

# Shell Center for Sustainability

RICE UNIVERSITY



# 1<sup>st</sup> Inaugural Conference

March 12-13, 2003

Rice University • Houston, Texas



Shell Center  
for Sustainability  
RICE UNIVERSITY

Inaugural Conference • March 12-13, 2003

**Welcome**

We wish to welcome you to this conference inaugurating the Shell Center for Sustainability at Rice University.

Rice is committed to developing and implementing sustainable solutions to the critical, interconnected environmental, economic, and social challenges facing our planet.

We see the overall objective of the conference as one of both celebrating the creation of the center and exploring opportunities to foster sustainability. The sharing of information underscores the center's key ethos of education and outreach. However, the conference objective is not just to celebrate and share information; it is also to identify specific education, outreach, and research opportunities for the Shell Center. Thus, the findings and observations of the speakers and conference participants will play an important role in helping set the center's long-term agenda.

To that end, the conference will address opportunities to promote innovative solutions to global needs such as energy supply, environmental protection, provision of water and clean air, and economic development in developed and developing countries. In so doing, our speakers and participants will also consider the social, economic, and environmental implications of their observations and recommendations, as well as the role of technology, the private sector, and private/public partnerships in fostering sustainability.

Again, thank for you for joining us. We are grateful for your participation.

Sincerely,



Malcolm Gillis  
President  
Rice University

## Mission Statement

On July 25, 2002, Rice University and the Shell Oil Company Foundation announced the establishment of the Shell Center for Sustainability.

The center will create an interdisciplinary program of education, research, and outreach to address the role of the private sector in implementing a sustainable future. The center will draw upon the various strengths of the university and will collaborate with other highly respected regional, U.S., and global institutions of higher learning and nongovernmental organizations (NGOs) in this endeavor.

The fundamental premise that corporate decision-making is a critical component to a successful strategy for improving social, environmental, and economic welfare will underpin the center's work. Development and evolution of technologies and business models will be focus areas since they help define the landscape within which private sector decision-making occurs.

An interdisciplinary approach is critical to understanding and improving the implementation of corporate sustainability strategies. There are roles for both national and international regulation, new technologies, and improved management, measurement, and reporting systems that drive corporate actions. Implementation of this vision requires contributions from the physical, social, and management sciences.

The center will be enabled by fellowship support to attract top young scholars from around the world—from both developed and developing nations—to pursue graduate study and research on sustainability issues. The center also will support outstanding visiting scholars and sponsor outreach programs designed to inform policy makers, business leaders, nongovernmental organizations, and the general public while stimulating better-informed dialogue.

## Supporting Rice University Institutes

Activities in the Shell Center for Sustainability are supported by two of Rice's interdisciplinary institutes: the James A. Baker III Institute for Public Policy and the Environmental and Energy Systems Institute.

The Environmental and Energy Systems Institute brings together faculty and students spanning all of Rice's academic divisions in programs of research, education, and community service that promote the guardianship of environmental quality and natural resources.

The James A. Baker III Institute for Public Policy is strictly nonpartisan and dedicated to the highest standards of intellectual excellence and integrity with the goal of helping bridge the gap between the theory and practice of public policy. To that end, the institute draws together experts from academia, government, the media, business, and nongovernmental organizations.

## Objectives

**Overview:** The Shell Center for Sustainability will meet educational, outreach, and research requirements related to developing a sustainable future. The center will be supported by the Environmental and Energy Systems Institute, and the center's activities also draw upon the resources of interdisciplinary groups at Rice including the James A. Baker III Institute for Public Policy, the Jones Graduate School of Management, and the newly created Center for Biological and Environmental Nanotechnology.

