

InterAcademy Council

2007 ANNUAL REPORT OF THE IAC EXECUTIVE DIRECTOR

The InterAcademy Council (IAC) in 2007 published its most ambitious report to date, identifying a scientific consensus for directing global energy development. *Lighting the Way: Toward a Sustainable Energy Future* lays out a science, technology, and policy roadmap for developing energy resources to drive economic growth in both developing and industrialized countries while also securing climate protection and global development goals.

Measures of the success of this IAC energy report must ultimately involve the breadth and depth of attention given by government and industrial decisionmakers, the scientific and technological community, and the general public; and most importantly, ongoing follow-up actions pursued in every region of the globe. This requires the ongoing dedicated efforts of affiliated academies in all nations.

A unique strength of the InterAcademy Council is that its reports have a globally prestigious advocacy and implementation constituency in the national academies of sciences, engineering, and medicine in over 90 countries. The global associations of these academies—the InterAcademy Panel (IAP) for International Issues, the International Council of Academies of Engineering and Technological Sciences (CAETS), and the InterAcademy Medical Panel (IAMP)—are fostering important academy advisory relationships with governments, industry, and other stakeholders.

The InterAcademy Council and the world's scientific, engineering, and medical academies, working together, have a great opportunity to bring together knowledge and problem-solving expertise to address the urgent challenges facing the world. During 2008, an urgent task for the InterAcademy Council and its partner academy organizations is to establish a more effective network for producing and disseminating critical information for the common good. This important effort is the theme of this year's report of the IAC Executive Director.

Launching New Partnerships in 2008: *Increasing the Impact and Effectiveness of IAC Reports*

With its inventory of published reports and planned studies, the InterAcademy Council and partner academy organizations have the opportunity to put its information-sharing global network into action.

A. A Sustainable Energy Future

As a crucial next step following the release of the October 2007 IAC report *Lighting the Way: Toward a Sustainable Energy Future*, it is proposed that a series of regional conferences of scientists and technologists be convened during 2008 by multinational

associations of scientific and technological academies in the Americas, Europe, Africa, Asia, and the Middle East. The purpose of these conferences will be (1) to develop a common agenda among scientific organizations for ongoing engagement in issues related to the needed transitions to sustainable energy resources and utilization and (2) to promote an action agenda by individual scientific organizations for engaging their own memberships and governments in efforts for achieving a sustainable energy future.

The 2007 Report Launch. On 22 October, 2007, the InterAcademy Council released *Lighting the Way: Toward a Sustainable Energy Future*. This report was commissioned by the Governments of Brazil and China. Chinese Premier Wen Jiabao was briefed and presented the report by Study Co-Chair Steven Chu on 11 October in Beijing. The Brazilian Minister of Science and Technology, Sergio Machado Rezende, was briefed and presented the report by Study Co-Chair José Goldemberg on 16 October in Brasilia.

During the week following the report release, the IAC report received news coverage throughout the world. The following are examples of this news coverage:

- *International Herald Tribune*: "Global Energy Experts Urge Green Energy Options"
- Agence France-Presse, Paris: "Energy Poses Major 21st Century Crisis: Scientists Say"
- Reuters (UK): "Solar Energy Boom May Help World's Poorest"
- *Pravda*, Moscow (AP): "Coal Burning Power Plants Cause Dangerous Climate Change"
- Australian Broadcasting Corp.: "Energy Crisis Looming as Threat to Humanity: Experts"
- Daily News and Analysis, India: "Energy Poses Major 21st Century Crisis"
- Antara, Indonesia: "Consensus Science Roadmap Published for Global Energy"
- Folha (Brazil): "Verba para energia limpa precisa dobrar, aponta relatório"
- *New York Times*: "Panel Urges Global Shift on Sources of Energy"
- *TIME*: "The Energy Solution: Do Something"
- *Wall Street Journal* (AP): "Science Panel Urges Focus on Coal-Burning Plants"
- CNN: "Coal Single Greatest Challenge to Averting Climate Change"
- *Washington Post* (AP): "Scientists See Coal As Key Challenge"
- Science Now: "When You Grow, Grow Green"
- *Science*: "Energy Policy: National Academies Make Case for Sustainable Growth"
- *Scientific American*: "Solution to Energy and Climate Crises? A Game of Leapfrog"
- SciDev.net (UK): "Academies: We Must Address Energy Imbalance"

Chinese-language news articles and broadcasts about *Lighting the Way* were produced by Xinhua News Agency, People's Daily, Guang Ming, China Broadcast, Wen Hui, People.com.cn, Fa zhi Evening News, He Xun, and China News.

IAC communications with the news media prior to and subsequent to the report release were greatly assisted by Resource Media in San Francisco, California, USA.

