



# **INTERNATIONAL CONFERENCE ON INNOVATION IN ENERGY TECHNOLOGIES**

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## **Biographical Information of Speakers**

**PETER BLAIR** is Executive Director of the Division on Engineering and Physical Sciences of The National Academies' National Research Council (NRC). He was formerly Executive Director of Sigma Xi, the Scientific Research Society, and publisher of *American Scientist* (1996-2001). Earlier, at the former Congressional Office of Technology Assessment (1983-1996), he served as Energy Program Director and then as Assistant Director of the agency and Director of the Division on Industry, Commerce, and International Security. He received OTA's distinguished service award in 1991. Prior to his government service he was on the faculty at the University of Pennsylvania (1976-1985) and Co-Founder of Technecon Analytic Research, Inc. (1978-1985). Technecon was acquired by Reading Energy Corporation in 1985. Dr. Blair is also Adjunct Professor of Public Policy at the University of North Carolina at Chapel Hill. He is a fellow of the AAAS and holds a B.S. in engineering from Swarthmore College, an M.S.E. in systems engineering and M.S. and Ph.D. degrees in energy management and policy from the University of Pennsylvania.

**BERNARD BOURGEOIS** is a CNRS (Centre National de la Recherche Scientifique) fellow, specialised in economics of energy and economics of innovation. He works within Institute of Economics and Politics of Energy, a CNRS team in Grenoble (France), now a department of a larger research institute (LEPII). He began his career working on the price and cost of energy (1976) and then was involved in regional energy programs. He ended this period during a two-year secondment in the Directorate General for Regional Policy of the European Commission in Brussels (1984/1985). Coming back to Grenoble, he conducted research and produced publications on international oil industry, and from the mid-1990's shifted to oil technology change and economics of technical change. Dr. Bourgeois is a member of the International Association of Energy Economist, the Association Française des Techniciens du Pétrole, and the International Joseph Schumpeter Society. His recent publications include: Bourgeois Bernard, Finon Dominique et Martin, Jean-Marie, *Energie et changement technologique. Une approche évolutionniste*. Paris: Economica, 2000; Jacquier-Roux, V. and Bourgeois, B. (2002) "New networks of technological creation in energy industries : reassessment of the roles of equipment suppliers and operators," *Technology analysis & strategic management*, 14 (4):399-410; Bel François and Bourgeois, Bernard, "Innovation direction and persistence within an industry: the refining process case," in *New empirical methods and simulation techniques*, ed. by P.P. Saviotti. London: Edward Elgar, 2002, à paraître October 2003; Bourgeois, B., Mima Avdulaj, S. (2003), "Rationales for co-operation between firms and States within an emerging radical innovation". In: *The economic dynamics of fuel cells technologies*. Avadikyan, B., Cohendet, P., Héraud, J.-A., eds. Heidelberg: Springer-Verlag, pp. 79-114; Bourgeois, B. (2003), "Les carburants reformulés: une dynamique d'innovations de modernisation écologique," p. 311-338 et "L'exploration-production pétrolière: discontinuité technologique et fertilisation par les technologies de l'information et de la communication," p. 369-394. in : *Energie et changement technologique*, 2000, op. cit.

**LEWIS M. BRANSCOMB** is the Professor, emeritus, of Public Policy and Corporate Management, and Emeritus Director of the Science, Technology and Public Policy Program at Harvard University's Kennedy School of Government. His AB in physics is from Duke University in 1945, *summa cum laude*, and Ph.D. degree in physics by Harvard University in 1950. A research physicist at the U.S. National Bureau of Standards (now the National Institute of Standards and Technology) from 1951 to 1969, he was Director of NBS from 1969 to 1972. He is an elected member of all three Academies: the National Academy of Science, National Academy of Engineering and the Institute of Medicine. In 1972 Dr. Branscomb was named Vice President and Chief Scientist of IBM, serving to his retirement in 1986. He served as chairman of the National

