

Deepak Rajagopal

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AREAS OF RESEARCH	Lifecycle assessment, Energy Economics and Policy, Agricultural Economics and Policy, Climate Policy
EDUCATION	Ph.D, Energy and Resources, University of California, Berkeley, 2009 M.S., Agricultural and Resource Economics, University of California, Berkeley M.S., Mechanical Engineering, University of Maryland, College Park, 2001 B.Tech., Mechanical Engineering, Indian Institute of Technology, Madras, India, 1999
EMPLOYMENT	<i>Assistant Professor</i> July 2010 to present (On-leave AY 2013 to 2015) Institute of the Environment and Sustainability, University of California, Los Angeles <i>Visiting Assistant Professor</i> 2013-2015 School of Public and Environmental Affairs, Indiana University, Bloomington, Indiana <i>Post-doctoral Researcher</i> August 2009 to June 2010 Energy Biosciences Institute, University of California, Berkeley <i>Engineer in Structural integrity and Reliability</i> August 2001 to May 2004 United Technologies Research Center, East Hartford, Connecticut
PEER-REVIEWED PUBLICATIONS	D. Rajagopal, C. V. Zapata and H. Maclean (2017): Life cycle assessment for Economists. <i>Annual Review of Resource Economics</i> Forthcoming D. Rajagopal (2016): The elasticity of global cropland with respect to crop production and the implications for peak cropland, <i>Environmental Research Letters</i> , DOI:10.1088/1748-9326/11/11/114016 D. Rajagopal (2016): A step towards a general mathematical framework for Consequential Life Cycle Assessment. <i>Journal of Industrial Ecology</i> DOI: 10.1111/jiec.12433. D. Rajagopal (2016): A synthesis of unilateral approaches to mitigating emissions leakage under incomplete policies. <i>Climate Policy</i> DOI:10.1080/14693062.2016.1150249 M. Accordino and D. Rajagopal (2015): When a National Cap-and-Trade Policy with a Carve-out Provision May Be Preferable to a National CO ₂ Tax, <i>The Energy Journal</i> , Vol.36, No.3 189–207. D. Rajagopal (2015): On approaches to mitigate emissions leakage under biofuel policies. <i>Global Change Biology Bioenergy</i> , Volume 8, Issue 2, March 2016, Pages: 471?480 D. Rajagopal, R. Plevin, G. Hochman, and D. Zilberman (2015): Multi-criteria comparison of alternative fuel policies: Renewable fuel standards, clean fuel standards and fuel GHG tax. <i>Energy Economics</i> , Vol.49, 359–369.