Copies of the report have been distributed to relevant international organizations, as well as to all scientific, engineering, and medical academies throughout the world for dissemination to academic, governmental, and industrial leaders in their nations. The IAC is providing copies of the report to the general public as requested. The full text of the report is available online in HTML and PDF formats for reading or downloading at www.interacademycouncil.net.

Report Authorship. *Lighting the Way* was produced by a Study Panel of 15 world-renowned energy experts, co-chaired by Nobel Laureate **Steven Chu**, Director of the Lawrence Berkeley National Lab in the United States, and **José Goldemberg**, former Secretary of State for the Environment for the State of São Paulo, Brazil. The other thirteen Study Panel Members were **Shem Arungu Olende** (Kenya), Secretary-General, African Academy of Sciences & Chairman and Chief Executive Officer, Queconsult 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 (International Institute for Applied Systems Analysis); **Rajendra Pachauri** (India), Director-General, The Energy and Resources Institute & Chairman, Intergovernmental Panel on Climate Change (2007 Nobel Peace Prize Winner); **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 Institute of Electrical Engineering, Chinese Academy of Sciences & Honorary President of Ningbo University. The Study Panel was assisted by **Jos van Renswoude**, Study Director; **Dilip Ahuja**, Professor, Indian National Institute of Advanced Studies, as Special Advisor to the Study Panel; and **Marika Tatsutani**, writer and editor.

Regional Contributions. The Study Panel convened seven workshops—most hosted by national scientific academies—to obtain additional insights into energy issues facing different regions of the world. **Durban Workshop**—held in October 2005 as a satellite event to the World Conference on Physics and Sustainable Development—focused on energy challenges and controversies on the African continent. **Beijing Workshop**—hosted by the Chinese Academy of Sciences in November 2005—was dedicated to aspects of the energy situation in China and thematically focused on

energy efficiency (especially in building construction) and the application of clean technologies to the use of fossil energy sources (clean coal technology, enhanced oil recovery and carbon capture, use of gas hydrates). **Berkeley Workshop**—hosted by the Lawrence Berkeley National Laboratory in January 2006—was thematically dedicated to energy-related, cutting-edge science and technology. **Rio de Janeiro Workshop**—hosted by the Brazilian Academy of Sciences in March 2006—focused on the use of biomass and biofuels as sources of energy in Latin America, on the energy-related problems of large cities. **New Delhi Workshop**—hosted by the Indian National Science Academy in May 2006—paid in-depth attention to the complex energy situation (now and in the future) in the Indian subcontinent. **Paris Workshop**—hosted by the French Academy of Sciences in June 2006—focused on the energy situation in Europe. **Tokyo Workshop**—hosted by the Science Council of Japan in December 2006—focused on the energy situation in Japan.

Report Review. All IAC draft reports are extensively reviewed prior to publication. In May 2007, fifteen reviewers from all regions of the world submitted reviews of the draft report of the energy study panel. During June and July, the study panel prepared a response to the reviews, as well as prepared a final draft reflecting the reviewers' comments. In late July, this response to review was submitted to two review monitors, **Ralph Cicerone**, President of the U.S. National Academy of Sciences, and **R. A. Mashelkar**, President of the Indian National Science Academy. On 17 August 2007, the review monitors reported their judgment that the study panel had successfully responded to review.

Funding. Financial contributions for this study and report publication were gratefully received from the Chinese Academy of Sciences, the Government of Brazil, the William and Flora Hewlett Foundation, the United Nations Foundation, the German Research Foundation (DFG), and the Energy Foundation.

B. Women for Science

As a follow-up in 2008 to the IAC report *Women for Science*, it is proposed that a series of workshops be convened and sponsored by partner organizations. The purpose of these workshops will be (1) to develop a common agenda among academies for promoting the full participation of women in scientific and technological fields, and (2) to develop an action agenda for individual academies to contribute to this effort. Participants will include representatives of academies of sciences, engineering, and medicine.

C. Global Water Challenges

The InterAcademy Panel has sponsored a program of activities devoted to issues related to water resources. The Brazilian Academy of Sciences serves as lead academy for this IAP Water Research and Management Program. This program has sponsored workshops in several countries focusing on regional water challenges. Major topics include science-based solutions for mitigating major sources of pollution in streams, rivers, and lakes; and improving access to safe drinking water. In support of the IAP Water Research and Management Program, in 2008 the IAC Board will consider launching a series of in-depth science-based advisory studies on policies for addressing critical needs related to water resources. This IAC study program could

include such topics as drinking water resources, agricultural water resources, water recycling, and impact mitigation of a potential rise in sea level.

D. Improving Global Surveillance of Diseases

The IAC Board has agreed, in partnership with the InterAcademy Medical Panel, to undertake an independent, evidence-based study to make recommendations for further development of global surveillance capabilities for addressing emerging zoonotic diseases, such as avian influenza and SARS. Such a study would include the appropriate roles, coordination, and reporting mechanisms; the human, scientific and technological capacities; and the related costs to improve the world's disease surveillance capability.