**Education:** The Shell Center for Sustainability will be an interdisciplinary program of education, research, and outreach to address the role of the private sector in implementing a sustainable future. It will:

- Provide society with broadly educated environmental, technical, and natural resource experts to mold future decision-making in the private and public sectors to help assure a more sustainable future in both developed and developing nations.
- Advance thinking around market-based mechanisms that can be deployed to enhance sustainability. Help improve public and private sector decision-making, while increasing the sustainability literacy of individuals entering all professions.

**Outreach:** The center will share the knowledge developed with institutions, business leaders, governments, policy-makers, students, and the general public to raise awareness about sustainable development and best practices for achieving sustainability. It will:

- Enhance the exchange of information in the public and private sectors by serving as an independent forum for open discussion and constructive dialogue on sustainable development issues and policies across a broad spectrum of stakeholders, including U.S. and international business leaders, academia, NGOs, and senior policy-makers.
- Share this knowledge developed with institutions, business leaders, governments, policymakers, students, and the general public to raise awareness about sustainable development and best practices for achieving it.
- Develop linkages with other institutions and nongovernmental organizations at a local, regional, national, and international level.

**Research:** The center will foster new technologies, business models, products, and markets to enhance prospects for sustainable economic growth. It will:

- Develop new tools in engineering, the social sciences, and the natural sciences that enhance the understanding of requirements for sustainability, help remove institutional barriers to sensible environmental and social practices, and contribute to new policy instruments for achieving sustainability.
- Research issues posed by environmental and societal impacts arising from economic activities.

# Shell Center for Sustainability

## RICE UNIVERSITY

### **Inaugural Conference**

Shell Oil Foundation Auditorium, Jesse H. Jones Graduate School of Management  
James A. Baker III Hall  
Rice University  
March 12-13, 2003

#### *Hosted by*

Environmental and Energy Systems Institute  
James A. Baker III Institute for Public Policy

### **March 12**

#### **Registration 7:30 A.M.**

Jesse H. Jones Graduate School of Management Dinning Room

#### **Plenary Opening 8:30 A.M.**

Shell Oil Foundation Auditorium, Jesse H. Jones Graduate School of Management  
Simulcast in James A. Baker III Hall

Welcome

*Mr. Christian Holmes*

*Executive Director, Shell Center for Sustainability*

### **Plenary Addresses: Global Perspectives**

Sustainability and Development

*Dr. Malcolm Gillis*

*President, Rice University*

Energy and Sustainability

Prudence Pays: Practical Steps to Bridge Conflicting Views on Climate Change

*Sir Philip Watts*

*Chairman of the Committee of Managing Directors,  
The Royal Dutch/Shell Group*

European Perspective

*Mr. Guy Hascoet*

*Former French Minister of State for Social Economy*

The Chicago Climate Exchange: Creating a Market for Greenhouse Gases Emissions Trading

*Dr. Richard Sandor*

*Chairman and CEO, Chicago Climate Exchange*

### **Buffet Luncheon 11:30 A.M.–12:45 P.M.**

Southwestern Fare

Rice Memorial Center • Grand Hall

### **Global Perspectives continued 1:00–2:00 P.M.**

U.S. Perspective

*Dr. Paula Dobriansky*

*U.S. Under Secretary of State for Global Affairs*

Biodiversity Challenges

*Dr. Francisco Dallmeier*

*Director, Monitoring and Assessment of Biodiversity Program  
National Zoological Park Conservation and Research Center  
Smithsonian Institute*



# Shell Center for Sustainability RICE UNIVERSITY

## **March 12 Afternoon Panels**

Doré Commons, James A. Baker III Hall  
Simulcast in Jesse H. Jones Graduate School of Management

Lessons Learned:  
Market Based Solutions and Public/Private Partnerships

### **2:00 P.M. Air**

Moderator, Dr. Matthew Fraser  
*Assistant Professor, Civil and Environmental Engineering, Rice University*

Mr. Hiroyuki Watanabe  
*Senior Managing Director, Toyota Motor Corporation*  
Mr. Hank Habicht  
*President, Global Environment Technology Foundation*  
Dr. Kyriacos Zygourakis  
*Chair, Chemical Engineering Department, Rice University*

