Health, Environmental, and Other External Costs and Benefits of Energy Production and Consumption

Committee

Jared L. Cohon

Chair

Jared L. Cohon (CHAIR) is president of Carnegie Mellon University in Pittsburgh, Pennsylvania. His research interests focus on environmental system analysis, especially the development and application of techniques for planning and decision-making in situations with multiple conflicting objectives. Dr. Cohon has authored, co-authored, and edited more than 80 professional publications on this interdisciplinary field which combines engineering, economics, and applied mathematics. He came to Carnegie Mellon in 1997 after serving as dean of the School of Forestry and Environmental Studies and professor of environmental systems analysis at Yale University from 1992 to 1997. Dr. Cohon began his teaching career in 1973 at Johns Hopkins University, where he served as assistant, associate, and full professor in the Department of Geography and Environmental Engineering and as Assistant and Associate Dean of Engineering and Vice Provost for Research. Dr. Cohon is a member of the board of directors of Ingersoll-Rand Company (a producer of refrigeration and industrial equipment). The Pittsburgh Post-Gazette has named him one of Pittsburgh's "Top 50" business leaders. In 1996, the National Audubon Society and the American Association of Engineering Societies jointly awarded him the Joan Hodges Queneau Medal for outstanding achievement in environmental conservation. He served on the U.S. Nuclear Waste Technical Review Board, appointed by President Clinton in 1995, and he served as the board's chairman from 1997 to 2002. Dr. Cohon also was appointed by President George W. Bush in 2002 to his Homeland Security Advisory Council. He served as chairman of the Council's Senior Advisory Committee on Academe, Policy and Research and he served as co-chair of the Council's Secure Borders/Open Doors Advisory Committee. Dr. Cohon received his Ph.D. in civil engineering from the Massachusetts Institute of Technology.

Maureen L. Cropper

Vice Chair

Maureen L. Cropper (VICE CHAIR) is professor of economics at the University of Maryland, former lead economist at The World Bank, and research associate at the National Bureau of Economic Research. Dr. Cropper's research has focused on valuing environmental amenities (especially environmental health effects), on the discounting of future health benefits, and on the tradeoffs implicit in environmental regulations. Her recent research analyzes the externalities associated with motorization and the interaction between residential location, land use and travel demand. Dr. Cropper is a member of the National Academy of Sciences. She also is past president of the Association of Environmental and Resource Economists and a former chair of the Advisory Council for Clean Air Act Compliance Analysis, a subcommittee of EPA's Science Advisory Board. Dr. Cropper has served on the advisory boards of Resources for the Future, the Harvard Center for Risk Analysis, the Donald Bren School of the Environment and the AEI-Brookings Center on Regulation. She received her Ph.D. in economics from Cornell University.

Mark R. Cullen

Member

Mark Cullen is professor of medicine and public health at Yale University School of Medicine. His research interests are in occupational and environmental medicine, including isocyanate exposure in automobile-shop workers, lung cancer in people exposed to asbestos, and lead toxicity in workers. He has published several textbooks, including Clinical Occupational Medicine and Textbook of Clinical Occupational and Environmental Medicine. He is a member of the DuPont Epidemiology Review Board, a member of the MacArthur Foundation Network on Socioeconomic Status and Health, and a corporate medical director for the Aluminum Company of America. Dr. Cullen is a member of the Institute of Medicine and served as a member of its Board on Health Sciences. He also served as a member of the National Research Council (NRC)'s Committee on Human Biomonitoring for Environmental Toxicants. Dr. Cullen received his M.D. from Yale University and did his residency in internal medicine.

Elisabeth M. Drake

Member

Elisabeth M. Drake is Emeritus Staff affiliated with the MIT Energy Initiative. Prior to her retirement in 2001, she served as associate director for new energy technologies at the MIT Energy Laboratory. With other MIT colleagues, she developed an interdisciplinary graduate course on Sustainable Energy and co-authored a textbook, "Sustainable Energy: Choosing among Options", published in 2005 by the MIT Press. Her research interests focus on new and emerging energy supply-side and demand-side technologies that may facilitate a transition to a more sustainable future, with lower greenhouse gas emissions at reasonable costs in both industrialized and developing countries. Early in her career she worked at Arthur D. Little, Inc. (ADL), initially as a cryogenic engineer working on liquid hydrogen refrigerators and the fueling system for the Saturn rocket. Later, she consulted on early liquefied natural gas (LNG) projects worldwide and on LNG safety research. She became a Vice President for Technological Risk Management at ADL and later was Vice President for their international Health, Safety, and Environmental Practice. She is a member of the National Academy of Engineering (NAE) and has served on a number of National Research Council (NRC) committees, including topics as diverse as oversight of the US Army's chemical weapons disposal operations and "Personal Cars and China" (a 2003 joint NRC report of the NAE and the Chinese Academy of Engineering). She presently serves as a member of the National Academies' Report Review Committee. She received a ScD in chemical engineering from the Massachusetts Institute of Technology.

