

Curriculum Vitae

Chris Mutel
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Education:

- 2006-2012 Ph.D., Eidgenössische Technische Hochschule Zürich,
Zürich, Switzerland
- 2004-2006 M.S., Environmental Engineering, University of Iowa, Iowa, USA
- 1995-2000, 2004 B.S., Geography, University of Iowa, Iowa, USA

Employment:

- 2014-Present** **Scientist**, Paul Scherrer Institute, Villigen, Switzerland.
- 2009-Present** **Editor for Geographies**,ecoinvent centre. Responsible for implementation and verification of geographical data in the ecoinvent database.
- 2012-2014 **Postdoctoral fellow**, Eidgenössische Technische Hochschule Zürich. Working under Professor Stefanie Hellweg. Responsibilities include organizing seminars, developing and teaching new lectures and labs, and grant writing. Research efforts include uncertainty and sensitivity analysis, regionalization in life cycle assessment, and global sustainability assessment.
- 2011-2013 **Founder**, Aveny GmbH. Aveny is a firm providing life cycle assessment consultancy services and custom software. <http://www.aveny.ch/>.
- 2006-2012 **Research Assistant**, Eidgenössische Technische Hochschule Zürich. Working under Professor Stefanie Hellweg. Responsible for initiating and managing research on Sustainable Consumption and regionalization in life cycle assessment. Developed outside sources of data and funding. Supervised numerous masters and bachelors theses. Wrote flexible life-cycle assessment computer tool.
- 2004-2006 **Research Assistant**, University of Iowa. Working under Professor Jerald Schnoor. Responsible for organization and developing syllabus for class on Sustainable Systems. Developed model for thesis relating wind and solar data to electricity generation to demand data for a proposed new building.
- 2004 **Research Intern**, Sebesta Blomberg, Minneapolis. Prepared air pollution models and permits for a new biomass generating facility in northern Minnesota.
- 2000-2003 **Peace Corps Volunteer**, Environmental Education, Kazakhstan. Worked in Kokshetau and Almaty. Taught ecology and English at Kokshetau State University. Worked with UNDP and National Environmental Center. Organized summer camps and teacher's seminars. Organized and registered "Globus" Resource Center NGO. Worked and taught at National Debate Center. Organized and led international debate tournaments and seminars for students. Taught seminars on debate pedagogy for teachers. Wrote and edited numerous grants for international organizations.

Academic Honors and Awards:

- 1999,2004-5 Dean's List
1996 Second place at 50th Anniversary National Debate Tournament (Second youngest person in the final round in the history of the tournament)
1994, 1995 AP (Advanced Placement) Scholar with Distinction
1994 National Merit Finalist

Volunteer Experience:

- 2016-present Member, SETAC North America roadmap working group on inventory model description and revision
2016-present Member, SETAC North America roadmap working group on uncertainty
2015-present Co-chairman, UNEP SETAC cross-cutting issues working group on LCIA regionalization
2014-present LC IMPACT, task leader for regionalisation
2009-10 Co-chairman, Ecoinvent indicator monitoring committee. Responsible for developing new version of life cycle impact assessment data format.
2009-10 Member, Ecoinvent Working Group on Database Structure. Responsible for developing proposals to include regionalization, parameterization, and inheritance in ecoinvent 3 database.
2005-6 Member, Campus Energy Advisory Council, University of Iowa
2005-6 Member, Campus Planning Commission, University of Iowa
2004-6 Member, University of Iowa Engineers for a Sustainable World (ESW);
Founder, University of Iowa Sustainability Coalition.
1999-2000 Crisis Center crisis line volunteer, Iowa City, IA, USA

Environmental Experience:

- 6-12/2005 Host, Environment@Iowa, a weekly talk show on environmental issues and research at the University of Iowa.
3/2005 Member, ESW Team that won a \$10,000 P3X Grant from US EPA; Grant implements international student exchange between Iowa and Mexico for pollution prevention training
1/2000 Internship with David Osterberg, Iowa Department of Natural Resources, studying electricity regulation, wind power, and global climate change
Lifetime Member The Nature Conservancy

