

Vita: ROBERT K. KAUFMANN

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EDUCATION

Ph.D. Energy Management & Policy, 1988
University of Pennsylvania.

M.A. Economics, 1984
University of New Hampshire.

B.S. Biology (Concentration: Ecology & Systematics), 1979 with honors
Cornell University.

PROFESSIONAL EXPERIENCE

Chair, Department of Geography & Environment, Boston University, September 2009 – August, 2012.

Founding Partner, First Fuel Software 420 Bedford St. Lexington, MA 02420 August 2010 – present. To date, our methodology for remote energy audits has been validated by Fraunhofer USA, we have filed a patent, and raised our A round of funding (\$12.4 million). Currently, we several clients that include utilities and the federal government.

Governor's Energy Policy Review Commission, January 2013 – October 2013. The Governor of Massachusetts has charged this committee with writing a report to the legislature on the success and cost-effectiveness of programs under chapter 169 of the acts of 2008 (the Green Communities Act).

Director, Center for Energy & Environmental Studies, Boston University, September 2006 – August, 2009; September 2012-present.

Professor, Department of Geography and the Center for Energy & Environmental Studies, Boston University, September 2003 - present.

Associate Professor, Department of Geography and the Center for Energy & Environmental Studies, Boston University, September 1995 - 2003.

Assistant Professor, Department of Geography and the Center for Energy & Environmental Studies, Boston University, September 1989 - 1995.

Senior Economist, Energy Department, Wharton Econometrics, September 1987 - August 1989.

Research Scientist, Complex Systems Research Center, University of New Hampshire, February 1982 - August 1984.

Research Technician, Complex Systems Research Center University of New Hampshire, September 1979 - January 1982.

PATENTS

Kaufmann, R.K., N. Kulatilaka, K. Kolkebeck, S. Shah, M. Kolodziej, System and method for remote modeling of end use energy consumption in buildings, (patent pending).

BOOKS

R.K. Kaufmann and C.J. Cleveland. 2007. *Environmental Science*. McGraw-Hill, New York.

C.A.S. Hall, C. Cleveland, and R. Kaufmann. 1986. *Energy and Resource Quality: The Ecology of the Economic Process*, John Wiley & Sons, New York. Reprinted by University Press of Colorado, Niwot CO. 1992.

J. Gever, R. Kaufmann, D. Skole, and C. Vorosmarty. 1986. *Beyond Oil: The Threat to Food and Fuel in the Coming Decades*. Ballinger Press, Cambridge, Mass. Reprinted by the University Press of Colorado, Niwot Colorado. 1992.

PEER REVIEW ARTICLES

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Kaufmann, RK, H. Kauppi, ML Mann, and J.H Stock, 2013, Does temperature contain a stochastic trend: linking statistical results to physical mechanisms, *Climatic Change*. doi 10.1007/s10584-012-0683-2.

Kaufmann, RK, S. Gopal, X. Tang, S. M. Raciti, PE Lyons, N. Geron, and F. Craig, Revisiting the weather effect on energy consumption; implications for the impact of climate change, 2013, *Energy Policy* 62:1377-1384, doi.:10.1016/j.enpol.2013.07.056

Knyazikhin, Y. P. Lewis, M.I. Disney, M. Mottus, M. Rautiainen, P. Stenberg, R.K. Kaufmann, A. Marshak, M.A. Schull, Y. Carmona, W. Vanderbilt, A.B. Davis, F. Baret, S., Jacquemoud, P.L. A. Lyapustin, Yang, and R.B. Myneni, 2013, Reply to Ollinger et al: Remote sensing of leaf nitrogen and emergent ecosystem properties, *Proceedings National Academy of Sciences*, DOI: 10.1073/pnas.1305930110.

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Myneni, R.B., J.R. Dong, C.J. Tucker, R.K. Kaufmann, P.E. Kauppi, J. Liski, L. Zhou, V. Alexeyev, and M.K. Hughes. 2001. A large carbon sink in the woody biomass of Northern Forests. *Proceeding National Academy Sciences* **98**(26), 14784-14789.

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Kaufmann, R.K. and C.J. Cleveland, 2001, Oil production in the lower 48 states; Economic, geological, and institutional determinants. *The Energy Journal*. **22**:27-49.

