Stefan Pauliuk

Personal details

Date of birth: March 1st, 1982

Place of birth: Herzberg (Elster), fmr. German Democratic Republic

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Present position

Since 2021: Professor for *Sustainable Energy and Material Flow Management* and head of the research group *Industrial Ecology Freiburg* at the Faculty of Environment and Natural Resources, University of Freiburg, Germany.

Links

Blog	Homepage	Google Scholar	Twitter
Teaching	Github (software)	Figshare (data)	Youtube

Research interests

- **Industrial ecology** and **socio-metabolic research**, in particular the study of global supply chains, sustainable material cycles, sustainable consumption, and environmental footprints of consumption
- **Prospective assessment** of sustainable development strategies
- **Scenario analysis** for material cycles and consumption patterns
- **Indicator and policy development** for resource efficiency, circularity, and sustainability
- **Method and theory development** for material flow analysis (MFA), life cycle assessment (LCA), supply and use tables (SUT), and multiregional input-output analysis (MRIO).

Method competence

- **Industrial ecology methods**, including material flow analysis (MFA), life cycle assessment (LCA), and multiregional input-output analysis (MRIO)
- **Scenario modelling** and prospective assessment
- **Software and database development** for industrial ecology (Python and SQL)
- **Statistical analysis**: regression analysis, statistical inference, and data reconciliation

Teaching

- **'Material and Energy Flow Analysis'** (MSc level, 10 ECTS), annually
- **'Life cycle management'**, together with Dr. Johan Vélez and Rainer Grießhammer, (MSc level, 5 ECTS), annually from 2017 to 2023.
- **'Energy and Sustainability'**, together with Ernst Ulrich von Weizsäcker (MSc, 5 ECTS), annually from 2015 to 2022.
- **'Master thesis project in industrial ecology'** (Research skills, science ethics, and scientific writing at the MSc level, 5 ECTS), annually.
- **'Industrial Ecology open online course (IEooc)'**, free online course at MSc level available under http://www.teaching.industrialecology.uni-freiburg.de/
- **'Umweltphysik'** (Environmental Physics) for bachelor students (5 ECTS), annually.
- **'Nachhaltiges Energie- und Stoffstrommanagement'** (Sustainable energy and material flow management), (MSc level, 5 ECTS), annually from 2015 to 2023.

Education and professional experience

2015-2021: Assistant professor ('Juniorprofessor') for *Sustainable Energy and Material Flow Management* and head of the research group *Industrial Ecology Freiburg* at the Faculty of Environment and Natural Resources, University of Freiburg, Germany.

2013–2015: Post-doctoral researcher in the group of Prof. Edgar Hertwich (environmental systems analysis, industrial ecology) at NTNU Trondheim. My main focus during that time was to contribute to the integration of different systems analysis methods including MFA, IO, LCA, and integrated assessment modeling. I also contributed to the work with physical, mixed unit, and hybrid multiregional IO tables.

2009–2013: PhD in industrial ecology at the Norwegian University of Science and Technology (NTNU) in Trondheim. Thesis advisors: Professor Daniel B Müller and Professor Helge Brattebø (both at the Industrial Ecology Programme). Main working areas: material flow analysis; the steel cycle; sustainable buildings and transportation; climate change mitigation; decoupling; method and database development. **Thesis title**: 'The Role of Stock Dynamics in Climate Change Mitigation'. The Phd committee

(Professor Ernst Worrell, Utrecht; Lecturer Dr. Julia Steinberger, Leeds; and Lecturer Dr. Jonathan Cullen, Cambridge, UK) assessed the thesis as “internationally outstanding”.

2007–2008: Scientific employee at Deutsches Elektronensynchrotron (DESY). Development of control and measurement software.

2007: University Diploma (MSc equivalent) in physics, University of Jena, Germany. Graduated under Professor Reinhard Meinel with a diploma thesis on the topic ‘Constructive uniqueness proofs of stationary vacuum black hole spacetimes including the case of degenerate horizons’ with final grade „sehr gut“.

