

Daniel M. Kammen

Brief Biography

Daniel M. Kammen is the Class of 1935 Distinguished Professor of Energy at the University of California, Berkeley, where he holds appointments in the Energy and Resources Group, the Goldman School of Public Policy, and the department of Nuclear Engineering. Kammen is the founding director of the Renewable and Appropriate Energy Laboratory (RAEL). Kammen is also the Co-Director of the Berkeley Institute of the Environment (<http://bie.berkeley.edu>).

Kammen received his undergraduate (Cornell A., B. '84) and graduate (Harvard M. A. '86, Ph.D. '88) training in physics. After postdoctoral work at Caltech and Harvard, Kammen was professor and Chair of the Science, Technology and Environmental Policy at Princeton University in the Woodrow Wilson School of Public and International Affairs from 1993 – 1998. He then moved to UC Berkeley.

Through RAEL (<http://rael.berkeley.edu>) Kammen works with faculty colleagues, postdoctoral fellows, and roughly 20 doctoral students on a wide range of science, engineering, economics and policy projects related to energy science, engineering and the environment. The focus of Kammen's work is on the science and policy of clean, renewable energy systems, energy efficiency, the role of energy in national energy policy, international climate debates, and the use and impacts of energy sources and technologies on development, particularly in Africa and Latin America. His work is interdisciplinary, and extends from theoretical studies to highly practical field projects and the design and development of specific policy initiatives and pieces of legislation. Kammen has published five books, over 200 journal articles and 30 research reports.

Daniel Kammen serves on the National Advisory Board of the Union of Concerned Scientists, on the Technical Review Board of the Global Environment Facility is on the advisory board of the Union of Concerned Scientists, and in 1998 was elected a Permanent Fellow of the African Academy of Sciences.

Kammen's website: <http://socrates.berkeley.edu/~kammen>, documents his teaching, partnerships with developed and developing country partners, and media and educational efforts.

On February 22, 2007, Daniel Kammen will receive the Distinguished Citizen Award from the Commonwealth Club of California. This is the 19th time the Club has honored individuals who have made significant and enduring contributions to the Bay Area and California community, and who embody the principles and values of The Commonwealth Club.

Website: <http://commonwealthclub.org/features/annualdinner/19th/>

From March 5 - 7, 2007, Kammen will deliver the Martin Lectures at Oxford University, with Princeton University Press releasing the lectures as a book in late 2007.

Website: <http://www.martininstitute.ox.ac.uk/jmi/>

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Selected Journal Publications

Kammen is the author of over 200 papers and reports, most of which are available online at: <http://rael.berkeley.edu>). A selection includes:

Kammen, D. M. (2006) "The Rise of Renewable Energy", *Scientific American*, September. 82 - 91.

Kammen, D. M. (2006) Testimony at U. S. House of Representatives Committee on Government Reform, "Climate Change Technology Research: Do We Need a 'Manhattan Project' for the Environment?" Representative Tom Davis, Chair, Henry Waxman, Ranking Minority Member, September 21, Washington, D. C.
URL:
<http://reform.house.gov/GovReform/News/DocumentSingle.aspx?DocumentID=50310>

Kammen, D. M. (2006) "September 27, 2006 – A day to remember", *San Francisco Chronicle*, September 27.

Farrell A. E., Plevin, R. J. Turner, B. T., Jones, A. D. O'Hare, M. and Kammen, D. M. (2006) "Ethanol can contribute to energy and environmental goals", *Science*, **311**, 506 – 508.

Kammen, D. M. and Nemet, G. (2005) "Reversing the incredible shrinking energy R&D budget," *Issues in Science & Technology*, Fall, 84 – 88.

Jacobson, A. and Kammen, D. M. (2005) " Science and engineering research that values the planet", *The Bridge: Journal of the National Academy of Engineering*, Winter, 11 – 17.

Bailis, R., Ezzati, M. and Kammen, D. M. (2005) "Mortality and greenhouse gas impacts of biomass and petroleum energy futures in Africa", **308**, *Science*, 98 – 103.

Ezzati, M. and Kammen, D. (2001) "Indoor air pollution from biomass combustion and acute respiratory infections in Kenya: An Exposure-response study", *The Lancet*, **358**, 619 – 624.

Margolis, R. and Kammen, D. M. (1999) "Underinvestment: The energy technology and R&D policy challenge", *Science*, **285**, 690 – 692.

Baer, P., Harte, J., Herzog, A., Holdren, J., Hultman, N., Kammen, D. M., Haya, B., Norgaard, R., and Raymond, L. (2000) "Equity and greenhouse gas responsibility", *Science* **289**, 2287.

Selected Current Projects

- Daniel Kammen is the founding Editor-in-Chief of *Environmental Research Letters*, an open-access rapid publication journal covering the entire environmental field. ERL, which published it first two issues in 2006 has already climbed to be the most cited journal of those published by the Institute of Physics (UK).
- Kammen is the director of the Urban Sustainability Initiative at the Berkeley Institute of the Environment. The USI project is supported by the Gordon and Betty Moore Foundation. The USI project is focused on bringing science, technology and policy expertise and solutions to address the needs of urban centers in developing nations, where one-half of the global population will soon be living. Initial USI projects are underway in China, South Africa, and Tanzania. Website: <http://bie.berkeley.edu/usi>.
- University of California Berkeley/Lawrence Berkeley National Laboratory/University of Illinois - \$500 million Energy Biosciences Institute (EBI) Proposal. This team won the competition to host and develop the institute. Kammen was the section leader and primary author for the Global Systems Engineering, Economics, and Ethics component of the EBI Proposal submitted to British Petroleum.
- Kammen is working directly with Sir Richard Branson, founder of the Virgin Group to develop a new, zero-carbon, model for communities and nations. Started initially in the British Virgin Islands as a two-island pilot, soon to expand to the entire BVI system. A related project is develop the first low-carbon airline. For this effort Virgin Atlantic, Virgin Africa, and Virgin Nigeria will be used as the models, the first industry movers.
- Kammen and his students have developed a set of analytic models and practical projects to demonstrate the feasibility of *deep cuts*, defined as 80% or more reductions over current (baseline) emissions of greenhouses gases in the context of sustained economic growth. In phase two of the project, a series of local, regional, national, and global low-carbon strategies will be developed.