Peer-reviewed Publications:

- Heeren, N., Mutel, C., Steubing, B., Ostermayer, Y., Wallbaum, H., Hellweg, S. 2015. Environmental Impact of Buildings—What Matters? *Environmental Science & Technology*, **49** (16), 9832-9841.
Pauliuk, S., Majeau-Bettez, G., Mutel, C., Steubing, B., Stadler, K. 2015. Lifting Industrial Ecology Modeling to a New Level of Quality and Transparency. *Journal of Industrial Ecology*, doi: 10.1111/jiec.12316.
Müller, S., Lesage, P., Ciroth, A., Mutel, C., Weidema, B. P., Samson, R. 2014. The application of the pedigree approach to the distributions foreseen in ecoinvent v3. *The International Journal of Life Cycle Assessment*, doi:10.1007/s11367-014-0759-5.
de Baan, L., Mutel, C., Curran, M., Hellweg, S., Koellner, T. 2013. Land use in LCA: Global characterization factors based on regional and global potential species extinctions. *Environmental Science & Technology*, **47** (16), 9281-9290.

- Mutel, C., de Baan, L., Hellweg, S. 2013. Two-step sensitivity testing of parameterized and regionalized life cycle assessments: methodology and case study. *Environmental Science & Technology*, **47** (11), 5660-5667.
- Mutel, C., Pfister, S., Hellweg, S. 2012. GIS-based Regionalized Life Cycle Assessment: How big is small enough? Methodology and case study of electricity generation. *Environmental Science & Technology*, **46** (2), 1096-1103.
- Milà i Canals Ll, Azapagic A, Doka G, Jefferies D, King H, Mutel C, Nemecek T, Roches A, Sim S, Stichnothe H, Thoma G, Williams A. 2011. Approaches for addressing Life Cycle Assessment data gaps for bio-based products. *Journal of Industrial Ecology*, **15** (5), 707-725.
- Rugani B, Huijbregts M, Mutel C, Bastianoni S, Hellweg S. Solar Energy Demand (SED) of Commodity Life Cycles. *Environmental Science & Technology*, **45** (12), 5426-5433.
- Wernet G, Mutel C, Hellweg S, Hungerbühler K. 2011. The environmental importance of energy use in chemical production. *Journal of Industrial Ecology*, **15** (1), 96-107.
- Mutel C, Hellweg S. 2009. Regionalized Life Cycle Assessment: Computational Methodology and Application to Inventory Databases, *Environmental Science and Technology*, **43** (15), 5797-5803.
- Juraske, R, Mutel C, Stoessel F, Hellweg S. 2009. Life Cycle Human Toxicity of Pesticides: Comparing fruit and vegetable diets in Switzerland and the United States. *Chemosphere*, **77**, 939-945.

Other publications and reports:

- Mutel, C. 2012. *Framework and tools for regionalization in life cycle assessment*. PhD. Dissertation, ETH Zürich, Zürich, Switzerland.
- Weidema, B. P., Bauer, C., Hischer, R., Mutel, C., Nemecek, T., Vadenbo, C.O., Wernet, G. 2011. *Overview and methodology: Data quality requirements for the ecoinvent database version 3*. Ecoinvent centre, St. Gallen, Switzerland.
- Mutel, C., Stössel, F., Hellweg, S. 2009. *Sensitivity-based methods for estimating LCA results of selected bio-based ingredients*. Report for Unilever. ETH Zürich, Zürich, Switzerland.
- Mutel, C. 2006. *Estimating Wind Speed Distribution for Modeling Power Generation at Oakdale Campus*. M.S. Thesis. University of Iowa: Iowa City, IA, USA.
- Мьютел, К. *Critical Thinking in the Teaching of English: An American Perspective*. Актуальные Проблемы Лингвистики, Теории Перевода и Теории Обучения Иностранному Языку. Международная Научно-практическая Конференция, Посвященная 40-летию Кокшетауского Государственного Университета имени Ш. Ш. Уалиханова, Кокшетауский Государственный Университет, Кокшетау, 2002. p. 256-60.
- Мьютел, К, Хусаинов А. *Проблемы Экологического Образования в Республике Казахстан*. Материалы Международной Научно-практической Конференции Посвященной 10-летию Независимости Республики Казахстан, Том VI, Кокшетауский Государственный Университет, Кокшетау, 2001. p. 346-50.