Mary R. English

Member

Mary R. English is a Research Leader at the Institute for a Secure and Sustainable Environment and an Associate of the Center for Applied and Professional Ethics at the University of Tennessee at Knoxville. Her current research interests include the socioeconomic impacts of biofuels production; the ethics of energy production, distribution, and consumption; state and local transportation and land use planning; and participatory processes for environmental decision making. Over the past 20 years, her work has focused on the social and political aspects of various environmental management issues, such as siting controversial projects, cleaning up Superfund sites, the restoration and reuse of brownfield sites, and alternative mechanisms for involving stakeholders in environmental decisions. Dr. English is a member of the Tennessee Air Pollution Control Board. She previously served on the National Research Council (NRC)'s Board on Radioactive Waste Management and several NRC study committees, such as the Committee on the Environmental Impacts of Wind-Energy Projects. She also has served on the U.S. Environmental Protection Agency's National Environmental Justice Advisory Council and the National League of Women Voters' Advisory Committee to the Nuclear Waste Education Project. Dr. English received her Ph.D. in Sociology from the University of Tennessee at Knoxville.

Christopher B. Field

Member

Christopher B. Field is the founding director of the Department of Global Ecology of the Carnegie Institution of Washington and professor of biology and of environmental earth system science at Stanford University. He is an ecosystem ecologist with research programs exploring the global carbon cycle and ecosystem responses to global change. Dr. Field is an author of more than 100 scientific papers, and he has served on the editorial boards of Ecology, Ecological Applications, Ecosystems, Global Change Biology, and Proceedings of the National Academy of Sciences. His recent National Research Council (NRC) experience includes membership on the Board on International Scientific Organizations, Board on Environment Studies and Toxicology, Committee on Research at the Intersection of the Physical and Life Sciences, Committee on Earth-Atmosphere Interactions: Understanding and Responding to Multiple Environmental Stresses, Committee on Grand Challenges in the Environmental Sciences, Panel on Ecological Impacts of Climate Change, and chair of the US National Committee for SCOPE. He is a member of the National Academy of Sciences. Dr. Field received his Ph.D. in biology from Stanford University.

Daniel S. Greenbaum

Member

Daniel S. Greenbaum is the president and chief executive officer of the Health Effects Institute (HEI), an independent not-for-profit research institute funded jointly by government and industry to provide trusted research on the health effects of air pollution. At HEI, Mr. Greenbaum has overseen the development and implementation of a strategic research plan that focuses the institute’s efforts on providing critical research on and reanalysis of particulate matter, air toxics, and alternative fuels, increasingly on an international scale. He has served as chair of the Environmental Protection Agency (EPA) Blue Ribbon Panel on Oxygenates in Gasoline, as chair of EPA’s Clean Diesel Independent Review Panel, and as a member of the national Clean Air Act Advisory Committee. Before joining the Health Effects Institute, he served as commissioner of the Massachusetts Department of Environmental Protection. In the National Research Council, he has served on the Board on Environmental Studies and Toxicology, as vice chair of the Committee on Air Quality Management in the United States, and most recently as a member of the Committee on Estimating Mortality Risk Reduction and Economic Benefits from Controlling Ozone Air Pollution. Mr. Greenbaum earned a master’s degree in city planning from the Massachusetts Institute of Technology.

James K. Hammitt

Member

James K. Hammitt is Professor of Economics and Decision Sciences and Director of the Harvard Center for Risk Analysis at the Harvard School of Public Health. His research and teaching concern the development of decision analysis, benefit-cost analysis, game theory, and other quantitative methods and their application to health and environmental policy in the United States and internationally. Dr. Hammitt is particularly interested in the management of long-term environmental issues, such as global climate change and stratospheric-ozone depletion, in comprehensive evaluation of risk-control measures (including ancillary benefits and countervailing risks) and in alternative methods for measuring the value of reducing health risks, including monetary and health-adjusted-life-year metrics. He serves as a member of the EPA Science Advisory Board and its Environmental Economics Advisory Committee and chairs the EPA Advisory Council on Clear Air Compliance Analysis. Dr. Hammitt previously served as a member of the American Statistical Association Committee on Energy Statistics (Advisory Committee to the U.S. Energy Information Administration) and the National Research Council (NRC) panel studying the implications of dioxin in the food supply. He held the Pierre-de-Fermat Chaire d'Éxcellence at the Toulouse School of Economics and served as senior mathematician at the RAND Corporation and a faculty member at the RAND Graduate School of Policy Studies. Dr. Hammitt received his Ph.D. in public policy from Harvard University.