### **3:00 P.M. Energy**

Moderator, Ms. Amy Myers Jaffe  
*Wallace Wilson Fellow for Energy Studies, James A. Baker III Institute for Public Policy  
Associate Director for the Rice Energy Program, Environmental and Energy Systems Institute*

Mr. Kurt Hoffman  
*Director, Shell Foundation*  
Dr. David Victor  
*Director, Stanford University Program on Energy and Sustainable Development*  
Mr. Walter Hornaday  
*President, Cielo Wind Power*

### **4:00 P.M. Water**

Moderator, Dr. Mark Wiesner  
*Director, Environmental and Energy Systems Institute, Rice University*

Mr. James Blackburn  
*Chair, Galveston Bay Conservation and Preservation Association*  
Dr. Alain Dangeard  
*Chairman and CEO, M.E.E. Development*

### **Closing Plenary Address**

Bringing It All Together: The Corporate Challenge  
Dr. Bjorn Stigson  
*President, World Business Council for Sustainable Development*

# Shell Center for Sustainability

R I C E   U N I V E R S I T Y

**March 13  
Workshops**

Participation By Invitation Only

Simultaneous closed workgroup sessions with 20 participants from the academic, government, corporate, and NGO sectors. The objective of the workgroups is to explore lessons learned and to develop recommendations related to the role of technology, public-private partnerships, and market-based solutions in improving water and air quality and meeting energy needs in both rural and urban areas. The workgroups will identify areas for future research, education, and outreach to be undertaken by the Shell Center for Sustainability.

**8:00 A.M.**

James A. Baker III Hall

**Air Quality and Urban Sustainability**

Co-Chair, Dr. Alberto Mendoza Dominguez

*Head of the Air Quality Laboratory, Monterrey Technical Institute, Monterrey, Mexico*

Co-Chair, Dr. David Allen

*Chair, Texas Council on Environmental Technology*

**Energy**

Co-Chair, Dr. Nancy Kete

*Senior Fellow and Co-Director of the EMBARQ Center for Transport and the Environment, World Resources Institute*

Co-Chair, Dr. Rahul Tongia

*Research Engineer  
Carnegie Mellon University*

**Water**

Co-Chair, Dr. Alain Dangeard

*Chairman and CEO, M.E.E. Development*

Co-Chair, Dr. Mark Wiesner

*Director, Environment and Energy Systems Institute  
Rice University*

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**Paula Dobriansky**  
*U.S. Undersecretary of State for Global Affairs*

Dr. Paula J. Dobriansky, U.S. Undersecretary of State for Global Affairs, is responsible for foreign policy issues, including democracy, human rights, labor, counter-narcotics and law enforcement, refugee and humanitarian relief matters, and environmental/scientific issues. Previously, she served as senior vice president and director of the Washington office of the Council on Foreign Relations. Other government appointments have included associate director for policy and programs at the United States Information Agency, deputy assistant secretary of state for human rights and humanitarian affairs, deputy head of the U.S. delegation to the 1990 Copenhagen Conference on Security and Cooperation in Europe (CSCE), advisor to the U.S. delegation to the 1985 UN Decade for Women Conference, and director of European and Soviet affairs at the National Security Council at the White House.

**Matthew Fraser**  
*Assistant Professor, Civil and Environmental Engineering, Rice University*

Dr. Matthew Fraser is an assistant professor in the civil and environmental engineering department at Rice University and is Rice's first air-quality researcher. Dr. Fraser received his B.S. degree with university honors in chemical engineering from Carnegie Mellon University and his Ph.D. degree in environmental engineering science with a minor in geology and planetary science from California Institute of Technology. He is the co-principal investigator of a \$3.65-million EPA grant together with Dr. David Allen of the University of Texas-Austin, studying atmospheric fine particles in Houston.

