

# Lighting the way: Toward a sustainable energy future

## A report by the InterAcademy Council

“This report represents the convergence of some of the best minds and top institutions in the world to establish the necessary direction for governments, scientists, engineers, and industry—indeed society as a whole—to secure the clean, sustainable energy required for our prosperity.”

**Steven Chu**, Study Panel co-chair and Nobel Laureate

“For too long, we have contemplated the future with fear and without a strong grasp of the solutions. Especially today, as nations develop and industrialize, our leaders need this roadmap and the direction it provides for a promising, rather than daunting, future.”

**José Goldemberg**, Study Panel co-chair and  
Former Minister, Federal Government of Brazil

### InterAcademy Council

The InterAcademy Council (IAC) embodies the collective expertise and experience of national academies of science, engineering, and medicine from all regions of the world. IAC represents over 150 national academies of science, engineering and medicine, including the world's leading academies.

The IAC produces reports on scientific, technological, and health issues related to the great global challenges of our time, providing knowledge and advice to national governments and international organizations.

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 the world's scientific academies, the International Council of Academies of Engineering and Technological Sciences (CAETS), and the InterAcademy Medical Panel (IAMP) of the world's medical academies.

The IAC Secretariat is hosted by the Royal Netherlands Academy of Arts and Sciences (KNAW) in Amsterdam, The Netherlands.

#### Mail address

P.O. Box 19121  
1000 GC, Amsterdam  
The Netherlands

#### Office location

Het Trippenhuis  
Kloveniersburgwal 29  
1011 JV Amsterdam  
The Netherlands

T +31 (0)20 551 0766  
F +31 (0)20 620 4941  
secretariat@iac.knaw.nl

# Lighting the way: Toward a sustainable energy future

## A consensus science roadmap for securing our global energy future...

### Recommendations for producing a global supply of affordable and sustainable energy

Commissioned by the governments of China and Brazil and published by the InterAcademy Council (IAC), *Lighting the way: Toward a sustainable energy future* is a study report designed to provide decision-makers in both developing and industrialized countries with the authoritative scientific analyses and recommendations necessary to address the major energy challenges facing our generation:

- How can we provide universal access to affordable, modern power?
- What is the most efficient way to address environmental costs?
- How can we establish energy security?

This report answers key questions on:

- Transition pathways to sustainable energy systems, including energy efficiency, carbon pricing, carbon capture and sequestration, and accelerated deployment of renewable energy resources.
- Policies and financial requirements for supporting such transitions.
- Research, development and demonstration priorities, and the political, intellectual and financial investments needed for the realization of these priorities.

## ...In-depth analyses, scores of contributing scholars...

### A blue-ribbon panel of the world's top scientists, engineers and economists

To produce *Lighting the way*, the IAC convened an authoritative panel of leaders in science and engineering from around the world. Led by co-chairs Steven Chu and José Goldemberg, the panel includes:

- Steven Chu (USA)**, co-chair; Director, Lawrence Berkeley National Laboratory & Professor of Physics and Professor of Molecular and Cell Biology, University of California, Berkeley
- José Goldemberg (Brazil)**, co-chair; Professor, Institute of Electrotechnics and Energy, University of São Paulo
- Shem Arungu Olende (Kenya)**, Secretary-General, African Academy of Sciences & Chairman and Chief Executive Officer, Quecosult Ltd.
- Ged Davis (UK)**, Co-President, Global Energy Assessment, International Institute for Applied Systems Analysis (IIASA)
- Mohamed El-Ashry (Egypt)**, Senior Fellow, UN Foundation
- Thomas B. Johansson (Sweden)**, Professor of Energy Systems Analysis and Director of the International Institute for Industrial Environmental Economics (IIIEE) at Lund University
- David Keith (Canada)**, Director, ISEEE Energy and Environmental Systems Group & Professor and Canada Research Chair in Energy and the Environment, University of Calgary
- Li Jinghai (China)**, Vice-President of the Chinese Academy of Sciences
- Nebosja Nakicenovic (Austria)**, Professor of Energy Economics at Vienna University of Technology & Leader of Energy and Technology Programs at IIASA
- Rajendra Pachauri (India)**, Director-General, The Energy and Resources Institute & Chairman, Intergovernmental Panel on Climate Change
- Majid Shafie-Pour (Iran)**, Professor of Environmental Engineering (Energy, Air Pollution and Climate Change), Faculty of Environment, University of Tehran
- Evald Shpilrain (Russia)**, Professor of Thermophysics and Renewable Energy Sources, Corresponding member of the Russian Academy of Sciences (RAS), Advisor to the RAS
- Robert Socolow (USA)**, Professor of Mechanical and Aerospace Engineering at Princeton University
- Kenji Yamaji (Japan)**, Professor of Electrical Engineering at the University of Tokyo, Member of Science Council of Japan, Vice-Chair of IIASA Council & Chairman of the Green Power Certification Council of Japan
- Yan Luguang (China)**, Chairman of the Scientific Committee of the Institute of Electrical Engineering, Chinese Academy of Sciences & Honorary President of Ningbo University

## ...A viable solution for a problem faced by all.

### A wide and rigorous peer review, backed by the world's national academies of science

The IAC launched this study in early 2005 and, along the way, commissioned 19 reports and convened seven national symposia across the globe. Incorporating the data and analysis of leading global energy and development institutions such as the World Bank and the International Energy Agency, the study panel has analyzed:

- Projections and impacts of varying assumptions on future energy sources and use.
- The rate and direction of technological progress and the policies that affect it.
- Research, development and demonstration efforts underway throughout the world.

In a joint statement about energy, growth and sustainability issued by 13 of the world's leading national academies in May 2007, the academies noted that *Lighting the way* will confront the critical energy challenges of our time.

The study report underwent an extensive, monitored, peer review conducted by a large, blind-review panel assembled by the IAC and validated by the IAC Board. The IAC Board, composed of 18 presidents of science academies and other organizations, approved the report for publication and public release in the fall of 2007. Upon publication, the entire report will be available in electronic format at [www.interacademycouncil.net](http://www.interacademycouncil.net).

For more information on the study, visit the IAC website at [www.interacademycouncil.net](http://www.interacademycouncil.net)

