Accelerating Decarbonization in the United States: Technology, Policy, and Societal Dimensions

Committee

Stephen W. Pacala

Chair

Stephen W. Pacala is Professor Emeritus of Ecology and Evolutionary Biology and Senior Scholar at High Meadows Environmental Institute at Princeton University. He directs the Carbon Mitigation Initiative, an effort to develop solutions to the greenhouse warming problem. Steve is also a founder and Chairman of the Board of Climate Central, a nonprofit media organization focusing on climate change. He currently serves on President Joseph R. Biden’s Council of Advisors on Science and Technology (PCAST). He chaired the National Academy of Sciences Committee on Carbon Dioxide Removal and Sequestration, which released its report in 2018. His research covers a wide variety of ecological and mathematical topics with an emphasis on interactions between greenhouse gases, climate and the biosphere. Dr. Pacala has an undergraduate degree from Dartmouth College in 1978 and a Ph. D. in biology from Stanford University in 1982. He serves on the boards of the Environmental Defense Fund and Hamilton Insurance Group. Among his many honors are the David Starr Jordan Prize and the George Mercer Award of the Ecological Society of America. Dr. Pacala is a member of the National Academy of Sciences and the American Academy of Arts and Sciences.

Danielle Deane-Ryan

Member

Danielle Deane-Ryan is a Senior Fellow at The New School’s Tishman Environment and Design Center. She has devoted her career to advancing pioneering strategic, equitable climate crisis solutions across multiple sectors. Prior to that, Danielle was the inaugural Director of Equitable Climate Solutions at the Bezos Earth Fund. Previously, Deane-Ryan served as a senior advisor on climate and environmental justice to foundations including the Libra Foundation, the Donors of Color Network, and the Heising-Simons Foundation. Other prior roles include directing philanthropic programs at the Nathan Cummings Foundation and the Hewlett Foundation; serving the Obama Administration as Senior Advisor for External Affairs and Acting Director for Stakeholder Engagement at the Department of Energy's Office of Energy Efficiency and Renewable Energy; co-launching Green 2.0 while at the Raben Group; and managing the Commission to Engage African Americans on Energy, Climate Change, and the Environment at the Joint Center for Political and Economic Studies. Danielle co-authors the 2019 Clean Energy States Alliance Report Solar with Justice: Strategies for Powering Up Under-Resourced Communities and Growing an Inclusive Solar Market. She serves on the Clean Energy States Alliance and the Williams College boards. She holds an M.Sc. from the London School of Economics in environment and development and a B.A. from Williams College in political economy with an environmental studies concentration. Williams College awarded its Bicentennial Medal to her in 2019 for her contributions to the environmental justice field.

Alexandra Fazeli

Member

Alexandra "Sandy" Fazeli leads the National Association of State Energy Officials’ (NASEO) policy and program priorities coordination; workforce development; equity, access, and inclusion; and state and local cooperation and coordination on energy, climate, and resilience planning. She oversees NASEO’s private sector Affiliates program, which connects state energy policy makers, companies, and non-profits, and helps lead the content development of NASEO’s major conferences and events. She serves as an Adjunct Fellow for the Center for Strategic and International Studies Wadhwani Chair in U.S. India Policy Studies and on the City of Minneapolis Community Environmental Advisory Commission and Advisory Board of the CAES Energy Policy Institute at Boise State University. She also serves as a non-resident fellow for the Center for Strategic and International Studies. Prior to NASEO, Ms. Fazeli worked on energy efficiency and state policy issues at the Rocky Mountain Institute, the Colorado Energy Office, and the Alliance to Save Energy. She received a Bachelor of Science in foreign service from Georgetown University and a Master of Development Practice from the University of Denver.

Julia H. Haggerty

Member

Julia Haggerty is Associate Professor of Geography in the Department of Earth Sciences at Montana State University, where she holds a joint appointment in the Montana Institute on Ecosystems. She received her BA from Colorado College in Liberal Arts and her PhD from the University of Colorado in History. An award-winning teacher, Haggerty teaches courses in human, economic and energy resource geography at MSU. She also leads the Resources & Communities Research Group in studying the ways rural communities respond to shifting economic and policy trajectories, especially as they involve natural resources. Haggerty has expertise in diverse rural geographies including those shaped by energy development, extractive industries, ranching and agriculture, and amenity development and conservation. Partnerships and collaboration with diverse stakeholders are central to her approach. Prior to joining MSU, Haggerty was a post-doctoral fellow at the University of Otago in New Zealand (2005-2007) and a Policy Analyst with Headwaters Economics in Bozeman, Montana (2008-2013). Haggerty speaks frequently to public audiences about her research and has served on a number of boards and advisory committees from local to international scales.