**Malcolm Gillis**  
*President, Rice University*

Dr. Malcolm Gillis received his B.A. and M.A. degrees from the University of Florida and his Ph.D. from the University of Illinois. He began his academic career at Duke University, followed by a 15-year tenure at Harvard. He returned to Duke in 1984 as professor of economics and of public policy. In July 1990, he became vice provost for academic affairs at Duke University. In July 1993, he became the sixth president of Rice University. Until assuming leadership roles in university administration, he was a frequent consultant to the U.S. Treasury Department, Canadian Ministry of Finance, World Bank, and the governments of Colombia, Ecuador, Bolivia, and Indonesia. He has published more than 70 articles and is author, co-author, or editor of eight books.

**Hank Habicht**  
*Chief Executive, Global Environment Technology Foundation*

Mr. Hank Habicht has been president and chief executive officer of Global Environment and Technology Foundation since 1998. Mr. Habicht was senior vice president with Safety-Kleen Corporation. From 1989 to 1993, he served as deputy administrator for the U.S. Environmental Protection Agency (EPA). He also served as Assistant Attorney General of the U.S. Department of Justice under the Reagan administration, where he directed the environment and natural resources division. Since 1998, Mr. Habicht has been the president of the Global Environment Technology Foundation.

**Guy Hascoet**  
*Former French Minister of State for Social Economy*

Mr. Guy Hascoet served as French minister of state for social economy from March 2000 until May 2002. Previously, he served as a member of the National Assembly Manufacturing and Trade Committee and vice chairman of the Study Group on Rivers and Navigable Waterways. He was a member of the National Council for Departmental and Communal Public Services, vice chairman of the Nord-de-Calais Regional Council, and deputy for Les Verts National Assembly. Mr. Hascoet received his degree in environmental engineering from the University of Tours.

**Kurt Hoffman**  
*Director, Shell Foundation*

Mr. Kurt Hoffman is director of the Shell Foundation. He joined Shell Oil Company in 1997 to design and develop the Shell Foundation, which was established formally as a UK grant-making charity in June 2000 with a mission to promote sustainable development worldwide. Previously, Mr. Hoffman enjoyed a 20-year career as a development professional, serving as senior staff member and adviser to numerous development agencies, private foundations, and international corporations. He has also served as senior fellow and reader in development studies at the science policy research unit, University of Sussex, United Kingdom, from 1976 to 1987.

**Christian Holmes**  
*Executive Director, Shell Center for Sustainability and Environmental and Energy Systems Institute, Rice University*

Mr. Christian Holmes serves as executive director of both the Rice University Shell Center for Sustainability and the Rice Environmental and Energy Systems Institute. He has held a number of senior executive positions in business and government in the energy, environmental and international economic development sectors, including vice president for environment, safety and health at Tenneco Energy; chief financial and administrative officer of the U.S. Environmental Protection Agency; director of the U.S. Trade and Development Agency (TDA); executive director of the President's Task Force on International Private Enterprise; and principal deputy assistant secretary of state for refugee programs.

**Walter Hornaday**  
*President, Texas Wind Power Company*  
*President, Cielo Wind Power, LLC*

Mr. Walter Hornaday is beginning his eleventh year as president of Texas Wind Power Company and the fifth year as president of Cielo Wind Power, LLC. Mr. Hornaday is involved in every phase of development of utility-scale wind power projects. Before working for Cielo Wind Power Company, he was a field engineer and a construction manager for electrical substation facilities and coal-fired power plant construction projects for Bechtel Engineers, Morrison-Knudsen, and CRS Sirrene. Mr. Hornaday holds a B.S. in architectural engineering and an M.S. in civil engineering, both received from the University of Texas at Austin.