Rogene F. Henderson

Member

Rogene F. Henderson is a senior biochemist and toxicologist in the Experimental Toxicology Program of the Lovelace Respiratory Research Institute. She is also a clinical professor in the College of Pharmacy at the University of New Mexico in Albuquerque. Her major research interests are in the use of bronchoalveolar lavage fluid analyses to detect and characterize biomarkers of developing lung disease, the toxicokinetics of inhaled vapors and gases, and the use of biological markers of exposure and of effects to link environmental exposure to disease. She has served on a number of scientific advisory boards, including those of DOE, EPA, NIEHS, and the U.S. Army. She was recently chair of EPA's Clean Air Scientific Advisory Committee. Dr. Henderson is a National Associate of the National Academies, and is a former member of the Board on Environmental Studies and Toxicology. She received her Ph.D. in chemistry from the University of Texas.

Catherine L. Kling

Member

Catherine L. Kling is professor of economics and head of the Resource and Environmental Policy Division at the Center for Agricultural and Rural Development at Iowa State University. Her research has been in the areas of natural resource and environmental economics. Dr. Kling has served on the U.S. Environmental Protection Agency’s Science Advisory Board and has been a member of the Environmental Economics Advisory Committee. She is currently a member of the National Research Council (NRC) committee that is reviewing USDA's Agricultural Resource Management Survey (ARMS). Dr. Kling received her Ph.D. in economics from the University of Maryland.

Alan J. Krupnick

Member

Alan J. Krupnick is a senior fellow and director of quality of the environment at Resources for the Future. His research focuses on analyzing environmental issues, in particular the benefits, costs, and design of air-pollution policies in the United States and in developing countries. His research also addresses the valuation of health and ecologic improvements and, more recently, the ancillary benefits of climate policy and urban transportation and development problems. Dr. Krupnick has served as a consultant to state governments, federal agencies, private corporations, the Canadian government, the European Union, the World Health Organization, and the World Bank. He co-chaired an advisory committee that counseled the U.S. Environmental Protection Agency on new ozone and particulate-matter standards. Dr. Krupnick has participated in several National Research Council studies, including those of the Committee for the Evaluation of the Congestion Mitigation and Air Quality Improvement Program, the Committee on Research and Peer Review in EPA, the Surface Transportation Environmental Cooperative Research Program Advisory Board, and the Committee on Estimating Mortality Risk Reduction Benefits from Decreasing Tropospheric Ozone Exposure. He also has served on a Royal Society of Canada committee analyzing ambient-air quality standard-setting in Canada. Dr. Krupnick received his PhD in economics from the University of Maryland.

Russell Lee

Member

Russell Lee is a Distinguished R&D Staff Member in Science and Technology Policy at Oak Ridge National Laboratory (ORNL). Previously, he was director of the Center for Energy and Environmental Analysis, and Leader of the Resource Modeling Group at ORNL. Dr. Lee's research focus is on science and technology policy, energy supply and demand, environmental externalities associated with energy production and use, and transportation analysis. He was the U.S. lead person in the joint U.S.-European Commission study that resulted in the eight-volume report on Fuel Cycle Externalities; and senior author of the book on Health and Environmental Impacts of Electricity Generation Systems: Procedures for Comparative Assessment. He is author of numerous other papers, book chapters and reports on the subject of energy externalities. Dr. Lee has been invited to present workshops, serve on expert panels, and consult on the subject of the impacts of electricity generation technologies, global climate change, environmental externalities, technology R&D policy, waste management, and related issues by the National Academies, the U.S. Department of Energy, the Organisation for Economic Cooperation and Development, the Commission of the European Communities, the International Energy Agency, the National Association of Regulatory Utility Commissioners, the International Atomic Energy Agency, the United Nations Framework Convention on Climate Change, foreign governments, universities, and industry. Prior to joining ORNL, he was an assistant professor at the University of Iowa and at Boston University. Dr. Lee is a member of the Committee on Social and Economic Factors of Transportation and of the Project Panel on Development of Research Performance Measurement Tool Box, both of the Transportation Research Board. Dr. Lee received his Ph.D. in geography from McMaster University in Canada.

H. S. Matthews

Member

H. Scott Matthews is the research director of the Green Design Institute and associate professor in the Departments of Civil and Environmental Engineering and Engineering & Public Policy at Carnegie Mellon University. His work includes valuing the socio-economic implications of environmental systems and infrastructure and industrial ecology. He focuses on using the internet to facilitate environmental life cycle assessment of products and processes, estimating and tracking carbon emissions across the supply chain, and the sustainability of infrastructure. Dr. Matthews serves as chair of the Committee on Sustainable Systems and Technology with the Institute of Electrical and Electronic Engineers. He holds a Ph.D. in economics from Carnegie Mellon.