Science Board from 1980 to 1984. His current research is on early-stage high-tech innovation, on innovation policy in China, on business development in the field of information technology, on the role of science and technology in countering terrorism, and in a new policy paradigm for federal support of basic research. Recent books: with Rick Klausner as co-chair and the NRC committee on S&T for Countering Terrorism, *Making the Nation Safer: the Role of S&T in Countering Terrorism* (National Academies Press 2002); with Philip Auerswald: *Taking Technical Risks: How Innovators, Managers and Investors Manage Risk in High Tech Innovation* (MIT Press 2001); with Fumio Kodama and Richard Florida and entitled "Industrializing Knowledge: University-Industry Linkages in Japan and the United States," (MIT Press 1999); with James Keller, *Investing in Innovation: Creating a Research and Innovation Policy that Works*, (MIT Press 1998).

**MARILYN BROWN** is the Director of Oak Ridge National Laboratory's Energy Efficiency and Renewable Energy Program, a \$125 million per year program of research on advanced energy efficiency, electric reliability, and renewable energy technologies. During her 20 years at ORNL, she has researched the impacts of policies and programs aimed at accelerating the development and deployment of sustainable energy technologies. Prior to coming to Oak Ridge, she was a tenured Associate Professor in the Department of Geography at the University of Illinois, Urbana-Champaign. While on the faculty, she received two NSF grants and funding from other sources to support her research on the diffusion of energy innovations. She has authored more than 140 publications and has received awards for her research from the American Council for an Energy-Efficient Economy, the Association of American Geographers, the Technology Transfer Society, Lockheed Martin Corporation, and the Association of Women in Science. A recent study that she co-led ("Scenarios for a Clean Energy Future") was the subject of two Senate hearings, has been cited in proposed federal legislation, and has played a significant role in international climate change debates. Dr. Brown serves on the boards of directors of several energy, engineering, and environmental organizations and on the editorial board of the *Journal of Technology Transfer*. She is also a member of the National Commission on Energy Policy.

**WILLIAM CRAVEN** is Manager of Regulatory and Technical Affairs with DaimlerChrysler's Washington DC office. In this capacity he helps develop and implement corporate strategies involving the Federal government concerning alternative fuel and zero emission vehicles. Recent activities include FreedomCAR, alternative fuel tax credits and clean diesel. Mr. Craven has over twenty years experience in the field of alternative fuel vehicles. Prior to joining DaimlerChrysler he was Vice President of Marketing at Electrosources, a battery company that supported electric and hybrid electric vehicle programs of most major auto companies around the world. He also helped start and became the Assistant Director of the Center for Electrochemical Systems and Hydrogen Research at Texas A&M University. The center conducted fundamental alternative fuels research. Mr. Craven earned a BA in Marketing and an MBA from the University of Texas

**MICHAEL R. CURTIS** is a Policy Analyst at the U.S. Department of Energy. He has more than 25 years experience working in the private sector, academia, and government service. He has worked primarily in areas of energy policy, science and technology policy, environmental management, pollution prevention, civil/environmental engineering, and program/project management. He currently works in the Office of Science and Technology Policy within the Office of Policy and International Affairs. In his present position, Dr. Curtis conducts policy studies on issues regarding science and technology policy development. He provides policy leadership and policy formation on DOE technology transfer policy and management and serves as the primary point of contact on matters related to technology transfer policy formulation, management and administration. He also serves as DOE's representative to several working groups on technology transfer. Dr. Curtis also conducts policy analysis and research in the area of

technological innovation and climate change, and served as a contributing author on a number of international publications for the International Energy Agency (IEA) and the Organization for Economic Cooperation and Development (OECD). His other research interests include science and technology for sustainable development, climate change science and technology policy, and environmental equity in the U.S. He is an adjunct professor at George Mason University's School of Public Policy where he teaches science and technology policy and energy policy. He holds a Ph.D. in Public Policy from George Mason University as well as M.S. and B.S. in engineering degrees from the University of Texas at Austin.