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Stern, D.I. and R.K. Kaufmann, 2000, Is there a global warming signal in hemispheric temperature series: a structural time series approach *Climatic Change*. **47**:411-438.

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Kaufmann, R.K. B. Davidsdottir, S. Garnham, P. Pauly. 1998. The determinants of atmospheric SO₂ concentrations: reconsidering the environmental Kuznets curve. *Ecological Economics* **25**:208-220.

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- Kaufmann, R.K. and C.J. Cleveland. 1995. Measuring sustainability: needed--an interdisciplinary approach to an interdisciplinary concept. *Ecological Economics* **15**:109-112.
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- Kaufmann, R.K., P. Pauly, and J. Sweitzer. 1993. The effects of NAFTA on the environment. *The Energy Journal* **14**:217-240.
- Kaufmann, R.K. and L.H. Thompson. 1993. Carbon taxes: Their benefits, liabilities. *Forum for Applied Research and Public Policy* **8**(3) 113-116.
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S. Piccot, T. Lynch, R. K. Kaufmann, C.J. Cleveland, and B. Moore. 1991. Analysis of historical radiatively important trace gases (RITG) emissions: Development of a trace gas accounting system (T-GAS) for 14 countries. EPA -600/9-91-019. National Technical Information Service.

R. K. Kaufmann and I. Azary-Lee. 1991. A biophysical analysis of substitution: Does substitution save energy in the US forest products industry? In *Ecological Economics: Implications for Forest Management and Practice*. Dennis P. Bradley and P.O. Nilsson (Eds). The Swedish University of Agricultural Sciences. Garpenberg. pp. 111-123.

R. Kaufmann. 1989. A new model of the link between energy and economics. In *Proceedings, The Third National Conference of Microcomputer Applications in Energy*. Pages 3-9.

R. Kaufmann, B. Moore, and M.M. Averner. 1983. A qualitative analysis of gas exchange in a closed ecological life support system. Society of Automotive Engineers Technical Paper Series, 820888.

B. Moore, R. Kaufmann, and C. Reinhold. 1981. Design and control strategies for a CELSS: integrating mechanistic paradigms and biological complexities. American Society of Mechanical Engineers.

TECHNICAL REPORTS

Kaufmann, R.K. 1994. The Outlook for the World Oil Market. Prepared for the World Project LINK Conference. The United Nations, NY.

Kaufmann, R.K. H.Y. Li, P. Pauly, K Seto, J. Sweitzer. 1993. A Preliminary analysis of international aspects of a carbon tax: the role of the world oil market. Prepared for the US Environmental Protection Agency.

Kaufmann, R.K. 1994. The Outlook for the World Oil Market. Prepared for the World Project LINK Conference. Beijing, The People's Republic of China.

Kaufmann, R.K., and J.L. Sweitzer. 1992. The Effect of Environmental Policy of the Oil and Natural Gas Industry. Prepared for the Japan National Oil Corporation

Kaufmann, R.K. H.Y. Li, P. Pauly, and L.H. Thompson. 1991. Global Macroeconomic Effects of carbon taxes: A feasibility study. Prepared for the US Environmental Protection Agency.

Kaufmann, R. K. and J.L. Sweitzer. 1991. Acid Deposition and Global Warming: Their Relation to and Effect on the Oil and Natural Gas Industry. Prepared for the Japan National Oil Corporation.

B. Moore, R. Kaufmann, S. Wolf, and R. Mason. 1982. CELSS workshop Reports I & II: *Biological problems and experimental program for a controlled ecological life support system*. CELSS Research Reports. Prepared for the National Aeronautics and Space Agency.

BOOK REVIEWS & LETTERS

R.K. Kaufmann, 2005, Book Review, Beyond Oil: The View From Hubbert's Peak,. By Kenneth S. Deffeyes. *Nature* **434**:960.

R.K. Kaufmann. 1996. Book Review: Managing the Global Commons: The Economics of Climate Change. By W.D. Nordhaus. *Ecological Economics* **19**:96.

R.K. Kaufmann. 1996. Book Review: This Fissured Land: An Ecological History of India By M. Gadgil and R. Guha. *Ecological Economics* **18**:260-261.

R.K. Kaufmann. 1993. Book Review: In the Servitude of Power: Energy and Civilization Through the Ages. By J.C. Debier, J.P. Delage, and D. Hemery. *Ecological Economics* **8**:313-314.