Thomas E. McKone

Member

Thomas E. McKone is senior staff scientist and deputy department head at the Lawrence Berkeley National Laboratory and an adjunct professor and researcher at the University of California, Berkeley School of Public Health. Dr. McKone's research interests include the development, use, and evaluation of models and data for human-health and ecological risk assessments; chemical transport and transformation in the environment; and the health and environmental impacts of energy, industrial, and agricultural systems. One of Dr. McKone's most recognized achievements was his development of the CalTOX multimedia risk/impact-assessment framework for the California Environmental Protection Agency. He has been a member of several National Research Council committees, including the Committee on Improving Risk Analysis Approaches Used by the US EPA, Committtee on Environmental Decision Making: Principles and Criteria for Models, Committtee on EPA's Exposure and Human Health Reassessment of TCDD and Related Compounds, Committtee on Toxicants and Pathogens in Biosolids Applied to Land, and Committee on Toxicology. Dr. McKone was recently appointed by California Governor Arnold Schwarzenegger to the Scientific Guidance Panel for the California Environmental Contaminant Biomonitoring Program. He is a fellow of the Society for Risk Analysis, former president of the International Society of Exposure Analysis, and a member the Organizing Committee for the International Life-Cycle Initiative--a joint effort of the UN Environment Program and the Society for Environmental Toxicology and Chemistry. He earned his PhD in engineering from the University of California, Los Angeles.

Gilbert E. Metcalf

Member

Gilbert E. Metcalf is professor of economics at Tufts University and research associate at the National Bureau of Economic Research. His primary research area is applied public finance with particular interests in taxation, energy, and environmental economics. His current research focuses on policy evaluation and design in the area of energy and climate change. Dr. Metcalf has taught at Princeton University and the Kennedy School of Government at Harvard University and has served as a visiting scholar at the Joint Program on the Science and Policy of Global Change at MIT. He has served as a consultant to various organizations including the Chinese Ministry of Finance, the U.S. Department of the Treasury, and Argonne National Laboratory. He received his Ph.D. in economics from Harvard University.

Richard L. Revesz

Member

Richard L. Revesz is dean at New York University Law School, where he also serves as the Lawrence King Professor of Law. His work focuses on five distinct areas: federalism and environmental regulation, design of liability regimes for environmental protection, positive political economy analysis of environmental regulation, analytical foundations of environmental law, and the use of cost-benefit analysis in administrative regulation. Dean Revesz has also served as chair of the Committee on Judicial Review of the American Bar Association's Section on Administrative Law and Regulatory Policy and as a member of the Environmental Economics Advisory Committee of the U.S. Environmental Protection Agency's Science Advisory Board. In addition, he has also been a visiting professor at the Woodrow Wilson School of Public and International Affairs at Princeton University, Yale Law School, Harvard University Law School, and University of Geneva School of Law. He holds a J.D. from Yale University and a M.S. in engineering from the Massachusetts Institute of Technology.

Terrance G. Surles

Member

Terrance G. Surles is technology integration and policy analysis program manager for the Hawaii Natural Energy Institute. His research focuses on reducing dependence on petroleum from both a climate change and energy security perspective. Dr. Surles also serves as a senior advisor to the University of California’s California Institute for Energy and Environment. In addition, he is director of the Pacific International Center for High Technology Research for which he works to develop and enhance collaborative programs between Japanese and American government and private sector clients. Previously, he was a vice president for the Electric Power Research Institute. He was a program director and assistant director for science and technology with the California Energy Commission. He was associate laboratory director for energy programs at Lawrence Livermore National Laboratory. Dr. Surles was deputy secretary for science and technology at the California Environmental Protection Agency. He was general manager of environmental programs at Argonne National Laboratory. He served as a member of the National Research Council (NRC)’s Committee for Development of Methodology for Evaluating Prospective Benefits of United States Department of Energy Programs, Phases I and II. He holds a Ph.D. in analytical chemistry from Michigan State University.

Ian S. Wing

Member

Ian Sue Wing is an associate professor in the Geography Department at Boston University (BU) and a research affiliate of the Centers for Energy & Environmental Studies and Transportation Studies at BU and at the Joint Program on the Science & Policy of Global Change at the Massachusetts Institute of Technology. In 2005-2006, he was a REPSOL-YPF Energy Fellow at Harvard's Kennedy School of Government. Dr. Sue Wing's research focuses on the economic analysis of energy and environmental policy, with an emphasis on climate change and computational general equilibrium analysis of economies' adjustment to policy shocks. He served on the Renewable Energy Modeling Analysis Partnership of the U.S. Department of Energy and on the Second Generation Model Advisory Panel of the Science Advisory Board of the U.S. Environmental Protection Agency. He holds a Ph.D. in Technology, Management & Policy from the Massachusetts Institute of Technology.