**PATRICK DAVIS** is a Team Leader of the Fuel Cell Technology Team in the U.S. Department of Energy, Office of Hydrogen, Fuel Cells and Infrastructure Technologies. The fuel cell team conducts R&D of stationary and transportation PEM fuel cell technology, including systems, fuel processing and component development efforts. He is also co-chairman of the FreedomCar Fuel Cell Technical Team. Prior to joining the Fuel Cells for Transportation Program, Mr. Davis managed the United States Advanced Battery Consortium battery test program and the DOE ultracapacitor R&D program. He has over 20 years experience in the development of electrochemical technologies.

**ROBERT FRI** is a Visiting Scholar and Senior Fellow Emeritus at Resources for the Future. He has served as director of the National Museum of Natural History, president of Resources for the Future, and deputy administrator of both the Environmental Protection Agency and the Energy Research and Development Administration. Mr. Fri is currently a director of American Electric Power Company and of the Electric Power Research Institute; a Trustee of Science Service, Inc.; vice-chair of the Board on Energy and Environmental Systems at the National Research Council; and a member of the National Petroleum Council. He received his B.A. in physics from Rice University and his M.B.A. from Harvard University.

**YUKIKO FUKASAKU** received her first university education in chemistry and biology at Jochi Daigaku (Sophia University) Tokyo, Japan and worked at the Mitsubishi Kasei Institute of Life Sciences in Tokyo for a few years before turning to studies in the history and social studies of science and international relations. She received the Doctor of Philosophy degree from the University of Sussex in UK (Science Policy Research Unit) in science and technology policy studies. She has worked for international organisations, national public bodies and research institutes including UNESCO, ILO, JETRO, NEDO and Centre de Sociologie de l'Innovation of the École Nationale Supérieure des Mines as staff or independent researcher. She currently works as principal administrator in the Science and Technology Policy Division, Directorate for Science, Technology and Industry of the OECD.

**EMMANUEL HASSAN** is an economist at the Directorate of Science, Technology and Industry of the OECD. In this position, he has concentrated on the analysis of the sectoral patterns of innovation and the development of bibliometric indicators in order to map the knowledge base of specific scientific and technological fields. Emmanuel Hassan received a Ph.D. in economics (concentration on economics of innovation) from University Paris IX-Dauphine and a J.D. (concentration on corporate law) from University Paris IX-Nanterre in France. His Ph.D. dissertation focuses on the use of advanced bibliometric indicators to map the knowledge base of the field of space communications and the knowledge flows among its actors in the European Union, the United States, and Japan. He is the author of "Simultaneous Mapping of Interactions between S&T Knowledge Bases: the Case of Space Communications", recently published in the Journal of the American Society for Information Science and Technology.

**DAVID GARMAN** is Assistant Secretary for Energy Efficiency and Renewable Energy at the US Department of Energy. He was nominated by President George W. Bush to serve as Assistant Secretary on April 30, 2001 and was confirmed unanimously by the United States Senate on May 25, 2001. He assumed the position after being sworn in by Secretary Abraham on May 31, 2001. Assistant Secretary Garman previously served in a variety of positions on the staff of two U.S. Senators and two Senate Committees during a career spanning nearly 21 years. Most recently, Mr. Garman served as Chief of Staff to Alaska Senator Frank H. Murkowski. Mr. Garman also served on the professional staff of the Senate Energy and Natural Resources Committee and the Senate Select Committee on Intelligence. Throughout his career, Mr. Garman's work has focused mainly on energy and the environment. For example, while serving on the Senate Select Committee on Intelligence, Mr. Garman worked in the newly emerging area of "environmental intelligence and security," working on issues such as global climate change, transboundary pollution, and regional environmental threats from the Former Soviet Union. While on the staff of the Energy and Natural Resources Committee, Mr. Garman's portfolio included energy research and development, science and technology, and global climate change. Mr. Garman also served as a U.S. Senate observer at virtually all of the major negotiations under the United Nations Framework Convention on Climate Change from 1995-2000. Mr. Garman holds a Bachelor of Arts from Duke University, and a Master of Science in Environmental Sciences from the Johns Hopkins University.

