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Energy and Resources Group  
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**Academic positions**

Associate Professor (with tenure), Energy and Resources Group, University of California at Berkeley, 2021-present.

Assistant Professor, Energy and Resources Group, University of California at Berkeley, 2014-2021.

Assistant Professor, School of Natural Resources and the Environment, University of Michigan, 2012-2013.

Ciriacy-Wantrup Postdoctoral Fellow, Department of Agricultural and Resource Economics, University of California, Berkeley, 2010-2012.

Postdoctoral Research Associate, Economic and Social Research Institute, Dublin, Ireland, 2008-2010.

**Other professional affiliations**

Ausschusses für Umwelt- und Ressourcenökonomie (AURÖ) im Verein für Socialpolitik  
Member, 2019-present.

CESifo Fellow, 2019-present.

Visiting Researcher, Princeton University, spring 2019.

Global Transitions Editorial Board Member, 2018-present.

University Fellow, Resources for the Future, 2018-present.

Senior Fellow, Berkeley Institute for Data Science, University of California at Berkeley, 2017-present.

Affiliated Faculty, Institute of European Studies, University of California at Berkeley, 2016-present.

Climatic Change Editorial Board Member, 2015-2020.

Climatic Change Associate Deputy Editor, 2014-2019.

CESifo Research Network Affiliate, 2012-2018.

Visiting Researcher, ifo Institute, Germany, 2012.

Visiting Research Fellow, Smith School of Enterprise and the Environment, University of Oxford, United Kingdom, 2008.

## Education

Ph.D. (Economics) International Max Planck Research School on Earth System Modelling and University of Hamburg, Germany, 2009.

M.Sc. (Environmental Change and Management) University of Oxford, United Kingdom, 2004.

M.Phil. (Philosophy, Logic and Philosophy of Science) Ludwig-Maximilians-Universität Munich, Germany, 2003.

Visiting Student (Philosophy) University of Oxford, United Kingdom, 2001-2002.

## Journal articles

“Equity weighting increases the social cost of carbon,” with Brian C. Prest, Lisa Rennels and Frank Errickson, *Science*, 2024, 385(6710): 715-717.

“Inequality Aversion for Climate Policy,” with Stellio Del Campo and Ulrike Kornek, *Review of Environmental Economics and Policy*, 2024, 18(1): 96-115.

“Identifying low-carbon energy R&D portfolios that are robust when models and experts disagree,” with Franklyn Kanyako and Erin Baker, *Joule*, 2023, 7: 2245–2260.

“Sea Level and Socioeconomic Uncertainty Drives High-End Coastal Adaptation Costs,” with Tony E. Wong, Catherine Ledna, Lisa Rennels, Hannah Sheets, Frank C. Errickson and Delavane Diaz, *Earth's Future*, 2022, 10(12): e2022EF003061.

“MimiBRICK.jl: A Julia package for the BRICK model for sea-level change in the Mimi integrated modeling framework,” with Tony E. Wong, Lisa Rennels, Frank C. Errickson, Vivek Srikrishnan, Alexander Bakker and Klaus Keller. *Journal of Open Source Software*, 2022, 7(76): 4556.

“Comprehensive Evidence Implies a Higher Social Cost of CO<sub>2</sub>,” with Kevin Rennert, Frank Errickson, Brian C. Prest, Lisa Rennels, Richard G. Newell, William Pizer,

Cora Kingdon, Jordan Wingenroth, Roger Cooke, Bryan Parthum, David Smith, Kevin Cromar, Delavane Diaz, Frances C. Moore, Ulrich K. Müller, Richard J. Plevin, Adrian E. Raftery, Hana Ševčíková, Hannah Sheets, James H. Stock, Tammy Tan, Mark Watson and Tony E. Wong, *Nature*, 2022, 610: 687–692.

“Testing the Dismal Theorem,” with Richard S.J. Tol, *Journal of the Association of Environmental and Resource Economists*, 2022, 9(5): 885-920.

“The Social Cost of Carbon: Advances in Long-Term Probabilistic Projections of Population, GDP, Emissions, and Discount Rates,” with Kevin Rennert, Brian C. Prest, William A. Pizer, Richard G. Newell, Cora Kingdon, Lisa Rennels, Roger Cooke, Adrian E. Raftery, Hana Ševčíková and Frank Errickson, *Brookings Papers on Economic Activity*, 2022, Fall 2021: 223-275.

“Utilitarian benchmarks for emissions and pledges promote equity, climate and development,” with Mark B. Budolfson, Francis Dennig, Frank Errickson, Kevin Kuruc, Dean Spears and Navroz K. Dubash, *Nature Climate Change*, 2021, 11: 827–833.