Open source software:

[brightway2](#), [temporalis](#), [brightway2-regional](#), [pandarus](#), [stats_arrays](#), [constructive geometries](#)

Organization:

- Applied Advanced Life Cycle Assessment*, PhD Summer School, Switzerland, July 2016.
- Life Cycle Assessment SCCER Mobility Skills Development Workshop*, Zürich, Switzerland. 3 June 2015.
- LCA Discussion Forum 53: Uncertainty in Life Cycle Assessment: State of the art and practical challenges*. Zürich, Switzerland. 13 Sept. 2013.
- Regionalized LCA in practice: Where are we, and what directions should we follow?* Special Session at LCA 10: Bridging Science, Policy, and the Public, Portland, Oregon. 2-4 Nov. 2010.
- LCA Discussion Forum 39: Regionalization in Life Cycle Assessment*. Zürich, Switzerland. 13 Nov. 2009.

Conference Presentations:

- Automatic differentiation of global datasets using input-output data.* LCA 15: A bright green future. Vancouver, Canada, 6-8 Oct. 2015.
- Can't we all get along? The pain and promise of LCA data interchange.* LCA 15: A bright green future. Vancouver, Canada, 6-8 Oct. 2015.
- Temporal life cycle assessment: critical review and a simplified approach.* LCA 15: A bright green future. Vancouver, Canada, 6-8 Oct. 2015.
- Regionalized assessment using LC IMPACT and ecoinvent: Case study of electricity production.* LCM 2015: Mainstreaming Life Cycle Management for sustainable value creation. Bordeaux, France, 30 Aug.-2 Sept. 2015
- Transforming ecoinvent for fun and profit.* LCM 2015: Mainstreaming Life Cycle Management for sustainable value creation. Bordeaux, France, 30 Aug.-2 Sept. 2015
- Brightway2: A new contribution to open source industrial ecology.* ISIE 2015: Taking stock of industrial ecology. Guildford, England, 7-10 July 2015
- Brightway2-temporalis: A simple approach to temporal LCA calculations.* ISIE 2015: Taking stock of industrial ecology. Guildford, England, 7-10 July 2015
- Finding the right spatial scale for life cycle impact assessment: minimisation of global spatial autocorrelation.* EUROGEO 2014: The Power of Geography and the Role of Spatial Information. Valletta, Malta, 15-17 May 2014.
- Regionalized inventory data and LCA with ecospold2.* LCA 13: Fulfilling LCA's promise. Orlando, FL, USA. 30 Sept.-3 Oct. 2013.
- Using online scientific notebooks for LCA calculations.* LCA 13: Fulfilling LCA's promise. Orlando, FL, USA. 30 Sept.-3 Oct. 2013.
- Improving the spatial scale of impact assessment: analyzing and applying the regionalized LC-IMPACT methods.* SETAC Europe, Glasgow, Scotland. 12-16 May 2013.
- Integrating GIS-based Regionalization into LCA Calculations: The Example of Water.* LCA Discussion Forum 50: Water in LCA: Which assessment techniques are emerging or ready? Including lots of challenging aspects. Zurich, Switzerland. 4 Dec. 2012.
- Two-step sensitivity analysis: Methodology and Case Study.* LCA 12: Life-cycle thinking... life-cycle living. Tacoma, WA, USA. 25-27 Sept. 2012.
- GIS-based Regionalized Life Cycle Assessment: How big is small enough? Methodology and case study of electricity generation.* SETAC World, Berlin, Germany. 20-24 May 2012.
- How to do regionalized LCA.* LCA 11: Instruments for Green Futures Markets. Chicago, Illinois. 4-6 Oct., 2011.
- GIS-based regionalization: Application to electricity generation in the United States.* LCA 10: Bridging Science, Policy, and the Public, Portland, Oregon. 2-4 Nov. 2010.
- Web mapping and Green Receipts: Communicating the results of Life Cycle Assessment to decision-makers.* Assessing and Communicating the Loss of Biodiversity and Ecosystem Services, Bayreuth, Germany. 11-15 Oct. 2010.
- GIS-based regionalization, and implementation in new LCA data formats.* LCA Discussion Forum 39, Zürich, Switzerland, 13 Nov. 2009.
- Real-time Life Cycle Assessment: An implementation for ETH Zürich.* Life Cycle Assessment 9, Boston, USA. 29 Sept. - 2 Oct. 2009.
- Using a Fruit and Vegetable Dataset to Determine Statistically Independent Indicators of Food Production.* LCM 2009, Cape Town, South Africa, 6-9 Sept. 2009.
- Challenges of Implementation of Regionalization and Parameterization in Life Cycle Assessment.* SETAC Europe, Göteborg, Sweden, 31 May - 4 June 2009.
- Brightway: an open, innovative LCA model.* InLCA 2008. Seattle, USA, 30 Sept. - 2 Oct. 2008.