**HELGE GODØ** is a senior research scientist with the Norwegian Institute for the Study of Research and Higher Education (NIFU) in a group for science & technology policy and innovation studies. He is also a lecturer at the University Graduate Center at Kjeller of the University of Oslo lecturing on technology, innovation and product development. Dr. Godø's research interest is the interaction between technological development (in particular ICT) and society, understanding and explaining how and why technologies are created and how social and cultural factors are incorporated in technological solutions. In this, the role of R&D and its relationship to innovation processes are essential - and how these are influenced and constrained by different types of boundary conditions, networks and the socio-economic environment. Since 1996, he has served as Chairperson of a national research program in the Research Council of Norway on the social and cultural aspects of ICT. From 1991 to 1996 he was director of research responsible for research planning and strategy at Telenor Research and Development of Telenor AS, Norway's largest telecommunications operating company. From 1987 to 1989, Dr. Godø served as Secretary of the Energy and Industry Committee of the Storting (Norwegian Parliament). He previously worked as a researcher at the Norwegian Telecommunications Research Establishment, the Work Research Institute of Oslo, and the Rogaland Research Center (Rogalandforskning) in Stavanger. Dr. Godø earned his Cand. Mag. (BA) and Cand. Polit (M.A.) degrees from the University of Oslo and holds a Ph.D. from University of Roskilde, Denmark.

**VOLKER HECK** is Vice President for Political Affairs of RWE AG, in Essen, Germany and Head of the RWE Liaison Office in Berlin. He was previously the Head of Press Department in the Central Division of Corporate Communication of RWE AG (March 1, 1999, to September 30, 2000), Head of Economics Department in the Central Division of Corporate Development of RWE AG (July 1, 1995, to February 28, 1999), Head of Political Analysis Department, Central Division of Corporate Development of RWE Energie AG (July 1, 1994, to June 30, 1995), and Assistant Manager in the Central Division of Corporate Development (September 1, 1991, to June 30, 1994). Mr. Heck serves as Chairman of the Energy Committee of the Business and Industry Advisory Committee to the OECD. He studied economics at Friedrich-Wilhelm-University, Bonn.

**JOHN P. HOLDREN** is the Teresa and John Heinz Professor of Environmental Policy and Director of the Program on Science, Technology, and Public Policy in the John F. Kennedy School of Government, and Professor of Environmental Science and Public Policy in the Department of Earth and Planetary Sciences, at Harvard University. He is also a member of the Board of Tutors for Harvard's undergraduate major in Environmental Science and Public Policy; Distinguished Visiting Scientist and Vice Chair of the Board of Trustees at the Woods Hole Research Center; and Professor Emeritus of Energy and Resources at the University of California, Berkeley (where he was co-founder in 1973 of the campus-wide, interdisciplinary, graduate-degree program in Energy and Resources in which he served variously as Vice Chair, Chair, and Chair of Graduate Advisors until 1996). He is Chair of the Committee on International Security and Arms Control of the National Academy of Sciences, a member of the Board of Directors of the John D. and Catherine T. MacArthur Foundation, and was a member from 1994 to 2001 of President Clinton's Committee of Advisors on Science and Technology (PCAST). He chaired PCAST panels on protection of nuclear-bomb-materials (1995), the U.S. fusion-energy R&D program (1995), U.S. energy R&D strategy (1997), and international cooperation on energy (1999); and in 1996-7 he co-chaired with E. Velikhov the U.S.-Russian Independent Scientific Commission on Plutonium Disposition (reporting to Presidents Clinton and Yeltsin). He also chairs National Academy panels on the spent-fuel standard for plutonium disposition, on technical issues related to the Comprehensive Test Ban Treaty, and on US-India energy cooperation, and US-Russia cooperation on nuclear nonproliferation and counter-terrorism. He is the author of about 300 articles and reports on plasma physics, fusion energy technology, energy and resource options in industrial and developing countries, global environmental problems, impacts of population growth, and international security and arms control, and he has co-authored and co-edited fourteen books on these topics. Professor Holdren earned bachelors and masters degrees from M.I.T. in aeronautics and astronautics (1965 and 1966) and the Ph.D. from Stanford University in aeronautics/astronautics and theoretical plasma physics (1970). Before going to UC Berkeley in 1973, he worked on missile technology at the Lockheed Corporation, as a plasma physicist at the Lawrence Livermore Laboratory, and as a Senior Research Fellow in the Environmental Quality Laboratory and the Division of Humanities and Social Sciences at the California Institute of Technology. He is a member of the National Academy of Sciences and the National Academy of Engineering, and a Fellow of the American Academy of Arts and Sciences, the American Physical Society, the American Association for the Advancement of Science, and the California Academy of Sciences. In 1981 he received one of the first MacArthur Foundation Prize Fellowships; in 1993 he shared the Volvo Environment Prize with Paul Ehrlich; and in 1994 he received the Forum Award of the American Physical Society ("for promoting public understanding of the relation of physics to society"). In December 1995 he delivered the Nobel Peace Prize acceptance lecture on behalf of the Pugwash Conferences on Science and World Affairs, which he served as Chair of the Executive Committee from 1987 to 1997. He received the 1999 Kaul Foundation Award for Excellence in Science and Environmental Policy, the 2000 Tyler Prize for Environmental Achievement, and the 2001 Heinz Prize in Public Policy.

