



Foreword

As recognized in 1997 by the Kyoto Protocol, achieving a sustainable energy future presents an urgent challenge for the 21st century. Current patterns of energy resources and energy usage are proving detrimental to the long-term welfare of humanity. The integrity of essential natural systems is already at risk from climate change caused by the atmospheric emissions of greenhouse gases. At the same time, basic energy services are currently unavailable to a third of the world's people, and more energy will be essential for equitable, worldwide sustainable development. The national and global energy security risks are further exacerbated by an escalating energy cost and by the competition for unevenly distributed energy resources.

This global problem requires global solutions. Thus far, insufficient advantage has been taken of the world's leading scientists and their major institutions, even though these institutions are a powerful resource for communicating across national boundaries and for reaching agreement on rational approaches to long-term problems of this kind. The world's academies of science and of engineering—whose judgments are based on objective evidence and analysis—have the respect of their national governments but are not government-controlled. Thus, for example, scientists everywhere can generally agree even when their governments have different agendas. Many political leaders recognize the value of basing their decisions on the best scientific and technological advice, and they are increasingly calling upon their

own academies of sciences and engineering to provide this advice for their nation. But the possibility and value of such advice at the international level—from an analogous source based on associations of academies—is a more recent development. In fact, only with the establishment of the InterAcademy Council (IAC) in 2000 did accessing such advice become a straightforward matter.¹ Thus far, three major reports have been released by the InterAcademy Council: on institutional capacity building in every nation for science and technology (S&T), on African agriculture, and on women for science.²

At the request of the Governments of China and Brazil, and with strong support from United Nations Secretary-General, Mr. Kofi Annan, the IAC Board has now harnessed the expertise of scientists and engineers throughout the world to produce *Lighting the Way: Toward a Sustainable Energy Future*. Here, we call special attention to three of the report's important messages.

First, science and engineering provide critical guiding principles for achieving a sustainable energy future. As the report states, 'science provides the basis for a rational discourse about trade-offs and risks, for selecting research and

1 The eighteen-member InterAcademy Council Board is composed of presidents of fifteen academies of science and equivalent organizations representing Brazil, Chile, China, France, Germany, Hungary, India, Iran, Japan, Malaysia, Turkey, the United Kingdom, and the United States, plus the African Academy of Sciences and the Academy of Sciences for the Developing World (TWAS) and representatives of the InterAcademy Panel (IAP) of scientific academies, the International Council of Academies of Engineering and Technological Sciences (CAETS), and the InterAcademy Medical Panel (IAMP) of medical academies.

2 InterAcademy Council, *Inventing a Better Future: A Strategy for Building Worldwide Capacities in Science and Technology*, Amsterdam, 2004; InterAcademy Council, *Realizing the Promise and Potential of African Agriculture*, 2004; InterAcademy Council, *Women for Science: An Advisory Report*, Amsterdam, 2006. (Accessible at www.interacademycouncil.net)



development (R&D) priorities, and for identifying new opportunities—openness is one of its dominant values. Engineering, through the relentless optimization of the most promising technologies, can deliver solutions—learning by doing is among its dominant values. Better results will be achieved if many avenues are explored in parallel, if outcomes are evaluated with actual performance measures, if results are reported widely and fully, and if strategies are open to revision and adaptation.’

Second, achieving a sustainable energy future will require an intensive effort at capacity building, as well as the participation of a broad array of institutions and constituencies. The report emphasizes that ‘critical to the success of all the tasks ahead are the abilities of individuals and institutions to effect changes in energy resources and usage. Capacity building of individual expertise and institutional effectiveness must become an urgent priority of all principal actors—multinational organizations, governments, corporations, educational institutions, non-profit organizations, and the media. Above all, the general public must be provided with sound information about the choices ahead and the actions required for achieving a sustainable energy future.’

Third, although achieving a sustainable energy future requires long-range approaches, given the dire prospect of global climate change, the Study Panel urges that the following be done expeditiously and simultaneously:

- Concerted efforts should be mounted for improving energy efficiency and reducing the carbon intensity of the world economy, including the worldwide introduction of price signals for carbon emissions with consideration of different economic and energy systems in individual countries.
- Technologies should be developed and deployed for capturing and sequestering carbon from fossil fuels, particularly coal.
- Development and deployment of renewable energy

technologies should be accelerated in an environmentally responsible way.

Also urgent as a moral, social, and economic imperative, the poorest people on this planet—who primarily reside in developing countries—should be supplied with modern, efficient, environmentally friendly and sustainable energy services. The scientific, engineering, and medical academies of the world, in partnership with the United Nations and many other concerned institutions and individuals, are poised to work together to help meet this urgent challenge.

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