

Benjamin P Goldstein, Ph.D.

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Education

University of Toronto	2007	B.A.Sc.	Chemical Engineering
Technical University of Denmark	2012	M.Sc.	Environmental Engineering
Technical University of Denmark	2017	Ph.D.	Management Engineering

Professional Experience

2021-Present	Assistant Professor of Bioresource Engineering, Faculty of Agricultural and Environmental Sciences, McGill University <i>Faculty Associate</i> Trottier Institute for Sustainability in Engineering and Design
2017-2020	Postdoctoral Research Fellow, Erb Institute for Global Sustainable Enterprise, School for Environment and Sustainability, University of Michigan
2014-2015	Visiting Scholar, School of Architecture and Planning, Massachusetts Institute of Technology
2009-2013	Project Scientist, AEL Environment, Mississauga, ON

Departmental Service

2021-Present	Program Director – Master of Science, Applied (M.Sc.A), Bioresource Engineering (Non-Thesis): Environmental Engineering Option
2021-Present	Co-Chair – Departmental Committee on Equity, Diversity, and Inclusion

Awards

2017	Recipient of the <i>Young Researcher Award</i> . Technical University of Denmark. Presented to one graduating Ph.D. student from each department based on demonstrated research excellence.
2012	Recipient of the <i>International Student Award</i> . Technical University of Denmark. Awarded to the top 4 international students at the university based on GPA.

Publications

Refereed Journal Articles

2021	Elliot T., Torres-Matallana J., <u>Goldstein B.</u> , Almenar J., Gómez-Baggethun E., Maes J., Proenca V., Rugani B., An expanded framing of ecosystem services is needed for a sustainable urban future. Renewable and Sustainable Energy Reviews (Under Consideration)
2021	Elliot T., <u>Goldstein B.</u> , Gómez-Baggethun E., Maes J., Proenca V., Rugani B., Global ecosystems deficits of European cities. Science of the Total Environment (Under Consideration)

- 2021 Chamanara S., [Goldstein B.](#) & Newell J.P., Mapping power dynamics in supply chains. **Journal of Supply Chain Management** (Under Consideration)
- 2021 Cho K., [Goldstein B.](#), Gounaridis D. & Newell J.P., Hidden risks of deforestation in global supply chains of natural rubber: A study of Sri Lanka. **Journal of Cleaner Production** (Accepted with Revisions)
- 2021 [Goldstein B.](#), Newell J.P., Pelton R., Gounaridis D. & Schmitt J., Do we accurately measure what we consume? **One Earth** (Under Consideration)
- 2021 [Goldstein B.](#), Reames T. & Newell J.P., Racial inequities in household energy use and carbon emissions in the United States: An Emissions Paradox. **Energy Research and Social Science**, 84 DOI: 10.1016/j.erss.2021.102365
- 2021 Dorr E., [Goldstein B.](#), Horvath A., Aubry C., Gabrielle B., Environmental impacts and resource use of urban agriculture: system review and meta-analysis. **Environmental Research Letters**, 16(9) DOI: 10.1088/1748-9326/ac1a39
- 2021 Cho K., [Goldstein B.](#), Gounaridis D. & Newell J.P., Where does your guacamole come from? Detecting deforestation associated with the export of avocados from Mexico to the United States. **Journal of Environmental Management**, 278 (Part 1) DOI: 10.1016/j.jenvman.2020.111482
- 2021 Chamanara S., [Goldstein B.](#) & Newell J.P., Where is the Beef? Costco's Beef Supply Chain and Environmental Justice in California. **Journal of Cleaner Production**, 278 DOI: 10.1016/j.jclepro.2020.123744
- 2020 [Goldstein B.](#), Gounaridis D. & Newell J.P., The carbon footprint of household energy use in the United States. **Proceedings of the National Academy of Sciences of U.S.A.**, 117(32) DOI: 10.1073/pnas.1922205117
- 2020 [Goldstein B.](#) & Newell J.P., How to track corporations across space and time. **Ecological Economics**, 169 DOI: 10.1016/j.ecolecon.2019.106492
- 2020 Sohn J., Kalbar P., [Goldstein B.](#) & Birkved, M., Defining Temporally Dynamic Life Cycle Assessment: A Literature Review. **Integrated Environmental Assessment and Management**, 16(3) DOI: 10.1002/ieam.4235
- 2020 Sohn J., Bisquert P., Hecham A., Kalbar P., [Goldstein B.](#), Birkved M. & Irving-Olsen S. Argumentation corrected context weighting-life cycle assessment: A practical method of including stakeholder perspectives in multi-criteria decision support for LCA. **Sustainability**, 12(6) DOI: 10.3390/su12062170
- 2019 [Goldstein B.](#) & Newell J.P., Why academics should study the supply chains of individual corporations. **Journal of Industrial Ecology**, 23(6) DOI: 10.1111/jiec.12932
- 2019 Newell J.P., [Goldstein B.](#) & Foster A., A 40-year review of food–energy–water nexus literature and its application to the urban scale. **Environmental Research Letters**, 14(7) DOI: 10.1088/17489326/ab0767
- 2017 Mohareb E., Heller M., Novak P., [Goldstein B.](#), Fonoll X. & Raskin L., Considerations for reducing food system energy demand while scaling up urban agriculture. **Environmental Research Letters**, 12(12) DOI: 10.1088/1748-9326/aa889b
- 2017 [Goldstein B.](#), Moses R., Sammons N. & Birkved M., Potential to curb the environmental burdens of American beef consumption using a novel plant-based beef substitute. **PLoS One**, 12(12) DOI: 10.1371/journal.pone.0189029
- 2017 [Goldstein B.](#), Birkved M., Fernández J. & Hauschild, M. Contributions of Local Farming to Urban Sustainability in the Northeast United States. **Environmental Science & Technology**, 51(13) DOI: 10.1021/acs.est.7b01011

