

Vita: ROBERT K. KAUFMANN

## ADDRESS

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## EDUCATION

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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

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

Founding Partner, First Fuel Software 420 Bedford St. Lexington, MA 02420 November 2009 – 2019. First Fuel sold to *Uplight* June 2019.

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.

## BOOKS

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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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Tucker, C. M. Brandt, P. Hiernaux, A. Kariryaa, K. Rasmussen, J. Small, C. Igel, F. Reiner, K. Melocik, J. Meyer, S. Sinno, E. Romero, E. Glennie, Y. Fitts, A. Morin, J. Pinzon, D. McClain, P. Morin, C. Porter, S. Loeffler, L. Kergoat, B. Issoufou, P. Savadogo, J. Wigneron, B. Poulter, P. Ciais, R. K. Kaufmann, R. Myneni, S. Saatchi, and R. Fensholt. in press, Sub-continental scale carbon stocks of individual trees in African drylands, *Nature*.

Pollack, A., and R.K. Kaufmann, 2022, Increasing storm risk, structural defense, and house prices in the Florida Keys, *Ecological Economics* 194:107350.

Arampatzidis, I, T. Dergiades, R.K. Kaufmann, and T. Panagiotidis, 2021, Oil and the U.S. stock market: implications for low carbon policies, *Energy Economics*, 103:105588.

Turiel, J.S. and R.K. Kaufmann, 2021, Evidence of air quality data misreporting in China: An impulse indicator saturation model comparison of local government-reported and U.S. embassy-reported PM<sub>2.5</sub> concentrations (2015-2017), *PLoS ONE* 16(4): e0249063.

Kaufmann, R.K., D. Newberry, C. Xin, and S. Gopal. 2021, Feedbacks among electric vehicle adoption, charging, and the cost and installation of rooftop solar, *Nature Energy*, doi.org/10.1038/s41560-020-00746-w

Kaufmann, R.K. and F. Pretis, 2021, Understanding glacial cycles: a multivariate disequilibrium approach, *Quaternary Science Reviews*, 251 106694.

Kaufmann, R.K. and C. Connelly, 2020, Non-market forces significantly affect oil prices, *Nature Energy*. <https://doi.org/10.1038/s41560-020-0549-1>

Chang, Y. R.K. Kaufmann, C.K. Kim, J. I. Miller, J.Y. Park, S. Park, 2020, Evaluating trends in time series of distributions: a spatial fingerprint of human effects on climate, *Journal of Econometrics*, 214:274-294.

Hallack, L. N., Kaufmann, R., & Szklo, A. S. 2020. Price discovery in Brazil: causal relations among prices for crude oil, ethanol, and gasoline. *Energy Sources, Part B: Economics, Planning, and Policy*, 15(4), 230-251.

Kaufmann, R.K. 2020, A regionalized or unified oil market: the price spread between Brent and WTI, *Economics of Energy & Environmental Policy* 9(2):11-30.

Stanimirova, R., Arévalo, P., Kaufmann, R. K., Maus, V., Lesiv, M., Havlík, P., & Friedl, M. A. 2019, Sensitivity of Global Pasturelands to Climate Variation. *Earth's Future*, 7. <https://doi.org/10.1029/2019EF001316>

Hallack, L.N. R.K. Kaufmann, and A. Szklo, 2019, The effect of productivity and country risk on development in the Brazilian pre-salt province, *Energy Sources, Part B Economics, Planning, and Policy*, 14(3):80-97.

Ansari, E. and R.K. Kaufmann, 2019, The effect of oil and gas price and price volatility on rig activity in tight formations and OPEC Strategy, *Nature Energy*. 4:321-328.

R.K. Kaufmann, R.K. 2019, Pass-Through of Motor Gasoline Taxes: Efficiency and Efficacy of Environmental Taxes, *Energy Policy*, 125:207-215.

Kaufmann, R.K. and E. Hines, 2018, The effect of combined-cycle generation and hydraulic fracturing on prices for coal, oil, and natural gas: implications for carbon taxes, *Energy Policy*, 118:601-611.

Kaufmann, R. K., 2017, Airfares and oil prices: 'feathers and rockets' adjustments, *Energy Economics*, 68:515-521.

Veliz, K.D. R.K. Kaufmann, C.J. Cleveland, and A Stoner, 2017 The effect of climate change on electricity expenditures in Massachusetts. *Energy Policy* 106:1-11.

Kaufmann, R.K., M. L Mann, S. Gopal, J. A Liederman, P.D. Howe, F. Pretis, X.Tang, M. Gilmore, 2017, The Spatial Heterogeneity of Climate Change as an Experiential Basis for Skepticism, *Proceedings National Academy of Sciences*, 114(1):67-71.

Kaufmann, R.K., and D. Vaid. 2016, Lower electricity prices and greenhouse gas emissions

due to rooftop solar; empirical results for Massachusetts, *Energy Policy*, 91:345-352.

