

# Julia K. Steinberger

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Nationality: Swiss and USA  
Birth: 1974, Geneva, Switzerland

## Research interests

Investigating the distribution, purpose, impacts, and alternatives of resource use in terms of human needs and environmental sustainability.

## Employment

- 2011- Lecturer in Ecological Economics at the Sustainability Research Institute of the University of Leeds.
- 2007-2010 Senior researcher at the Institute of Social Ecology, Vienna.
- 2006-2007 Postdoctoral researcher at the Universities of Lausanne and Zurich
- 2005 Development studies and ecological economics at the Institute for Development Studies of the University of Geneva (now IHEID).
- 1997-2004 Research assistant in the Ultracold Hydrogen Group of the physics department at MIT.
- 1997-1999 Research assistant in the pulsar group of the astronomy division of the physics department at MIT.
- 1996-1997 Research assistant in the Cryogenic Space Neutrino Detection Group at Brown University.
- 1994-1996 Undergraduate research assistant in the Observational Cosmology Group of the physics department at Brown University.

## Education

PhD in Physics, 2004, Massachusetts Institute of Technology, Cambridge, Massachusetts, USA

Thesis title: Progress towards high precision measurements on ultracold metastable hydrogen and trapping deuterium

ScB in Mathematics and Physics, 1996, Brown University, Providence, Rhode Island, USA

Senior thesis on modeling the detection of polarization of the Cosmic Microwave Background Radiation.

Graduated with Honors in Physics, Brown University Astronomy Prize for Senior Thesis Research.

Maturité Scientifique, 1993, Collège de Saussure, Genève, Suisse

Mention "très bien", awarded de Saussure prize.

## Languages

English and French (mother tongues), German, Spanish.

## Teaching

University of Leeds, 2011-

Masters courses: "Tools and techniques for integrated ecological economic modeling" and "Participatory environmental project/policy evaluation"

Institute of Social Ecology, Vienna 2007-2010

Masters courses: "Energy in human-environment relations", "Analytic methods in social ecology", "Discourses in environmental sociology"

Guest lectures

Universities of Geneva, Lausanne, Fribourg

Math and physics

Junior high school math and physics, (spring 2005, Geneva), weekly recitations in statistical physics

(spring 2003, MIT), conducted monthly science exposure and familiarization classes for Boston children aged 6-12 as a volunteer for TTT Foundation (2000-2004, MIT), weekly recitations in mathematics for engineers (1996-1997, Brown University), teaching assistant for a computer-based multivariate calculus course (fall 1994, Brown University).

### Student supervision

PhD dissertation:

Marlyne Sahakian, Understanding consumption patterns in Metro Manila, University of Geneva (ongoing).

Masters thesis:

Dominik Wiedenhofer, Spatial analysis of direct and indirect energy use in Australia, Institute of Social Ecology Vienna (ongoing).

Ana Rita de Jesus Carvalho, "Facteurs d'émissions pour les tables Input-Output internationales – cas du dioxyde de soufre", EPFL, 2007.

François Turk, "La compensation de CO<sub>2</sub>, une réelle diminution de l'effet de serre?", EPFL, 2007.

### Awards, membership in academic societies and professional committees

Elected to the Nominating Committee of the International Society of Industrial Ecology 2010-2011.

Lead Author of the Urbanization knowledge module of the IIASA Global Energy Assessment (2008-2010).

Member of the International Society of Industrial Ecology since 2007.

Member of the International Society of Ecological Economics since 2010.

Award from the Mayor of Cambridge, Massachusetts, recognizing science tutoring (2004).

### Computer

Extensive programming experience with Matlab, C, Simapro (Life-Cycle Analysis software), Autocad, LaTeX, Fortran, Audacity on Linux and Windows.

### Event organization

4-6 November 2009: 2<sup>nd</sup> SUME project interface workshop (Sustainable Metabolism for Europe) at the Institute of Social Ecology in Vienna.

November 18 2005: High-level discussion panel at the United Nations World Summit for the Information Society in Tunis on "Information and Communication Technology for Peace"

March 6 2004: Conceived and organized "Depleted Uranium: Toxic Contaminant or Necessary Technology" conference at MIT.

June 6 2002: Organized pre-commencement concert and showing of documentary "Life and Debt" by Stephanie Black at MIT.

2001-2002: Organized "Whose World Economy?" weekly documentary film series at MIT.

### Peer-reviewed publications

Steinberger, JK; Krausmann, F (2011) Material and energy productivity. *Environmental Science and Technology*: **45**(4): 1169-1176 <http://dx.doi.org/10.1021/es1028537>

Gingrich, S; Kuskova, P; Steinberger, JK (2011) Long-term changes in CO<sub>2</sub>-emissions in Austria and Czechoslovakia - identifying the drivers of environmental pressures *Energy Policy* **39**(2): 535-543 <http://dx.doi.org/10.1016/j.enpol.2010.10.006>

Sahakian, M; Steinberger, JK (2011) Energy Reduction Through a Deeper Understanding of Household Consumption: Staying Cool in Metro Manila. *Journal of Industrial Ecology*: forthcoming.

