Journal of Industrial Ecology

Volume 22, Number 3

June 2018

The Official Journal of the International Society for Industrial Ecology (ISIE)

Special Issue on the Global Multi Regional Input Output Database "EXIOBASE"

Guest editors: Arnold Tukker, Richard Wood, Stefan Giljum, and Klaus Hubacek

COLUMN		
Editorial	482	Relevance of Global Multi Regional Input Output Databases for Global Environmental Policy: Experiences with EXIOBASE 3
		Arnold Tukker, Richard Wood, and Stefan Giljum
Input-Output Analysis	485	Institutionalization of Inter-Country Input-Output Tables: Working Towards Harmonization and Standardization
		José M. Rueda-Cantuche, Isabelle Remond-Tiedrez, and Maaike C. Bouwmeester
	487	Future Development of the Inter-Country Input-Output (ICIO) Database for Global Value Chain (GVC) and Environmental Analyses
		Norihiko Yamano and Colin Webb
METHODS, TOOLS, A		TWARE
	489	Recent Progress in Assessment of Resource Efficiency and Environmental Impacts Embodied in Trade: An Introduction to this Special Issue
		Arnold Tukker, Stefan Giljum, and Richard Wood
	502 ://	EXIOBASE 3: Developing a Time Series of Detailed Environmentally Extended Multi-Regional Input-Output Tables
		Konstantin Stadler, Richard Wood, Tatyana Bulavskaya, Carl-Johan Södersten, Moana Simas, Sarah Schmidt, Arkaitz Usubiaga, José Acosta-Fernández, Jeroen Kuenen, Martin Bruckner, Stefan Giljum, Stephan Lutter, Stefano Merciai, Jannick H. Schmidt, Michaela C. Theurl, Christoph Plutzar, Thomas Kastner, Nina Eisenmenger, Karl-Heinz Erb, Arjan de Koning, and Arnold Tukker
	516 •//	Methodology for the Construction of Global Multi-Regional Hybrid Supply and Use Tables for the EXIOBASE v3 Database
		Stefano Merciai and Jannick Schmidt
	532	A Note on the Magnitude of the Feedback Effect in Environmentally Extended Multi-Region Input-Output Tables
		Daniel Moran, Richard Wood, and João F. D. Rodrigues
	540 ://	Prioritizing Consumption-Based Carbon Policy Based on the Evaluation of Mitigation Potential Using Input-Output Methods
		Richard Wood, Daniel Moran, Konstantin Stadler, Diana Ivanova, Kjartan Steen-Olsen, Alexandre Tisserant, and Edgar G. Hertwich

5
Richard Wood, Konstantin Stadler, Moana Simas, Tatyana Bulavskaya, Stefan Giljum, Stephan Lutter, and Arnold Tukker
 Headline Environmental Indicators Revisited with the Global Multi-Regional Input-Outpu Database EXIOBASE
Zoran J.N. Steinmann, Aafke M. Schipper, Konstantin Stadler, Richard Wood, Arjan de Koning, Arnold Tukker, and Mark A.J. Huijbregts
Wasting Food, Wasting Resources: Potential Environmental Savings Through Food WasteReductions
Arkaitz Usubiaga, Isabela Butnar, and Philipp Schepelmann
EMENTATION
5 Towards Robust, Authoritative Assessments of Environmental Impacts Embodied in Trade: Current State and Recommendations
Arnold Tukker, Arjan de Koning, Anne Owen, Stephan Lutter, Martin Bruckner, Stefan Giljum Konstantin Stadler, Richard Wood, and Rutger Hoekstra
Book Review of Techniques for Evaluating the Differences in Multiregional Input-Output Databases: A Comparative Evaluation of CO ₂ Consumption-Based Accounts Calculated Using Eora, GTAP and WIOD, by Anne Owen Arnold Tukker
Book Review of Environmental and Economic Impacts of Decarbonization: Input-Output Studies on the Consequences of the 2015 Paris Agreement. 2017. Edited by Óscar Dejuán, Manfred Lenzen, and María-Ángeles Cadarso. Arnold Tukker
TRACTS
Chinese Abstracts Journal of Industrial Ecology Volume 22, Number 3
i //

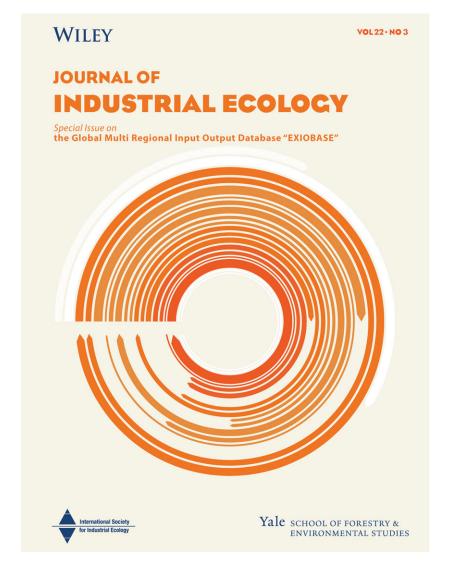
These texts have supporting information available on the journal's Web site: *www.wileyonlinelibrary.com/journal/jie* (not available with Print on Demand).