“Health Impacts of Climate Change as Contained in Economic Models Estimating the Social Cost of Carbon Dioxide,” with Kevin Cromar, Peter Howard and Valeri Vasquez, *GeoHealth*, 2021, 5(8).

“Distributions.jl: Definition and Modeling of Probability Distributions in the JuliaStats Ecosystem,” with Mathieu Besançon, Alex Arslan, Simon Byrne, Dahua Lin, Theodore Papamarkou and John Pearson, *Journal of Statistical Software*, 2021, 98(16): 1–30.

“The importance of health co-benefits under different climate policy cooperation frameworks,” with Noah Scovronick, Francis Dennig, Frank Errickson, Maddalena Ferranna, Wei Peng, Dean Spears, Fabian Wagner and Mark Budolfson, *Environmental Research Letters*, 2021, 16(5).

“Equity is more important for the social cost of methane than climate uncertainty,” with Frank C. Errickson, Klaus Keller, William D. Collins and Vivek Srikrishnan, *Nature*, 2021, 592: 564–570.

“Eight Priorities for Calculating the Social Cost of Carbon,” with Gernot Wagner, Maureen Cropper, Simon Dietz, Kenneth T. Gillingham, Ben Groom, J. Paul Kelleher, Frances C. Moore and James H. Stock, *Nature*, 2021, 590: 548–50.

“Inequality and the Social Cost of Carbon,” with Johannes Emmerling, *Journal of the Association of Environmental and Resource Economists*, 2019, 6(2): 29-59.

“Modeling Uncertainty in Climate Change: A Multi-Model Comparison,” with Kenneth Gillingham, William Nordhaus, Geoffrey Blanford, Valentina Bosetti, Peter Christensen, Haewon McJeon and John Reilly, *Journal of the Association of Environmental and Resource Economists*, 2018, 5(4): 791-826.

- “Mimi-PAGE, an open-source implementation of the PAGE09 integrated assessment model,” with Frances Moore, James Rising, Niklas Lollo, Cecilia Springer, Valeri Vasquez, Alex Dolginow and Chris Hope, *Scientific Data*, 2018, 5: 180187.
- “Priority for the worse-off and the social cost of carbon,” with Matthew Adler, Valentina Bosetti, Greg Garner, Klaus Keller and Nicolas Treich, *Nature Climate Change*, 2017, 7(6): 443-449.
- “Shutting Down the Thermohaline Circulation,” with Francisco Estrada and Richard S.J. Tol, *American Economic Review*, 2016, 106(5): 602-606.
- “Using and improving the social cost of carbon,” with William Pizer, Matthew Adler, Joseph Aldy, Maureen Cropper, Kenneth Gillingham, Michael Greenstone, Brian Murray, Richard Newell, Richard Richels, Arden Rowell, Stephanie Waldhoff and Jonathan Wiener, *Science*, 2014, 346(6214): 1189-1190.
- “The Marginal Damage Costs of Different Greenhouse Gases: An Application of FUND,” with Stephanie Waldhoff, Steven Rose and Richard S.J. Tol, *Economics: The Open-Access, Open Assessment E-Journal*, 2014, 8(2014-31): 1-33.
- “Climate Policy under Fat-Tailed Risk: An Application of FUND,” with Richard S.J. Tol, *Annals of Operations Research*, 2014, 220(1): 223-237.
- “The Uncertainty about the Social Cost of Carbon: A Decomposition Analysis Using FUND,” with Richard S.J. Tol, *Climatic Change*, 2013, 117(3): 515-530.  
 “Erratum to: The uncertainty about the social cost of carbon: A decomposition analysis using FUND,” with Richard S.J. Tol, *Climatic Change*, 2013, 121(2): 413.
- “Self-interested low-carbon growth in Brazil, China and India,” with John Ward, Cameron Hepburn, Simon Baptist, Philip Gradwell, Chris Hope and Max Krahé, *Global Journal of Emerging Market Economies*, 2012, 4(3): 291-318.
- “Climate damages in the FUND model: A comment,” with Richard S.J. Tol, *Ecological Economics*, 2012, 81: 42.
- “On International Equity Weights and National Decision Making on Climate Change,” with Richard S.J. Tol, *Journal of Environmental Economics and Management*, 2010, 60(1): 14-20.
- “Government Failure and Market Failure: On the Inefficiency of Environmental and Energy Policy,” with Robert W. Hahn, *Oxford Review of Economic Policy*, 2010, 26(2): 197-224.
- “International Climate Policy and Regional Welfare Weights,” with Daiju Narita and Richard S.J. Tol, *Environmental Science & Policy*, 2010, 13(8): 713-720.