2004–2007: Study of physics, University of Jena, Germany

2001–2004: Study of physics, Chemnitz University of Technology, Germany

2001: Qualification for university entrance (Abitur), Max-Steenbeck-Gymnasium Cottbus, Germany

Research stays and other professional exchange

2019: Institute of the Urban Environment, Chinese Academy of Sciences, Xiamen, PRC. Collaboration on material flow analysis of critical raw materials

2019: Monash University, Melbourne, Department of Mining Engineering. Collaboration on prospective supply and demand models for metals

2014: Waseda University, Tokyo, Department of Economics. Collaboration on the prospective material tracing model for steel

2014: University of Sydney, Department of Physics. Collaboration on input-output analysis of waste management

2013: Centre for Environmental Science, CML, Leiden University, the Netherlands. Collaboration on prospective scenarios for critical metal demand

2012: Cambridge University, Department of Engineering. Collaboration on the global steel cycle scenario model

Language skills

German: native speaker; **English:** fluent; **Norwegian:** fluent; **French:** basic.

Leadership experience, committee work, and institutional responsibilities

2023-2024: Community-elected Chair of the Board of the Section for Socioeconomic Metabolism (material flow analysis) of the International Society for Industrial Ecology (ISIE).

Since 2023: Editor for the Journal of Industrial Ecology, ISSN 1530-9290

2021: Co-chair of the Industrial Ecology Day, a global 24 hr online conference of the International Society for Industrial Ecology (ISIE). https://is4ie.org/events/event/international-industrial-ecology-day-2021

Since 2020: Co-chair of the industry/materials modelling working group of the international consortium on 'Energy Demand changes Induced by Technological and Social Innovations' (EDITS), hosted by the International Institute for Applied Systems Analysis (IIASA): https://iiasa.ac.at/web/home/research/researchPrograms/Energy/Research/EDITS/EDITS.html

2019-2022: Co-chair of the Board of the Section for Socioeconomic Metabolism (material flow analysis) of the International Society for Industrial Ecology (ISIE).

2019-2021: Member of the Committee for Environmental Protection (Ausschuss für Umweltschutz) of the University of Freiburg, Germany.

Since 2017: Academic director of the MSc programme 'Renewable Energy Engineering and Management', University of Freiburg

2018-2021: Member of the Nominating Committee of the International Society for Industrial Ecology (ISIE).

2017–2019: Member of the working group „Material- und Energieeffizienz", an advisory body for German federal ministries regarding the utilisation of wood and wood products in the German economy

2016–2018: Member of the 'Data Transparency Task Force' of the International Society for Industrial Ecology (ISIE).

2013–2014: Co-organiser of the IndEcol Forum, an extracurricular activity for Industrial Ecology MSc students

2008–2010: Member of the board of the Industrial Ecology Programme at NTNU

2002–2004: Member of the board of physics students at Chemnitz University of Technology

Dissemination and community service

- I tweet, blog about my research, and contribute to the Wikipedia on a regular basis.
- During my term as Co-Chair and later Chair of the Board of the Section for Socioeconomic Metabolism (material flow analysis) of the International Society for Industrial Ecology (ISIE), I contributed to strengthening the global SEM/MFA community by leading and publishing two research guideline documents (listed under 'Other selected

publications, guidelines) below) and by substantially revising our section's homepage and turning it into an entry hub for our field: https://is4ie.org/sections/metabolism