R. K. Kaufmann. 1993. Book Review: Beyond the Limits. By D. Meadows, D. Meadows, and J. Randers. *Natural Resources Forum* **17**(1):68-69.

R. K. Kaufmann. 1993. Book Review: Blueprint for a Green Planet. By D. Pearce, A. Makandya, and E. Barbier. *Ecological Economics* **7**:75-78.

C. Cleveland, R. Costanza, C.A.S. Hall and R. Kaufmann. 1985. Energy and Economic Activity. *Science*. **230**:738.

FUNDED RESEARCH

N. Phillips (Principal Investigator), Robert K Kaufmann (Co-investigator). Urban metabolism of Boston, ULTRA-Ex Program, National Science Foundation, October 2009-March 2012 \$209,000

D. Nepstad (Principal investigator), Woods Hole Research Center, Robert Kaufmann (Co-investigator) Feedbacks among forestry, fire, and agriculture in Amazonia, Biocomplexity Program National Science Foundation, 9/1/04-8/31/10 \$249,996

D. Nepstad (Principal investigator), Woods Hole Research Center, Robert Kaufmann (Co-investigator) A Scientific Framework for Basin Wide Conservation Gordon and Betty Moore Foundation 6/1/03-5/31/06 \$157,999

R.K. Kaufmann (Principal investigator), R. Myneni (Co-Investigator) Monitoring recent changes in biospheric activity using tree rings and NDVI. With Roseanne D'Arrigo (Principal Investigator) Tree-Ring Laboratory, Lamont Doherty Earth Observatory. National Science Foundation (Ecological Rates of Change) Boston University portion \$149,300 9/1/02-8/31/04

Myneni, Ranga (Principal investigator), Boston University, R. Kaufmann ((Co-Investigator), The Greening Earth: Proposal for Monitoring the Pulse of Global Vegetation with Data from Multiple Satellites Since 1981 into the 21st Century. \$580,000 12/1/02-11/31/05

D. Nepstad (Principal investigator), Woods Hole Research Center, (Klink, Carlos , Universidade de Brasilia & Moutinho, Paulo S, Instituto de Pesquisa Ambiental), Robert Kaufmann (Co-investigator) Amazon Scenarios: Modeling Interactions Among Land Use, Fire and Climate. NASA. Boston University portion \$115,000 12/1/02-11/31/05

R.K. Kaufmann (Principal investigator), C. Woodcock, D. Dye, and K. Seto. Modelling and forecasting land use change in China based on socioeconomic drivers. NASA LCLUC-0002 (\$295,000) May 1, 1997 - April 31, 2000.

R.K. Kaufmann (Principal investigator) and S Gopal and L. Scuderi. The Impact of climate change on US agriculture. National Science Foundation Grant Number #95-23600. (\$155,623) September 1 1995 - August 31, 1998.

C.E. Woodcock, (Principal Investigator), F. El-Baz, C. Cleveland, M. Friedl, S. Gopal, R. Kaufmann, J. Key, D.Dye, R. Myneni, G. Salvucci, A. Strahler, Co-Investigators. Center for Excellence in Remote Sensing at Boston University. NASA (\$380,000) October 1, 1997 - September 30, 1998.

Peter Pauly (Principal Investigator) and R.K. Kaufmann (Co-Principal Investigator) Economic and environmental effects of carbon taxes: A multi-country study. US Environmental Protection Agency \$290,000 (Boston University (\$90,000)). October 1, 1992 - August 31, 1994.

R.K. Kaufmann (Principal Investigator). Using Project LINK to asses the emissions of carbon dioxide. US Environmental Protection Agency \$27,755, March 1, 1992 - August 31, 1992.

R.K. Kaufmann (Principal Investigator). Analyzing Non-OPEC oil production. Japan National Oil Corporation. \$12,500. July 1, 1992 - August 31 1992.

R.K. Kaufmann (Principal Investigator) Using Project LINK to assess the emissions of carbon dioxide. US Environmental Protection Agency. \$15,000 September 1 1991 - February 28 1992.

R.K. Kaufmann (Principal Investigator). The effect of environmental policy on the oil and natural gas industry. Japan National Oil Corporation. \$15,000 September 1 1991 - January 31 1992.

R.K. Kaufmann (Principal Investigator) Analyzing the effect of policies to global climate change on economic activity and carbon emissions. US. Environmental Protection Agency. \$10,200 January 1 - August 31 1991.