- S. Z. Attari and D. Rajagopal (2015): Enabling energy conservation through effective decision aids. *Journal of Sustainability Education*. Volume 8.
- G. Hochman, D. Rajagopal, G. Timilsina and D. Zilberman (2014). Quantifying the causes of the global food commodity price crisis. *Biomass and Bioenergy* 68, 106-114
- D. Rajagopal (2014): Consequential life cycle assessment of policy vulnerability to price effects. *Journal of Industrial Ecology* 18 (2), 164-175
- D. Rajagopal (2013): The fuel market effects of biofuel policies and implications for regulations based on lifecycle emissions. *Environmental Research Letters* 8(024013)
- D. Rajagopal and D. Zilberman (2013): On market-mediated emissions and regulations on life cycle emissions. *Ecological Economics* 90, 70–84
- D. Rajagopal and R. Plevin (2013): Implications of market-mediated emissions and uncertainty for biofuel policies. *Energy Policy*. 56, 75–82
- D. Zilberman, S. Barrows, G. Hochman and D. Rajagopal (2013): On the Indirect Effect of Biofuel. *American Journal of Agricultural Economics* 95(5): 1332–1337
- D. Zilberman, G. Hochman, D. Rajagopal, S. Sexton and G. Timilsina (2012): The Impact of Biofuels on Commodity Food Prices: Assessment of Findings. *American Journal of Agricultural Economics* 95(2): 275–281
- G. Hochman, S. Kaplan, D. Rajagopal, and D. Zilberman (2012): Biofuel and Food-Commodity Prices, *Agriculture*, 2(3), 272-281, doi:10.3390/agriculture2030272
- D. Rajagopal (2011): The Economics of Biofuel Policies. *Biofuels* 2(6) 599–601
- D. Rajagopal, G. Hochman and D. Zilberman (2011): Indirect fuel use change and the environmental impact of biofuel policies. *Energy Policy* 39, 228-233
- G. Hochman, D. Rajagopal and D. Zilberman (2011). The Effect of Biofuels on International Oil Markets. *Applied Economic Perspectives and Policy* vol. 33 (3), 402-427
- D. Zilberman, G. Hochman, and D. Rajagopal (2011). Indirect Land Use Change: A Second Best Solution to a First Class Problem. *Agbioforum* 13(4), 382–390
- D. Zilberman, G. Hochman, and D. Rajagopal (2011). On the inclusion of Indirect Land Use in Biofuel Regulations *Illinois Law Review* 2 413-434
- G. Hochman, D. Rajagopal, G. Timilsina and D. Zilberman (2011). The Role of Inventory Adjustments in Quantifying Factors Causing Food Price Inflation *World Bank Policy Research Working Paper* 5744
- G. Hochman, D. Rajagopal and D. Zilberman (2010). Are Biofuels the Culprit? OPEC, Food, and Fuel. *American Economic Review Papers and Proceedings*, 100(2): 183 - 187
- G. Hochman, D. Rajagopal and D. Zilberman (2010). The Effect of Biofuels on Crude Oil Markets. *AgBioForum* vol. 13 (2), 112-118
- D. Rajagopal, S.Sexton, G. Hochman and D. Zilberman (2009). Recent developments in renewable technologies: R&D investment in advanced biofuels. *Annual Review of*

Resource Economics, vol. 1, 1.11.24

D. Rajagopal, S.Sexton, G. Hochman, D. Roland-Holst, and D. Zilberman (2009). Model estimates of food-versus-biofuel trade-off, *California Agriculture*, vol. 63(4), 199-201

S. Sexton, D. Rajagopal, G. Hochman, D. Zilberman, and D. Roland-Holst, (2009). Biofuel policy must evaluate environmental, food security and energy goals to maximize net benefits. *California Agriculture*, 63(4), 191-198

M Khanna, G. Hochman, D. Rajagopal, S Sexton and David Zilberman (2009). Sustainability of food, energy and environment with biofuels. *CAB Reviews: Perspectives in Agriculture, Veterinary Science, Nutrition and Natural Resources 2009*, 4(28)

D. Rajagopal and D. Zilberman (2008). Environmental, economic and policy aspects of biofuels. *Foundations and Trends in Microeconomics*, 4(5): 353-469 and *World Bank Policy Research Working Paper 4341*

D. Rajagopal (2008). Implications of India's biofuel policies for food, water and the poor. *Water Policy*, vol. 10(S1): 95-106

D. Zilberman, T. Sproul, D. Rajagopal, S. Sexton, and P. Hellegers (2008). "Rising energy prices and the economics of water in agriculture." *Water Policy* vol. 10: 11

S Sexton, D. Zilberman, D. Rajagopal, and G. Hochman (2008). The role of biotechnology in a sustainable biofuel future. *AgBioForum*, 12(1): 1-11

D. Rajagopal, S.Sexton, G. Hochman, D. Roland-Holst, and D. Zilberman (2007). Challenge of biofuel: filling the tank without emptying the stomach. *Environmental Research Letters*, 2(2):1-9

S. K. Gupta and D. Rajagopal (2002). Forming part families for generating shared press-brake setups. *Journal of Manufacturing Systems*, 21(5):329-349

BOOK CHAPTERS

D. Rajagopal. Challenges in quantifying and regulating the unintended environmental consequences of biofuel expansion. In Q. Zhangcai, A. Hastings and U. Mishra (Eds), *Bioenergy and Land use change*, American Geophysical Union, Forthcoming in 2017

G. Hochman, D. Rajagopal, G. Timilsina, and D. Zilberman. "Impacts of Biofuels on Food Prices." In *The Impacts of Biofuels on the Economy, Environment, and Poverty*, Chapter 4, pp. 47-64. Springer New York, 2014

