MARCO MIOTTI

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EDUCATION

Massachusetts Institute of Technology (MIT) 2014 – 2019
Ph.D. in Engineering Systems
Committee: Jessika Trancik (chair, advisor), John Heywood, P. Christopher Zegras

Swiss Federal Institute of Technology (ETH) Zurich 2010 – 2013
S.M. in Environmental Engineering

Swiss Federal Institute of Technology (ETH) Zurich 2007 – 2010
B.S. in Environmental Sciences

RESEARCH EXPERIENCE

Researcher (Oberassistent), Lecturer February 2023 – present
Chair of Ecological Systems Design, ETH Zurich

Postdoctoral Fellow November 2019 – October 2022
Urban Informatics Lab, Stanford University

Research Assistant September 2014 – October 2019
Trancik Lab, MIT

Research Assistant November 2013 – February 2014
Laboratory for Energy Systems Analysis, Paul Scherrer Institute

Research Assistant (part time) July 2010 – July 2011
Applied Entomology Group, ETH Zurich

PROFESSIONAL EXPERIENCE

Centro Nacional de Producción Más Limpia February 2014 – June 2014
Swiss Civilian Service | Bogotá, Colombia

Global Risk Forum Davos August 2013 – October 2013
Swiss Civilian Service | Davos, Switzerland

Evonik Industries March 2012 – September 2012
Intern | Marl, Germany & Shanghai, China

PEER-REVIEWED JOURNAL AND CONFERENCE ARTICLES

Miotti, Elvarsson, and Hellweg. Decarbonizing urban mobility through accessibility planning. *In final preparation.*

Meyer de Freitas, **Miotti**, Zani, and Axhausen. Rethinking cost–benefit analysis for transformative cycling policies: integrating behavioral change and the logsum method. *In review.*

Miotti. How fast are bicycles and e-bikes compared to other modes? An accessibility-based analysis. *In review (conference submission).*

Miotti and Hellweg. Efficient and representative door-to-door travel time estimation for planning and policy. *Transportation* [in press].

Miotti and Trancik. Determinants of electric vehicle emissions savings and costs across locations and individuals. *Environmental Research Letters* [in press].

Miotti. Fast and scalable traffic volume estimation using modified betweenness centrality. *Accepted to the 105th Transport Research Board Annual Meeting.*

Ho, **Miotti**, and Jain. Building energy consumption and urban form: A multi-temporal empirical investigation. *Environment and Planning B: Urban Analytics and City Science*, 2025. [Link].

Miotti, Needell, and Jain. The impact of urban form on daily mobility demand and energy use: evidence from the United States. *Applied Energy,* 2023. [Link].

Ho, **Miotti**, and Jain. Exploring the Empirical Relationship Between Urban Form and Building Energy Use. *2023 ASCE International Conference on Computing in Civil Engineering.* [Link].

Miotti and Jain. A computationally efficient algorithm to enable privacy preserving urban energy data sharing under the "15/15" rule. *Energy Proceedings 2022.* [Link].

Miotti and Jain. Modeling aggregate human mobility patterns in cities based on the spatial distribution of local infrastructure. *2021 Hawaii International Conference on System Sciences.* [Link].

Miotti, Needell, Ramakrishnan, Heywood, and Trancik. Quantifying the impact of driving style changes on light-duty vehicle fuel consumption. *Transportation Research Part D: Transport and Environment*, 2021. [Link].

Miotti, Needell, and Trancik. Quantifying Reductions in Personal Vehicle Energy Consumption Due to Driving Style Changes. *Transportation Research Board 97th Annual Meeting*, 2018. [Link].

McNerney, Needell, Chang, **Miotti**, and Trancik. TripEnergy: Estimating personal vehicle energy consumption given limited travel survey data. *Transportation Research Record: Journal of the Transportation Research Board*, 2017. [Link].

Fletcher, **Miotti**, Swaminathan, Klemun, Strzepek, and Siddiqi. Water Supply Infrastructure Planning: Decision-Making Framework to Classify Multiple Uncertainties and Evaluate Flexible Design. *Journal of Water Resources Planning and Management*, 2017. [Link].

Miotti*, Supran*, Kim, and Trancik. Personal vehicles evaluated against climate change mitigation targets. *Environmental Science & Technology*, 2016. [Link]. *authors contributed equally.

