

IAN SUE WING

Associate Professor, Boston University Department of Earth & Environment
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Nationality

Naturalized U.S. citizen (country of origin: Trinidad & Tobago)

Professional Experience

2008-present Associate Professor, Department of Earth & Environment, Boston University
2005-2006 Repsol-YPF Energy Fellow, Kennedy School of Government, Harvard University
2002-present Research Affiliate, Center for Energy & Environmental Studies, Boston University
2004-2007 Research Affiliate, Center for Transportation Studies, Boston University
2002-2008 Assistant Professor, Department of Geography & Environment, Boston University
2002-present Research Affiliate, Joint Program on the Science & Policy of Global Change, MIT
2001-2002 Postdoctoral Associate, Joint Program on the Science & Policy of Global Change, MIT

Education

1996-2001 Ph.D., Massachusetts Institute of Technology (Technology, Management & Policy)
Dissertation: Induced Technical Change in CGE Models for Climate Policy Analysis
1994-96 M.Sc., Oxford University (Development Economics)
1993-94 Bachelor of Engineering, Thayer School of Engineering, Dartmouth College
1989-93 B.A., Dartmouth College (Major: Engineering Sciences; Minor: Environmental Studies)

Peer-Reviewed Articles, Book Chapters and Book Contributions

- P1. Jacoby, H.D. and I. Sue Wing (1999). Adjustment Time, Capital Malleability, and Policy Cost, *Energy Journal*, Special Issue: The Costs of the Kyoto Protocol, A Multi-Model Evaluation: 73-92.
- P2. Ellerman, A.D. and I. Sue Wing (2000). Complementarity: An Invitation to Monopsony? *Energy Journal* 21(4): 29-59.
- P3. Ellerman, A.D. and I. Sue Wing (2003). Absolute vs. Intensity-Based Emission Caps, *Climate Policy* 3(Supplement 2), S7-S20.
- P4. Sue Wing, I. (2006). Representing Induced Technological Change in Models for Climate Policy Analysis, *Energy Economics* 28: 539-562.
- P5. Sue Wing, I. (2006). The Synthesis of Bottom-Up and Top-Down Approaches to Climate Policy Modeling: Electric Power Technologies and the Cost of CO₂ Emission Limits, *Energy Policy* 34: 3847-3869.
- P6. Sue Wing, I. and W.P. Anderson (2007). Modeling Small Area Economic Change in Conjunction with a Multiregional CGE Model, in R.J. Cooper, K.P. Donaghy and G.J.D. Hewings (eds.), *Globalization and Regional Economic Modeling*, Springer-Verlag, 263-288.
- P7. Sue Wing, I. and R.S. Eckaus (2007). The Decline in U.S. Energy Intensity: Its Origins and Implications for Long-Run CO₂ Emission Projections, *Energy Policy* 35: 5267-5286.
- P8. Sue Wing, I. (2008). The Synthesis of Bottom-Up and Top-Down Approaches to Climate Policy Modeling: Electric Power Technology Detail in a Social Accounting Framework, *Energy Economics* 30: 547-573.
- P9. Sue Wing, I. (2008). Explaining the Decline in U.S. Energy Intensity, *Resource and Energy Economics* 30: 21-49.
- P10. Fisher-Vanden, K. and I. Sue Wing (2008). Accounting for Quality: Issues with Modeling the Impact of R&D on Economic Growth and Carbon Emissions in Developing Economies, *Energy Economics* 30(6): 2771-2784.
- P11. Sue Wing, I. A.D. Ellerman and J.M. Song (2009). Absolute vs. Intensity-Based Limits for CO₂ Emission Control: Performance Under Uncertainty, in H. Tulkens and R. Guesnerie (eds.), *The Design of Climate Policy*, MIT Press, 221-252.
- P12. Sue Wing, I. (2009). Computable General Equilibrium Models for the Analysis of Energy and Climate Policies, in J. Evans and L.C. Hunt (eds.), *International Handbook On The Economics Of Energy*, Cheltenham: Edward Elgar, 332-366.