- I created and maintain the industrial ecology dashboard on GitHub, which is an inventory of open software repositories that are relevant for industrial ecology researchers. (https://github.com/IndEcol/Dashboard)
- I created and maintain the industrial ecology open online course (IEooc), which is the most comprehensive collection of industrial ecology teaching material available on the web. (https://www.industrialecology.uni-freiburg.de/teaching.aspx/)
- I created and maintain the Industrial Ecology Data Commons (IEDC), an online catalogue for socioeconomic and engineering data that are used across the industrial ecology methods. (http://www.database.industrialecology.uni-freiburg.de/)
- Since 2023, I have been a member of the Editorial Board of the Journal of Industrial Ecology (JIE). As JIE associate editor, I handle 20-30 submissions every year.
- I regularly serve on scientific committees for academic conferences, including the Biannual International Conference of the International Society for Industrial Ecology (ISIE), the International Input-Output Conference, the International Conference on Resource Sustainability (icRS) 2018, the Bioeconomy Congress 2017, the Ecobalance conference in Japan, and the socioeconomic metabolism section conference of the ISIE.
- I frequently (ca. 2 times per month) serve as reviewer for scientific journals, organisations, and funders, including Ecological Economics, Economic Systems Research, Energy and Buildings, Energy Strategy Reviews, Renewable and Sustainable Energy Reviews, Environmental Science and Technology, the International Energy Agency (IEA), The International Journal of Life Cycle Assessment, the IPCC, Climate Policy, the Journal of Cleaner Production, the Journal of Industrial Ecology, Nature Climate Change, Nature Scientific Data, PLOS ONE, PNAS, Resources Conservation and Recycling, Science, Transportation Research Part D, the European Research Council (ERC), and more.
- As a member of the 'Data Transparency Task Force' of the International Society for Industrial Ecology (ISIE), I contribute to the development of standards and best practice guidelines for data sharing as part of the peer review publication process (https://is4ie.org/data)
- In 2017, I organised the 2-day "Young researcher seminar on Material Flow Analysis and sustainable material cycles" in Freiburg with 15 participants from the wider region.

Conference presentations, talks

I present posters, give presentations, and am invited for seminars and plenary talks at workshops and conferences worldwide. Conferences that I regularly attend include the biannual conference of the International Society for Industrial Ecology (ISIE), the Gordon Research Conference for Industrial Ecology, the Ecobalance conference (Japan), and the International Meeting of the Socioeconomic Metabolism Section of the ISIE.

Selected invited talks:

- "Global life cycle impacts of wood products use and cascading", Plenary talk at the 2022 Gordon Research Conference for Industrial Ecology, Newry, Maine, USA.

- Webinar on "Reductions in material production induced by demand-side strategies: Implications for sustainable development" in September 2022 as part of the Energy Demand changes Induced by Technological and Social innovations (EDITS) initiative.

- "Climate Change and Resource Efficiency – Current Knowledge Situation and Research Needs", plenary talk given at both the conference on resource-efficient decarbonisation pathways, organized by the German Federal Environmental Agency, Berlin, Nov 4-5, 2019, and during the EU Raw Materials Week, Brussels, Nov 18-22, 2019.

- "Circular Metabolism and Climate", joint plenary talk with Arnold Tukker, Xuemei Bai, and Vered Blass at the 2019 Biannual Conference of the International Society for Industrial Ecology (ISIE), Beijing, China.

- "The role of in-use stocks for circular economy and climate change mitigation", plenary talk at the International Symposium of the Christian Doppler Laboratory for Anthropogenic Resources, TU Vienna, September 2018.

- "Politische und ökonomische Steuerung nachhaltiger Stoffkreisläufe", Plenary talk at the annual working group meeting „Operations Research in Environmental Science" und „Supply Chain Management" of the Gesellschaft für Operations Research e.V. (GOR) and the Netzwerk Industrial Ecology, Ulm, March 2018.

- "Ökologische Fußabdrücke und Ressourcenrucksäcke: Wieviel Wald brauchen wir für die nachhaltige Gestaltung unserer Energie- und Materialversorgung?" Plenary talk about the Land footprint of German final consumption, given at the 37th Congress of the German forest scientists and forest associations in Freiburg, 2017

- "Between Accuracy and Relevance on the Large Scale: How to Make IE Models Fit for the Future." Plenary talk at the 2016 Gordon Research Conference for Industrial Ecology, Stowe, Vermont, USA.

- "Prospective Models of Society's Future Metabolism: What Industrial Ecology has to Contribute." Plenary talk at the 2015 Biannual Conference of the International Society for Industrial Ecology (ISIE), Surrey, UK.