**DON E. KASH** is the John T. Hazel, Sr. and Ruth D. Hazel Professor of Public Policy at George Mason University's Institute of Public Policy. He is also a member of the Faculty of Tsinghua University (the Chinese MIT) located in Beijing. Before taking his present position he was George Lynn Cross Research Professor of Political Science at the University of Oklahoma, and was the founding director of the Science and Public Policy Program. From 1978-81 he headed the division of the U.S. Geological Survey that regulated an annual \$25 billion of energy and mineral activities on Federal and Indian lands and the Outer Continental Shelf. Kash's research has focused on the interaction of technology, public policy and society. He has coauthored a new book that has been published in both English and Chinese editions entitled: *The Complexity Challenge: Technological Innovation for the 21st Century*. The book investigates the

fundamental rethinking required by the transition from an industrial to a synthetic production system. Key to success in the contemporary period is the capacity of organizational systems to evolve with changing technologies. Complex organizational systems now have the capacity to repeatedly produce what has never existed before and to do it in spite of the fact that the process of creation is beyond the capacity of any individual to understand. Kash is presently working on a comparative study of complex systems that includes cases in the Peoples Republic of China, Japan, India, Germany, France, and the United States. Kash has been a member of the Assembly of Engineering of the National Research Council (NRC) and has chaired or been a member of fifteen NRC boards or committees. He served on thirteen Congressional Office of Technology Assessment committees and has chaired the Committee on Science, Engineering and Public Policy of the American Association for the Advancement of Science

**GLENN MACDONELL** is Director, Energy in Canada's Industry Department, a post he has occupied since 2001. His focus is supporting the development of Canada's energy related sector through promotion of innovation, trade and investment. Recent activities include the development, in partnership with the Canadian fuel cell industry, of a commercialization road map. Previously he was Director, Aerospace in the Department of Industry from 1998 to 2001. Earlier he had held a variety of positions in the Departments of Industry, Foreign Affairs and Environment and the Ministry of State for Science and Technology related to innovation, science & technology policy and industrial development. He received B. Sc. and M. Sc. Degrees in Physics from Queen's University.

**AKIRA MAEDA** received his Ph.D. in engineering-economic systems and operations research with a minor in economics from Stanford University, California, in 1999. He also holds a master of engineering degree in electrical engineering (1990) and a bachelor of science degree in electronic engineering (1988), both from the University of Tokyo, Japan. He is currently an assistant professor at the School of Policy Management, Keio University, Japan. He teaches both graduate and undergraduate courses including economics, finance, management science, energy and environmental policy. He had worked with Tokyo Electric Power Company, Japan from 1990 to 1996 where he served as a research engineer in the technology and policy research section of R&D Planning Department. He had also worked with the International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria in summer 2001 where he served as a research scholar in the Environmentally Compatible Energy Strategies Project. His scientific research interests are basically on energy economics and finance.