**Amy Myers Jaffe**  
*Wilson Fellow for Energy Studies, James A. Baker III Institute for Public Policy*  
*Associate Director, Environmental and Energy Systems Institute*

Ms. Amy Myers Jaffe is associate director of the Rice University Energy Program and Wallace Wilson Fellow for Energy Studies at the James A. Baker III Institute for Public Policy of Rice University. Prior to joining the Baker Institute, Ms. Jaffe, a Princeton graduate in Arabic studies, was the senior economist and Middle East analyst for Petroleum Intelligence Weekly, a respected oil journal. Ms. Jaffe is a widely quoted expert on energy issues and has written for a variety of publications including the New York Times, Dow Jones International, the Asian Wall Street Journal, and the Mideast Report.

**Nancy Kete**  
*Senior Fellow and Co-director of the EMBARQ Center for Transport and Environment, World Resources Institute*

Dr. Nancy Kete is senior fellow in the climate, energy, and pollution program at the World Resources Institute and co-director of the EMBARQ Center for Transport and the Environment. Dr. Kete previously served as deputy director of the Office of Atmospheric Programs for the U.S. Environmental Protection Agency. She has been responsible for the development and analysis of domestic and international climate change policy options as well as for voluntary energy efficiency and other greenhouse gas mitigation programs. Other experience includes serving as senior policy analyst in the Office of Air and Radiation, and science advisor for environmental affairs at the U.S. Mission to the Organization for Economic Cooperation and Development in Paris.

**Alberto Mendoza Dominguez**  
*Assistant Professor, Chemical Engineering,  
Instituto Tecnológico y de Estudios Superiores de Monterrey*

Dr. Alberto Mendoza Dominguez is assistant professor of chemical engineering at the Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM), Mexico, where he also holds a joint position as head of the Air Quality Laboratory with the Center for Environmental Quality. Dr. Mendoza has a Ph.D. in Environmental Engineering from the Georgia Institute of Technology and an M.S. in environmental engineering and B.S. in chemical engineering from ITESM. He has participated in numerous air quality studies, including SAMI (Southern Appalachian Mountain Initiative), SCISSAP (Southern Center for the Integrated Study of Secondary Air Pollutants), and a Mexico-U.S. border air quality effort examining transboundary air pollution.

**Richard Sandor**  
*Chairman and CEO, Chicago Climate Exchange*

Dr. Richard L. Sandor is chairman and CEO of the Chicago Climate Exchange, a self-regulatory exchange that administers a voluntary greenhouse gas reduction and trading program for North America. He is a research professor at the Kellogg Graduate School of Management at Northwestern University. Previously, he served as vice president and chief economist of the Chicago Board of Trade, where he earned the reputation of being the principal architect of the interest-rate futures market now traded worldwide. Dr. Sandor was honored by the City of Chicago and the Chicago Board of Trade for his contribution to the creation of financial futures. In August 2002, Dr. Sandor was chosen by *Time* magazine as one of its “Heroes for the Planet” for his work as founder of the Chicago Climate Exchange.

**Bjorn Stigson**  
*President, World Business Council for Sustainable Development*

Mr. Bjorn Stigson is president of the World Business Council for Sustainable Development. He began his career as a financial analyst with the Swedish Kockums Group and later worked for welding equipment suppliers ESAB in positions responsible for finance, operations, and marketing. In 1983, he became president and CEO of the Fläkt Group, the world leader in environmental control technology. Following the acquisition of Fläkt by ABB in 1991, he became executive vice president and a member of ABB Asea Brown Boveri’s Executive Management Group. In 1995, he was appointed president of the World Business Council for Sustainable Development (WBSCD) in Geneva, a coalition of some 150 leading international corporations. Mr. Stigson is presently a member of advisory councils to, among others, Unilever, OECD, and the government of China. He is also a member of the newly established board of GRI (Global Recruiting Initiative) and the IRGC (International Risk Governance Council).