- 2017 Goldstein B., Birkved M., Fernández J. & Hauschild, M. Surveying the environmental footprint of urban food consumption. **Journal of Industrial Ecology**, 21(1) DOI: 10.1111/jiec.12384
- 2016 Goldstein B., Birkved M., Fernández J. & Hauschild, M. Testing the environmental performance of urban agriculture as a food supply in northern climates. **Journal of Cleaner Production**, 135 DOI: 10.1016/j.jclepro.2016.07.004
- 2016 Goldstein B., Hauschild M., Fernández J. & Birkved M. Urban versus conventional agriculture, taxonomy of resource profiles: a review. **Agronomy for Sustainable Development**, 36(9) DOI: 10.1007/s13593-015-0348-4
- 2016 Goldstein B., Hansen S.F., Gjerris M., Laurent A. & Birkved M. Ethical aspects of life cycle assessments of diets. **Food Policy**, 59 DOI: 10.1016/j.foodpol.2016.01.006
- 2013 Goldstein B., Birkved M., Quitzau M-J, & Hauschild M., Quantification of urban metabolism by coupling with the life cycle assessment framework: concept development and case study. **Environmental Research Letters**, 8 DOI: 10.1088/1748-9326/8/3/035024
- 2013 Goldstein B., Herbøl M., Figueiroa M., Gaps in tools assessing the energy implications of renovations versus rebuilding decisions. **Current Opinions in Environmental Sustainability**, 5 DOI: 10.1016/j.cosust.2013.03.005

Book Chapters

- 2022 Gummidi B., Goldstein B., Sohn J., Lanau M., Birkved M. & Liu G., Quantifying the True Carbon Cost of Cities: 50 Years of Construction in Odense, Denmark. In **Embodied Carbon and Impacts of Buildings and Cities** (eds) Azari R. & Moncaster A. **Routledge** (Forthcoming).
- 2018 Goldstein B. & Rasmussen F., Life Cycle Assessment of Buildings and the Built Environment. In **Life Cycle Assessment** (eds) Hauschild M., Rosenbaum R., & Olsen S. **Springer**.