Chris T. Hendrickson

Member

Chris T. Hendrickson (NAE) is the Hamerschlag University Professor of Engineering Emeritus, Director of the Traffic 21 Institute at Carnegie Mellon University, chair of the TRB Division Committee and Editor-in-Chief of the ASCE Journal of Transportation Engineering Part A (Systems). His research, teaching and consulting are in the general area of engineering planning and management, including transportation systems, design for the environment, system performance, construction project management, finance and computer applications. Central themes in his work are a systems wide perspective and a balance of engineering and management considerations. He has co-authored eight books and published numerous articles in the professional literature. Prof. Hendrickson has been the recipient of the Council of University Transportation Centers Lifetime Achievement Award (2020), the ARTBA Steinburg Award (2019), the Faculty Award of the Carnegie Mellon Alumni Association (2009), Turner Lecture Award of the American Society of Civil Engineers (2002), the Fenves Systems Research Award from the Institute of Complex Engineering Systems (2002). He is a member of the National Academy of Engineering, National Academy of Construction (2014), Fellow of the American Association for the Advancement of Science (2007), a Distinguished Member of the American Society of Civil Engineers (2007) and an Emeritus Member of the Transportation Research Board (2004). He earned bachelor‘s and M.S. degrees from Stanford University, an M.Phil. degree in economics from Oxford University, and a Ph.D. from the Massachusetts Institute of Technology.

Roxanne Johnson

Member

Roxanne Johnson established and currently directs the research department at the BlueGreen Alliance (BGA), a national coalition of labor unions and environmental groups working to build a stronger, fairer economy. In her current role, she leads BGA's research efforts to understand job creation opportunities in the clean economy. Her team is responsible for conducting manufacturing and policy research in industries such as wind and solar energy, energy efficiency, advanced vehicles, and infrastructure. Her previous work at the Great Plains Institute focused on communicating model results showing potential impacts of energy and transportation policy. Ms. Johnson earned a B.S. in Mathematics and Environmental Studies from Northland College in Ashland, Wisconsin. She also earned an M.S. in Science, Technology, and Environmental Policy from the Humphrey School of Public Affairs in Minneapolis, Minnesota.

Timothy C. Lieuwen

Member

Timothy C. Lieuwen, NAE, serves as Executive Director of the Strategic Energy at the Institute at Georgia Technology. He is also a Regents' Professor and the David S. Lewis, Jr. Chair in the School of Aerospace Engineering. He is also the founder and chief technology officer of TurbineLogic, an analytics firm working in the gas turbine industry. Prof. Lieuwen is an international authority on clean energy and propulsion, and his work has contributed to numerous commercialized innovations in the energy and aerospace sectors. He has authored or edited five books, including the textbook Unsteady Combustor Physics. He has also authored 350 other publications and received four patents, all of which are licensed. He is editor-in-chief of the Aerospace Industries Association (AIAA) Progress book series. Current and past board positions include governing/advisory boards for Oak Ridge National Lab, Pacific Northwest National Lab, National Renewable Energy Lab, Electric Power Research Institute, appointment by the DOE Secretary to the National Petroleum Counsel, and board member of the ASME International Gas Turbine Institute. He is an elected member of the National Academy of Engineering, a fellow of ASME, APS, and AIAA, and a foreign fellow of the Indian National Academy of Engineering. Major awards include the ASME R. Tom Sawyer Award, AIAA Pendray Award, and ASME's George Westinghouse Gold Medal. He holds a Ph.D. in mechanical engineering from Georgia Tech. He has served on the Academies' Review of NASA Test Flight Capabilities and the Decadal Survey of Aeronautics.