R.K. Kaufmann (Principal Investigator). Analyzing the effect of policies to slow global warming and acid deposition on the oil and gas industry: Japan National Oil Company (Geography) \$15,000 September 1, 1990 - January 31 1991.

New Faculty Seed Grant. Boston University (\$2,000).

FELLOWSHIPS & AWARDS

Scientific American Fifty Most Important Papers Published in 2001. Zhou, L, C.J. Tucker, R.K. Kaufmann, D. Slayback, N.V. Shabanov, and R.B. Myneni. 2001. Variations in northern vegetation activity inferred from satellite data of vegetation index during 1981 to 1999. *Journal of Geophysical Research* 106:20069-20083.

Agronomy Journal Editors' Citation for Excellence in Manuscript review, 2000.

The International Association of Energy Economists Publication Award For The Best Paper Published in 1991. Forecasting ultimate oil recovery and its rate of production: Incorporating economic forces into the models of M. King Hubbert.

Chairman's Dissertation Award. University of Pennsylvania. Spring 1988.

University Fellow. University of Pennsylvania. 1984 - 1986.

National Wildlife Federation Publication Award. "Energy and the United States Economy: A Biophysical Perspective." *Science*, 225:890-898 (1984).

RESEARCH PANELS & WORKSHOPS

Coping with volatile oil and commodity prices, European Central Bank, November, 2011.

Commodity prices: drivers and economic impacts, The Bank of England/European Central Bank, London, February 2009.

General Accounting Office, Crude Oil: Uncertainty about future oil supply makes it important to develop a strategy for addressing a peak and decline in oil production, GAO-07-283, February 2007.

Land-Use/Land-Cover Change Steering Committee, NASA.

Project LINK Modelling Center. Built and maintain the model of the world oil market for Project LINK, the econometric model supported by the United Nations.

Intergovernmental Panel on Climate Change. Working Group I.

External drivers of deforestation and regrowth: Human dimensions of deforestation and regrowth in the Brazilian Amazon. Sponsored by the University of Florida, University of New Hampshire, Marathon Florida. February 20-23, 1997.

Assessing the role of human and natural capital in economic production. Sponsored by the MacArthur Foundation and held at the Center for Energy & Environmental Studies, Boston University.

Integrated Models of Global Climate Change: Coupling Social and Natural Sciences. Sponsored by the Potsdam Institute for Research on Climate Change Impacts. Potsdam, Germany.

Complex Ecological Economics Systems Dynamics Workshop. Sponsored by the Beijer Institute, International Institute for Ecological Economics, The Swedish Royal Academy of Sciences.

Stanford Energy Modelling Forum 12. Global Climate Change: Energy Sector Impacts of Greenhouse Gas Emission Control Strategies. September 1990 - June 1992.

Stanford Energy Modelling Forum 11. International Oil Supplies and Demands. September 1989 - September 1990.

INVITED LECTURES

The relation among trader positions and oil prices: going beyond causal order, Coping with volatile oil and commodity prices, European Central Bank, Frankfurt, Germany, November 2011.

National Contributions to and Moral Responsibility for Climate Change, Public Affairs Lecture Series, Farleigh Dickenson University, NJ October, 2011.

The relation among trader positions and oil prices: going beyond causal order, Coping with volatile oil and commodity prices, New York, New York, October 2011.

The outlook for global oil prices? Project LINK, New York, October 2011.

The role of speculation vs. fundamentals in the recent oil price rise. Plenary Talk OPEC at Fifty, NEPI, Tulsa Oklahoma, March 2011.

Oil supply and energy transitions in the USSR and USA. Energy Transitions Workshop, Boston University, Boston, MA February 2011.

Testing hypotheses about glacial cycles against the observational record, Woods Hole Oceanographic Institution March 2011.

Testing hypotheses about glacial cycles against the observational record, Boston University Earth Science Seminar, February 2011.

China's Impact on the Global Environment, Brown University, December 2010.

Climate Change: Why So Skeptical? Public Affairs Lecture Series, Farleigh Dickenson University, NJ November, 2010.

Climate Change: Why So Skeptical? SeniorLife, MA October, 2010.

The role of market fundamentals and speculation in recent price changes for crude oil Project LINK, New York, New York, October 2010

Oil and the American Way of Life, Denver, CO August, 2010.