D. Zilberman, S. Kaplan, G. Hochman, and D. Rajagopal. "Political Economy of Biofuels." In *The Impacts of Biofuels on the Economy, Environment, and Poverty*, Chapter 11 pp. 131-144. Springer New York, 2014

G. Hochman, D. Rajagopal and D. Zilberman (2011) Biofuels and Climate Change. In Robert Mendelsohn and Ariel Dinar (Eds.), *Handbook On Climate Change And Agriculture*, Edward Elgar Publishing

D. Zilberman, D. Rajagopal, S. Sexton, G. Hochman, and T. Serra (2011): "The Economics of Biofuels, Food and the Environment". In A. Schmitz, N. Wilson, C. Moss, and D. Zilberman (Eds.) *The Economics of Alternative Energy Sources and Globalization*. Bentham Books, eISBN: 978-1-60805-233-2

D. Rajagopal, G. Hochman and D. Zilberman (2009). “A simple framework for regulation of biofuels”. In Madhu Khanna et al. (Eds), *Handbook of bioenergy economics and policy*, Springer Series: Natural resource management and policy

D. Zilberman, D. Rajagopal and G. Hochman (2012): Economists perspective on biofuels. In C. Taylor, R. Lomneth, F. Wood-Black (Eds.) *Perspectives on Biofuels: Potential Benefits and Possible Pitfalls*, American Chemical Society

D. Rajagopal, R. Weldzius and J. Ifft: Land Use Impacts of the Renewable Fuel Standard: Evidence from changes in the Conservation Reserve Program Enrollment. American Agricultural Economics Association Annual Conference, Boston, July 31–Aug 2, 2016

D. Rajagopal: Heuristic approaches to determine vulnerability of new technologies to market-mediated effects, International Society for Ecological Economics (ISEE)¹, Washington DC, June 26–29, 2016

D. Rajagopal: Heuristic approaches to determine vulnerability of new technologies to market-mediated effects, *Poster presented at* Gordon Research Conference Industrial Ecology, Stowe, Vermont, June 19–24, 2016

D. Rajagopal, R. Weldzius and J. Ifft: Land Use Impacts of the Renewable Fuel Standard: Evidence from changes in the Conservation Reserve Program Enrollment. Association of Environmental and Resource Economists (AERE) Summer Conference, Colorado, June 9 –11, 2016

D. Rajagopal and M. Accordino. Shale, Biofuel and OPEC Heartland Environmental Economics Workshop, University of Illinois, Urbana Champaign, October 18-19, 2016

D. Rajagopal. The Political Economy of Emission Intensity Standards: An Assessment of Alberta’s Specified Gas Emitters Regulation. Accepted to *World Congress of Environmental and Resource Economists*, Istanbul, Turkey, June 27-30, 2014

D. Rajagopal. Tradable emission performance standards for reducing GHG emissions: Evidence from Alberta’s Specified Gas Emitters Regulation. *Western Economic Association International, 88th Annual Conference*, Seattle, June 28-July 2, 2013

Megan H. Accordino and D. Rajagopal. Why a National Cap-and-Trade Policy with a Carve-out Provision May Be Preferable to a National CO₂ tax. *Western Economic Association International, 88th Annual Conference*, Seattle, June 28-July 2, 2013

Megan H. Accordino and D. Rajagopal : Comparing Renewable Portfolio Standards, Emission Intensity Standards and Pollution Taxes in the Electricity Sector. *31th United States Association of Energy Economics conference* at Austin, Texas, November 4-7, 2012

D. Rajagopal, G. Hochman and D. Zilberman: Multi-criteria comparison of fuel policies: Renewable fuel mandate, emission standards, and GHG tax. *19th Annual Conference of the European Association of Environmental and Resource Economists* at Prague, Czech Republic, June 27-30, 2012

D. Rajagopal. Prices vs quantities in the context of Lifecycle assessment based regula-

¹Accepted but withdrawn due to scheduling conflict

tions. *Summer Conference of Association of Environmental and Resource Economists* at Seattle, June 8–10 2011

D. Rajagopal. Acreage expansion due to corn ethanol: What historical experience suggests. *4th UC Berkeley Bio-economy Conference* at UC Berkeley, March 24–25, 2011

D. Rajagopal, G. Hochman and D. Zilberman. Domestic policies for global externalities: Technology mandates versus performance standards in the transportation sector. *4th World Congress of Environmental and Resource Economists* University of Quebec, Montreal, June 28-July 2nd, 2010.