Miotti, Hofer, and Bauer. Integrated environmental and economic assessment of current and future fuel cell vehicles. *International Journal of Life Cycle Assessment*, 2015. [Link].

BOOK CHAPTERS, REPORTS AND LETTERS

Meyer de Freitas, **Miotti**, and Zani. Effects of an E-Bike City. In *The E-Bike City: Designing sustainable streets.* Axhausen and Elliot (eds). ETH Zurich, 2025. [Link].

Schenker, **Miotti**, and Pfister. Sustainability assessment of battery supply chains and externalities in e-bike mobility. In *The E-Bike City: Designing sustainable streets.* Axhausen and Elliot (eds). ETH Zurich, 2025. [Link].

Trancik, Edwards, Kavlak, Klemun, McNerney, **Miotti**, Needell, Pereira, Supran, and Wei. "Notes on scale: Why U.S. states can make a significant contribution to the Paris Agreement." Press release, 2017. [Link].

Trancik, Supran, and **Miotti**. "Reality is that most EVs emit less CO2 than petrol cars over their lifetimes." Letter, The Financial Times, Nov. 20 2017. [Link].
Most read letter of the week in The Financial Times online.

Trancik, Brown, Jean, Kavlak, Klemun, Edwards, McNervey, **Miotti**, Mueller, and Needell. Technology improvement and emissions reductions as mutually reinforcing efforts: Observations from the global development of solar and wind energy. Technical report, 2015. [Link].

Treyer, Oshikawa, Bauer, and **Miotti**. Work Package 4: Environment. In *Energy from the Earth: Deep Geothermal as a Resource for the Future?* Hirschberg, Wiemer, and Burgherr (eds). VDF Hochschulverlag, Zurich, 2015. [Link].

DATASETS

Miotti, Needell, and Jain. Measures of urban form and mobility energy use indices for each census tract in the United States. Data Dryad. [Link].

SOFTWARE AND TOOLS

Carboncounter.com and Carboncounter.lu. Responsibilities: concept, design, programming, data collection, maintenance, server setup. Reached 500,000+ unique visitors.

FM Sensing (Android app; discontinued). Responsibilities: helped to integrate TripEnergy (a model to estimate vehicle trip fuel consumption) into server-side framework; developed a server-side module in Python to measure the eco-driving performance of a car drivers.

CONFERENCE PRESENTATIONS (SELECTION)

Miotti, Elvarsson, and Hellweg. Quantifying accessibility and its implications for sustainable urban mobility systems. International Land Use Symposium, Dresden, DE, 2025.

Miotti and Hellweg. A detailed atlas on urban form in Switzerland to understand travel demand across scales. 23rd Swiss Transport Research Conference, Ascona, CH, 2023.

Miotti, Jain. A computationally efficient algorithm to enable privacy preserving urban energy data sharing under the "15/15" rule. Intern. Conference on Applied Energy, Bochum, DE, 2022.

Miotti, Jain. Path to zero-carbon mobility: The role of urban planning and the built environment. Gordon Research Seminar (GRS) on Industrial Ecology, Newry ME, USA, 2022.

Miotti, Trancik. Leveraging data to estimate localized emissions and costs of personal vehicles. Gordon Research Seminar (GRS) on Industrial Ecology, Les Diablerets, Switzerland, 2018.

Miotti, Needell, Trancik. Quantifying reductions in personal vehicle energy consumption due to driving style changes. Transportation Research Board 97th Annual Meeting, Washington DC, USA, 2018.

Miotti, Trancik. Evaluating the emissions and costs of light-duty vehicles. International Society for Industrial Ecology/International Symposium on Sustainable Systems and Technologies (ISIE-ISSST) Joint Conference, Chicago, USA, 2017

Miotti, Supran, Kim, Trancik. Using a parameterized LCA to evaluate over 120 current passenger vehicle models against climate change mitigation targets. American Center for Life Cycle Assessment Conference (LCA XV), Vancouver, CA, 2015.

GRANTS AND FELLOWSHIPS (AS PRIMARY PROPOSAL AUTHOR/CO-AUTHOR)

ETH Zurich Center for Sustainable Future Mobility. "A high-resolution, multi-scale urban land use transport interaction model for sustainable spatial and mobility planning in Switzerland" (Mobility Initiative); 2024.

Stanford Center for Integrated Facility Engineering. "A big data modeling framework for evaluating the impact of urban design and constructability on multi-scale city energy usage"; 2021.

