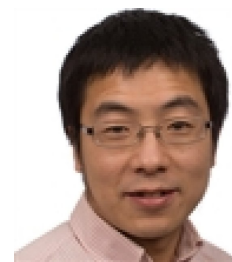


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## Summary

I am an enthusiastic industrial ecologist and my research aims to map the anthropogenic/socioeconomic metabolism at various geographical scales and inform its sustainability transition through understanding materials and energy flows and their associated environmental consequences in a systems context, in particular for case studies of metal cycles, agrifood chains, urban systems, and low-carbon technologies.

I have published widely in journals such as Nature, Nature Climate Change, and Environmental Science & Technology (won 2013 Best Article) and was awarded the prestigious Robert A. Laudise medal by the International Society for Industrial Ecology for my "outstanding contributions to the field of industrial ecology".

## Education

2012	Ph.D. (Industrial Ecology), Norwegian University of Science and Technology (NTNU)
2007	MSc. (Resource and Environmental Management), Chinese Academy of Sciences (CAS)
2004	BSc. (Geography), College of Environmental Sciences, Peking University (PKU), China

## Academic Positions

Apr'18-present	Professor WSR of Industrial Ecology, SDU Life Cycle Engineering
Mar'15-Mar'18	Associate Professor of Resource and Waste Management, SDU Life Cycle Engineering
Mar'15-present	Adjunct Professor, Chinese Academy of Sciences
Dec'12-Feb'15	Postdoc/Lecturer, Industrial Ecology Programme, Norwegian University of Science and Technology
Dec'08-Nov'12	PhD fellow, Industrial Ecology Programme, Norwegian University of Science and Technology
Jun'07-Nov'08	Energy and Environmental Policy Analyst, China National Petroleum Corporation (CNPC)

## Professional Activities and Services

2019-present:	Editorial Board, Scientific Data (SCI, Nature Publishing Group, impact factor 5.305)
2018-present	Editorial Board, Journal of Environmental Accounting and Management (Emerging SCI indexed)
2017-present	Associate Editor, Resource, Conservation & Recycling (SCI, Elsevier, impact factor 3.313)
2016-present	Editorial Board, Journal of Cleaner Production (SCI, Elsevier, impact factor 5.715)
2016-present	Editorial Board, Sustainability (SCI/SSCI, MDPI Open Access, impact factor 1.789)
2016-present	WGI Vice-leader, EU COST action "Mining the European Anthroposphere (MINEA)"
2016-present	Board Member, Energy and Minerals Resources Section, Chinese Society of Natural Resources
2015-present	Vice-chair, SocioEconomic Metabolism Section, International Society for Industrial Ecology
2015-present	Founding Board Member, Chinese Society for Industrial Ecology
Au'16-Sep'17	Guest Editor, special issue in Resource, Conservation & Recycling
Sep'15-Oct'16	Managing Guest Editor, special issue in Resource, Conservation & Recycling
Mar'15-Jan'16	Guest Editor, special issue in Acta Ecologica Sinica
Aug 2015	Invited Reviewer, World Energy Outlook 2015 (International Energy Agency)
Nov 2014	Session Chair, the joint 11th ISIE SEM section & the 4th ISIE Asia-Pacific conference
2009-present	Member, International Society for Industrial Ecology
Reviewer	Regular reviewer for 30+ ISI journals; 20+ times annually

## Teaching CV

Pedagogical view	<ul style="list-style-type: none"><li>o Teaching is as important as research for a faculty position and a commitment to the society.</li><li>o It is the inspiration and passionate of a good teacher that provides students with the motivation to learn themselves, ask questions, think independently, and persist the hard work to follow.</li><li>o The best way to encourage curiosity and enthusiasm is to create an interactive and inquiry-based learning environment in the class, through active participation of the students.</li><li>o Teaching is also learning; It benefits your research as well.</li></ul>
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Teaching experience	<ul style="list-style-type: none"> <li>o Putting science in context, especially with real-world practice and case studies, is essential in bringing sustainability perspective into climate change courses.</li> <li>o Material Flow Analysis (Fall 2014; Spring 2015, 2016, 2017, 2018, 2019): Primary instructor</li> <li>o Industrial Ecology (Fall 2017, 2018, 2019): Primary instructor</li> <li>o Methods in Science (Fall 2016, 2017, 2018, 2019): Co-instructor</li> <li>o Global Sustainability (Fall 2015, 2016, 2017, 2018, 2019): Co-instructor</li> <li>o Engineering for Sustainability (Summer 2018, 2019): Co-instructor</li> </ul>
Formal pedagogical training	<ul style="list-style-type: none"> <li>o University Lecturer Training Programme (an individually planned in-service teacher training programme for university teachers; 10 ECTS), SDU, Denmark, 12/2015 – 06/2017</li> <li>o PhD supervision process, methods and tools, SDU, Denmark, 02/2017 – 04/2017</li> <li>o Teaching in English Certificate, SDU, Denmark, 04/2016</li> <li>o Teaching and learning with social media (½ ECTS), SDU, Denmark, 04/2016</li> <li>o Designing and updating courses (½ ECTS), SDU, Denmark, 03/2016</li> <li>o Teacher Training Seminar for Lecturing &amp; Supervision in English, NTNU, Norway, 06/2010</li> </ul>