- P13. Bauer, D.M. and I. Sue Wing (2010). Economic Consequences of Pollinator Declines: A Synthesis, *Agricultural and Resource Economics Review* 39: 368-383.
- P14. National Research Council (2010). *Hidden Costs of Energy: Unpriced Consequences of Energy Production and Use*, Washington DC: National Academies Press.
- P15. Sue Wing, I. and J.L. Walker (2010). The Geographic Dimensions of Electoral Polarization in the 2004 U.S. Presidential Vote, in A. Paez, J. Le Gallo, R. Buliung, and S. Dall'Erba (eds.) *Progress in Spatial Analysis: Theory and Computation, and Thematic Applications*, Springer.
- P16. Webster, M., I. Sue Wing and L. Jakobovits (2010). Second-Best Instruments for Near-Term Climate Policy: Intensity Targets vs. the Safety Valve, *Journal of Environmental Economics & Management* 59: 250-259.
- P17. Sue Wing, I. (2011). Computable General Equilibrium Models for the Analysis of Economy-Environment Interactions, in A. Batabyal and P. Nijkamp (eds.) *Research Tools in Natural Resource and Environmental Economics*, Hackensack: World Scientific, 255-305.
- P18. Fisher-Vanden, K., K. Daenzer, I. Sue Wing and K. Calvin (2012). Decomposing the Impact of Alternative Technology Sets on Future Carbon Emissions Growth, *Energy Economics* 34(Supp. 3): S359-S365.
- P19. Fisher-Vanden, K., I. Sue Wing, E. Lanzi and D.C. Popp (2013). Modeling climate change feedbacks and adaptation responses: recent approaches and shortcomings, *Climatic Change* 117: 481-495.
- P20. Sue Wing, I. and K. Fisher-Vanden. (2013). Confronting the Challenge of Integrated Assessment of Climate Adaptation: A Conceptual Framework, *Climatic Change* 117: 497-514.
- P21. Gately, C.K., L.R. Hutyra, I. Sue Wing and M.N. Brondfield. (2013). A bottom up approach to on-road CO₂ emissions estimates: improved spatial accuracy and applications for regional planning, *Environmental Science and Technology* 47: 2423-2430.
- P22. Lanzi, E. and I. Sue Wing (2013). Capital Malleability, Emission Leakage and the Cost of Partial Climate Policies: General Equilibrium Analysis of the European Union Emission Trading System, *Environmental and Resource Economics* 55: 257-289.
- P23. Baldwin, J. and I. Sue Wing (2013). The Spatiotemporal Evolution of U.S. Carbon Dioxide Emissions: Stylized Facts and Implications for Climate Policy, *Journal of Regional Science* 53: 672-689.
- P24. Daenzer, K., Ian Sue Wing and K. Fisher-Vanden (2014). Coal's medium-run future under atmospheric greenhouse gas stabilization, *Climatic Change* 123: 763-783.
- P25. Jacoby et al (2014). Ch. 27: Mitigation, in J.M. Melillo, T.C. Richmond, and G.W. Yohe (eds.), *Climate Change Impacts in the United States: The Third National Climate Assessment*, U.S. Global Change Research Program, 27-1–27-nn.
- P26. Keenan, T.F., et al (2014). Net carbon uptake has increased through warming-induced changes in temperate forest phenology, *Nature Climate Change* 4: 598–604.
- P27. Sue Wing, I. and E. De Cian (2014). Integrated assessment: Modelling agricultural adaptation, *Nature Climate Change* 4: 535–536.
- P28. Sue Wing, I. and E.J. Balistreri (2014). Computable General Equilibrium Models for Economic Policy Evaluation and Economic Consequence Analysis, *Oxford University Press Handbook on Computational Economics and Finance*, forthcoming.
- P29. Sue Wing, I., A.Z. Rose and A. Wein (2014). Economic Impacts of the ARkStorm Scenario, *Natural Hazards Review*, forthcoming.

Reports and Conference Proceedings

- R1. Harnisch, J., I. Sue Wing, H.D. Jacoby and R.G. Prinn (1998). Primary Aluminum Production: Climate Policy, Emissions, and Costs, *MIT Joint Program on the Science & Policy of Global Change Report* No. 44, Cambridge MA.
- R2. H.D. Jacoby, R. Schmalensee and I. Sue Wing (1998). Toward a Useful Architecture for Climate Change Negotiations, *Proceedings of the OECD Workshop on the Economic Modeling of Climate Change*, Paris, 17-18 September.
- R3. M.H. Babiker, J.M. Reilly, M. Mayer, R.S. Eckaus, I. Sue Wing and R.C. Hyman (2001). The MIT Emissions Prediction and Policy Analysis (EPPA) Model: Revisions, Sensitivities, and Comparison of Results, *MIT Joint Program on the Science & Policy of Global Change Report* No. 71, Cambridge MA.
- R4. Sue Wing, I. and R.S. Eckaus (2003). The Energy Intensity of U.S. Production: Sources of Long-Run Change, *Proceedings of the 23rd IAEE North American Conference*, Mexico City.