Kaufmann, RK, 2016, Price differences among crude oils: the private costs of supply disruptions, *Energy Economics*, 56:1-8.

Kaufmann, R.K. and K. Juselius, 2016, Testing competing forms of the Milankovitch hypothesis: a multivariate approach, *Paleoceanography*. 31, doi:10.1002/2014PA002767.

Dergiades, T., R.K. Kaufmann, T. Panagiotidis, 2016, Long-run changes in radiative forcing and surface temperature: the effect of human activity over the last five centuries *Journal of Environmental Economics and Management*, 76:67-85.

Pretis, F, M. Mann, and R.K. Kaufmann, 2015, Testing competing models of the temperature hiatus: Assessing the effects of conditioning variables and temporal uncertainties through sample-wide break detection, *Climatic Change* **131:705-718**, DOI 10.1007/s10584-015-1391-5.

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Kaufmann, RK and S. Banerjee, 2014, A unified world oil market: regions in physical, economic, geographic, and political space, *Energy Policy* 74:235-242.

Kolodziej, M. and R.K. Kaufmann, 2014, Oil demand shocks reconsidered: A cointegrated vector autoregression, *Energy Economics*, 41:33-40.

Kaufmann, R.K. The end of cheap oil: Economic, social, and political change in the US and Former Soviet Union, 2014, *Energies* 7:6225-6241 doi:10.3390/en7106225.

Mann, M.L. R. K. Kaufmann, D.M. Bauer, S. Gopal, M. Nomack, J. Womack, K. Sullivan, B. Soares Filho, 2014, Pasture conversion and competitive land rents in the Amazon, *Ecological Economics*, 97:182-190.

Stern, D.I. and R.K. Kaufmann, 2014, Anthropogenic and natural causes of climate change, *Climatic Change*, 122:257-269.

Kolodziej, M. and R.K. Kaufmann, 2013, The role of trader positions in spot and futures prices for WTI, *Energy Economics* 40:176-182.

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Kaufmann RK, 2006, Energy returns on ethanol production, *Science* 312 (5781): 1747-1747.

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Kaufmann, R.K. H. Kauppi, and J.H. Stock, 2006, The relationship between radiative forcing and temperature: what do statistical analyses of the instrumental temperature record measure? *Climatic Change* 77:279-289.

Richmond, A. and R.K. Kaufmann, 2006, Is there a turning point in the relationship between income and energy use and/or carbon emissions? *Ecological Economics* 56:176-189.

Seto, K.C. and R.K. Kaufmann, 2005, Using logit models to classify land-use change from Landsat Thematic Mapper. *International Journal of Remote Sensing*. 26 (3): 563-577

Kaufmann, R.K. and C. Laskowski, 2005, Causes for an asymmetric relation between the price of crude oil and refined petroleum products, *Energy Policy* 33:1587-1596.

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Kaufmann, R.K, S. Dees, P. Karadeloglou, and M. Sanchez, 2004, Does OPEC matter? an econometric analysis of oil prices *The Energy Journal* 25(4):67-90.

D'Arrigo, R.D., R.K. Kaufmann, N. Davi, G.C. Jacoby, C. Laskowski, R.B. Myneni, Paolo Cherubini, 2004, Thresholds for warming-induced growth decline at northern treeline, *Global Biogeochemical Cycles* 18,GB3021,doi:10.1029/2004/GB002249.

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Kaufmann, R. K., R. D. D'Arrigo, C. Laskowski, R. B. Myneni, L. Zhou, and N. K. Davi 2004, The effect of growing season and summer greenness on northern forests, *Geophys. Res. Lett.*, 31, L09205, doi:10.1029/2004GL019608.

Kaufmann, R.K. 2004, The mechanisms for autonomous increases in energy efficiency: a cointegration analysis of the US energy/GDP ratio *The Energy Journal* 25(1) 121-144.

Kaufmann, R.K. Zhou, L, R.B. Myneni C.J. Tucker, D. Slayback, N.V. Shabanov, and J. Pinzon, 2003, The effect of vegetation on surface temperature: a statistical analysis of NDVI and climate data *Geophysical Research Letters* 30(2) 2137, doi: 10.1029/2003GL018251.

Kaufmann, R.K. and J.H. Stock, 2003, Testing hypotheses about the unknown carbon sink: a time series analysis *Global Biogeochemical Cycles* 17(2), 1072 doi:10.1029/2002GB001962.

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Zhou, L. R.K. Kaufmann. Y. Tian, R.B. Myneni, and C.J. Tucker, 2003, Relation between interannual variations in satellite measures of vegetation greenness and climate between 1982 and 1999, *Journal of Geophysical Research* 108(D1), 4004, doi:10.1029/2002JD002510,2003.

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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

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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

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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

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#### 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

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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.