- “The Economic Impact of Substantial Sea-Level Rise,” with Robert J. Nicholls and Richard S.J. Tol, *Mitigation and Adaptation Strategies for Global Change*, 2010, 15(4): 321-335.
- “Economic Costs of Extratropical Storms Under Climate Change: An Application of FUND,” with Daiju Narita and Richard S.J. Tol, *Journal of Environmental Planning and Management*, 2010, 53(3): 371-384.
- “The Impact of Climate Change on the Balanced-Growth-Equivalent: An Application of FUND,” with Richard S.J. Tol, *Environmental and Resource Economics*, 2009, 43(3): 351-367.
- “Equity weighting and the marginal damage costs of climate change,” with Cameron Hepburn and Richard S.J. Tol, *Ecological Economics*, 2009, 68(3): 836-849.
- “Discounting for Climate Change,” with Richard S.J. Tol and Gary W. Yohe, *Economics: The Open-Access, Open-Assessment E-Journal*, 2009, 3(2009-24).
- “Damage Costs of Climate Change Through Intensification of Tropical Cyclone Activities: An Application of FUND,” with Daiju Narita and Richard S.J. Tol, *Climate Research*, 2009, 39(2): 87-97.
- “Risk Aversion, Time Preference, and the Social Cost of Carbon,” with Richard S.J. Tol and Gary W. Yohe, *Environmental Research Letters*, 2009, 4(024002).
- “Discounting and the social cost of carbon: a closer look at uncertainty,” with Jiehan Guo, Cameron Hepburn and Richard S.J. Tol, *Environmental Science & Policy*, 2006, 9(3): 205-216.

### Chapters in books

- “The income elasticity of the impact of climate change,” with Richard S.J. Tol, in *Is the Environment a Luxury? An inquiry into the relationship between environment and income*, Silvia Tiezzi and Chiara Martini (eds.), Routledge, 2014: 34-47.
- “Schelling’s Conjecture on Climate and Development: A Test,” with Richard S.J. Tol, in *Climate Change and Common Sense: Essays in Honour of Tom Schelling*, Robert W. Hahn and Alistair Ulph (eds.), Oxford University Press, 2012: 260-273.
- “Methane Mitigation: Alternative Perspective,” in *Smart Solutions to Climate Change. Comparing Costs and Benefits*, Bjørn Lomborg (ed.), Cambridge University Press, Cambridge, 2010: 198-207.
- “Kommentar zu Hans-Werner Sinn,” with Richard S.J. Tol, in *Jahrbuch Ökologische Ökonomik 6: Diskurs Klimapolitik*, Joachim Weimann (ed.), Metropolis-Verlag, Marburg, 2009.

## Popular writing

“Thinking Through the Climate Change Challenge,” with Elizabeth Baldwin, Scott Barrett, Linda R. Cohen, Diane Coyle, Partha Dasgupta, Simon Dietz, David Frame, Robert W. Hahn, James Hammitt, Geoffrey Heal, Cameron Hepburn, Michael Hoel, Charles D. Kolstad, Andreas Lange, Robert Mendelsohn, Karine Nyborg, Ian Parry, Ken Richards, Robert Ritz, Thomas Schelling, Massimo Tavoni, Alistair Ulph, Herman Vollebergh and Anastasios Xepapadeas, *VoxEU.org*, 2011.

“On international equity weights and national decision making on climate change,” with Richard S.J. Tol, *VoxEU.org* (also as *IVM Newsletter* and *ESRI Research Bulletin*), 2010.

“Klimaschäden und Klimaverhandlungen,” with Janina Ketterer and Jana Lippelt, *ifo Schnelldienst*, 2009, 62(22): 52-54.

## Reports and other publications

“Equity and Climate Change: Applications of FUND,” *Reports on Earth System Science*, Max Planck Institute for Meteorology, Hamburg, Germany, 2009, 74.

“Marginal Damage from Greenhouse Gas Emissions,” Report for the New Energy Externalities Development for Sustainability project, 2007.

“Global impacts of abrupt sea-level rise,” with Robert J. Nicholls and Richard S.J. Tol, Background paper for the *Stern Review*, 2006.

“Social Cost of Carbon: A Closer Look at Uncertainty,” with Thomas E. Downing, Ruth Butterfield, Megan Ceronsky, Michael Grubb, Jiehan Guo, Cameron Hepburn, Chris Hope, Alistair Hunt, Ada Li, Anil Markandya, Scott Moss, Anthony Nyong, Richard S.J. Tol and Paul Watkiss, Department for Environment, Food and Rural Affairs (UK), London, 2005.

