
Preface

More than three decades have passed since a research group based at MIT startled policymakers, academics, and the public with publication of a study indicating that limits to growth on this planet likely would be reached within the next century. Fueled by numerous books published in the 1960s that focused on environmental and resource consequences of continued rapid growth in population and consumption, the MIT study, and the subsequent *Global 2000 Report to the President*, forcefully called attention to a developing human predicament. These publications ignited a vigorous and persistent debate over future prospects for the human race in a world of tightening limits. On one side, a group often characterized as neo-Malthusians has argued that unrestrained growth in population and consumption will lead to widespread famine, resource shortages, and environmental crises. On the other side, a group of technological and economic optimists has countered that there are no limits to growth in ingenuity, and therefore future generations will experience a better quality of life.

We make an effort in this book to contribute to this ongoing dialogue by offering an assessment of what has so far been learned about crucial aspects of this human predicament and by using this information to explore aspects of its future. Better foresight now is critical in supporting a growing world population in excess of 6.4 billion that is pressing close to nature's carrying capacity. Anticipatory thinking and policymaking can spare humanity from potential harsh consequences of the growth trajectory that is being followed. It is much easier to manage growing problems and issues in an anticipatory fashion, dealing with them before significant damage is done, than it is to engage in remedial action later on. Just as scientific consensus on the danger of depletion of stratospheric ozone led to resolute action in the form of the Montreal Protocol,

anticipatory thinking and action could help avert future dislocations, or even tragedies, stemming from global warming, petroleum depletion, or food and water shortages.

The forecasting process is unfortunately filled with risks and difficulties. There is the knotty problem of self-defeating prophecies. To the extent that pessimistic forecasts actually do galvanize people to take action, the responsible “Cassandras” can quickly become “Chicken Littles.” Thus, biologist Paul Ehrlich’s clarion call for action in his 1968 book *The Population Bomb* helped to sensitize leaders around the world to the need for meaningful population policies, but the subsequent success in reducing the worldwide rate of population growth allowed his critics to claim that he got it all wrong. Then there is the issue that even minimal uncertainty in forecasts is often used by vested interests as an excuse for inaction. Witness the extended delays in the United States in dealing with greenhouse warming. And there is the difficult question of complexity in the ecosociotechnical systems that are being analyzed. Things do not always work out exactly the way that they are forecast. For example, while there is a broad consensus that world petroleum production is relatively close to its peak, until very recently petroleum prices were so low as to lead some companies to shut in unprofitable wells. And the petroleum industry is still hesitant to invest large sums in exploration and development for fear that the current high prices will crash again if worldwide economic growth slows down.

In spite of these caveats, the early years of a new millennium offer an ideal opportunity to reflect on the recent past and to anticipate some of the prospects and perils of the next few decades. It is sad that the turn of the millennium, which offered a great opportunity to explore these issues further, for the most part passed with little significant research or reflection. Instead of collectively taking stock of the changing global predicament and launching bold new initiatives to deal with it, the event was mostly marked with fireworks displays and rock concerts. This book is our modest attempt to better respond to the challenges of the new millennium by assessing how well past efforts to assess global limits have done, and, more important, to look forward and anticipate how the combined forces of demographic change and technological innovation will interact with resource limitations to shape the conditions under which future generations will live on this planet.

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