Vivian E. Loftness

Member

Vivian Loftness is a University Professor and former Head of the School of Architecture at Carnegie Mellon University. She is an internationally renowned researcher, author, and educator with over thirty years of focus on environmental design and sustainability, advanced building systems integration, climate and regionalism in architecture, and design for performance in the workplace of the future. She has served on ten National Academy of Science (NAS) panels, the NAS Board on Infrastructure and the Constructed Environment and has given four Congressional testimonies on sustainability. Vivian is recipient of the National Educator Honor Award from the American Institute of Architecture Students and the Sacred Tree Award from the U.S. Green Building Council (USGBC). She received her B.S. and M.S. in Architecture from MIT and served on the National Boards of the USGBC, AIA Committee on the Environment, Green Building Alliance, Turner Sustainability, and the Global Assurance Group of the World Business Council for Sustainable Development. She is a registered architect and a fellow of the American Institute of Architects.

Carlos E. Martín

Member

Carlos Martín serves as a David M. Rubenstein Fellow at the Brookings Institution’s Metropolitan Policy Program and Director of the Remodeling Futures Program at Harvard University’s Joint Center for Housing Studies. Trained as an architect, construction engineer, and historian of technology, Dr. Carlos Martín connects the bricks and mortar of housing to social and economic outcomes of occupants, especially at the intersections of environment, energy, and housing with racial equity and income disparity. For over 20 years, he has led evaluation, research, and policy analysis for federal, state, and civil-sector entities in the fields of energy efficiency, housing construction and design, climate mitigation and adaptation, and energy and environmental justice. Dr. Martín previously led the Urban Institute’s Built Environment practice area. He was also part of a core team of researchers looking at the policy and practical methods for assessing equity in energy programs. Before Urban, Dr. Martín was assistant staff vice president for construction codes and standards at the National Association of Home Builders, SRP professor for energy and the environment at Arizona State University, and coordinator for the US Department of Housing and Urban Development's Partnership for Advancing Technology in Housing. He received his BSAD in architecture from MIT and MEng and PhD in civil and environmental engineering from Stanford.

Michael A. Méndez

Member

Michael Méndez is Assistant Professor of Environmental Policy and Planning at the University of California, Irvine. He previously was the inaugural James and Mary Pinchot Faculty Fellow in Sustainability Studies and Associate Research Scientists at the Yale School of the Environment. Dr. Méndez has more than a decade of senior-level experience in the public and private sectors, where he consulted and actively engaged in the policymaking process. This included working for the California State Legislature as a senior consultant, lobbyist, and as vice chair of the Sacramento City Planning Commission. In 2021, California Governor Gavin Newsom appointed Dr. Méndez to the Los Angeles Regional Water Quality Control Board. The board regulates water quality in a region of 11 million people. During his time at UC Irvine and Yale, he has contributed to state and national research policy initiatives, including serving as an advisor to a California Air Resources Board member, and as a participant of the U.S. Global Change Research Program's workgroup on "Climate Vulnerability and Social Science Perspectives." Dr. Méndez is a member of the National Academies of Sciences, Engineering, and Medicine's Board on Environmental Change and Society (BECS), and is on the board of directors of the social justice nonprofit, Alliance for a Better Community. He also serves as a panel reviewer for the National Academies of Sciences' Transit Cooperative Research Program (TCRP). Dr. Méndez holds three degrees in environmental planning and policy, including a PhD from UC Berkeley's Department of City and Regional Planning, and a graduate degree from MIT. His research on the intersection of climate change and communities of color has been featured in national publications including Urban Land (published by the Urban Land Institute); the Natural Resources Defense Fund Annual Report; the American Planning Association's Planning Magazine; Green 2.0: Leadership at Work; USA Today; and Fox Latino News. His new book "Climate Change from the Streets," published through Yale University Press (2020), is an urgent and timely story of the contentious politics of incorporating environmental justice into global climate change policy.