Oil and the American Way of Life, Public Affairs Lecture Series, Farleigh Dickenson University, NJ November , 2009.

The Outlook for Global Oil Prices? Project LINK, Bangkok, Thailand, October 2009

Do Household energy expenditures affect mortgage delinquency rates? Project LINK, Bangkok, Thailand, October 2009.

Oil and the American Way of Life, University of Dayton, Dayton, OH October, 2009.

Oil and the American Way of Life, Princeton Plasma Physics Laboratory, Princeton, NJ April, 2009.

Oil prices, speculation and fundamentals: Why were oil prices so high in the summer of 2008. University of Copenhagen, Copenhagen, Denmark, March 2009.

High & Low crude oil prices: Speculation versus fundamentals, Bank of England, London, February 2009.

Conversion in Amazonia: the importance of rent, Centre d'Etudes et de Recherches sur le Développement International , Cleremont-Ferrand, France, November 2008.

Oil and the American Way of Life, Lafayette College, United States Military Academy at West Point, West Point, NY, November 2008

Anthropogenic Climate Change, How Sure Are We, Lafayette College, Easton, PA October, 2008.

Oil and the American Way of Life, Lafayette College, Easton, PA October, 2008

Urban Myths of the Oil Market, Society for Professional journalists, Atlanta, GA September 2008.

The Relationship Among Temperature, CO₂, CH₄, Ice, and Dust: A VECM Analysis of the Vostok Core, Copenhagen, Denmark, September 2008.

Urban Myths of the Oil Market, Foundation for American Communications, Atlanta, GA April 2008.

Will Oil Prices Decline? A Rerun of the 1980's. European Central Bank, Frankfurt, Germany, January, 2008.

Urban Myths of the Oil Market, Foundation for American Communications, Richmond, VA April 2007.

Climate Change for Beginners, Foundation for American Communications, Nashville, TN November 2007.

Urban Myths of the Oil Market, Foundation for American Communications, Rockford, Illinois, October 2007.

Emissions, concentrations, and temperature: a time series analysis, European Science Foundation, Rome, Italy, September 2007.

Valuing Environmental Services, A Shadow Price for Net Primary Production, Project LINK meeting, Beijing, China May, 2007

Urban Myths of the Oil Market, Foundation for American Communications, Orlando, Florida April 2007.

Urban Myths of the Oil Market, Wellesley College, April 2007.

Does OPEC Matter? An Econometric Analysis, Rensselaer Polytechnic Institute, Troy, NY March, 2007.

Urban Myths of the Oil Market, New York State Energy Office, Albany, NY March 2007

Urban Myths of the Oil Market, Foundation for American Communications, Minneapolis-St. Paul, MN March 2007

The Forecast for Oil Prices: The Role of the Downstream Sector, United Nations, Geneva, Switzerland, November 2006.

It's the Economy, Stupid, and Association for the Study of Peak Oil, Boston, and MA October 2006.

Urban Myths of the Oil Market, Southern California Association of Governments, Los Angeles, CA October 2006.

Urban Myths of the Oil Market, Foundation for American Communications, Urbana, Illinois September 2006.

Urban Myths of the Oil Market, Foundation for American Communications, Hartford, May 2006.

The Coming Oil Transition, Duke University, April, 2006.

After the Peak: When Will the World Run Out of Inexpensive Oil? The European Central Bank, Frankfurt, Germany, March, 2006.

World Oil Markets: Living Off the Past, Planning for the Future. World Project LINK Conference, Geneva Switzerland, October 2005.

Valuing Environmental Services: A shadow Price for Net Primary Production, Harvard University, Cambridge, MA October, 2005.

Urban Myths of the Oil Market, Foundation for American Communications, Houston, September, 2005.

Why are Oil Prices So High? The World Bank, September 2005.

Do OTA Contacts reduce the use and by-products of toxic materials? Scientific Advisory Board—Office of technical Assistance, State of Massachusetts, Boston, MA July, 2005

Oil and the American Way of Life,: Don't Ask, Don't Tell. Fermi National Accelerator Laboratory, Chicago, IL, June 2005.

Modeling OPEC Production, World Project LINK Conference. Mexico City, May, 2005.

Changes in the Annual Cycle of Carbon Dioxide at Mauna Loa, University of Arizona, May 2005.

