



### **The Conclusions:**

What is meant by "sustainability"? It is a somewhat vague term whose definition is not always clear, depending on what it is that one wants to sustain. The most widely accepted general definition of sustainable development is that given by the United Nations' World Commission on Environmental Development:

*Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*

The physicist Nobel Laureate Murray Gell-Mann offers in his book *The Quark and the Jaguar: Adventures in the Simple and the Complex* the following definition of sustainability:

*The achievement of quality of human life and of the state of the biosphere that is not purchased mainly at the expense of the future. It encompasses survival of a measure of human cultural diversity and also of many of the organisms with which we share the planet, as well as the ecological communities that they form.*

An economist's definition of sustainability is given by Lloyd Orr in chapter 7:

*The preservation for future generations of a set of economic and social opportunities that are at least as rich and diverse as our own. It is not a goal so much as a process of continuous change and adaptation.*

Working toward a sustainable future is best viewed as a continuous process of adaptation to changing circumstances. Sustainability is an elusive goal that we pursue but never fully achieve - like many other goals in life, such as the pursuit of happiness. It is up to each generation to head in the right direction and then to pass the baton to the next generation.

The primary aim of this book is to change perceptions and attitudes rather than to give specific policy recommendations. Nevertheless, some general goals suggested by this work for the world in the 21st century are clear. They include

- vast improvements in the efficiency with which we use energy;
- accelerated development of alternative energy resources to replace fossil fuels - including the technology required for them to meet acceptable environmental standards;
- reduction in energy use per capita in the developed world;
- stabilization of world population with a smaller per capita energy use than has been required historically in developed countries.

Are we headed in the right direction? Fuel efficiency of automobiles has gone down, not up, in recent decades; the U.S. is attempting to solve its oil problems by more domestic drilling and greater control of foreign oil supplies, rather than through greater energy efficiency, conservation, and development of renewable energy resources, such as solar and wind; world population is still growing at the rate of 1.5% per year, corresponding to a doubling time of 47 years.

Finding the right direction is a complex interdisciplinary problem requiring a basic understanding of both the laws of nature that constrain our options and the fundamental moral, cultural, economic, and political principles that determine how humans behave. In this book, we have focused on basic facts and fundamental principles in the belief that a broader understanding of these principles by policy makers and the general public is needed in a democratic society to move us toward a sustainable future.

For their implementation, these principles require a broad public understanding of what is at stake, recognition of both our limits and our opportunities, and the development of political will.