E. Role of African Universities in Innovation

The IAC, in partnership with African scientific academies, as agreed to undertake a short-term advisory project to develop a set of recommendations for strengthening the contributions of universities and other higher education institutions in Africa for innovation and national development. To accomplish this goal, it is proposed that a study panel be constituted by IAC to seek to ensure that the recommendations generated reflect readily the conditions and systems as they vary from country to country. The audience for this project would include the African Association of Universities (AAU), the New Partnership for Africa's Development (NEPAD), the African Ministerial Council for Science and Technology (AMCOST), and the African Development Bank (AfDB). The recommendations would be of relevance to university administrators, staff/faculty, and research personnel; African government officials; academies of science and/or technology; international organizations such as UN organizations and the World Bank; and governmental and private financial contributors to international development.

Welcoming New Members on IAC Board

New IAC Board Members. **M. Vijayan**, President of the Indian National Science Academy, succeeded Professor R. A. Mashelkar as a member of the IAC Board. As a result of a new category of Board ex-officio membership, three additional members joined the IAC Board in 2007: **Howard Alper**, Co-Chair, InterAcademy Panel on International Issues; **Achiel van Cauwenberghe**, Past President, International Council of Academies of Engineering and Technological Sciences (CAETS); and **David Challoner**, Former Co-Chair, InterAcademy Medical Panel (IAMP).

Accordingly, at the beginning of 2008, the IAC Board was composed as follows: *Co-Chairs:* **Bruce Alberts**, President Emeritus, U.S. National Academy of Sciences; **Lu Yongxiang**, President, Chinese Academy of Sciences; *Members:* **Howard Alper**, Co-Chair, InterAcademy Panel on International Issues; **Reza Davari Ardekani**, President, Academy of Sciences of the Islamic Republic of Iran; **Engin Bermek**, President, Turkish Academy of Sciences; **Achiel van Cauwenberghe**, Past President, International Council of Academies of Engineering and Technological Sciences (CAETS); **David Challoner**, Former Co-Chair, InterAcademy Medical Panel (IAMP); **Ralph Cicerone**, President, U.S. National Academy of Sciences; **Mohamed H.A. Hassan**, President, African Academy of Sciences; **Jules Hoffmann**, President, Académie des Sciences, France; **Ichiro Kanazawa**, President, Science Council of

Japan; **Matthias Kleiner**, President, Deutsche Forschungsgemeinschaft; **Eduardo Moacyr Krieger**, Past President, Brazilian Academy of Sciences; **Servet Martinez Aguilera**, President, Chilean Academy of Sciences; **M. Vijayan**, President, Indian National Science Academy; **Jacob Palis**, President, Academy of Sciences for the Developing World (TWAS); **Martin Rees**, President, The Royal Society of London; **Salleh Mohd Nor**, Vice-President, Academy of Sciences of Malaysia; **S.E. Vizi**, President, Hungarian Academy of Sciences. *Observers:* **Frits van Oostrom**, President, Royal Netherlands Academy of Arts and Sciences; and **Goverdhan Mehta**, President, International Council for Science (ICSU).

Reorganization of the IAC Secretariat

The IAC Secretariat is hosted by the Royal Netherlands Academy of Arts and Sciences in Amsterdam. **John P. Campbell** continues to serve as IAC Executive Director. He assumed this position in May 2005 and re-located to Amsterdam from Washington, DC, where he had been a staff officer at the U.S. National Academies. Two new positions were added in 2007: IAC Associate Directors from member academies, who will provide greater professional support and oversight for developing IAC studies and programs. Dr. **Paulo de Goes**, Head of International Relations for the Brazilian Academy of Sciences, and Dr. **Shem Arungu Olende**, Secretary-General of the African Academy of Sciences, have been appointed as IAC Associate Directors. During 2007, administration of the IAC Secretariat was assisted by **Shu Hui Tan, Floor van den Born, and Henny Beers**. The IAC continues to employ consultants, serving as needed for professional staffing of studies and publication development.

Organizing for Effective International Cooperation

The scope and range of new IAC studies and programs being planned for 2008 will require greater intellectual and financial resources for initiating, funding, managing, and disseminating IAC reports. This has implications for the future role and organization of the IAC Board and Secretariat, necessitating an even greater participation of academies worldwide in the work of the InterAcademy Council. Thus in 2008 the IAC and partner organizations, the InterAcademy Panel and the InterAcademy Medical Panel, are actively engaging in bold new opportunities for cooperation and integration of efforts so as to increase the effectiveness of both the IAC and its partner organizations.

John P. Campbell
IAC Executive Director
25 January 2008