- R5. Sue Wing, I. (2004). Computable General Equilibrium Models and Their Use in Economy-Wide Policy Analysis, *MIT Joint Program on the Science & Policy of Global Change Technical Note* No. 6, Cambridge MA.
- R6. Sue Wing, I. and R.S. Eckaus (2004). Explaining Long-Run Changes in the Energy Intensity of the U.S. Economy, *MIT Joint Program on the Science & Policy of Global Change Report* No. 116, Cambridge MA.
- R7. Sue Wing, I. and D.C. Popp (2005). Representing Endogenous Technological Change in Models for Climate Policy Analysis: Theoretical and Empirical Considerations, invited chapter in M. Hanneman and A. Farrell (eds.), *Managing Greenhouse Gas Emissions in California*, California Climate Change Center at U.C. Berkeley.
- R8. Sue Wing, I., W.P. Anderson and T.R. Lakshmanan (2008). The Broader Benefits of Infrastructure Investment, *International Transport Forum Round Tables No. 140: The Wider Economic Benefits of Transport, Macro-, Meso- and Micro-Economic Transport Planning and Investment Tools*, Paris: OECD, 151-180.
- R9. Abler, D., K. Fisher-Vanden, M. McDill, R. Ready, J. Shortle, I. Sue Wing and T. Wilson (2009). *Economic Impacts of Projected Climate Change in Pennsylvania*, Report to the Pennsylvania Department of Environmental Protection.
- R10. Porter, K., et al (2010). Overview of the ARkStorm scenario, *U.S. Geological Survey Open-File Report 2010-1312*.
- R11. Wein, A., A. Rose, I. Sue Wing, and D. Wei (2013). Economic Impacts of the SAFRR Tsunami Scenario in California, in S. Ross and L. Jones (eds.), *The SAFRR (Science Application for Risk Reduction) Tsunami Scenario*, *USGS Open File Report 2013-1170*, Chapter H.
- R12. Sue Wing, I. (2013). Climate Change and US Electric Power, *American Economic Association 2013 Annual Meeting*, San Diego, CA.

Working Papers and Manuscripts Under Review

- W1. Sue Wing, I. (2004). Induced Technical Change and the Cost of Climate Policy.
- W2. Sue Wing, I. (2006). Induced Technological Change: Firm Innovatory Responses to Environmental Regulation.
- W3. Sue Wing, I. (2007). The Regional Impacts of U.S. Climate Change Policy: A General Equilibrium Analysis.
- W4. Sue Wing, I. and M. Kolodziej (2008). The Regional Greenhouse Gas Initiative: Emission Leakage and the Effectiveness of Interstate Border Adjustments.
- W5. Lanzi, E., and I. Sue Wing (2010). Directed Technical Change in the Energy Sector: an Empirical Test of Induced Directed Innovation.
- W6. Sue Wing, I. (2010). The Regional Incidence of a National Greenhouse Gas Emission Limit: Title VII of the American Clean Energy and Security Act.
- W7. Bauer, D.M. and I. Sue Wing (2011). The Macroeconomic Cost of Catastrophic Pollinator Declines.

Other Publications and Editorials

1. Coming to Terms..., in A. Garrod and J. Davis (eds.), *Crossing Customs: International Students Write on U.S. College Life and Culture*, Garland Studies in Higher Education No. 18., Falmer Press, New York: Taylor & Francis, 1999.
2. Sue Wing, I. and R.S. Eckaus (2003). Technological Change and the Continuing Puzzles and Implications for Climate Policy, *USAEF Dialogue* 11(3): 9-13.

Invited Presentations and Lectures

1. Climate Change and US Electric Power, *Harvard Kennedy School Asia Energy Leaders Program*, Jun. 17, 2013; *International Food Policy Research Institute*, Apr 5., 2013; *Pennsylvania State University Geosciences Dept.*, 30 Jan., 2013; *American Economic Association 2013 Annual Meeting*, San Diego CA, 6 Jan, 2013.
2. Strengthening the Empirical Basis for Climate Policy Models, *International Workshop on Innovation in Energy Technologies: What Can We Learn from Patent Data?* Venice, 19-20 May, 2011.
3. Sectoral and Regional Disaggregation and Interactions, USEPA-DOE workshop on *Improving the Assessment and Valuation of Climate Change Impacts for Policy and Regulatory Analysis*, Washington DC, 18-19 Nov., 2010.