Membership

- International Society for Industrial Ecology

Honours and Awards

2020: "Resources, Conservation & Recycling 2020 Most Cited Paper Award" and **"Resources, Conservation & Recycling 2020 Most Downloaded Paper Award"** for "Critical appraisal of the circular economy standard BS 8001:2017 and a dashboard of quantitative system indicators for its implementation in organizations" (DOI 10.1016/j.resconrec.2017.10.019)

2019: Best Paper Award for 2018 in "Resources, Conservation & Recycling" for "Critical appraisal of the circular economy standard BS 8001:2017 and a dashboard of quantitative system indicators for its implementation in organizations" (DOI 10.1016/j.resconrec.2017.10.019)

2016: Thomas E. Graedel Prize of the Journal of Industrial Ecology for the best paper published by a junior author in 2015 (DOI 10.1111/jiec.12306).

2001-2007: Scholarship from the German National Merit Foundation (Studienstiftung des Deutschen Volkes)

Selected projects

2022-2026: CIRCOMOD: circular economy modelling for climate change mitigation, EU Horizon, Work package leader

2019-2022: Holzhybrid: Design and environmental assessment of a modular and multi-functional wooden building, federal ministry funding, as, Work package leader

2019-2022: PROSET: prospective assessment of emerging technologies, Stihl Foundation, Work package leader

2018-2021: OASES: Open Assessment of the Swiss Economy, Swiss National Science Foundation, Work package leader

Journal publications

2024

Decent living standards, prosperity, and excessive consumption in the Lorenz curve, by ***Stefan Pauliuk.*** Ecological Economics, Volume 220, June 2024, 108161. https://doi.org/10.1016/j.ecolecon.2024.108161

Scenario analysis of supply- and demand-side solutions for circular economy and climate change mitigation in the global building sector, by ***Stefan Pauliuk***, Fabio Carrer, Niko Heeren, Edgar G. Hertwich. Journal of Industrial Ecology 28(6), 2024, pages 1699-1715, http://doi.org/10.1111/jiec.13557

Industry Transformations for High Service Provisioning with Lower Energy and Material Demand: A Review of Models and Scenarios. By Dominik Wiedenhofer, Jan Streeck, Frauke Wiese, Elena Verdolini, Alessio Mastrucci, Yiyi Ju, Benigna Boza-Kiss, Jihoon Min, Jonathan Norman, Hanspeter Wieland, Nuno Bento, María Fernanda Godoy León, Leticia Magalar, Andreas Mayer, Simone Gingrich, Ayami Hayashi, Joni Jupesta, Gamze Ünlü, Leila Niamir, Tao Cao, Marianne Zanon-Zotin, Barbara Plank, Johan Vélez-Henao, Eric Masanet, Volker Krey, Keigo Akimoto, Arnulf Grubler, Bas van Ruijven, and ***Stefan Pauliuk***.
Annual Review of Environment and Resources, Vol. 49. https://doi.org/10.1146/annurev-environ-110822-044428

Pathways to a net zero building sector in Colombia: insights from a circular economy perspective, by Johan Vélez and ***Stefan Pauliuk***, Resources Conservation and Recycling, accepted for publication.

From extraction to end-uses and waste management: modelling economy-wide material cycles and stock dynamics around the world, by Dominik Wiedenhofer, Jan Streeck, Hanspeter Wieland, Benedikt Grammer, Andre Baumgart, Barbara Plank, Christoph Helbig, ***Stefan Pauliuk***, Helmut Haberl, and Fridolin Krausmann (2024). Journal of Industrial Ecology 28(6), 2024, pages 1464-1480, https://doi.org/10.1111/jiec.13575

The Impact of Sectoral Aggregation on the Elasticities of Substitution in Modelling Translog Cost Functions, Gilang Hardadi and ***Stefan Pauliuk***, Economic Systems Research, accepted for publication.