Editorials and Commentaries

- 2017 Ernstoff A., Stylianou K. & Goldstein B., Response to: Dietary strategies to reduce environmental impact must be nutritionally complete. **Journal of Cleaner Production**, 162 DOI: 10.1016/j.jclepro.2017.05.205

Refereed Conference Proceedings

- 2022 Gagnon W., Adetona A., Gillespie E. & Goldstein, B., Decarbonizing the North: Carbon & Economic Analysis of Space Heating Combined Carbon Capture & Storage. 5th Annual Conference on Building Energy and Design, Montreal, Canada (Submitted)
- 2014 Goldstein B., Birkved M., Hauschild, M. & Fernández J. Urban agricultural typologies and the need to quantify their potential to reduce a city's environmental 'foodprint'. World Sustainable Buildings Conference 2014, Barcelona, Spain
2013. Birkved, M. & Goldstein, B., Environmental sustainability assessment of urban systems applying coupled urban metabolism and life cycle assessment. Sustainable Buildings Conference 2013, Graz, Austria

Other Publications

- 2019 Goldstein B. & Newell J.P. New Ways to Study the Supply Chains of Individual Corporations. ICYMI! (Fall Issue). Official Publication of the Erb Institute for Sustainable Enterprise at the University of Michigan
- 2019 Goldstein B. The Five Ws of Supply Chains: Who, What, When, Where and Why You Should Care. ICYMI! (Spring Issue) Official Publication of the Erb Institute for Sustainable Enterprise at the University of Michigan

Select Media Coverage

- 2020 *Scientific American*, "Neighborhood wealth dramatically impacts home greenhouse gas emissions," Nov. Issue
- 2020 *The San Francisco Chronicle*, "MicroClimates: An S.F. neighborhood has on the nation's lowest carbon footprints. It has almost nothing to do with the residents' choices," Nov. 17
- 2020 *Smart Cities Dive*, "High-income homes responsible for 25% more GHG: study," Nov. 21
- 2020 *Associated Press*, "Rich Americans spew more carbon pollution at home than poor," Jul. 20. Story was syndicated by numerous high-impact news outlets including The Washington Post, The Guardian, The Los Angeles Times, and The Christian Science Monitor.
- 2020 *Planetizen*, "One U.S. state boasts 33% fewer carbon emissions per capita than any other." Aug. 3
- 2020 *Gizmodo*, "McMansions will doom us all." Jul. 20
- 2020 *CNN*, "Wealthy American homes have carbon footprint 25% higher than low-income residences." Jul. 20
- 2020 *Thomson-Reuters*, "High household energy use could thwart U.S. emissions cuts, a study warns." Jul. 20
- 2020 *United Press International*, "Wealthier in the U.S. have larger carbon footprints, energy use survey shows." Jul. 20
- 2017 *Bloomberg*, "Urban agriculture won't save use from climate change." Jun. 21
- 2017 *Seeker*, "Urban farming isn't a game changer when it comes to carbon emissions." Jun. 22

Conference Contributions

Presentations (* indicates presenting author is Benjamin Goldstein)

- 2022 *Goldstein B. *What is Urban Symbiosis?*, American Association of Geographers 2022 Annual Meeting. New York City, New York. April 7-11 (Accepted) February 25 – March 1
- 2022 Chamanara S., Gounaridis D., Goldstein B. & Newell J.P. *Environmental justice of livestock supply chains in California*, American Association of Geographers 2022 Annual Meeting. New York City, New York. April 7-11 (Accepted) February 25 – March 1
- 2022 VanderWilde C., Goldstein B. & Newell J.P. *Do certification schemes foster supply chain embeddedness?*, American Association of Geographers 2022 Annual Meeting. New York City, New York. April 7-11 (Accepted) February 25 – March 1
- 2021 *Goldstein B., Cho K., Gounaridis D. & Newell J.P. *Rubber and risk: Deforestation related to the export of natural rubber from Sri Lanka*, American Association of Geographers 2021 Annual Meeting. Seattle, Washington. April 7-11
- 2021 Chamanara S., Goldstein B. & Newell J.P. *Costco's Supply Chain and Environmental Justice in California*, American Association of Geographers 2021 Annual Meeting. Seattle, Washington. April 7-11
- 2021 Cho K., Gounaridis D., Goldstein B. & Newell J.P. *Deforestation associated with supply chains exporting avocados from Mexico to the United States*, American Association of Geographers 2021 Annual Meeting. Seattle, Washington. April 7-11
- 2021 VanderWilde C., Goldstein B. & Newell J.P. *Tackling Guatemalan Palm Oil from Producer to US Consumer*, American Association of Geographers 2021 Annual Meeting. Seattle, Washington. April 7-11