“The Social Costs of Carbon Review – Methodological Approaches for Using SCC Estimates in Policy Assessment,” with Paul Watkiss, Thomas E. Downing, Cameron Hepburn, Chris Hope, Alistair Hunt and Richard S.J. Tol, Department for Environment, Food and Rural Affairs (UK), London, 2005.

## Grants

PI, Sloan Foundation, “Social Cost of Carbon Initiative”.

Hellman Fellowship, UC Berkeley.

Co-PI, Social Science Matrix at University of California, Berkeley, “Climate Economics: From Numerical Models to Data-Driven Estimates”.

Co-PI, Social Science Matrix at University of California, Berkeley, “Climate Change Economics Roundtable”.

PI, Peder Sather Center at University of California, Berkeley, “Efficiency and Equity in Economics Based Tools for Climate Change Policy”.

Senior personnel, National Science Foundation, “What are Sustainable Climate-Risk Management Strategies?”.

### **Stipends and awards**

Ciriacy-Wantrup Postdoctoral Fellowship, University of California, Berkeley, 2010-2012.

Doctoral Scholarship, International Max Planck Research School on Earth System Modelling, Hamburg, Germany, 2005-2009.

First place in the national youth research competition “Jugend Forscht,” 1997.

### **Research experience**

External Consultant, German Umweltbundesamt, 2022-present.

External Consultant, United States Environmental Protection Agency, 2021-2022.

External Consultant, United States Environmental Protection Agency, 2007-2010.

External Consultant, New Energy Externalities Development for Sustainability, European Commission, 2007.

External Consultant, Stern Review, United Kingdom, 2006.

External Consultant, Review of the Social Cost of Carbon, Department for Environment, Food and Rural Affairs, United Kingdom, 2004.

External Consultant on various small policy projects for the National Round Table on the Environment and the Economy (Canada), Marbek Resource Consultants (Canada), Pew Center on Global Climate Change (US) and Natural Resources Defense Council (US).

### **Industry experience**

Consultant, dezem GmbH, Berlin, Germany, 2001-2003.

Freelance software developer, Akademie des Deutschen Buchhandels gemeinnützige GmbH, Munich, Germany, 2000-2003.

Intern, Society and Technology Research Group, DaimlerChrysler AG, Berlin, Germany, 2001.

Managing director and founder, Imagotech Systems GmbH, Munich, Germany, 1997-2003. Technology start-up specializing in medical software.

Software developer, Dipl. Ing. Rolf-Dieter Klein, 1994-1997.

## **Teaching**

Climate Change Economics.

Computational Methods in Economics.

Environmental Regulation.

ERG Master Seminar.

## **PhD students**

Cecilia Springer (primary advisor, graduated in 2019)

Frank Errickson (primary advisor, graduated in 2020)

Stephen Jarvis (dissertation committee member, graduated in 2020)

Eli Lazarus (primary advisor)

Lisa Rennels (primary advisor)

Cody Warner (primary advisor)

Valeri Vasquez (primary advisor)

Eric M. Bell (dissertation committee member, graduated in 2018)

Itai Trilnick (dissertation committee member, graduated in 2019)

Niklas Lollo (dissertation committee member, graduated in 2020)

Andrew Hultgren (dissertation committee member, graduated in 2020)

Sarah Smith (dissertation committee member, graduated in 2020)

Hannah Druckenmiller (dissertation committee member, graduated in 2021)

Helene Benveniste (dissertation committee member at Princeton University, graduated in 2021)

John Dees (dissertation committee member)

Will Gorman (dissertation committee member)



Anaya Hall (dissertation committee member)

Esther Shears (dissertation committee member)

### **University and department service**

Member, Ciriacy-Wantrup Postdoctoral Fellowship Selection Committee, 2014-present.

Member, Environment and Society: data sciences for the 21st century (DS421), 2016-2020.

Member, ERG Executive Committee, 2014-present.

Member, ERG environmental science faculty search committee, 2014.

Member, ERG development committee, 2015-present.

Chair, ERG graduate student admissions committee, 2017-present.

### **Other**

Affiliations: American Economic Association, Association of Environmental and Resource Economists.

Languages: English, German (native).