**DANIEL MALKIN** is Head of the Science and Technology Policy Division of the OECD Directorate for Science, Technology and Industry (DSTI), a position he has held since 1999. He was previously heading the Industry and the Economic Analysis Divisions in the same Directorate. Work carried out in under Mr. Malkin's responsibility contributes to the definition of best practice policies leading to recommendations to high-level officials in charge of Science and Technology in OECD countries. It focuses *inter alia* on issues such as the assessment of OECD Member countries' S&T and innovation policies and public support to R&D; the performance and governance of Science and Innovation systems; and, more generally, the contribution of science and technology to productivity and economic growth. Prior to his joining the OECD, Mr. Malkin held several posts in the French Administration, the last one as Head of the Industry and Technology Department of the Planning Commission. He developed prospective studies in the Ministry of Industry and Research and the Regional Planning Commission. Daniel Malkin graduated from the École Polytechnique in Paris. He completed his post-graduate studies at the University of California (Berkeley) and at the University of Pennsylvania (Wharton School). He is a Member of the editorial board of the review *Futuribles*.

**ASLAUG MIKKELSEN** is professor of change management at the Stavanger University College and is also head of research at Rogaland Research Institute. She has an M.Phil. in sociology from the University of Oslo in 1979 and a PhD in work and organizational psychology from the University of Bergen in 1998. Dr. Mikkelsen's main research lies within field of the work design and organizational restructuring with a special focus on organizational learning and human consequences of change processes. She has published several books and international papers in her field.

**JOHN NAIL** is an economist in the Advanced Technology Program's Economic Assessment Office. His general research interests include the economics of innovation, patenting, and venture capital. His current research involves a study of the National Innovation System on the development of fuel cells and a study of commercialization and research outcomes for firms that participate in an ATP project. He has also served on the Biotechnology Selection Board for ATP and recently served as a panelist for a conference on female entrepreneurs in the biotechnology industry. Before coming to ATP, he conducted economic analyses of legal and regulatory matters, assisted in expert witness testimony involving price-fixing in the sports apparel and prescription drug markets, and developed an economic valuation of employee stock options. Dr. Nail earned a B.A. degree from the University of Maryland with Honors in Economics and a Ph.D. in Economics from the University of North Carolina. His dissertation focused on the impact of consolidation in local hospital markets, either through mergers or closures, on prices, costs and profit margins. His areas of expertise include Health Care Economics, Industrial Organization, and Applied Financial Economics.

**INJA PAIK** is a senior economist in the Office of Policy and International affairs, U.S. Department of Energy. She is currently chairing the OECD Focus Group on Innovation in Energy Technology. In her capacity as a senior economist, she provides economic theoretic foundations for policy decisions on a wide range of issues including energy security, environment, and science and technology. Her recent activities include science and economic growth, R&D productivity, oil and macroeconomic performance, and climate change. Her previous positions at the Department include: Director, Office of Energy Emergencies, responsible for monitoring and analyzing the global oil market, assessing the economic consequence of oil supply disruptions, and evaluating the size of emergency stocks. As the Deputy Director of the Office of International Energy Security Planning, her duties included development of U.S. oil policy positions in international forums, and participating in international agreements on oil emergency responses. Prior to joining the Department, Dr. Paik was assistant professor of economics at Georgetown University, where she developed and managed the Integrated Multimedia Pollution Model. More recently, she was research associate professor at the University of Pennsylvania School of Public and Urban Policy where she taught and participated in an energy and environmental tradeoff project. Dr. Paik received her undergraduate degree in economics from the University of California at Los Angeles, graduate training in business at Harvard, and a Ph.D. in economics from Georgetown University.