- 2021 J.P. Newell & Goldstein B. & Newell J.P. *Why academics need to study the architecture of corporations*, American Association of Geographers 2021 Annual Meeting. Seattle, Washington. April 7-11
- 2019 *Goldstein B. & Newell J.P. *Linking Urban and Rural by Tracking Corporate Actors Across Space and Time*, American Association of Geographers 2019 Annual Meeting. Washington, DC. April 7
- 2017 *Goldstein B. *Assessing the Edible City*, 9th Conference for Industrial Ecology. University of Illinois at Chicago, Chicago, Illinois. June 28
- 2014 *Goldstein B. *Urban 'Food-prints' and Urban Agriculture - Supplying Food in an Urbanizing World*, World Sustainable Building Conference 2014. Barcelona, Spain. October 29
- 2014 *Goldstein B. *Urban Agricultural Typologies and the Need to Quantify their Potential to Reduce a City's Environmental 'Foodprint'*, 5th NorLCA Biennial Case Symposium. Reykjavik, Iceland. October 2

Posters

- 2017 Goldstein B. & J.P. Newell *Firm-Centered Approaches to Industrial Ecology*, Gordon Research Conference on Industrial Ecology. Les-Diatribes, Switzerland. May 22
- 2016 Goldstein B., Fernandez J., Birkved M. & Hauschild M. *Testing the environmental performance of urban agriculture as a food supply in northern climates*, Gordon Research Conference on Industrial Ecology. Stowe, Vermont. June 24
- 2015 Goldstein B., Fernandez J., Birkved M. & Hauschild M. *Quantifying Urban Foodprints and Mitigation Opportunities*, 8th Conference for Industrial Ecology. Guildford, United Kingdom. July 8
- 2012 Goldstein B. *Application of LCA to Urban Metabolism as a Method for Gauging Urban Sustainability*, Society of Environmental Toxicology and Chemistry 18th LCA Case Study Symposium. Copenhagen, DK. November 26

Sessions Organized or Chaired (indicates session chair was Benjamin Goldstein)*

- 2021 *Environmental Justice of Production Networks* American Association of Geographers 2022 Annual Meeting. Paper session organizer: Goldstein B. & Chamanara S. New York City, New York. April 7-11
February 25 – March 1 Three Sessions
- 2021 **The Corporation [I,II,III]*. American Association of Geographers 2021 Annual Meeting. Paper session organizer: Goldstein B. & Chamanara S. Seattle, Washington. April 7-11. Three Sessions
- 2019 **Urban-rural linkages: theory, case studies and future [I,II]*. American Association of Geographers 2019 Annual Meeting. Paper session organizer: Goldstein B. & Chamanara S. Washington, DC. April 7. Two Sessions

Invited Talks

McGill University

- 2021 *Tracking Corporations Across Space and Time*. "GeoSpectives" lunch lecture at the Department of Geography. November 12

University of Michigan

- 2020 *The Carbon Energy Footprint of Household Energy Use in the United States*. Center for Sustainable Systems Board of Directors Meeting. October 8
- 2019 *Revealing Supply Chains to Increase Sustainability and Reduce Risk*, with Newell J.P. Center for Sustainable Systems Board of Directors Meeting. March 15

2019 *Revealing Supply Chains to Increase Sustainability and Reduce Risk*, with Newell J.P. MUSE Conference 2019. February 22

Technical University of Denmark

2015 *Testing the Assertion that Urban Agriculture is Sustainable*, DTU Sustain Conference 2019, December 17

2015 *Assessing the Edible City*, Guest Lecture for Sustainability and Life Cycle Assessment Undergraduate Course, Department of Civil Engineering, October 19

2014 *The Sustainability of Urban Agriculture from a Life Cycle Perspective*, Guest Lecture for Sustainability and Life Cycle Assessment Undergraduate Course, Department of Civil Engineering, October 19