Estimating the uncertainty of the greenhouse gas emission accounts in Global Multi-Regional Input-Output analysis, by Simon Schulte, Arthur Jakobs, and ***Stefan Pauliuk*** Earth System Science Data 16(6), pp 2669–2700, 2024. https://doi.org/10.5194/essd-16-2669-2024

An Environmental Assessment Framework for Circular Steel Products, by Wiebke Hagedorn, Kathrin Greiff, and ***Stefan Pauliuk***. Sustainable Production and Consumption, volume 49, September 2024, Pages 193-207. https://doi.org/10.1016/j.spc.2024.05.031

2023

Material Requirements of Decent Living Standards, Johan Andrés Vélez-Henao and ***Stefan Pauliuk***, Environmental Science and Technology, published online, https://doi.org/10.1021/acs.est.3c03957

Where is my footprint located? Estimating the geographical variance of Hybrid-LCA footprints, Arthur Jakobs, Simon Schulte, and ***Stefan Pauliuk***, Journal of Industrial Ecology 28(5), 1073-1088, https://doi.org/10.1111/jiec.13467

A review of methods to trace material flows into final products in dynamic material flow analysis - from industry shipments in physical units to monetary input-output tables (part I), Jan Streeck, ***Stefan Pauliuk***, Hanspeter Wieland, and Dominik Wiedenhofer, Journal of Industrial Ecology 27(2), 436-456. http://doi.org/10.1111/jiec.13380

A review of methods to trace material flows into final products in dynamic material flow analysis - comparative application of six methods to the USA and EXIOBASE3 regions (part II), Jan Streeck, Hanspeter Wieland, ***Stefan Pauliuk***, Barbara Plank, Kenichi Nakajima, and Dominik Wiedenhofer, Journal of Industrial Ecology, 27 (2), 457-475. https://doi.org/10.1111/jiec.13379.

Sector-level estimates for global future copper demand and the potential for resource efficiency, Stefanie Klose and ***Stefan Pauliuk***, Resources Conservation and Recycling, Volume 193, June 2023, 106941, https://doi.org/10.1016/j.resconrec.2023.106941.

Primary Exploration, Mining and Metal Supply Scenario (PEMMSS) model: towards a stochastic understanding of the mineral discovery, mine development and co-product recovery requirements to meet demand in a low-carbon future, S.A. Northey, S. Klose, ***S. Pauliuk***, M. Yellishetty, D. Giurco, Resources Conservation and Recycling Advances, Volume 17, May 2023, 200137. https://doi.org/10.1016/j.rcradv.2023.200137

2022

Co-design of digital transformation and sustainable development strategies - What socio-metabolic and industrial ecology research can contribute, *Stefan Pauliuk,* Maximilian Koslowski, Kavya Madhu, Simon Schulte, and Sebastian Kilchert, Journal of Cleaner Production, Volume 343, 2022, 130997. DOI 10.1016/j.jclepro.2022.130997

Required displacement factors for evaluating and comparing climate impacts of intensive and extensive forestry in Germany, Christian Buschbeck and ***Stefan Pauliuk***, Carbon Balance and Management 17 (14), 2022. DOI 10.1186/s13021-022-00216-8

Sector-specific scenarios for future stocks and flows of aluminum – An analysis based on shared socioeconomic pathways, Julien Pedneault, Guillaume Majeau-Bettez, ***Stefan Pauliuk***, Manuele Margni, Journal of Industrial Ecology 26(5), Pages: 1728-1746, DOI:10.1111/jiec.13321

Modelling Hazard for Tailings Dam Failures at Copper Mines in Supply Chains of Final Consumption, by Sören Lars Nungesser and ***Stefan Pauliuk***. Resources, 2022, 11(10), 95; DOI: 10.3390/resources11100095

Exploring the global trade networks of the tungsten supply chain: Insights into the physical and monetary mismatch among countries, Linbin Tang, Peng Wang, Zijie Ma, ***Stefan Pauliuk***, Wei-Qiang Chen, Tao Dai, Zipeng Lin, Journal of Industrial Ecology 27(1), pages 323-335, DOI 10.1111/jiec.13333