4. Panelist, *Energy Modeling Forum 24*, Washington DC, 24-25 Oct., 2010.
5. The Regional Incidence of U.S. Climate Policy, *Environmental Defense Fund Climate Economics Seminar*, 7 May, 2009.
6. The Regional Greenhouse Gas Initiative: Emission Leakage and the Effectiveness of Border Adjustments, *Arizona State University Economics of Climate Policy Workshop*, 19 Mar., 2008.
7. Economic Impacts of California's Greenhouse Gas Emission Target: Quantifying the Implications of Key Uncertainties *Dartmouth College Applied Statistics Working Group*, 29 Feb., 2008.
8. Using Computable General Equilibrium Models for Climate Policy Analysis, *Environmental Defense*, New York NY, 1 Feb., 2008.
9. The Regional Greenhouse Gas Initiative: Emission Leakage and the Effectiveness of Border Adjustments, *Regulatory Policy Program Seminar*, Harvard Kennedy School, 15 Feb., 2008.
10. Discussant, *Transport & Public Utilities Group Session at the 2008 Allied Social Science Associations Meeting*, New Orleans, LA, Jan. 5, 2008.
11. Discussant, *Yale One-Day Environmental Economics Meeting*, 16 Nov., 2007.
12. The Regional Greenhouse Gas Initiative: Emission Leakage and the Effectiveness of Border Adjustments, *Cornell University Regional Economics Seminar*, 14 Nov., 2007.
13. RGGI, Carbon Leakage, and the Influence of Border Measures, Environmental Modeling session at *INFORMS Annual Meeting 2007*, Seattle WA, 7 Nov., 2007.
14. The Broader Benefits of Infrastructure Investment, *OECD/ECMT Research Round Table on Macro-, Meso- and Micro-Infrastructure Planning and Assessment*, Boston University, 25-26 Oct., 2007.
15. Technology and Market Assumptions in Renewable Energy Models, *Renewable Energy Modeling Analysis Partnership Meeting*, U.S. Dept. of Energy, Washington DC, 3 Nov., 2006.
16. Panelist, *EPA Workshop on Characterizing, Quantifying, and Communicating Uncertainties: Assessment of the Effects of Global Change on U.S. Regional Air Quality*, Research Triangle Park, NC, 1-2 Nov., 2006.
17. The Decline in U.S. Energy Intensity: Its Origins and Implications for Long-Run CO₂ Emission Projections, in *"Climate Policy Without Cost: Can Technology Solve the Climate Problem?" An Inter-agency Workshop*, Washington DC, Jul. 18, 2006.
18. Explaining Long-Run Changes in the Energy Intensity of the U.S. Economy, *Western Economic Association 81st Annual Conference*, San Diego CA, Jun. 29-Jul. 3, 2006.
19. Explaining Long-Run Changes in the Energy Intensity of the U.S. Economy, *NBER Productivity Lunch*, Cambridge MA, Feb. 7, 2006.
20. Induced Technical Change: Firm Innovative Responses to Environmental Policy, *Yale Environmental Economics Seminar*, Feb. 28, 2007.
21. Induced Technical Change: Firm Innovative Responses to Environmental Policy, *Rensselaer Polytechnic Institute Economics Dept.*, Apr. 24, 2006.
22. Induced Technical Change: Firm Innovative Responses to Environmental Policy, *Ohio State University Agricultural Economics Dept.*, Apr. 20, 2006.
23. Induced Technical Change: Firm Innovative Responses to Environmental Policy, *Dartmouth College Workshop on Technical Change and the Environment*, Mar. 25, 2006.
24. Discussant, *NBER Environmental Economics Working Group Meeting*, Cambridge MA, Apr. 7-8, 2006.
25. New Developments in Macroeconomic Modeling Using Computational General Equilibrium (CGE) Models for Climate Change Studies, *California Energy Commission*, Sacramento CA, Feb. 9, 2006.
26. Discussant, *IAEE Session at the 2006 Allied Social Science Associations Meeting*, Boston MA, Jan. 6-8, 2006.
27. Discussant, *EPA/WRI/JED/SAGE Colloquium on Socioeconomic Drivers of Greenhouse Gases*, Washington DC, Sep. 29-30, 2005.
28. The role of technological change in reducing energy intensity, *NCCR Climate Symposium 2005: Interfaces between Climate and Economic Dynamics*, Interlaken, Switzerland, Mar. 3-5, 2005.
29. Using CGE Models for Economy-wide Policy Analysis, *MIT Laboratory for Energy and the Environment*, Sep. 13 and 20, 2006.
30. Using CGE Models for Economy-wide Policy Analysis, *MIT Laboratory for Energy and the Environment*, Oct. 11, 2005.
31. Representing Induced Technical Change in Climate Policy Models. *Energy Modeling Forum Climate Change Impacts and Integrated Assessment Meeting*, Snowmass CO, Aug. 5-8, 2003.