Other Institutions

2021 *Agri-Food Supply Chains: Making Them Transparent and Sustainable*. Guest lecture at the Copenhagen Business School, September 15

2021 *Spatially Resolved Urban Environmental Footprints: Novel Data in the US Context*. Guest seminar at the Indian Institute of Technology Bombay, Centre for Urban Science and Engineering, April 21

2020 *Hot to Track Corporations Across Space and Time*. Guest lecture at the Copenhagen Business School, November 3

Research Funding

Externally Funded

\$180,000 *Sustainable Cities on an Interconnected Planet*. Natural Sciences & Engineering Research Council (NSERC) Discovery Grant, 2021-2026
PI: Goldstein B.

\$12,000 *Sustainable Cities on an Interconnected Planet*. NSERC Discovery Grant-Launch Supplement, 2021-2026
PI: Goldstein B.

\$3,000 *Big or Small? The Environmental and Nutritional Impacts of Upscaling Urban Agriculture in Montreal*. NSERC Undergraduate Research Assistant Grant, 2021
PI: Goldstein B.

\$313,049 *The Sustainability Hoofprint of Cities - A Spatial Model to Assess Transboundary Urban Consumption*. National Science Foundation (NSF), 2018-2021.
PI: Newell J.P. Co-PI: Schmitt J.
Senior Personnel: Goldstein B. and Pelton R.

\$234,590 *The FEW-Meter – An Integrative Model to Measure and Improve Urban Agriculture, Shifting It Towards Circular Urban Metabolism*. Belmont Forum/NSF, 2018-2021.
PI: Newell J.P. Senior Personnel: Goldstein B.

\$4,000 *Assessing the Edible City*. Augustinus Fond (Denmark) Graduate Research Fellowship, 2014
PI: Benjamin Goldstein

\$4,000 *Assessing the Edible City*. Reinhold Fund (Denmark) Jorck and Hustrus Fund in Support of Graduate Research, 2014
PI: Benjamin Goldstein

Teaching

Courses at McGill

Engineering Mechanics: Statics (Fall 2021)

Department: Bioresource Engineering (Undergraduate)

Foundational course on the concepts of solid body mechanics, equilibrium, and the application of vector forces and displacements to the solution of physical systems in static equilibrium. Completely overhauled the course to by streamlining the lectures and assignments to focus on core concepts in order to reduce student burnout and teaching assistant workload. Assessment methods: Quizzes, assignments, and written exams.

Bio-Environmental Engineering (Fall 2021)

Department: Bioresource Engineering (Undergraduate)

Co-taught course on the role of bioresources and engineering solutions to grand global environmental challenges including climate change and energy scarcity. Emphasized the trade-offs of different potential technologies (e.g. biofuels, solar energy) across environmental and social dimensions, and their political and economic implications. Assessment methods: Quizzes, written midterm exam, and group case study.

Departmental Seminar (Winter 2021, Fall 2021)

Department: Bioresource Engineering (Undergraduate and Graduate)

Co-taught departmental seminar on research topics in science and engineering. Students develop short presentations and provide feedback to their peers as way to strengthen presentation skills and enhance knowledge in bioresource engineering. Assessment methods: Presentations, peer review, and short reports.

Courses at University of Michigan

Urban Sustainability (Fall 2018)

Department: Bioresource Engineering (Graduate)

Multidisciplinary introduction to urban sustainability through the lenses of industrial ecology, urban political ecology, and urban ecology. The course provides students with the theoretical and methodological tools to analyze complex urban sustainability challenges. Students learn about a range of solutions to foster a sustainable urban future, ranging from localization of agriculture, to industrial symbiosis, to ecological restoration. Assessment methods: Written midterm, essays, and group case study.

Teaching Assistant Positions at the Technical University of Denmark

Introduction to Life Cycle Assessment (Fall 2014, Fall 2015, Fall 2016)

Department: Management Engineering (Graduate)

Supervision, Committee Participation, and Advising

Formal Supervision

Ph.D. Students

2025[Est.] Dianka Alexieva, Department of Bioresource Engineering, McGill University, *Measuring and Mapping the Sustainability of the Montreal Foodshed Using Machine Learning*.