2021

Global Scenarios of Resource and Emission Savings from Material Efficiency in Residential Buildings and Cars, *Stefan Pauliuk,* Niko Heeren, Peter Berrill, Tomer Fishman, Andrea Nistad, Qingshi Tu, Paul Wolfram, and Edgar G Hertwich, Nature Communications 12 (2021), 5097. DOI: 10.1038/s41467-021-25300-4

Understanding environmental trade-offs and resource demand of direct air capture technologies through comparative life-cycle assessment, Kavya Madhu, ***Stefan Pauliuk***, Sumukha Dhathri, and Felix Creutzig, Nature Energy, DOI 10.1038/s41560-021-00922-6
Addendum to this article: Nat Energy (2023). https://doi.org/10.1038/s41560-023-01312-w

Carbon pricing of basic materials: Incentives and risks for the value chain and consumers, Jan Stede, ***Stefan Pauliuk***, Gilang Hardadi, and Karsten Neuhoff, Ecological Economics, in press. DOI 10.1016/j.ecolecon.2021.107168

Life cycle carbon emissions of different land conversion and woody biomass utilization scenarios in Indonesia, Rio Aryapratama and ***Stefan Pauliuk***, Science of the Total Environment, accepted for publication. DOI: 10.1016/j.scitotenv.2021.150226

Price variance in hybrid-LCA leads to large uncertainty in carbon footprint, Arthur Jakobs, Simon Schulte, ***Stefan Pauliuk***, Frontiers in Sustainability, DOI 10.3389/frsus.2021.666209

Relaxing the Import Proportionality Assumption in Multi-Regional Input-Output Modelling, Simon Schulte, Arthur Jakobs, ***Stefan Pauliuk***, Journal of Economic Structures, DOI 10.1186/s40008-021-00250-8

Quantifying longevity and circularity of copper for different resource efficiency policies at the material and product levels, Stefanie Klose and ***Stefan Pauliuk***, Journal of Industrial Ecology 25(4), p 979-993, DOI 10.1111/jiec.13092.

A comprehensive set of global scenarios of housing, mobility, and material efficiency for material cycles and energy systems modelling, Tomer Fishman, Niko Heeren, ***Stefan Pauliuk***, Peter Berrill, Qingshi Tu, Paul Wolfram, and Edgar G. Hertwich, Journal of Industrial Ecology, DOI 10.1111/jiec.13122.

2020

Material efficiency and its contribution to climate change mitigation in Germany – A deep decarbonisation scenario analysis until 2060*, Stefan Pauliuk* and Niko Heeren, Journal of Industrial Ecology, 25(2), pages 479-493, DOI 10.1111/jiec.13091

Linking Service Provision to Material Cycles – A New Framework for Studying the Resource Efficiency-Climate Change Nexus (RECC)*, Stefan Pauliuk*, Tomer Fishman, Niko Heeren, Peter Berrill, Qingshi Tu, Paul Wolfram, Edgar G. Hertwich, Journal of Industrial Ecology, DOI 10.1111/jiec.13023, available online.

Implications of the Distribution of German Household Environmental Footprints across Income Groups for Integrating Environmental and Social Policy Design, Gilang Hardadi, Alexander Buchholz, and ***Stefan Pauliuk***, Journal of Industrial Ecology, DOI 10.1111/jiec.13045, available online.

Material efficiency and climate change mitigation of passenger vehicles, Paul Wolfram, Qingshi Tu, Niko Heeren, ***Stefan Pauliuk***, and Edgar G. Hertwich. Journal of Industrial Ecology, DOI: 10.1111/jiec.13067, available online.

Multi-objective Optimization Identifies Trade-offs Between Self-sufficiency and Environmental Impacts of Regional Agriculture in Baden-Württemberg, Germany, Christian Buschbeck, ***Stefan Pauliuk***, Christian Hauenstein, and Larissa Bitterich. Journal of Agriculture, Food Systems, and Community Development, DOI 10.5304/jafscd.2020.101.003.

Refining the understanding of China's tungsten dominance with dynamic material cycle analysis, Linbin Tang, Peng Wang, Thomas E. Graedel, ***Stefan Pauliuk***, Keying Xiang, Yan Ren, Wei-Qiang Chen. Resources, Conservation & Recycling, Volume 158, p 104829, DOI 10.1016/j.resconrec.2020.104829.