32. Induced Technical Change and the Cost of Climate Policy, in Representing Technological Change in Models for Climate Policy Analysis: Lessons from Different Approaches, AERE Session at the 2004 Allied Social Science Associations Meeting, San Diego CA, Jan. 3, 2004.
33. Induced Technical Change and the Cost of Climate Policy, University of Colorado Environmental and Resource Economics Workshop, Boulder CO, Jul. 17-18, 2003.
34. Induced Technical Change and the Cost of Climate Policy, Center for the Integrated Study of the Human Dimensions of Global Change, Carnegie Mellon University, Pittsburgh PA, Mar. 7, 2003.
35. Cost Reduction in Solar Photovoltaics: David vs. Goliath or Bambi vs. Godzilla? Hewlett Foundation Workshop on Learning-by-Doing in Energy Technologies, Resources for the Future, Washington DC, June 17-18, 2003.
36. Climate Change: The Current Policy Landscape. Luncheon Meeting of the U.S. Association for Energy Economics New England Chapter, Cambridge MA, June 6, 2002.

Presentations and Papers at Conferences and Workshops

1. Regional Electricity Market Impacts of GHG Emission Limits: Evidence from a Bottom-Up Top-Down Model, INFORMS Annual Meeting 2011, Charlotte NC, Nov. 16, 2011.
2. The Changing Regional Structure of U.S. Carbon Dioxide Emissions, 1963-2002 (with James Baldwin), 56th Annual North American Meeting of the Regional Science Association International, New York NY, Nov. 20, 2008.
3. Regional Adjustment to Rising Energy Costs, 56th Annual North American Meeting of the Regional Science Association International, New York NY, Nov. 21, 2008.
4. Understanding the Drivers of U.S. Carbon Dioxide Emissions: A Regional Approach (with James Baldwin), 56th Annual North American Meeting of the Regional Science Association International, New York NY, Nov. 21, 2008.
5. A Spatial Perspective on the 2004 Election, 54th Annual North American Meeting of the Regional Science Association International, Savannah GA, Nov. 9, 2007.
6. Limiting CO₂ Emissions in a Federal System: Understanding and Mitigating the Cost of U.S. Climate Policy at the State Level, 53rd Annual North American Meeting of the Regional Science Association International, Toronto, Canada, Nov. 17-18, 2006.
7. Limiting CO₂ Emissions in a Federal System: Understanding and Mitigating the Cost of U.S. Climate Policy at the State Level, ECOMOD International Conference on Regional and Urban Modeling, Free University of Brussels, June 1-3, 2006.
8. A Spatial Perspective on the 2004 Election, Midwest Political Science Association Meeting, Chicago IL, Apr. 21-23, 2006.
9. Absolute vs. Intensity-Based Limits for CO₂ Emission Control, Performance Under Uncertainty, David Bradford Memorial Conference on the Design of Climate Policy, Venice, Italy, Jul. 22-23, 2005.
10. The Synthesis of Bottom-Up and Top-Down Approaches to Climate Policy Modeling: Electric Power Technologies and the Cost of CO₂ Emission Limits, 11th Annual Conference on Computing in Economics and Finance, Washington DC, 24 June 2005.
11. The Synthesis of Bottom-Up and Top-Down Approaches to Climate Policy Modeling: Electric Power Technologies and the Cost of CO₂ Emission Limits, Environment and Development Workshop, Rockefeller Center, Dartmouth College, Mar. 28, 2005.
12. The Energy Intensity of U.S. Production: Sources of Long-Run Change. IAEE Session at the 2003 Allied Social Sciences Association Meeting, Washington DC, Jan. 4, 2003.
13. Primary Aluminum Production: Projected Greenhouse Gas Emissions and the Costs of Climate Policy. 99th Annual Meeting of The Minerals, Metals and Materials Society, San Diego CA, March 3, 1999.