Clark A. Miller

Member

Clark A. Miller is Professor and Director of the Center for Energy & Society at Arizona State University. He leads sustainability research for the Quantum Energy and Sustainable Solar Technologies Engineering Research Center. He also serves as a member of the steering committee of LightWorks, ASU's university-wide sustainable energy initiative. Dr. Miller's current research focuses on the human and social dimensions of energy transitions, including the social value of distributed renewable energy systems; strategies for addressing poverty and inequality through energy innovation; the organization of urban and regional energy transitions; and the design and governance of solar energy futures. He is an author or editor of eight books, including The Weight of Light (2019), Designing Knowledge (2018), The Handbook of Science & Technology Studies (2016), The Practices of Global Ethics (2015), Science and Democracy (2015), Nanotechnology, the Brain, and the Future (2013), Arizona's Energy Future (2011), and Changing the Atmosphere (2001). He has published extensively in the fields of energy policy, science and technology policy, the role of science in democratic governance and international relations, the governance of emerging technologies, and the design of knowledge systems for improved decision-making. He holds a PhD in electrical engineering from Cornell University.

Jonathan A. Patz

Member

Jonathan Patz is the Vilas Distinguished Achievement Professor & John P. Holton Chair of Health and the Environment and, from 2011-2022, served as the inaugural director of the Global Health Institute at the University of Wisconsin–Madison. His faculty appointments are in the Nelson Institute for Environmental Studies, Center for Sustainability and the Global Environment (SAGE), and the Department of Population Health Sciences in the School of Medicine and Public Health. Dr. Patz co-chaired the health report for the first Congressionally mandated US National Assessment on Climate Change and for 15 years, served as a lead author for the United Nations Intergovernmental Panel on Climate Change (IPCC) – the organization that shared the 2007 Nobel Peace Prize. Some of his other awards include: the Aldo Leopold Leadership Fellows Award; the shared Zayed International Prize for the Environment; the Fulbright Scholarship; the American Public Health Association’s Homer Calver Award for environmental health leadership; Case Western School of Medicine Alumni Special Recognition award; Johns Hopkins Society of Scholars; Chanchlani Global Health Research Award; and he is an elected member of the National Academy of Medicine. Patz earned medical boards in both Environmental & Occupational Medicine (still active) and in Family Medicine. He received his medical degree from Case Western Reserve University (1987) and his Master of Public Health degree (1992) from Johns Hopkins University. Professor Patz has taught and conducted research on the health effects of climate change and global environmental change for nearly 30 years, and currently directs the university's Planetary Health Scholars Program. He has published over 200 science publications and several textbooks on these subjects.

Keith Paustian

Member

Keith Paustian is University Distinguished Professor in the Department of Soil and Crop Sciences and Senior Research Scientist at the Natural Resource Ecology Laboratory at Colorado State University. A major focus of his work involves modeling, field measurement and development of assessment tools for soil carbon sequestration and greenhouse gas emissions from soils. Dr. Paustian was the founder of SoilMetrics, which provides modeling software for estimating agricultural greenhouse gas emissions, that was acquired by Indigio Ag. He has published over 380 journal articles and book chapters. Dr. Paustian serves on the Farm and Forest Carbon Solutions Task force of the Bipartisan Policy Center; on the Science Advisory Board of the Rabo Carbon Bank; on the Dairy FFAR Modeling Advisory Committee of the Soil Health Institute; and on the Board of Senior Advisors of Solutions of the Land (SfL). Professional service activities also include Coordinating Lead Author for the IPCC 2006 National Greenhouse Gas Inventory Methods and the IPCC 2003 Good Practice Guidance for Land Use, Land Use Change and Forestry (LULUCF) and two National Academy of Science committees (in 2010-11 and 2018-19) related to land use, greenhouse gases and climate change mitigation. He served as a member of the US Carbon Cycle Science Steering Group, which provides expert input to Federal Agencies involved in climate and carbon cycle research. He also served on the Voluntary Carbon Standard Steering Committee for Agriculture, Forestry and Other Land Use (AFOLU) and on numerous other national and international committees involving climate and carbon cycle research. He is a Fellow of the Soil Science Society of America, recipient of the Soil Science Society of America’s Outstanding Research Award in 2015, and 2019 winner of the Global Foodshot Groundbreaker Award.