## Group members

Postdoc	Zhi Cao (PhD Chinese Academy of Sciences; Dynamic material flow analysis)
PhD students	<p>Maud Lanau (2017-2020, Urban metabolism and infrastructure stocks);</p> <p>Wu Chen (2017-2020, Sustainable transportation and material energy nexus);</p> <p>Ruichang Mao (2017-2020, Urban metabolism of Chinese cities);</p> <p>Kasper Rasmussen (2016-2020, Critical materials constraint for electrofuels);</p> <p>Li Xue (2015-2019, Sustainable agrifood systems, joint PhD with CAS).</p> <p>Some 2-3 visiting PhD students and scholars every year</p>
MSc students	<p>2018-2019: Alberto Zicari, Alexander Borsch, Jeppe Møller, Julija Metic, Luca Herbert, Sotirios Lytras, Sven Kapfer; Lasse Jakobsen (BSc), Mathias Andersen &amp; Christopher Larsen (BSc)</p> <p>2017-2018: Marcus Berr; Cord Ruprecht; Mohammed Badri; Shehab Elmasry; Qiance Liu</p> <p>2016-2017: Christopher O'Sullivan; Catherine Hill; Miina Mälgand; Jihan Jamo; Lea Rucpic</p> <p>2016: Neele Prass; Irma Sulinskaitė</p>

## Invited Consultancy Services

2016	DG JRC Institute for Energy and Transport, European Commission
2015	International Energy Agency (IEA)
2014	Trade and Markets Division, Food and Agriculture Organization (FAO)
2014	Global Food Loss and Waste Protocol, World Resource Institute
2013	Trade and Agriculture Directorate, Organisation for Economic Co-operation and Development (OECD)
2012	Invited visiting scientist, International Aluminium Institute
2008	Food, Feed, and Fuels, Stockholm Environment Institute

## Recent Grants and Projects

Sum	Attracted 15+ projects as Principle Investigators (PI) or co-investigators (Co-I) in the past 3 years; and many more as key personnel before.
2018	PI, "Creating building passports for circular, low-carbon, and healthy urban development", funded by SDU Lighthouse project theme on Open Data (ODEx) (DKK 547,000), 01/2018–12/2019
2018	PI, "Urban metabolism and urban built environment stocks analysis", funded by National Natural Science Foundation of China (for Overseas Chinese Scholars and Scholars) (CNY 200,000), 01/2018–12/2019
2017	PI, "Exploring material-energy nexus for resource and climate strategies", International Network Programme funded by Danish Agency for Science, Technology and Innovation (DKK 287,709), 01/2017–12/2017
2016	PI, "CityWeight: The weight of cities and dematerialization and decarbonization implications", DFF-Research Project Grant from the Danish Council for Independent Research   Technology and Production Sciences (DKK 2.59 million), 09/2016 – 08/2019
2016	Co-I (working package leader), "MinFuture: Global material flows and demand-supply forecasting for mineral strategies", funded by EU Horizon 2020 (total EUR € 1 million; my share at SDU DKK 1.1 million), 12/2016 – 11/2018
2016	PI, "The weight of cities: methods and applications", International Network Programme funded by Danish Agency for Science, Technology and Innovation (DKK 286,157), 01/2016–12/2016
2016	PI, EUopSTART, Danish Agency for Science, Technology and Innovation (DKK 50,000), 12/2015–03/2016

2015 Co-I (Task leader), "Resource Efficient Food and dRink for the Entire Supply cHain - REFRESH", EU Horizon 2020 project (total EUR € 9 million; my share at SDU DKK 1.4 million), 06/2015–05/2019

## Selected Awards, Recognitions, and Fellowships

2017 Robert A. Laudise Medal (a prestigious prize awarded every second year for outstanding achievements in industrial ecology by a researcher under the age of 36, endowed by AT&T in memory of Robert Laudise), International Society for Industrial Ecology, 06/2017

2017 Visiting Scientist Fellowship of Universities Denmark to visit Chinese Academy of Sciences, 07/2017

2017 Excellence of Reviewer Award 2016 for Resource, Conservation and Recycling, 01/2017

2016 Co-authored consultancy report reviewed and commented by the President of China, 03/2016

2015 Oversea Scholar Fellowship of Chinese Academy of Sciences, 08/2015

2014 Environmental Science & Technology First Runner-Up Best Article, 04/2014

2012 Best Publication Prize, NTNU Industrial Ecology, 11/2012

2012 Chinese Government Award for Outstanding Self-Financed Students Abroad, 05/2012

2010 Travel Grant for the first Summer Symposium on Sustainable Systems (4S), 06/2010

2009 Finalist of Global Development Medals Competition, Global Development Network (GDN), 02/2009

## Publications

Peer-reviewed journal articles: 60+ (Google Scholar: [goo.gl/uuBluaT](https://scholar.google.com/citations?user=uuBluaT); Selected 15 below)