2025[Est.] Abolghasem Azhdari, Department of Bioresource Engineering, McGill University, *Timber Cities – Environmental Implications of Shifting Towards Wood Mid- and High-Rises in Urban Growth*.

Master's Students

2022[Est.] William Gagnon, Department of Bioresource Engineering, McGill University, *Fighting Fire with Fire: Decarbonizing Energy in the Canadian North Using Pyrogenic Carbon Capture and Storage from Fire-Killed Trees*.

2023[Est.] Estefany Cabanillas, Department of Bioresource Engineering, McGill University, *Environmental Impacts of Advanced Controlled-Agriculture in Montreal.*

Graduate Researchers Supervised

McGill University: Yash Mehta (Summer 2021)

Undergraduate Researchers Supervised

McGill University: Laurianne Roy (Summer/Fall 2021), Anouk Rhode (Fall 2021)

Examination and Steering Committee Participation

Doctoral Examination Committee

2023 [Est.] Calli VanderWilde, Doctoral Candidate, School for Environment and Sustainability, University of Michigan. *A Political-Industrial Ecology of Palm Oil from Guatemala.*

2022 [Est.] Sanaz Chamanara, Doctoral Candidate, School for Environment and Sustainability, University of Michigan. *Environmental Justice and Governance of Beef Supply Chains.*

2020 Joshua Sohn, Department of Management Engineering, Technical University of Denmark. *Environmental Sustainability Assessment of Advanced Agricultural Waste Technologies and Agricultural Territories.* [External Examiner]

Doctoral Advisory Board/Steering Committee

2022 [Est.] Erica Dorr, AgroTech Paris. *Creation of a Simplified LCA Tool for Urban Agriculture.* [External Steering Committee Member]

2020 Thomas Eliot, Luxembourg Institute of Science and Technology. *Ecosystem Service Toolbox developed from multi-scale Integrated Modelling of Urban Metabolism.* [External Advisor]

Master's Thesis Co-Chair/Committee

2020 Kimin Cho, University of Michigan. *The influence of U.S. avocado demand on the environment and peoples of Michoacán, Mexico.*

2016 Leire Diez Larrea, Technical University of Denmark. *Management of urban nutrient cycles and sinks in the City of Copenhagen.*

2016 Saimonas Skurichinas, Technical University of Denmark. *Urban nutrient cycles and sinks in the City of Copenhagen.*

2014 Andreas Secher, Technical University of Denmark. *DGNB New Urban District Method in Sustainable Planning.*

Graduate Researchers Advised

Christian Noyce, University of Michigan. Spring 2019

Linnea Carver, University of Michigan. Fall 2018

Katherine Cunningham, University of Michigan. Fall 2018

Undergraduate Researchers Advised

University of Michigan: Emily Wolfe (Summer 2019), Lydia Whitbeck (Spring 2019), Jianella Macalino (Spring 2019)

Technical University of Denmark: Davide Casella (Bachelor's Thesis. 2016), Michael Reymann (Bachelor's Thesis. 2016), Cindy Jespersen (Bachelor's Thesis. 2014), Ida Christensen (Bachelor's Thesis. 2014)

Other Service and Membership

Invited Referee

Journal Manuscripts: Agronomy for Sustainable Development; Challenges for Sustainability; Current Opinions in Environmental Sustainability; Economic Systems Research; Environmental Research Letters; Environmental Science & Technology; Environmental Science & Policy; Global Environmental Change; Journal of Industrial Ecology; Journal of Cleaner Production; One Earth; Organization & Environment; Resources, Conservation & Recycling; Sustainability; Sustainable Cities and Society.

Conference Proceedings: Procedia CIRP.

Departmental Service as a Graduate Student

2014-2016 Head of Social Media and Public Outreach, Division for Quantitative Sustainability Assessment
2015-2016 Head of Graduate Student Society, Division for Quantitative Sustainability Assessment

Memberships

International Society for Industrial Ecology
American Association of Geographers
Ontario Society of Professional Engineers
Danish Society of Engineers [2012-2018]

Undergraduate Research Positions Held

2005 EyeTap Laboratory, Department of Electrical and Computer Engineering, University of Toronto.
Supervisor: Prof. Steve Mann