William Pizer

Member

William (Billy) Pizer is the Vice President for Research and Policy Engagement at Resources for the Future (RFF), an independent, nonprofit research institution that improves environmental, energy, and natural resource decisions through impartial economic research and policy engagement. From 2008 to 2011, he was Deputy Assistant Secretary for Environment and Energy at the U.S. Department of the Treasury, overseeing Treasury's role in the domestic and international environment and energy agenda of the United States. He is an adjunct professor at Duke University, where he was previously the Susan B. King Professor and Senior Associate Dean for Faculty and Research at the Sanford School of Public Policy. He has also served as the senior economist for energy and environment on the President's Council of Economic Advisers, and at the National Commission on Energy Policy, and was a senior fellow at RFF for more than a decade. His research examines different choices in the design of policies to drive towards net-zero greenhouse gas emissions, how those choices affect both aggregate costs to society and the distribution of those costs among different members of society, and the interaction of these domestic policies both across countries and with international negotiations. His work also examines how we value the future benefits of climate change mitigation. Dr. Pizer was involved in the creation of an environmental program at Duke Kunshan University in China. Dr. Pizer has written more than 60 peer-reviewed publications, books, and articles, including contributions to previous reports of the National Academy of Sciences reports and the Intergovernmental Panel on Climate Change. He holds a Ph.D. and an M.A. in economics from Harvard University and a B.S. in physics from the University of North Carolina at Chapel Hill.

Ed Rightor

Member

Ed Rightor was recently the Director of the Center for Clean Energy Innovation (ITIF), which seeks to accelerate the transition of the domestic and global energy systems to low-carbon resources. Prior to joining ITIF, he was the Director of the Industrial Program for the American Council for an Energy-Efficient Economy (ACEEE). In that role, Ed developed and led the strategic vision for the industrial sector, shaped the research and policy agenda, and convened stakeholders to accelerate energy efficiency and carbon emissions reductions. He also co-led the generation of the Department of Energy's Industrial decarbonization roadmap. Prior to joining ACEEE, he has held several leadership roles at Dow Chemical during his 31-year career. Through 2017, he served as the director of strategic projects in Dow’s Environmental Technology Center. In this role he worked with Dow businesses, operations, and corporate groups, to reduce air emissions, waste, freshwater intake, and energy use. He also served as the facilitator of Dow’s Corporate Water Strategy Team, led teams to establish and pursue Dow’s 2025 Sustainability Goals, including the first-ever water goal. Working across global industrial associations, he spearheaded a roadmap for the chemical industry on paths to reduce energy and greenhouse gas (GHG) emissions. In prior roles, he developed GHG and energy reduction options across Dow’s global operations and pursued project funding and implementation. Earlier, he started a new market-facing business in the energy sector, led cross-functional teams to optimize processes (six sigma), pioneered technology that led to new materials development, and led teams to troubleshoot production challenges. He earned a doctorate in chemistry from Michigan State University and a bachelor of science in chemistry from Marietta College.

Patricia Romero-Lankao

Member

Paty Romero-Lankao is a Sociology Professor at the University of Toronto Scarborough, and recipient of a Canada Excellence Research Chair in Sustainability Transitions. Before this, she worked at the NREL's Center for Integrated Mobility Sciences in 2018 as a senior research scientist in a joint appointment with the University of Chicago's Mansueto Institute for Urban Innovation, where she is a research fellow. Previously, she was a senior scientist at the National Center for Atmospheric Research. Throughout her career, she has developed a considerable body of highly regarded sociological and transdisciplinary research resulting in several research grants and some 145 peer-reviewed publications. Her work primarily focuses on crucial intersections among people, energy, mobility, and the built environment in cities around the world. She has developed many innovative methods (e.g., clustering techniques and indices) to examine how inequalities in income, education, and decision-making power across populations relate to the distribution of benefits or negative impacts associated with access to transportation, energy, and related technological innovations (distributional justice). She has also developed tools such as listening sessions and fuzzy cognitive maps to examine the energy and mobility needs of women, elders, the working class, people of color, and other underrepresented groups to inform the understanding and management of these needs (e.g., procedural justice). Dr. Romero-Lankao has extensive experience as a sociologist working across disciplines and at the science-policy interface in the United States, Mexico, and many urban locations internationally. Her leadership of international research has garnered a good deal of recognition—she served as co-leading author in a working group contributing to the Nobel Prize-winning Fourth Assessment Report published by the United Nations' Intergovernmental Panel on Climate Change. She also serves on the editorial board of Earth's Future and several other journals and on the steering committee of the U.S. Carbon Cycle Science Program.

