And what of the great mass extinctions? If, as some experts estimate, 95 per cent of all species died out in the Permian mass extinction, would not a gaian system have died with them? Global biotic crises have generally occurred every 20 or 30 million years. If Gaia existed before each crisis, she failed during it, in the sense that abiotic causes of heavy extinction overrode her homeostatic mechanisms. The massive extinctions that ensued would

have damaged Gaia further, leading to still more extinctions, and so on. How could Gaia have survived such downward spirals? This present volume is imaginative and delightfully written, but full of unanswered questions. Perhaps Lovelock will address them in his next book. □

Steven M. Stanley is a Professor in the Department of Earth and Planetary Sciences, The Johns Hopkins University, Baltimore, Maryland 21218, USA.

The thin green line

Norman Myers

Public Policy and the Misuse of Forest Resources. Edited by Robert Repetto and Malcolm Gillis. *Cambridge University Press*: 1988. Pp. 432. Hbk \$69.50; pbk \$27.95. To be published in Britain in December, hbk £45; pbk £19.50.

DEFORESTATION of the tropics has been proceeding at an increasing rate since about 1970, yet virtually all analyses of the issue have failed to tackle the core factors at work. They have responded to the symptoms rather than the problems themselves. Still less have they addressed the sources of the problems, to be found in macro-level processes of policy making and planning.

Hence the value of this book — it is the first to engage in methodical assessment of the covert causes of deforestation, concentrating on “the impacts that governments, most of which are committed in principle to conservation and wise resource use, are themselves having on the forests under their stewardship through policies that inadvertently or intentionally aggravate [forest] losses”. Such policies range from those that deal specifically with forestry matters (like timber royalties and logging regulations) to those bearing on tax and trade regimes, industrial incentives, land-tenure laws, settlement programmes, agriculture, population, indeed development overall. The policies concerned were mainly instituted for worthy objectives, including industrial or agricultural growth, regional development and poverty alleviation. But all too often they “have resulted in economic and financial losses while contributing to the depletion of forest resources”. At the end of the book, those policies that can be altered to reduce forest loss without foregoing economic advancement are identified.

The overall argument is presented through case-study examples from Indonesia, Malaysia, the Philippines, China, Brazil and West Africa (also, for comparative purposes, the United States, where certain irrational policies still hold sway). In Indonesia, where timber exports have been earning gross income of

\$2 billion per year, inefficient economic policies in forestry industries (in the form of exceptional subsidies, tax exemptions and heavily subsidized credits among other types of protection) have not only fostered unsustainable logging; they have caused a loss of potential harvesting payments plus other revenues worth \$4.4 billion during the period 1979–1982 alone. In Brazil one of the main causes of deforestation has been cattle ranching: strongly promoted by all manner of incentives worth \$2.5 billion, it has proved to be a highly successful commercial activity for individual entrepreneurs, while imposing a net drain on the national economy. During forest clearance, ranchers have burned marketable timber worth \$5 billion, ostensibly on the grounds that they could make easier profits through government subsidies. Fortunately, in both Indonesia and Brazil, things have recently improved somewhat through direct intervention on the part of the countries' presidents.

The contributors of the 12 case studies amply document the ways in which forestry policies have frequently generated ‘timber booms’ and other scrambles for short-term profits. Yet the greater part of deforestation is attributable to non-forestry policies. Among them are excessive clearing of land for plantation crops such as rubber, palm oil and cacao, and for mining and roads, dams and other large infrastructure projects. Overall, the

principal form of policy-induced deforestation is through measures that impoverish households living close to the margin of subsistence, especially in rural areas: “These include pricing policies and investment priorities biased against the agricultural sector, development strategies that depress the demand for unskilled labor, and agricultural policies that favor large farms over smallholders. Such policies retard the demographic transition, make rural populations more dependent on natural forests for subsistence needs, and increase the concentration of agricultural landholdings”. It is primarily as a result of them that there has been a mass migration of small-scale cultivators into Brazilian Amazonia, culminating in the burning of some 80,000 square kilometres of forest during the 1987 dry season.

On top of all these mis-directed and mis-applied policies of the governments of the nations directly concerned, external factors have contributed to the general abuse of forest resources. For instance, trade barriers protect wood-processing industries in the developed world, thus usurping many of the benefits from forest-based industrialization that could accrue to developing countries. Much of the excessive logging has been carried out by multinational timber corporations based in the developed world.

Public Policy and the Misuse of Forest Resources is a pioneering appraisal of the entire policy context within which deforestation is progressively promoted. The editors are to be congratulated on their analytical acumen: the argument is pursued with detailed documentation throughout, and is rounded out with first-rate summary chapters which introduce and close the book. □

Norman Myers, Upper Meadow, Old Road, Headington, Oxford OX3 8SZ, UK, is a consultant on development and environmental matters. He was formerly on the staff of the United Nations Food and Agriculture Organization's Forestry Department.

“Protect the forest from fire” — on a billboard in Jagdalpur, India, a man is seen setting fire to a forest in this life and as a consequence is roasted over a fire in hell. From *The Hour of the Fox: Tropical Forests, the World Bank, and Indigenous People in Central India*, by R.S. Anderson and W. Huber. Publisher is University of Washington Press, price \$25.