Program committee member: Association of Environmental and Resource Economists Summer Conference (2011), 18th Annual Conference of the European Association of Environmental and Resource Economists (2011), Association of Environmental and Resource Economists Summer Conference (2012), 19th Annual Conference of the European Association of Environmental and Resource Economists (2012), Association of Environmental and Resource Economists Summer Conference (2013), 20th Annual Conference of the European Association of Environmental and Resource Economists (2013), World Congress of Environmental and Resource Economists (2014), 21st Annual Conference of the European Association of Environmental and Resource Economists (2015), Association of Environmental and Resource Economists Summer Conference (2015).

Reviewer: American Economic Review, Applied Energy, Climate Change Economics, Climatic Change, Climatic Change Letters, Ecological Economics, Economics: The Open Access, Open-Assessment E-Journal, Energy Economics, Energy Research & Social Science, Environmental and Resource Economics, Global Environmental Change, Journal of Environmental Economics and Management, Journal of Public Economics, Nature, Nature Climate Change, Oxford Economic Papers, Proceedings of the National Academy of Sciences, Review of Environmental Economics and Policy, Scandinavian Journal of Economics and Science, Science, World Development.

## **Presentations at conferences and workshops**

- 2019: Ausschusses für Umwelt- und Ressourcenökonomie (AURÖ) im Verein für Socialpolitik; AERE summer conference; SCRiM.
- 2018: Social Cost of Carbon Workshop at Resources for the Future; 6th World Congress of Environmental and Resource Economists; SCRiM; juliacon.
- 2017: Climate Economics Workshop at UC Santa Barbara; National Academies of Sciences workshop on the Social Cost of Carbon; juliacon; SCRiM; Impacts World.
- 2016: Allied Social Science Associations Annual Meeting; SCRiM; NBER meeting at Duke.
- 2015: Berkeley conference on inequality; SCRiM; Duke University; AERE conference; EMF Snowmass; National Academies of Sciences expert workshop.
- 2014: Stanford University; Duke University; SCRiM; EMF Snowmass; UC Berkeley ERG colloquium.
- 2013: Allied Social Science Associations Annual Meeting; Yale University; EMF Snowmass; SCRiM; NYU Law School.
- 2012: Allied Social Science Associations Annual Meeting; NBER; Yale University.
- 2011: International Energy Workshop; Association of Environmental and Resource Economists Summer Conference; EPA and DOE – Improving the Assessment and Valuation of Climate Change Impacts for Policy and Regulatory Analysis II.
- 2010: EPA and DOE – Improving the Assessment and Valuation of Climate Change Impacts for Policy and Regulatory Analysis I; 12th Occasional California Workshop on Environmental and Resource Economics; Climate Change and Common Sense: Workshop in Honor of Tom Schelling; Fourth World Congress of Environmental and Resource Economists; Workshop on Climate Change and Distribution – ESOP; SURED – Monte Verità Conference on Sustainable Resource Use and Economic Dynamics.
- 2009: CESifo Area Conference on Energy & Climate Economics; Jahrestagung des Verein für Socialpolitik; CESifo Venice Summer Institute – Workshop on the Economics and Politics of Climate Change; 17th Annual Conference of the European Association of Environmental and Resource Economists; International Energy Workshop; Assessing the Benefits of Avoided Climate Change – Pew Center on Global Climate Change; The International Dimensions of Climate Policies.
- 2008: CESifo Venice Summer Institute – Workshop on Europe and Global Environmental Issues; 16th Annual Conference of the European Association of Environmental

and Resource Economists; SURED – Monte Verità Conference on Sustainable Resource Use and Economic Dynamics; Ph.D. Workshop on International Climate Policy.

2007: New Energy Externalities Development and Sustainability; 15th Annual Conference of the European Association of Environmental and Resource Economists; Integrated Coastal Zone Management and Valuation of Socio-Economic Impacts.

### **Invited presentations at institutions**

2019: Princeton University; University of Wisconsin-Madison; CESifo Munich.

2018: MIT; University of California, Los Angeles; RAND Corporation.

2017: Princeton University; Rutgers University.

2015: Princeton University; LBNL.

2013: University of California, Berkeley.

2012: University of Michigan; ETH Zurich; University of Hamburg; University of Massachusetts, Amherst; University of Texas, Austin; George Washington University; University of Montana.

2011: University of California, Irvine; Energy Institute at Haas, University of California, Berkeley; Pennsylvania State University.

2010: Department of Agricultural & Resource Economics – University of California, Berkeley; CESifo Group Seminar – LMU Munich.

2009: Biozentrum – LMU Munich; University of Warwick.

2008: Economic and Social Research Institute – Dublin; Smith School of Enterprise and the Environment - University of Oxford; Fondazione Eni Enrico Mattei; Venice International University; Kiel Institute for the World Economy;

2007: University Passau; Bundesamt für Umwelt – Switzerland.