**FIROZ RASUL** currently serves as Chairman of the Board of Ballard Power Systems. Between May 1999 and March 2003, Mr. Rasul served as Chairman and Chief Executive Officer. From December 1988 to May 1999, Mr. Rasul was President and Chief Executive Officer of Ballard Power Systems. Prior to joining Ballard Power Systems, Mr. Rasul was the Vice President of Marketing and Sales for MDI Mobile Data International, from 1981 until its takeover by its largest competitor, Motorola, in September 1988. Before MDI, Mr. Rasul worked with Black & Decker, and General Foods Corporation in Europe. Mr. Rasul is the President of the Ismaili Council for Canada. He has previously held positions as Chairman of Focus Humanitarian Assistance Canada, an international emergency relief agency, as a director for Telus (formerly BC Telecom), director for Royal Bank Capital Management, member of the national committee of the

Aga Khan Foundation Canada (an international development agency), as a member of the University of British Columbia's Board of Governors, and as a board member for Science World of British Columbia. Mr. Rasul has a Bachelors degree in Industrial Engineering from the University of Hertsfordshire in the United Kingdom and a Masters degree in Business Administration from McGill University in Montreal, Canada. In 2001, Mr. Rasul received a degree of Doctors of Laws, *honoris causa*, from Simon Fraser University in Vancouver, Canada

**SVEND REMØE** has extensive experience both from research and policy oriented positions in Norway and Europe. He served two years as a national expert to the Directorate General on Research in the European Commission. He also worked for two years as the coordinator of a project on National Innovations systems for the OECD. He then served as director of the STEP Group in Norway. With a background in economics and sociology, Remøe has worked for 20 years in research institutions as well as the business sector.

**JERRY SHEEHAN** is a principal administrator/senior economist in the OECD's Science and Technology Policy Division. He is responsible for work related to technological innovation and economic performance and for the biennial publication, *OECD Science, Technology, and Industry Outlook*. His current research focuses on policies to support business R&D and innovation; the relationship between intellectual property rights, innovation and economic growth; innovation in energy technology; and innovation in the service sector. Prior to joining the OECD, Mr. Sheehan was a senior program officer and study director with the Computer Science and Telecommunications Board of the U.S. National Academy of Sciences. He directed numerous studies related to the information technology industries, privacy and security, medical applications of the Internet, and protection of digital media. Mr. Sheehan previously served as an analyst with the Industry, Telecommunications, and Commerce program of the Congressional Office of Technology Assessment and as a member of the research staff of the System Planning Corporation. He holds degrees in electrical engineering and technology & policy from MIT.

**SUNG CHUL SHIN** served as a government official for 20 years, mostly in the field of energy policy and technology, prior to joining the Korean Institute for Energy Research (KIER) in June 2000. During his service in the Ministry of Commerce, Industry & Energy (MOCIE), he played a key role in preparing the Government's 10-year Long-Term Energy R&D Plan in 1997 as director of Energy Technology Division of MOCIE and also participated actively in setting up the Government's Comprehensive Strategies for Addressing the Climate Change Convention in 1999 as director of Energy & Resources Policy Division of MOCIE. He participated in UNFCCC COP3 Conference (Kyoto) as a member of the Korean Government's delegation, and now works for IEA CERT and APEC EGCFE as the Korean delegate. Since joining in KIER, he has been doing research on the topics of streamlining energy R&D portfolio for cost-effective CO2 mitigation and also promoting international cooperation/technology transfer. Dr Shin received his B.S. degree in chemical engineering from University of Yonsei, Korea (1976), his M.S degree from the Korea Advanced Institute of Science & Technology (1978) and the Ph.D. degree in chemical engineering from the Colorado School of Mines, Colorado, U.S.A (1986).

**STEPHANIE SHIPP** is the Director of the Economic Assessment Office in the Advanced Technology Program at the National Institute for Standards and Technology. She brings to ATP a background in surveys, public finance, and research. Stephanie started her career at the Federal Reserve Board, working on the Industrial Production Index. She then moved to the Bureau of Labor Statistics, working on the design of the Producer Price Index analytical system. Her next challenge was leading the information and analysis work for the Consumer Expenditure Survey and collaborating on research on income and expenditure inequality and poverty measurement. Stephanie moved to the Census Bureau in 1997 to work on developing the Industry and