Prior Projects

Indoor Air and Energy Project

Kammen and his students produced the first exposure-response relationship (Ezzati and Kammen, 2001) linking indoor air pollution to major ill-health. This four-year study, conducted in central Kenya (Laikipia District) has become a standard for action-oriented health and energy development projects. This work has led to improved stove analysis and dissemination efforts in over 20 nations. Then EPA Administrator Christine Todd Whitman and Professor Kammen introduced the a US-coordinated initiative in this area, the Partnership for Clean Indoor Air (<http://www.pciaonline.org/>) at the 2002 World Sustainability Summit in Johannesburg, South Africa.

Biofuel Initiative

Kammen and Alex Farrell, also of the Energy and Resources Group at the University of California, Berkeley, develop an open-source biofuel analysis software package. This project led to a 27 January (2006) paper in *Science* that was used by President Bush as background for his 'America is addicted too oil' statement in the State of the Union speech. The Biofuel Research team is now working on a number of projects for the State of California, including a Low Carbon Fuels Standard, to be announced by Governor Schwarzenegger in February 2007.

Education and Energy Outreach

On May 7, 2006, Kammen appeared on *60 Minutes* with Dan Rather in the segment, "The Ethanol Solution" that grew out of his 27 January 2006 paper that appeared in *Science*, "Ethanol can contribute to energy and environmental goals."

Website (and online video of the show):

<http://www.cbsnews.com/stories/2006/05/04/60minutes/main1588659.shtml>

Kammen makes regular appearances on National Public Radio's *Science Friday* (6 appearances), *All Things Considered* (5 appearances), *Marketplace* (4 appearances). He has been interviewed or quoted in *Time Magazine*, *Newsweek*, *The New York Times*, *The Financial Times of London*, *National Geographic*, and *The Wall Street Journal*.

A packet of press interviews and media events is included as a separate document.

Teaching and Mentoring

Kammen has developed a number of innovative courses, including a new class on Solar Photovoltaics that drew record student enrollment in both its inaugural (2004) and most recent (2006) offering. The course ranges from basic semiconductor physics to practical projects, including the design of solar systems installed on low-income housing projects in Oakland, and the design of business plans for major new clean energy companies.

Kammen's large graduate/advanced undergraduate lecture course on energy, ER100, 'Energy and Society' has expanded to become a 100+ person offering, which is accessed and used for distance learning by over 15 universities, in six countries.

Kammen's students have moved into a wide range of positions, including work at the Natural Resources Defense Council, Greenpeace, and CleanEdge, as well as in commercial energy firms such as Constellation Energy, GE Wind and as the founding partner of SunEdison, the largest installer of solar photovoltaics in the United States. He has former students now working at the United Nations (the Development Programme as well as at the Global Environment Facility) and at the U. S. National Renewable Energy Laboratory.

Kammen's recent doctoral students hold faculty positions at Georgetown's School of Foreign Service, in the School of Forestry and Environmental Studies at Yale University, the Harvard School of Public Health, the Schatz Energy Laboratory/Humboldt State University, the Energy and Environment Program at the University of Wisconsin - Madison, in the Departments of Geography at both Florida State University and the University of Wisconsin, Madison, and in the Greenspun School of Public Policy at the University of Nevada Las Vegas.

Public Policy Service

Kammen is a frequent witness in front of U. S Congressional House (8 appearances), Senate (3 appearances), and State of California (9 appearances) legislative hearings. He works closely with a number of members of the U. S. House and Senate.

In California Kammen worked closely with former California Assemblymember Fran Pavely on the development of both AB1493 (a 30% reduction of greenhouse gas emissions from vehicles in California), and the AB32, the California Global Warming Solutions Act, that calls for a 25% reduction in emissions by 2025. Kammen serves on the environmental advisory committee to the California Public Utilities Commission, and on the Sustainability Committee for San Francisco Mayor Gavin Newsom.

He recently served as the only non-Canadian on Natural Resources Canada's task force on a clean energy future. That report is available from the Prime Minister's Office as:

Bruneau, A., Connor, D., Fox, J. C., Kammen, D. M., Keith, D., Lamarre, P., Martel, J. G., McCready, K., Merrin Best, P., Schramm, L. (2006) *Powerful Connections – Priorities and Directions in Energy Science and Technology in Canada*. Report of the National Advisory Panel on Sustainable Energy Science and Technology (Natural Resources Canada: Government of Canada, Ottawa, Ontario).

Kammen is currently serving on energy task forces for the Governor's of New York State, Connecticut, and Wisconsin.

Kammen served on the Nuclear Energy Research Advisory Committee (NERAC) for the U. S. Department of Energy's examination of the next generation of nuclear power options ('Generation IV').