Conferences and Workshops Organized

- O1. Representing Technological Change in Models for Climate Policy Analysis: Lessons from Different Approaches, AERE Session at the Allied Social Science Associations Meeting, San Diego, Jan. 3, 2004.
- O2. Workshop on Technical Change and the Environment, Dartmouth College, Mar. 25-26, 2006.
- O3. Workshop on "Climate Adaptation: Improving the Connection Between Empirical Research and Integrated Assessment Models", National Bureau of Economic Research, Cambridge, May 17-18, 2012.

Panel and Advisory Board Memberships

1. Integrated Assessment for Climate Change Research Panel, U.S. Department of Energy, Washington DC, Jun. 2004.
2. Second Generation Model Advisory Panel, Science Advisory Board, U.S. Environmental Protection Agency, Nov. 2004-2006.
3. Renewable Energy Modeling Analysis Partnership, U.S. Department of Energy, 2005-2007.
4. National Research Council Panel on the Health, Environmental, and Other External Costs and Benefits of Energy Production and Consumption, 2008-2009.
5. National Science Foundation Decision, Risk and Management Sciences, 2011-2013.
6. Intergovernmental Panel on Climate Change Fifth Assessment Report Working Group III, contributing author (Chapter 6: "Assessing Transformation Pathways"), Dec. 2011-present.
7. 2013 National Climate Assessment Report, lead author (Chapter 27: "Mitigation"), Feb. 2012-present.
8. Mitigation Indicators Technical Team for the US Global Change Research Program National Climate Assessment, Feb. 2013-present.

Grants and Research Awards: Funded

- F1. Representing Endogenous Technological Change in Climate Policy Models: General Equilibrium Approaches. U.S. Dept. of Energy Office of Science (BER), 2002-2005, \$321,000.
- F2. Empirical and Computational Investigations of International Technology Spillovers: Effects on Income Convergence, Greenhouse Gas Emissions, and the International Transmission of Mitigation Costs, U.S. Dept. of Energy Office of Science (BER), 2006-2008, \$323,000.
- F3. General Equilibrium Analyses of California's Global Warming Solutions Act of 2006, California Energy Commission, 2007-2008, \$334,129.
- F4. Crops, Climate, Canals and the Cryosphere in Asia - Changing Water Resources around the Earth's Third Pole (PI: Steve Frolking, UNH), National Science Foundation (Water Sustainability & Climate, Category 3), 2010-2013, \$224,014.
- F5. Research in Integrated Assessment: Inter-Model Comparison, Development, Testing, and Diagnostics (PI: John Weyant, Stanford), U.S. Dept. of Energy Office of Science (BER), 2010-2013, \$137,891 (total award: \$6M).
- F6. The Impacts of Climate Change on the U.S. Economy: An Interregional Computable General Equilibrium Approach (PI: Robert Beach, Research Triangle Institute), U.S. Environmental Protection Agency Climate Change Division, Dec. 2011-Jun. 2012, \$93,694.
- F7. What are Sustainable Climate Risk Management Strategies? (PI: Klaus Keller, Pennsylvania State University), National Science Foundation (Sustainability Research Networks), 2012-2017, \$199,991 (total award: \$12M).
- F8. Research in Integrated Assessment: Inter-Model Comparison, Development, Testing, and Diagnostics—Renewal (PI: John Weyant, Stanford), U.S. Dept. of Energy Office of Science (BER), 2013-2016, \$156,028 (total award: \$4M).

Grant Proposals: Unfunded

- U1. Kuwait City: A Sustainable Development Strategy (PI: T.R. Lakshmanan, BU), Gov't of Kuwait, Oct. 2002-Jun. 2005, \$875,542.
- U2. Absolute vs. Intensity-Based Emission targets for CO₂ Control: Theoretical and Empirical Assessments of Performance Under Uncertainty (PI: A.D. Ellerman, MIT), U.S. Environmental Protection Agency, Jun. 2004-May 2007, \$307,785.
- U3. Regional Economic Simulation of Air Pollution Emissions: A Nested Spatial Equilibrium Approach, U.S. Environmental Protection Agency, Sep. 2004-Aug. 2007, \$742,106.
- U4. Maximum Likelihood Estimation of Gravity-Type Spatial Interaction Models with Spatial and Temporal Autocorrelation: An Application to U.S. Migration (PI: J.P. Cohen, Hartford), NSF (Mathematical Social & Behavioral Sciences), Sep. 2005-Aug. 2007, \$446,441.
- U5. Spatially and Temporally Autocorrelated Gravity Models: An Application to Migration and Regional Economic Growth in the U.S. (PI: J.P. Cohen, Hartford), NSF (Economics/Geography & Regional Science), Feb. 2006-Jan. 2008, \$182,825.