ODYM - An Open Software Framework for Studying Dynamic Material Systems - Principles, Implementation, and Data Structures, by ***Stefan Pauliuk*** and Niko Heeren. Journal of Industrial Ecology, 24(3), 446-458, DOI 10.1111/jiec.12952.

2019

Contributions of sociometabolic research to sustainability science. Haberl, Helmut, Wiedenhofer, Dominik, ***Pauliuk, Stefan***, Krausmann, Fridolin, Müller, Daniel B, and Fischer-Kowalski, Marina. Nature Sustainability, 2019 (2), 173-184, DOI 10.1038/s41893-019-0225-2.

A General Data Model for Socioeconomic Metabolism and its Implementation in an Industrial Ecology Data Commons Prototype. ***Stefan Pauliuk***, Niko Heeren, Mohammad Mahadi Hasan, and Daniel B Müller, Journal of Industrial Ecology, 23(5), 1016-1027, DOI 10.1111/jiec.12890.

Material efficiency strategies to reducing greenhouse gas emissions associated with buildings, vehicles, and electronics – A review, by Hertwich, Edgar; Ali, Saleem; Ciacci, Luca; Fishman, Tomer; Heeren, Niko; Masanet, Eric; Nojavan Asghari, Farnaz; Olivetti, Elsa; ***Pauliuk, Stefan***; Tu, Qingshi; Wolfram, Paul. Environmental Research Letters, 2019, Vol. 14, 043004, DOI 10.1088/1748-9326/ab0fe3

Estimating in-use wood-based materials carbon stocks in Indonesia: towards a contribution to the national climate mitigation effort Resources, by Rio Aryapratama and ***Stefan Pauliuk***, Resources Conservation & Recycling, 2019, Volume 149, pp 301-311. https://doi.org/10.1016/j.resconrec.2019.06.010

Prospective Cost and Environmental Impact Assessment of Battery and Fuel Cell Electric Vehicles in Germany, by Kai Bekel and ***Stefan Pauliuk***, International Journal of Life Cycle Assessment, 2019, 24, 2220–2237, DOI 10.1007/s11367-019-01640-8

Integrating Dynamic Material Flow Analysis and Computable General Equilibrium Models for Both Mass and Monetary Balances in Prospective Modeling: A Case for the Chinese Building Sector
Zhi Cao, Gang Liu, Shuai Zhong, Hancheng Dai, and ***Stefan Pauliuk***
Environmental Science and Technology, 53 (1), pp 224–233, 2019. https://doi.org/10.1021/acs.est.8b03633

Integrating Life Cycle Assessment into the Framework of Environmental Impact Assessment for Urban Systems. Framework and Case Study of Masdar City, Abu Dhabi. Kavya Madhu and ***Stefan Pauliuk***. Environments, 2019, 6 (9), 105. https://doi.org/10.3390/environments6090105

Physical and Monetary Methods for Estimating the Hidden Trade of Materials. Wei-qiang Chen, Zi-jie Ma, ***Stefan Pauliuk***, and Tao Wang. Resources, 2019, 8(2), p. 89. https://doi.org/10.3390/resources8020089

2018

Critical appraisal of the circular economy standard BS 8001:2017 and a dashboard of quantitative system indicators for its implementation in organizations
Stefan Pauliuk. Resources Conservation and Recycling, Volume 129, 2018, pages 81-92. https://doi.org/10.1016/j.resconrec.2017.10.019

Scenarios for demand growth of metals in electricity generation technologies, cars and electronic appliances.