Urban Myths of the Oil Market, Foundation for American Communications, New Orleans, December 2004.

The Outlook for the World Oil Market. World Project LINK Conference. New York, November, 2004.

Oil and the American Way of Life,: Don't Ask, Don't Tell. Spokane Community College, Spokane, WA October 2004.

The Past, Present, and Future of oil prices, production, & demand. University of Maryland, College Park, MD. October, 2004.

The Past, Present, and Future for World Oil Prices. Brazilian Petroleum Institute, Rio de Janeiro, Brazil. July, 2004.

The effect of land use change on local climate in the Pearl River Delta, China, Rensselaer Polytechnic Institute, March, 2004.

The Outlook for the World Oil Market. World Project LINK Conference. New York, November, 2003.

The mechanisms for autonomous increases in energy efficiency: a cointegration analysis of the US energy/GDP ratio US Society for Ecological Economics Saratoga Springs, NY May, 2003.

Does Opec Matter? The European Central Bank, Frankfurt, May, 2003.

The Outlook for the World Oil Market. World Project LINK Conference. New York, April, 2003.

The effect of war on oil prices. IPEA & the Ministry of Finance, Rio de Janeiro, Brazil. March, 2003.

Monitoring and modeling land-use change in the Pearl River Delta, China, using satellite imagery and socioeconomic data. Harvard University, Cambridge. February, 2003

A model of the world oil market, European Central Bank, Frankfurt, November 2002.

The Outlook for the World Oil Market. World Project LINK Conference. Bologna, October, 2002.

The effect of radiative forcing on surface temperature: a statistical approach. School of Public Health, Boston University. April 2001.

The Outlook for the World Oil Market. World Project LINK Conference. New York, April, 2001.

Monitoring and modeling land-use change in the Pearl River Delta, China, using satellite imagery and socioeconomic data. University of Massachusetts, Boston. April, 2001.

A temperature driven biotic sink for carbon in the northern hemisphere. Harvard University. January 2001.

The economic, geological, and institutional determinants of US oil production. Yale University, December 2000.

The Outlook for the World Oil Market. World Project LINK Conference. Oslo, Norway, October, 2000.

An Alternative Model of the Relation Among the Economy, Energy, and Materials: Implications for Climate Change Policy: Harvard University. June 2000.

Statistical Analysis of the Global Carbon Cycle: Identifying Factors Responsible for Missing Carbon: Woods Hole Research Center, May 2000.

The Outlook for the World Oil Market. World Project LINK Conference. United Nations, New York, April, 2000.

Modelling Land Use Land Cover Change in the Pearl River Delta of China. NASA Principal investigators meeting. Virginia. April 2000.

Emissions, Concentrations, & Temperature: A Time Series Analysis (with Jim Stock). Harvard University. February 2000.

Identifying the date of change in land cover classes from a time series of Landsat images. Waiginengen, Netherlands. December, 1999.

The Outlook for the World Oil Market. World Project LINK Conference. Athens, Greece, November, 1999.

Modelling Land Use Land Cover Change in the Pearl River Delta of China. NASA Principal investigators meeting. Virginia. May 1999.

The Outlook for the World Oil Market. World Project LINK Conference. United Nations, New York, May, 1999.

How much oil remains and why should you care? World Oil Forum, Denver. October 1998.

The Outlook for the World Oil Market. World Project LINK Conference. Brazil, September, 1998.

Modelling corn yield; Soil moisture versus precipitation. Community meeting on integrated assessment. Washington, DC July 1998.

Needed: A Truly Interdisciplinary Approach for Assessing Global Climate Change American Geophysical Union, Boston May 1998.

The Outlook for the World Oil Market. World Project LINK Conference. United Nations, New York, March, 1998.

Evidence for human influence on climate from hemispheric temperature relations World Project LINK Conference. Kuala Lumpur, Malaysia, September, 1997.

The Outlook for the World Oil Market. World Project LINK Conference. United Nations, New York, March 24, 1996.

The future of energy and economics; externalities, depletion, and global integration. Tufts University February 14, 1996.

Natural gas in the US: How far can technology stretch the resource base? International Association of Energy Economists. October 29, 1996.

The Outlook for the World Oil Market. World Project LINK Conference. University of Lausanne, Switzerland, September 30, 1996.