D. Rajagopal Policy objectives and policy choices. *3rd UC Berkeley Bio-economy Conference* Berkeley, California, May 7–10, 2010

G. Hochman, D. Rajagopal, and D. Zilberman. A Technological Response to Environmental Policy: From Putty-Clay to Putty-Doh. *4th World Congress of Environmental and Resource Economists*, Universit du Qubec, Montreal. June 28th -July 2nd, 2010.

D. Rajagopal Cleaning up transportation: Clean fuel mandate versus emission standard. *32th International Association of Energy Economics conference* at San Francisco, California, June 21–24, 2009

D. Rajagopal A simple framework for regulation of greenhouse gases from biofuels. *28th United States Association of Energy Economics conference* at New Orleans, Louisiana, December 2–5, 2008

D. Rajagopal. Regulation of greenhouse gas emissions from biofuels. Presented at *Farm Foundation and USDA Conference on Transition to a bioeconomy: Environment and Rural Development Impacts* at St. Louis, Missouri, October 15–16 2008

D. Rajagopal. Prices, Policies and Environmental Lifecycle Analysis of Energy *AERE session of the 2008 Joint Annual Meeting American Association of Agricultural Economics and American Council on Consumer Interests* at Orlando, Florida, July 2008

D. Rajagopal and D. Zilberman (2008). Environmental Lifecycle Assessment for Policy Decision-Making and Analysis *Proceedings of a conference on Lifecycle Carbon Footprint of Biofuels* Edited by Joe L. Outlaw and David P. Ernstes January 29, 2008, Miami Beach, Florida .

D. Rajagopal. Rethinking current strategies for biofuel production in India. *International Conference on Linkages in Water and Energy in Developing Countries*. Conference organized by IWMI, FAO and ICRISAT at Hyderabad, India January 2007

A Mixed Integer Programming Formulation for Generating Shared Press-Brake Setups. *ASME Design for Manufacturing Conference*, Pittsburgh, September 2001

OTHER
PUBLICATIONS

G. Hochman, D. Rajagopal and D. Zilberman (2011) OPEC and the Environmental Impact of Biofuels, *Agricultural and Resource Economics Update* 15(2):9-11, published by Giannini Foundation of Agricultural Economics,

D. Rajagopal, G. Hochman and D. Zilberman (2010). Lifecycle based regulation of fuels: A Rube Goldberg Contraption of Climate policy *USAEE Dialogue*, United States Association for Energy Economics, Vol. 18, No. 1, March 2010

D. Rajagopal and D. Zilberman (2008). The Use of Environmental Life-Cycle Analysis for Evaluating Biofuels. *Agricultural and Resource Economics Update*, 11(3) published by Giannini Foundation of Agricultural Economics

S. Sexton, D. Rajagopal, D. Zilberman, and G. Hochman (2008) Food versus Fuel: How biofuels make food more costly and gasoline cheaper. *Agricultural and Resource Economics Update*, 12(1) published by Giannini Foundation of Agricultural Economics

S. Sexton, D. Rajagopal, D. Zilberman, and D. W. Roland-Holst (2007) The Intersection of Energy and Agriculture: Implications of Rising Demand for Biofuel and the Search for the Next Generation. *Agricultural and Resource Economics Update*, 10(5), published by Giannini Foundation of Agricultural Economics

SEMINARS AND
PANELS

Special panel on Environmental and Energy Policy, 13th Western Economics Association International (WEAI) Conference, Santiago, Chile, January 3-6, 2017

UC Berkeley, Energy and Resources Group Colloquium, Nov 9, 2016

Stanford University, Seminar in Department of Civil and Environmental Engineering, Nov 8, 2016

University of Illinois, Urbana Champaign, Environmental Economics Seminar Series, Department of Agricultural and Consumer Economics, Sep 12, 2016