- 1) Xue, L.; Prass, N.; Gollnow, S.; Davis, J.; Scherhauser, S.; Ostergren, K.; Cheng, S.; Liu, G. \* Efficiency and Carbon Footprint of the German Meat Supply Chain. *Environmental Science & Technology* 2019. 53(9):5133-5142.
- 2) Liu, Q.; Cao, Z.; Liu, X.; Liu, L.; Dai, T.; Han, J.; Duan, H.; Wang, C.; Wang, H.; Liu, J.; Cai, G.; Mao, R.; Wang, G.; Tan, J.; Li, S.; Liu, G. \* Product and Metal Stocks Accumulation of China's Megacities: Patterns, Drivers, and Implications. *Environmental Science & Technology* 2019. 53(8):4128-4139.
- 3) Ciacci, L.; Vassura, I.; Cao, Z.; Liu, G.; Passarini, F. Recovering the "new twin": Analysis of secondary neodymium sources and recycling potentials in Europe. *Resources, Conservation and Recycling* 2019, 142: 143-152.
- 4) Cao, Z.; Liu, G. \*; Zhong, S.; Dai, H.; Pauliuk, S. 2018. Integrating dynamic material flow analysis and computable general equilibrium models for both mass and monetary balances in prospective modelling: A case for Chinese building sector. *Environmental Science & Technology* 2019. 53(1): 224-233.
- 5) Tazi, N.; Kim, J.; Bouzidi, Y.; Chatelet, E.; Liu, G. Wastes and Material Flows Management in Wind Energy System: A Case Study of Champagne-Ardenne Region, France. *Resources, Conservation and Recycling* 2019, 145: 199-207.
- 6) Cao, Z.; Liu, G. \*; Duan, H.; Xi, F.; Liu, G.; Yang, W. Unravelling the mystery of Chinese building lifetime: A calibration and verification based on dynamic material flow analysis. *Applied Energy* 2019, 238: 442-452.
- 7) Duan, H.\*; Travis, R.M.; Liu, G.\*; Zeng, X.; Yu, K.; Huang, Q.; Zuo, J.; Qin, Y.; Li, J. A Chilling Prospect: Climate change effects of mismanaged refrigerants in China. *Environmental Science & Technology* 2018. 52(11): 6350-6356.
- 8) Han, J.; Chen, W.; Zhang, L.; Liu, G. \* Uncovering the spatiotemporal dynamics of urban infrastructure development: A high spatial resolution materials stock and flow analysis. *Environmental Science & Technology* 2018. 52(21): 12122-12132.
- 9) Yu, B.; Deng, S.; Liu, G. \*; Yang, C.; Chen, Z.; Hill, C.; Wu, J. Nighttime Light Images Reveal Spatial-Temporal Dynamics of Global Anthropogenic Resources Accumulation above Ground. *Environmental Science & Technology* 2018. 52(20): 11520-11527.
- 10) Cao, Z.; Shen, L.; Løvik, A.N.; Müller, D. B.; Liu, G. \* Elaborating the history of our cementing societies: an in-use stock perspective. *Environmental Science & Technology* 2017. 51(19): 11468–11475.
- 11) Zhang, C.; Chen, W.; Liu, G.; Zhu, D. Economic growth and the evolution of material cycles: An analytical framework integrating material flow and stock indicators. *Ecological Economics* 2017. 140: 265-274.
- 12) Xue, L.; Liu, G.\*; Parfitt, J.; Liu, X.; Van Herpen, E.; Stenmarck, Å; O'Connor, C.; Östergren, K.; Cheng, S. Missing food, missing data? A critical review of global food loss and food waste data. *Environmental Science & Technology* 2017. 51 (12): 6618–6633.
- 13) Liu, G.; Bangs, C.E.; Müller, D.B. Stock dynamics and emission pathways of the global aluminium cycle. *Nature Climate Change* 2013, 3: 338–342.
- 14) Liu, G.; Müller, D. B. Mapping the global journey of anthropogenic aluminium: a trade-linked multilevel material flow analysis. *Environmental Science & Technology* 2013, 47 (20): 11873–11881.
- 15) Müller, D. B.; Liu, G.; Løvik, A.N.; Modaresi, R.; Pauliuk, S.; Steinhoff, F. S.; Brattebø, H. Carbon Emissions of Infrastructure Development. *Environmental Science & Technology* 2013, 47 (20): 11739–11746.