The role of human activity in global temperature: causal order in the historical record and coupled general circulation models. Plenary speaker. International Society of Ecological Economists, August 7, 1996.

The determinants of atmospheric concentrations of SO₂: reconsidering the environmental Kuznets curve. International Society of Ecological Economists, August 7, 1996.

The economic, engineering, and demographic determinants of the energy/GDP ratio: implications for carbon emissions. International Society of Ecological Economists, August 6, 1996.

Can technology reduce emissions of greenhouse gases? Incorporating technology innovation into the consideration of policy responses to human-induced climate change. Center for Global Change. February 9, 1996.

The relation among sustainability, income, and environmental degradation. Seminar on Sustainable development. University of Costa Rica. San Jose, Costa Rica. January 22, 1996.

The Outlook for the World Oil Market. World Project LINK Conference. September 25, 1995. University of Pretoria, South Africa.

The determinants of atmospheric SO₂ concentrations: reconsidering the environmental Kuznets curve. Environmental economics and policy seminar December 7, 1994. Harvard University.

Sustainability: Separating the wheat from the chaff. Sustainable development and environmental quality in the Hudson river valley. November 22, 1994, Garrison, New York.

The relation between marginal product and price in US energy markets. Political Economy of Global Energy. Brown Bag Luncheon Seminar. MIT. March 28, 1994.

The Outlook for the World Oil Market. World Project LINK Conference. March 10, 1994. The United Nations, NY.

The Outlook for the World Oil Market. World Project LINK Conference. September 13, 1993. Beijing, The People's Republic of China.

An Empirical Model of the World Oil Market. New England Chapter International Association for Ecological Economics. MIT. May 16, 1993.

Energy Supply, Economic Activity, and Social Change in the US and Former Soviet Union. Ecological Economics: Linking Economics and the Environment. University of Missouri at St. Louis. March 26, 1993.

An Empirical Model of the World Oil Market. Political Economy of Global Energy. Brown Bag Luncheon Seminar. MIT. March 24, 1993.

Integrating economic and physical models of climate change (Plenary Talk). Integrated Models of Global Climate Change: Coupling Social and Natural Sciences. The Potsdam Institute for Research on Climate Change Impacts. Potsdam, Germany. November 25, 1992.

A User's Guide to Carbon Taxes. University of New Hampshire, October 13, 1992. Durham NH.

An unexpected source of leakages from a unilateral carbon tax. World Project LINK Conference. Ankara, Turkey, September 17, 1992.

The economic cost of reduced yields of corn in Iowa due to climate change. International Society of Ecological Economists. August 6, 1992 Stockholm, Sweden.

The Outlook for the World Oil Market. World Project LINK Conference. September 24, 1991. Moscow, USSR.

Policies to increase US oil production: Likely to fail, damage the economy, and damage the environment. Pennsylvania Energy Office. September 5, 1991. Harrisburg, PA.

A Model of the World oil market for Project LINK. World Project LINK Conference. November 9, 1990 Manila, Philippines.

Tracking the emission of carbon dioxide by nation, sector, and fuel: A trace gas accounting system. International Society for Ecological Economics. May 23, 1990. Washington DC.

A Biophysical Analysis of the Energy/Real GDP Ratio in the "Big Five". International Society for Ecological Economics. May 23, 1990. Washington DC.

A Biophysical Analysis of Substitution: Does Substitution Save Energy in the US Forest Products Industry? Ecological Economics: Implications for Forest Management and Practice. April 4, 1990. St. Paul MN.

World Oil Markets: The Possibility for Another Oil Shock. Wharton International Forum. Wharton Business School, University of Pennsylvania. September 7, 1989.

A New Model of the Link Between Energy and Economics. Plenary Speaker. Third Annual Conference for Microcomputer Applications of Energy Use. November, 1988. Tucson AZ.

Do Flexible Functional Forms Generate Accurate Estimates of Energy Demand? Eighth Annual North American Conference of the International Association of Energy Economists. November, 1986. Boston, Mass.

US Carrying Capacity: What are the Limits? Global Tomorrow Coalition Meeting, June, 1983. Washington, D.C.

Modelling Gas Exchange in a Closed Biological System. Third International Conference on the State of the Art in Ecological Modelling. May 1982. Fort Collins, Colorado.