Steinberger, JK; Roberts, JT (2010): From constraint to sufficiency: the decoupling of energy and carbon from human needs, 1975-2005. *Ecological Economics* <http://dx.doi.org/10.1016/j.ecolecon.2010.09.014>

Steinberger, JK; Krausmann, F; Eisenmenger, N (2010): Global patterns of material use: a socioeconomic and geophysical analysis. *Ecological Economics* **69**(5), pp. 1148-1158. <http://dx.doi.org/10.1016/j.ecolecon.2009.12.009>

Weisz, H; Steinberger, JK (2010): Reducing energy and materials flows in cities. *Current Opinion in*

- Environmental Sustainability* **2**(3), pp. 185-192. <http://dx.doi.org/10.1016/j.cosust.2010.05.010>
- Kennedy, C; Steinberger, JK; Gasson, B; Hansen, Y; Hillman, T; Havranek, M; Pataki, DE; Phdungsilp, A; Ramaswami, A; Villalba Mendez, G (2010): Methodology for inventorying greenhouse gas emissions from global cities. *Energy Policy* **38**(9), pp. 4828-4837. <http://dx.doi.org/10.1016/j.enpol.2009.08.050>
- Binder, CR; Feola, G; Steinberger, JK (2010): Considering the normative, systemic and procedural dimensions in indicator-based sustainability assessments in agriculture. *Environmental Impact Assessment Review* **30**(2), pp. 71-81. <http://dx.doi.org/10.1016/j.eiar.2009.06.002>
- Steinberger, JK; Friot, D; Jolliet, O; Erkman, S (2009): A spatially explicit life cycle inventory of the global textile chain. *International Journal of Life Cycle Assessment* **14**(5), pp. 443-455. <http://dx.doi.org/10.1007/s11367-009-0078-4>
- Steinberger, JK; van Niel, J; Bourg, D (2009): Profiting from negawatts: reducing absolute consumption and emissions through a performance-based energy economy. *Energy Policy* **37**(1), pp. 361-370. <http://dx.doi.org/10.1016/j.enpol.2008.08.030>
- Kennedy, C; Steinberger, JK; Gasson, B; Hansen, Y; Hillman, T; Havranek, M; Pataki, DE; Phdungsilp, A; Ramaswami, A; Villalba Mendez, G (2009): Greenhouse gas emissions from global cities. *Environmental Science and Technology* **43**(19), pp. 7297-7302. <http://dx.doi.org/10.1021/es900213p>
- Steinberger, JK (2008): Book review of Sustainable Energy: Choosing Among Options by J. W. Tester, E. M. Drake, M. W. Golay, M. J. Driscoll, and W. A. Peters and Energy at the Crossroads: Global Perspectives and Uncertainties by V. Smil. *Journal of Industrial Ecology* **12**(2), pp. 248-249
- Steinberger, JK (2008): Book review of Sustainability Indicators - A Scientific Assessment edited by Tomas Hak, Bedrich Moldan and Arther Lyon Dahl,. SCOPE Volume 67. *Journal of Industrial Ecology* **12**(5/6), pp. 802-804
- Landhuis, D; Matos, L; Moss, SC; Steinberger, JK; Willmann, KVL; Greytak, TJ; Kleppner, D (2003): Inelastic Collision Rates of Trapped Metastable Hydrogen. *Physical Review A* **67**, pp. 022718
- Kaspi, VM; Chakrabarty, D; Steinberger, JK (1999): Precision timing of two anomalous X-ray pulsars. *Astrophysical Journal* **525**(1), pp. L33-L36
- Keating, B; Timbie, P; Polnarev, A; Steinberger, JK (1998): Large angular scale polarization of the cosmic microwave background radiation and the feasibility of its detection. *Astrophysical Journal* **495**(2), pp. 580-596