Carnegie Mellon University, Engineering and Public policy and Civil and Environmental Engineering Seminar, Aug-24-2016

Purdue University, Department of Agricultural Economics Seminar, Feb-12-2016

Iowa State University, Department of Economics, Experimental Program to Stimulate Competitive Research (EPSCOR) Energy Policy Seminar Series, Sep-11-2014

Rutgers University, Department of Agriculture, Food, and Resource Economics, May-02-2014

University of Illinois, Urbana-Champaign, Environmental Economics Seminar, Department of Agricultural and Consumer Economics, Apr-15-2014

UCLA, Environmental Economics Policy and Management Seminar Series, June-06-2013

University of California San Diego, Environmental Economics Seminar, Department of Economics, Jan-28-2013

International Workshop on *The Economics of Biofuels* organized by Low Carbon Programme, a Joint Programme on Energy and Climate by Fundacin Repsol, the University of the Basque Country (UPV/EHU) and the Basque Centre for Climate Change (BC3), September 19th, 2013, Bilbao, Spain

German American Energy Forum Panel, *Sustainable Energy - The Path to our Energy Future* held at the, 555 Pennsylvania Avenue, Washington, DC, October 14th, 2010

California State University, Sacramento, Ethical implications of the interconnection between food, energy and development policies, at the Ethics of Food symposium to

be held on November 9-10th, 2009

Food and Agriculture Organization, 1st FAO BEFSCI technical consultation on Criteria and Indicators on Sustainable Bioenergy Production that Safeguards Food Security, to be held at FAO headquarters in Rome, Italy between November 2nd -4th, 2009

Lawrence Berkeley National Laboratory, Berkeley, Economics of lifecycle analysis and greenhouse gas regulation of fuels, Seminar of the Energy and Environmental Technologies Division, May 28th, 2009

Workshop on *Biofuels: Environmental Consequences and Interactions with Changing LandUse* organized by the German National Committee for Scientific Committee on Problems of the Environment (SCOPE) at Gummersbach, Germany, September 22th to 25th 2008

TEACHING

University of California, Los Angeles

Energy Environment and Development (Env157)

Life cycle assessment (159)

Senior Practicum (Env180)

Tools for Sustainability Assessment (250)

Indiana University, Bloomington

Public Management Economics

Environmental Economics

PROFESSIONAL
SERVICE

Refereeing: Agbioforum, Agriculture, Agricultural Economics, Agriculture and Human Values, Applied Economic Perspectives and Policy, Biofuels Bioproducts and Biorefining, Climatic Change, Climate Policy, Energy Economics, Energy Policy, The Energy Journal, Environmental Research Letters, Environment and Development Economics, Environmental Science and Technology, European Review of Agricultural Economics, Global Environmental Change, Global Food Security, Journal of Industrial Ecology, Nature Climate Change, Nature Energy, Journal of Public Economics, Resources, Conservation and Recycling, Resource and Energy Economics, Review of Agricultural Economics, USDA Economic Research Service' Economic Research Report Series, World Development

PRESS AND
OUTREACH

KPCC AirTalk 02/23/2016 - The environmental impact of more Amazon customers with free shipping <http://www.scpr.org/programs/airtalk/2016/02/23/46615/environment-impact-of-more-amazon-customers-with-f/>

Los Angeles Times 03/12/2016 - <http://www.latimes.com/business/>

HONORS AND
AWARDS

Student Paper Award for paper "Greenhouse gas regulation of transportation fuels: Emission quota versus intensity standards," 32th Annual Conference of the International Association for Energy Economics (June 2009).

United Nations Industrial Development Organization and University of California Berkeley, Management of Technology Program Fellowship, Haas School of Business (2005)

Outstanding Teaching Assistant Award for 1999-2000 by the Center for Teaching Excellence, University of Maryland

Outstanding Achievement Award for the project on Modeling and Analysis of Cooling, Heating and Power (CHP) Systems for Buildings, United Technologies Research Center (2003)

Outstanding Achievement Award for the project Integrated Total Aircraft Power Systems Modeling and Analysis, United Technologies Research Center (2002)