Sebastiaan Deetman, ***Stefan Pauliuk***, Detlef P. van Vuuren, Ester van der Voet, and Arnold Tukker
Environmental Science and Technology 52(8), 2018, pages 4950-4959. https://doi.org/10.1021/acs.est.7b05549

Bio-electrochemical Conversion of Industrial Wastewater combined with downstream Methanol Synthesis – An Economic- and Life Cycle Assessment.
Jan Streeck, Christoph Hank, Michael Neuner, Laura Gil-Carrera, Marika E Kokko, ***Stefan Pauliuk***, Achim Schaadt, Sven Kerzenmacher and Robin J White
Green Chemistry (20), 2018, 2742. DOI: 10.1039/c8gc00543e

2017

Industrial ecology in integrated assessment models.
Stefan Pauliuk, Anders Arvesen, Konstantin Stadler, and Edgar G. Hertwich
Nature Climate Change 7, 2017, pages 13–20. https://doi.org/10.1038/NCLIMATE3148

Solid Waste and the Circular Economy - A Global Analysis of Waste Treatment and Waste Footprints.
Alexandre Tisserant, ***Stefan Pauliuk***, Stefano Merciai, Jannick Schmidt, Jacob Fry, Richard Wood, and Arnold Tukker. Journal of Industrial Ecology 21(3), 2017, pages 628-640. https://doi.org/10.1111/jiec.12562

Choice of Allocations and Constructs for Attributional or Consequential Life Cycle Assessment and Input-Output Analysis. Guillaume Majeau-Bettez, Thomas Dandres, ***Stefan Pauliuk***, Richard Wood, Edgar Hertwich, Réjean Samson, and Anders Hammer Strømman. Journal of Industrial Ecology, in press. DOI: 10.1111/jiec.12604

Correlation between production and consumption-based environmental indicators: The link to affluence and the effect on ranking environmental performance of countries. Moana Simas, ***Stefan Pauliuk***, Richard Wood, Edgar G Hertwich, and Konstantin Stadler. Ecological Indicators 76, 2017, pages 317–323. https://doi.org/10.1016/j.ecolind.2017.01.026

Regional distribution and losses of end-of-life steel throughout multiple product life cycles—Insights from the global multiregional MaTrace model. ***Stefan Pauliuk***, Yasushi Kondo, Shinichiro Nakamura, and Kenichi Nakajima. Ressources, Conservation and Recycling 116, 2017, pages 84-93. https://doi.org/10.1016/j.resconrec.2016.09.029

Quantifying Recycling and Losses of Cr and Ni in Steel Throughout Multiple Life Cycles Using MaTrace-Alloy. Shinichiro Nakamura, Yasushi Kondo, Kenichi Nakajima, Hajime Ohno, and ***Stefan Pauliuk***. Environmental Science and Technology 51(17), 2017, pages 9469-9476. https://doi.org/10.1021/acs.est.7b01683

On the boundary between economy and environment in life cycle assessment. Bo Pedersen Weidema, Jannick Schmidt, Peter Fantke, and ***Stefan Pauliuk***. The International Journal of Life Cycle Assessment, 23, 1839-1846, 2018. DOI 10.1007/s11367-017-1398-4 DOI 10.1007/s11367-017-1398-4

2016

Commentary: Balance issues in input–output analysis: A comment on physical inhomogeneity, aggregation bias, and coproduction. Guillaume Majeau-Bettez, ***Stefan Pauliuk***, Richard Wood, Evert A. Bouman, and Anders Hammer Strømman. Ecological Economics 126, 2016, 188-197. https://doi.org/10.1016/j.ecolecon.2016.02.017

Matching global cobalt demand under different scenarios for co-production and mining attractiveness
Alexandre Tisserant and ***Stefan Pauliuk***. Journal of Economic Structures 5:4, 2016. DOI 10.1186/s40008 016 0035 x

Toward a Practical Ontology for Socioeconomic Metabolism. ***Stefan Pauliuk***, Guillaume Majeau-Bettez, Edgar G Hertwich, and Daniel B Müller. Journal of Industrial Ecology 20(6), pages 1260-1272. https://doi.org/10.1111/jiec.12386

An Australian Multi-Regional Waste Supply-Use Framework. Jacob Fry, Manfred Lenzen, Damien Giurco, and ***Stefan Pauliuk***. Journal of Industrial Ecology 20(6), pages 1295-1305. http://dx.doi.org/10.1111/jiec.12376

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