and Smith had seen the long rocky road ahead. Despite their elegant, ethical, and data-informed arguments about responsibility and accountability in the global greenhouse, they would not have been too surprised—although undoubtedly would have been disappointed—that 30 years later an editorial in *Nature*, in November 2023, would observe that despite the establishment of a loss-and-damage mechanism, “Questions of who will pay and how much, and who will be eligible to receive funding and on what grounds, *are yet to be answered*” [emphasis added].<sup>9</sup>

My own (complimentary) copy of Hayes and Smith’s book is inscribed with the date ‘January 1994’. I had received it from the academic journal *Futures*, along with an invitation to prepare a review. My judgement at the time was that “... in terms of isolating the key issues which will remain centre stage in the negotiations it is one of the best [books] to have been published so far.”<sup>10</sup> Its early and prescient development of a philosophical framework for thinking about ‘common but differentiated responsibility’, and its strong commitment to evidence-based empirical research originating from different world regions to operationalise the framework, is the reason why ‘**The Global Greenhouse Regime: Who Pays?**’ is my climate book of 1993.

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<sup>7</sup> Athanasiou,T. and Baer,P. (2002) *Dead Heat: Global Justice and Global Warming*. New York: Seven Stories Press. 176pp.

<sup>8</sup> Adger,W.N., Paavola,J., Huq,S. and Mace,M.J. (eds.) (2006) *Fairness in Adaptation to Climate Change*. Cambridge MA: MIT Press. 319pp.

<sup>9</sup> Anon editorial (2023) ‘Loss and damage’ – the most divisive words in climate finance today. *Nature*. 623: 665-666, 23 November.

<sup>10</sup> p.879 in: Hulme,M. (1994) Warming to global justice. Review of ‘The Global Greenhouse Regime: Who Pays?’ *Futures*. 26(8): 878-879. My review also raised the question, prompted by Hayes and Smith’s book, whether our response to global warming was guided by the desire to stabilise climate or by the desire to use global warming as a means of promoting a more equitable world.