Devashree Saha

Member

Devashree Saha is the Director of US Clean Energy Economy program at the World Resources Institute (WRI). In this role, she supports policymakers and other stakeholders to ensure policies and strategies to advance the clean energy transition are fair and inclusive, with a focus on decent jobs, skills, economic development, equity, and putting people and communities at the center of the transition. Prior to joining WRI, Devashree led the Council of State Government’s (CSG) energy and environmental policy work where she was responsible for directing research and providing policy analysis and technical assistance to state legislators and executive branch officials. Before joining CSG, Devashree worked at the Brookings Institution where her research focused on a wide array of clean energy topics, including examining clean energy innovation trends at the U.S. sub-national level, identifying promising clean energy financing mechanisms, and estimating the employment size, nature and spatial geography of the U.S. clean economy. Earlier in her career, she worked for the National Governors Association, providing governors and their staff with data and guidance on best practices affecting the energy sector. Devashree holds a Ph.D. in public policy from the University of Texas at Austin and a master’s degree in political science from Purdue University.

Kelly Sims Gallagher

Member

Kelly Sims Gallagher is Professor of Energy and Environmental Policy at The Fletcher School, Tufts University. She directs the Climate Policy Lab and the Center for International Environment and Resource Policy at Fletcher. From June 2014-September 2015 she served in the Obama Administration as a Senior Policy Advisor in the White House Office of Science and Technology Policy, and as Senior China Advisor in the Special Envoy for Climate Change office at the U.S. State Department. Gallagher is a member of the board of the Belfer Center for Science and International Affairs at Harvard University. She is a member of the Executive Committee of the Tyler Prize for Environmental Achievement and she also serves on the board of the Energy Foundation. Broadly, she focuses on energy innovation and climate policy. She specializes in how policy spurs the development and deployment of cleaner and more efficient energy technologies, domestically and internationally. She is a member of the Council on Foreign Relations. She is the author of Titans of the Climate (The MIT Press 2018), The Global Diffusion of Clean Energy Technologies: Lessons from China (MIT Press 2014), China Shifts Gears: Automakers, Oil, Pollution, and Development (The MIT Press 2006), and dozens of other publications.

Susan F. Tierney

Member

Susan Tierney, a Senior Advisor at Analysis Group, is an expert on energy and environmental economics, regulation, and policy, particularly in the electric and gas industries. She consults to businesses, government agencies, grid operators, foundations, tribes, environmental groups, financial institutions, and other organizations. Previously, she served as the Assistant Secretary for Policy at the U.S. Department of Energy, and was the Secretary for Environmental Affairs in Massachusetts, Commissioner at the Massachusetts Department of Public Utilities, and Executive Director of the Massachusetts Energy Facilities Siting Council. She co-authored the energy chapter of the National Climate Assessment, and serves on the boards of the Sloan Foundation, the Coalition for Green Capital, Barr Foundation, Resources for the Future, and World Resources Institute. She has served on several committees of the National Academies, chaired the Department of Energy’s Electricity Advisory Committee, and now chairs the External Advisory Council of the National Renewable Energy Lab. She taught at the Department of Urban Studies and Planning at MIT and at the University of California at Irvine, and has lectured at Harvard University, University of Chicago, Yale University, New York University, Tufts University, Northwestern University, and University of Michigan. She earned her Ph.D. and master’s in regional planning at Cornell University and her B.A. at Scripps College.

William Walker

Member

William "Reed" Walker is the Transamerica Professor of Business and Public Policy and Economics at UC Berkeley. His research explores the social costs of environmental externalities such as air pollution and how regulations to limit these externalities contribute to gains and/or losses to society. He is the faculty co-director of UC Berkeley’s Opportunity Lab - Climate and Environment Initiative. He is also a research associate at the Energy Institute at Berkeley and a faculty research fellow at the National Bureau of Economic Research. He was a recipient of the Sloan Foundation Research Fellowship and the IZA Young Labor Economist Award. His work has been supported by the Environmental Protection Agency, the National Science Foundation, the Robert Wood Johnson Foundation, the Sloan Foundation, and the Smith-Richardson Foundation. He received his PhD in economics from Columbia University.