### **Book chapters, conference proceedings, reports, PhD thesis**

- Wiedenhofer, D; Lenzen, M; Steinberger, JK (2011) Spatial and Socio-Economic Drivers of Direct and Indirect Household Energy Consumption in Australia. Landscapes of Urban Consumption. Ed: P. W. Newton.
- Erb, K-H; Mayer, A; Krausmann, F; Lauk, C; Plutzar, Steinberger, JK; Haberl H (2011). The interrelations of future global bioenergy potentials, food demand and agricultural technology. Socioeconomic and environmental impacts of biofuels: Evidence from developing nations. Eds: A. Gasparatos and P. Stromberg. Cambridge, Cambridge University Press: forthcoming.
- Steinberger, JK; Krausmann, F (2010): What do economic resource productivities measure?, in: Proceedings of the International Society for Ecological Economics conference: Advancing sustainability in a time of crisis, 22-25 August 2010, Oldenburg - Bremen, Germany. 1-22.
- Fischer-Kowalski, M; Krausmann, F; Steinberger, JK; Ayres, RU (2010): Towards a low carbon society: Setting targets for a reduction of global resource use., in: Vienna: IFF Social Ecology, Social Ecology Working Paper , 1-37. [http://www.uni-klu.ac.at/socec/downloads/WP115\\_web.pdf](http://www.uni-klu.ac.at/socec/downloads/WP115_web.pdf)
- Erb, K-H; Haberl, H; Krausmann, F; Lauk, C; Plutzar, C; Steinberger, JK; Müller, C; Bondeau, A; Waha, K; Pollack, G (2009): Eating the planet: Feeding and fuelling the world sustainably, fairly and humanely - a scoping study. Report commissioned by Compassion in World Farming and Friends of the Earth, UK, in: Vienna, Potsdam: Institute of Social Ecology and PIK Potsdam, Social Ecology Working Paper , 1-132. [http://www.uni-klu.ac.at/socec/downloads/WP116\\_WEB.pdf](http://www.uni-klu.ac.at/socec/downloads/WP116_WEB.pdf)
- Blanc, I., Friot, D., Cabon, J., Mäenpää, I., Steinberger, J., Krausmann, F., Erb, K.-H., Tukker, A., Vercalsteren, A., and Van Hoof, V. (2009): *Evaluation of Environmental Accounting Methodologies for the assessment of global environmental impacts of traded goods and services. Report to SKEP*.
- Steinberger, JK; van Niel, J; Bourg, D (2008): Vers une économie fondée sur la performance énergétique. *La Revue Durable* (31), pp. 46-50
- Steinberger, JK; Friot, D; Jolliet, O; Erkman, S (2007): Location-specific global product LCI : a textile case study, in: Paper presented at the 3rd International Conference on Life Cycle Management, University of Zurich, 27-29 August 2007. Zürich:

- Steinberger, JK; Lassueur, T; Seal, T (2006): Evaluation des programmes d'action du Plan Directeur Cantonal de l'Energie 2001-2005. Report to the Canton of Geneva, IPTEH, University of Lausanne
- Currion, P and Steinberger, JK (2006): The Role of ICT in Crisis Management. In: *Faster and More United? - the debate about Europe's crisis response capacity*. European Commission, pp. 372-379.
- Stauffacher, D., Currion, P., Drake, W., and Steinberger, J.K. (2005): *Information and Communication Technology for Peace: the role of ICT in preventing, responding to and recovering from conflict*. New York: United Nations ICT Task Force.
- Steinberger, JK (2004): Progress towards high precision measurements on ultracold metastable hydrogen and trapping deuterium, Massachusetts Institute of Technology, Physics Department.

### Conferences & Workshops

- 2010 Presentation "What do economic resource productivities measure?" with Fridolin Krausmann, International Society of Ecological Economics, Oldenburg, Germany, 22-25 August 2010.
- Presentations "Modeling Infrastructure-Driven Urban Energy Demand" with Markus Heinz and "Understanding Energy and Material Productivity" with Fridolin Krausmann, Conaccount – Asia-Pacific section of the International Society of Industrial Ecology, Tokyo, 7-9 November 2010.
- 2009 Presentation "Global patterns of material use: the impact of economic development, population and technology on cross country differences of material consumption." with Fridolin Krausmann and Nina Eisenmenger. International Society of Industrial Ecology, Lisbon, Portugal, 21-24 June 2009.
- Invited presentation "Measuring low carbon cities" with Helga Weisz, at the workshop "Towards low carbon cities: understanding and analyzing urban energy and carbon" in Nagoya, Japan, February 17-18 2009.
- 2008 Presentation "The Evolving Energy requirements of human society: global trends in the human development-Energy relationship, 1975-2005" (with J. Timmons Roberts), Conaccount, Charles University, Prague September 11-12 2008.
- Posters "The Evolving Energy requirements of human society: global trends in the human development-Energy relationship, 1975-2005" (with J. Timmons Roberts) and "The evolution of material and energy flows of the EU-15, 1970-2004" (with Helga Weisz, Fridolin Krausmann and Nina Eisenmenger), Gordon Research Conference on Industrial Ecology, Colby-Sawyer College, New Hampshire, August 17-22 2008.
- Presentation: "The changing relation of energy consumption and human development: a global study 1975-2005" at Advances in Energy Studies, TU Graz, June 29-July 2 2008
- 2007 Presentation: "Discussing system boundaries of urban metabolism by considering direct and indirect resource use" jointly with Helga Weisz, Workshop Analysing Stocks and Flows of the Urban Built Environment, Trondheim, Norway, October 11-12 2007.
- Presentation: "LCA for globalized trade: data requirements and challenges from a textile case study", Life Cycle Management 2007, Zürich, 27-29 August 2007.
- Accepted talk: "Kyoto targets for growing urban regions: using the case study of Geneva, Switzerland to understand the potential and limits of regional approaches to climate and energy policy implementation", International Society of Industrial Ecology, Toronto, June 17-20 2007.
- Invited speaker for round-table "Quel avenir énergétique pour les pays du Sud?", EPFL, organized by Ingénieurs du Monde, April 2007.
- 2006 Poster "Assessment of Geneva's Energy Action Programs", Gordon Research Conference in Industrial Ecology, Oxford, August 6-11 2006.