- U6. Climatic implications of U.S. urbanization: An assessment of the radiative impacts and feedbacks of land use, land cover change (PI: L.R. Hutyra, BU), NSF (Coupled Natural Human Systems), Sep. 2011-Aug. 2014, \$500,000.
- U7. An integrated assessment using decadal predictions of U.S. regional climate variability forced by the tropical Pacific (PI: B.A. Anderson, BU), NSF/NOAA/DOE/USDA (EaSM2).
- U8. Flooding by Hurricanes and the Sustainability of Coastal Development (PI: S. Fagherazzi, BU), NSF Coastal SEES (Science, Engineering and Education for Sustainability), Sep. 2013-Aug. 2018, \$850,000.

Editorial Boards

Energy Economics, Associate editor, 2006-2012.

Environmental and Resource Economics, Co-Editor, 2013-present.

Refereeing

Journal of Environmental Economics and Management, Land Economics, The Energy Journal, Energy Economics, Resource and Energy Economics, Journal of Applied Economics, Energy Policy, Climatic Change, Ecological Economics, The B.E. Journals in Economic Analysis and Policy, Journal of the Japanese and International Economies, Journal of Policy Analysis and Management, National Science Foundation (Economics, Geography & Regional Science, Social and Behavioral Sciences, Decision, Risk & Management Sciences), NWO/Netherlands Organization for Scientific Research, Pew Center on Global Climate Change, Proceedings of the National Academy of Sciences, European Economic Review, The Economic Journal, European Research Council.

Professional Memberships

American Economic Association (AEA), International Association for Energy Economics (IAEE), Association of Environmental and Resource Economists (AERE)

Teaching

1. Fundamentals of International Economics (CAS IR292), International Relations Dept.
2. Environmental Policy Analysis (CAS GE420/620), Dept. of Geography & Environment
3. U.S. Environmental Policy (CAS GE425/625), Dept. of Geography & Environment
4. Climate Change Policy Analysis and Modeling (CAS GE512), Dept. of Geography & Environment

Theses Supervised

- 2004 Lars Seifert, MA International Relations & Environmental Policy, Boston University
- 2005 Bradley Strode, Work for Distinction, BA Environmental Analysis & Policy, Boston University
Amy R. Richmond, Ph.D. Geography, Boston University (3rd reader)
- 2006 Aysen H. Gencer, Ph.D. Geography, Boston University (3rd reader)
Alexandra Lempp, Ph.D. Economics, University of Paris I (2nd reader)
- 2008 Dina Salem, MA International Relations & Environmental Policy
James Baldwin, Ph.D. Geography & Environment, Boston University (1st reader)
- 2010 Elisa Lanzi, Ph.D. Economics, University of Venice (3rd reader)
Kathryn Schu, Ph.D. Geography & Environment, Boston University (1st reader)
- In progress J. Winkler, C. Gately, J. Woolcott, Ph.D. Earth & Environment, Boston University (supervisor)

University Service

- Curriculum development for courses GE309, GE420/620, GE425/625 and GE460/660, Dept. of Geography & Environment, 2003-2005
- Director of Undergraduate Studies, Dept. of Geography & Environment, 2006-2009
- Member, search committee for environment and development position, Dept. of Geography & Environment, 2007-2008
- Social Science Curriculum Committee, BU College of Arts & Sciences, 2010-2013(chair, 2011-2012)
- Director of Graduate Studies, Dept. of Geography & Environment, Sep. 2011-2012
- Member: Departmental Curriculum Committee, Dept. of Earth & Environment, Sep. 2013-present

- Search chair: Human Dimensions of Global Change, Dept. of Earth & Environment, Sep. 2013-present

Honors and Awards

- Rhodes Scholarship, 1994-1996 (Mansfield College)

Consulting

The Brattle Group (Senior Advisor), Battelle Memorial Institute, US Geological Survey, Industrial Economics Inc., Organization of Economic Cooperation and Development, The World Bank.