Occupation coding system for the Census 2000, guiding the analytical efforts for a welfare reform survey, the Survey of Program Dynamics, and spearheading a major hiring effort for her division. On a detail to the Office of the Secretary, Office of Budget, Stephanie led the Department of Commerce Strategic Planning effort for 2000-2005. Stephanie and the Task Force received a Bronze Medal for their Strategic Planning work. Stephanie is active in professional organizations and is a regular presenter and discussant at the American Economic Association and American Statistical Association (ASA) annual meetings. Currently, she is an executive member of the ASA Government Statistics Section. In the past, she was the program chair for the National Economists Club and chair of the ASA Committee for Women in Statistics. Stephanie received a Ph.D. from George Washington University with specialties in public finance and demography. She received a BA in economics from Trinity College, Washington DC

**ORONZO TAMPONE** is Assistant to the Head of the Renewable Sources and Innovative Energy Cycles department of ENEA (Italian Board for New Technologies, Energy and Environment), with responsibility for international liaisons, relationships with European Union, and personnel. From 1995 to 2001 he was responsible for the technical and management support unit of the Engineering and Power Generation Plants in the Energy Department, where he was involved in strategic planning, auditing, inspection, financial management. From 1991 to 1995, he was Head of the Wind Power Division of the Renewable Sources Department, where he coordinated theoretical and experimental activities aimed at developing wind power generation in Italy, in cooperation with Italian and international industry. Mr. Tampone also served as Head of the Components Qualification Service, which aimed at carrying out qualification tests on components for nuclear power plants on suitably built experimental facilities, and of Heat Transfer Laboratory, which conducts experimental and theoretical activities on thermal fluid-dynamics applied to reactor safety. He was a researcher in ENEA's Fluid Dynamics and Vibration Laboratory and the Reactor Technologies Laboratory's experimental activity on dedicated facilities, in cooperation with industry, research centres in Italy and abroad. He has been a speaker at numerous national and international conferences. He earned his degree in Mechanical Engineering from Rome University "La Sapienza" in June 1968.

**JÜRGEN WENGEL** studied social sciences at Göttingen University until 1983 and public administration science at the Hochschule für Verwaltungswissenschaften Speyer until 1985. After receiving his university degrees and a two-year engagement at the department of sociology of Göttingen University he joined the Fraunhofer Institute for Systems and Innovation Research (ISI), Karlsruhe, in 1985 and worked in the department of Industrial Innovation. From November 1989 to May 1991 he served as national expert in the European Commission. In 1992 he became head of the Innovations in Manufacturing research group and deputy head of the Manufacturing and Communication department. Today he is deputy head of the Innovation in Manufacturing department in the ISI. His research topics are the analysis and evaluation of technology-policies in the field of production technology on the national and European levels, the diffusion characteristics of these technologies, technology transfer and the impact of techno-organizational changes on firms, workforce and economic aspects. He coordinated prospective studies on the consequences of new technologies (e.g. fuel cells, nanotechnologies) on future manufacturing structures and processes.

**ROY WILLIAMSON** works for the Key Business Technologies Directorate of UK Department of Trade and Industry, developing innovation networks in emerging technology areas. He has prepared an analysis of the UK's research expertise and industrial capability in the field of fuel cells and has recently developed the concept of a Fuel Cells Forum, which uses the latest information management and networking software to inform participants of developments in technology worldwide, the latest patent applications and facilitates business to business and

university to business collaboration. This was launched at the recent Grove Symposium and has already grown to over 100 members. This concept will be rolled out to other key technologies. Before joining the DTI, Roy spent six years as a technologist at Alstom, involved with small industrial gas turbines, building on a background in aeronautical engineering.

**MADLINE WOODRUFF** is a senior analyst in the Energy Technology Policy division of the International Energy Agency. In this position, she has focused on analysing energy technology and R&D policy trends in OECD countries and technology strategies for reducing greenhouse gas emissions from energy. Her previous work at Pacific Northwest National Laboratory encompassed a wide range of projects on energy technology and regulatory policy and industrial energy efficiency. Ms. Woodruff received an M.S. in Technology and Policy and an M.S. in Nuclear Engineering from the Massachusetts Institute of Technology.