Stanford TomKat Center for Sustainable Energy. "A coupled urban mobility and building energy model to inform emission reduction strategies of cities" (Postdoctoral Fellowship); 2019.

Swiss National Science Foundation (SNF). "Developing a coupled urban mobility and building energy model to inform energy consumption reduction strategies of cities" (Early Postdoc.Mobility Fellowship); 2019.

MyEnergy. "Adaptation of the tool 'carboncounter.com' for the context of Luxembourg"; 2019.

Toyota Motor Company. "An integrated, parametrized emissions model for light-duty vehicles"; 2018.

MIT Martin Family. "Evaluating technology evolution pathways against climate goals: the case of light-duty vehicles" (Sustainability Graduate Fellowship); 2018.

TEACHING AND MENTORSHIP EXPERIENCE

Classroom teaching

Environmental Engineering Seminar, ETHZ (co-lecturer, all lectures)	Fall 2025 – present
Prospective Environmental Assessments, ETHZ (guest lecturer, 2 lectures)	Spring 2024 – present
Introduction to Life Cycle Assessment, MIT (guest lecturer, 2 lectures)	Fall 2017

Teaching education

Kaufman Teaching Certificate Program (KTCP), MIT	Summer 2018

Student supervision

PhD research (co-supervision)

Carlo Schmid	2024 – present
Eleanor Ho	2021 – 2023
Full supervision of 3 graduate students during lab director's parental leave	Summer 2020

Master's projects and theses

Anna Bellosi	Fall 2025
Samantha Yi-Shuen Liu	Fall 2020 and 2021

Bachelor's projects and theses

Leonie Droege	Spring 2025
Anna Bogatu, Anne Graf	Spring 2024
Nathanael Monhart	Spring 2024
Triana Hernandez Hasselkus	Summers 2021 and 2022
Sai Sameer Pusapaty	Fall 2017
Christiane Adcock	Spring 2017

Teaching assistancy

Mapping and Evaluating New Energy Technologies, MIT	Fall 2017

AWARDS & HONORS

Best Paper Award nominee, 2021 Hawaii International Conference on System Sciences	2021
Best Paper Award, Transportation Research Board Energy Subcommittee (4th author)	2018
Editor's Choice Paper, Journal of Water Resources Planning and Management (2nd author)	2018
Siebel Scholarship	2017
Society of Industrial Ecology Young Professionals Scholarship	2017
Willi-Studer Prize (for best GPA in master's program), ETH Zurich	2013
Unitech Fellowship, ETH Zurich	2012

MEDIA COVERAGE (SELECTION)

The New York Times. "Just How Good for the Planet Is That Big Electric Pickup Truck?"	2023-02-17
USA Today. "Fact check: Lifetime carbon emissions lower for electric vehicles than gas-powered cars."	2022-06-09
The New York Times. "Electric Cars Are Better for the Planet – and Often Your Budget, Too."	2021-01-15
The Guardian. "New MIT app: check if your car meets climate targets."	2016-09-28
The New York Times. "An App to Help Save Emissions (and Maybe Money) When Buying a Car."	2016-09-27
NPR. "It May Not Cost You More To Drive Home In A Climate-Friendly Car."	2016-09-27

SERVICE

Representative, Teaching Commission, ETH Zurich, Department of Civil, Environmental, and Geomatic Engineering	2024 – present
Deputy, Departmental Commission, ETH Zurich, Department of Civil, Environmental, and Geomatic Engineering	2024 – present
President, MIT IDSS Student Council	2018 – 2019
Captain, MIT IDSS Ice Hockey Team	2017 – 2019
Co-Organizer, MIT Policy Hackathon: From Data to Decisions	2018
Co-President, MIT Engineering Systems Student Society	2016 – 2017
Military (completed regular service / training school), Swiss Air Force	2006

Manuscript reviewer (selection)
Science; Environmental Research Letters; Applied Energy; Environmental Science & Technology; Environmental Science & Policy; Transportation Research Record; Transportation Research Part D: Transport & Environment; Journal of Industrial Ecology; Frontiers in Energy Research.

SKILLS

Spoken languages
German (native), English (proficient / C2), Spanish (experienced / B2), French (elementary / A2).

Programming and markup languages
20,000+ lines written: Python, Javascript, HTML/CSS | 2,000+ lines written: R, SQL, LaTeX.

Software
Adobe Photoshop/Illustrator/InDesign, version control (Git), GIS/ArcGIS.