Advanced regionalization in LCA: An approach using GIS logic. In LCA 2008. Seattle, USA, 30 Sept. - 2 Oct. 2008.

Applying Regional EDIP 2003 Impact Assessment Factors to the Ecoinvent 2.0 Database: Methodology and Results. SETAC Europe, Warsaw, Poland, 25-29 May 2008,

Wind and Solar Energy at the University of Iowa: Preliminary Results. University of Iowa Energy Expo, Iowa City, IA, 4 Oct. 2005

A Hybrid Wind-Solar Power Model for Green Buildings Using Site-Specific Meteorological Data. Engineering Sustainability Conference, Pittsburgh, Pennsylvania. 10 April 2005.

Debate as a Game/ Debate as an Activity. Kazakhstan National Debate Center Seminar: The Role of Debate in the Democratization Process of Education and Society. Almaty, KZ, 11 Nov. 2003

Dragonfly Pond: An Interactive Planning Game for Schoolchildren. Peace Corps & Ecological Club "Rostok" Seminar: Ecological Innovations in Education. Kokshetau, Kazakhstan. 11 August 2002.

Руководства по Проведению Экологического Лагеря. OSCE Seminar: Ecological Education: NGOs and State Action in the Implementation of the Aarhus Convention. Borovoye, Kazakhstan. 7 July 2001.

A College Student's Perspective on Global Climate Change. Iowa United Nations Association Conference: "Taking on the Science of Climate Change: A Public Hearing Seeking Innovative Solutions," Des Moines, Iowa. 11 June 1999.

Invited Talks

The future of LCA software and data networks, Leiden Universiteit, Leiden, NL. 12 Jan. 2016.

Environmental Impacts of Energy Technologies. SCCER SoE PhD Summer School, Grimselpass, CH. 15 Oct. 2015.

Regionalization: Let's do it already! Radboud University Nijmegen, Nijmegen, NL. 15 Jan. 2014.

Regionalization in LCA: Methodology, Inventory Spatial Uncertainty, and Impact Assessment Spatial Scale. CIRAI, Université de Montréal, Montreal, CA. 17 Jan. 2013.

Practical uncertainty in LCA. Advanced Class on LCA and Tools for Sustainability. Universitat Autònoma de Barcelona, Barcelona, ES. 8-9 Nov. 2012.

Web mapping & green receipts. BaCaTec Summer School: Assessing and Communicating the Loss of Biodiversity and Ecosystem Services, Bayreuth, DE. 14 Oct. 2010.

Professional Service:

Reviewer for *Environmental Science & Technology, Journal of Industrial Ecology, International Journal of Life Cycle Assessment, Environmental Research Letters, Energy Policy, Journal of Cleaner Production*

Languages Spoken:

Russian (Advanced Mid – ACTFL Qualification), German (Basic), French (Basic)