**Rahul Tongia**  
*Research Engineer, Department of Engineering and Public Policy  
Carnegie Mellon University*

Dr. Tongia’s research explores issues of infrastructure in emerging economies. Using quantitative policy and decision analysis, he has focused on the energy and telecom domains. His work also deals with broader policy issues such as security, international collaboration (especially U.S.-India), and technology and analysis transfer. Part of his research involves developing models for identifying current technology and policy environments, examining the role of public and private intervention, and exploring technology options for telecom infrastructure. Dr. Tongia holds a B.S. in electrical engineering from Brown University and an Ph.D. in engineering and public policy from Carnegie Mellon University.

**David G. Victor**  
*Director, Stanford University Program on Energy and Sustainable Development*

Dr. David Victor is director of the Program on Energy and Sustainable Development at Stanford University, which focuses on economic and environmental consequences of energy consumption. His initial studies examined the development of the North American and global natural gas markets and the reform of electric power markets. Other research has analyzed how the availability of modern energy services can affect the process of economic growth in the world’s poorest regions. Previously, Dr. Victor directed the science and technology program at the Council on Foreign Relations in New York. He holds a Ph.D. in political science from the Massachusetts Institute of Technology and a B.A. in history and science from Harvard University.

**Hiroyuki Watanabe**  
*Senior Managing Director, Toyota Motor Corporation*

Mr. Hiroyuki Watanabe, senior managing director of the Toyota Motor Corporation, joined Toyota in 1967. Named to the board of directors in 1996, he directed Toyota's worldwide operations in after-sales service, supply parts, and conversion and accessory and was responsible for Toyota's Future Project Division. Appointed managing director in 1999, Mr. Watanabe's responsibilities shifted to environmental affairs, product management, and development of Toyota's fuel cell systems. He also oversees the Virtual Venture Company, a Toyota internal organization set up in 1997 for planning and commercializing activities designed to provide new products and services for young consumers. In 2001, he assumed the position of senior managing director.

**Sir Philip Watts**  
*Chairman of the Committee of Managing Directors, The Royal Dutch/Shell Group*

Sir Philip Watts is chairman of Shell Transport and Trading Company and of the Committee of Managing Directors of Royal Dutch/Shell. He has served as chairman and managing director of the Shell Petroleum Development Company of Nigeria; regional coordinator for Europe; and director of planning, environment, and external affairs for Shell International in London. He also is chairman of the World Business Council for Sustainable Development and of the UK chapter of the International Chamber of Commerce. In January 2003, Mr. Watts was knighted both for services to British business and in recognition of his role in the WBCSD.

**Mark R. Wiesner**  
*Director, Environmental and Energy Systems Institute  
Rice University*

Dr. Mark Wiesner is the director of the Environmental and Energy Systems Institute at Rice University, where he also holds appointments as professor in the Departments of Civil and Environmental Engineering and Chemical Engineering. Dr. Wiesner's research pioneered the application of membrane processes to environmental separations and water treatment and recently initiated an examination of the fate and transport of nanomaterials in the environment. Before joining the Rice University faculty in 1988, he worked in research and development with the Lyonnaise des Eaux, Le Pecq, France, and was a principal engineer with the environmental consulting firm of Malcolm Pirnie, Inc., White Plains, New York.

**Kyriacos Zygorakis**  
*Chair, Chemical Engineering Department  
Rice University*

Dr. Zygorakis received his Engineering Diploma from the National Technical University of Athens, Greece in 1975 and his Ph.D. in Chemical Engineering from the University of Minnesota in 1981. He is currently the A. J. Hartsook Professor in Chemical Engineering and Bioengineering and Chair of the Department of Chemical Engineering at Rice University. His research interests include pollution control, energy utilization, cellular and tissue engineering, and applied mathematics. He has published over 100 articles in scientific journals, has one patent, and has given numerous invited and technical presentations. Professor Zygorakis is currently a member of the Texas Council on Environmental Technology.



*This program was printed on an environment-friendly paper stock*