Net Energy Analysis of Importing Energy. International Symposium on Energy and Ecological Modelling. April 1981. International Society for Ecological Modelling. Louisville, Kentucky.

CONSULTING

European Central Bank. Assembled a long-run forecast for world oil prices.

World Bank. Built model of the world oil market for the modeling division.

ABSAR Corporation, Saudi Arabia, Analyzed the effect of changes in the price of crude oil on end-user prices in OECD nations.

European Central Bank. Built model of world oil market.

IPEA & Ministry of Finance (Brazil) Forecast of US invasion of Iraq on world oil Prices.

Arthur Andersen Consulting. Knowledgespace Consultant.

Nomura Research Institute. 1994. Review of world oil supply and demand models and estimation of energy demand models for newly industrialized economies in Asia.

Japan National Oil Corporation. Built model of world oil market.

Charles River Associates. 1993. Helped assess the effect of the BTU tax included in President Clinton's FY 94 Budget on the US oil production and drilling rates.

Chase Econometrics, Energy, Metals, & Materials. October 1984 - August 1987.

Micromosaics, 1984. Wrote computer program for Ecology Lab, an educational computer game that teaches the fundamental principles of ecology.

WGBH-NOVA, 1985. Wrote the teaching guide for Ecology Lab.

PEER REVIEW

Science	Nature
Ecological Economics	The International Journal of Forecasting
The Economic Journal	Resource and Energy Economics
The Energy Journal	Economic Modelling
Landscape Ecology	Agronomy Journal
Structural Change and Economic Dynamics	Ecological Applications
Energy: The International Journal	The Annals of Regional Science
Environment and Development Economics	Global and Planetary Change
Atmospheric Environment	Climatic Change
Review of Economics and Statistics	Environmental Management
The Journal of Environmental Economics and Management	
Journal of Geophysical Research (D) Atmospheres	

PROFESSIONAL SERVICE

Proposal Review

National Science Foundation, NASA, US EPA, US Department of Agriculture, Social Sciences and Humanities Research of Canada, Swiss National Science Foundation.

Review Panels

NASA

Panel for LBA grants (September 1997)

Site visit LBA-Ecology mid tenure review panel February (2001)

Site visit LBA/LCLUCC assessment of Richard Bilsburrow (UNC), Robert Walker (MSU) and Emilio Moran (IU) November 2001)

NSF

Site visit to Carnegie Mellon University to review renewal of NSF grant to the Carnegie Mellon Center for Integrated Study of the Human Dimensions of Global Change (CIS-HDGC) of \$8 million for five years (October 1999)

Review of NSF funding for IIASA (about \$5 Million) February 2001

Media Presentations

I have appeared on the national nightly news on NBC and CBS.

I have been quoted repeatedly in publication such as *The New York Times*, *National Geographic*, *Readers Digest* and many newspapers

I have written an Econoblog for *The Wall Street Journal* (with James Hamilton)

About wice a year, I appear on local TV to explain changes in oil prices.

Interviewed by Richard Kerr of *Science* regarding the outlook for world oil prices (Richard A. Kerr OPEC's second coming *Science* **281**:1129.)

Several TV appearances and print interviews for *Journal of Geophysical Research* paper (Zhou *et al.*, 2001).

Research is one of five projects chosen by Boston University to appear on the Boston University Science Coalition Research Website (<http://www.bu.edu/research/Features/scicoalition02/warming.html>)

Print interviews for *Nature* paper (Kaufmann and Stern, 1997 (e.g. Financial Times of London)

International Society for Ecological Economics

Ran for President of the US chapter of the International Association of Ecological Economists in fall 2000 (Lost).

Helped organize 1996 ISEE meeting at Boston University

UNIVERSITY
SERVICE

Director of Graduate Students, Center for Energy and Environmental Studies, Fall 2000 to present

Helped write internal review of the Center for Energy & Environmental Studies

Director, Center for Energy & Environmental Studies, Spring 2000.

Board of Directors, Boston University Children's Center. Spring 1992 - present

Director of Graduate Students, Center for Energy and Environmental Studies, Fall 1989 - Spring 1993.

Freshman and Transfer Summer Advisor, Summer 1990 - 1993.

Chair Search Committee, Department of Geography, Spring 1992

Freshman Friday Lectures, Spring 1992 and Spring 1993.

Center for Talented Youth Lectures, Fall 1992 and Fall 1993.