Issue Information for the

Journal of Industrial Ecology

The Official Journal of the International Society for Industrial Ecology (ISIE)

Volume 22, Number 3



Cover Image

The cover image, designed by Peter Hirsch and Yanin Kramsky, evokes a Sankey diagram, a type of flow chart widely used in industrial ecology in which the width of the arrows is proportional to the magnitude of material and energy flows. For a description of the <u>history</u> and <u>methodology</u> of Sankey diagrams, see the work of Mario Schmidt.

The *Journal of Industrial Ecology* is owned by <u>Yale University</u> and headquartered at the Center for Industrial Ecology of the School of Forestry & Environmental Studies.

Journal of Industrial Ecology

Editors

- Reid Lifset, Yale University (USA) Editor-in-Chief
- Lei Shi, Tsinghua University (China) Editorial Director, Asian Regional Office
- Richard Wood, Norwegian University of Science and Technology (Norway) Editorial Director, European Regional Office
- Helge Brattebø, Norwegian University of Science and Technology (Norway) *Editor*
- John Ehrenfeld, International Society for Industrial Ecology (USA) Editor emeritus
- Edward Gordon, Yale University (USA) Assistant Editor
- Cheryl Myrup, Yale University (USA) Assistant Editor
- Robert Anex, University of Wisconsin (USA) Editor, Biofuels and Agriculture
- Weslynne Ashton, Illinois Institute of Technology (USA) Editor, Industrial Symbiosis
- Frank Boons, Erasmus University Rotterdam (The Netherlands) Editor, Social Science
- Miguel Brandão, Royal Institute of Technology (Sweden) Editor, Life Cycle Assessment
- Michael Brown, Brown and Wilmanns Environmental (USA) Editor, Case Studies
- Mikhail Chester, Arizona State University (USA) Editor, Life Cycle Assessment
- Charles Corbett, University of California, Los Angeles (USA) Editor, Supply Chain Management
- Ichiro Daigo, University of Tokyo (Japan) Editor, MFA/SFA
- Thomas Gloria, Harvard University (USA) Editor, Life Cycle Assessment Stefan Gößling-Reisemann, University of Bremen (Germany) Editor,
- Book Reviews Michael Hauschild, Technical University of Denmark (Denmark) Editor, Life Cycle Assessment
- Reinout Heijungs, Vrije Universiteit Amsterdam (The Netherlands) Editor, Statistics
- Stefanie Hellweg, ETH Zurich (Switzerland) Editor, Life Cycle Management
- Klaus Hubacek, University of Maryland (USA) Editor, Input-Output Analysis
- Chris Kennedy, University of Victoria (Canada) Editor, Urban Metabolism
- Alexis Laurent, Technical University of Denmark (Denmark) Editor, Life Cycle Assessment
- Manfred Lenzen, University of Sydney (Australia) Editor, Input-Output Analysis
- Annie Levasseur, CIRAIG (Canada) Editor, Life Cycle Assessment
- Donald Lyons, University College, Cork (Ireland) Editor, Industrial Symbiosis
- Guillaume Majeau-Bettez, Polytechnique Montreal (Canada) Editor, Data
- Philippa Notten, The Green House (South Africa) Editor, Life Cycle Assessment
- Jooyoung Park, KU-KIST Green School (Korea) Editor, Industrial Symbiosis
- Heinz Schandl, Commonwealth Scientific and Industrial Research Organisation (Australia) *Editor*, MFA/SFA
- Sabrina Spatari, Drexel University (USA) Editor, Book Reviews Valerie Thomas, Georgia Institute of Technology (USA) Associate Editor Ester van der Voet, Leiden University (The Netherlands) Associate Editor Luk van Wassenhove, INSEAD (France) Editor, Supply Chain Management Walter Wehrmeyer, University of Surrey (UK) Editor, Case Studies Ron Williams, General Motors (retired) (USA) Editor, Life Cycle Management
- Junming Zhu, Tsinghua University (China) Editor, Public Policy

Managing Board

William Ellis, Yale University (USA) Thomas Graedel, Yale University (USA) Edgar Hertwich, Yale University (USA) Heinrich Jessen, Jebsen & Jessen (Singapore) Yuichi Moriguchi, University of Tokyo (Japan) Ann Okerson, Center for Research Libraries (USA)

Institutional Affiliates

- International Institute for Applied Systems Analysis (Laxenburg, Austria)
- International Institute for Industrial Environmental Economics (Lund, Sweden)
- Center for Sustainable Systems (Ann Arbor, Michigan, USA)
- World Business Council for Sustainable Development (Geneva, Switzerland)
- Wuppertal Institute for Climate, Energy and the Environment (Wuppertal, Germany)

Editorial Board

- Derry Allen (USA)
- Braden R. Allenby, Arizona State University (USA)
- Clinton Andrews, Rutgers University (USA)
- Jesse Ausubel, Rockefeller University (USA)
- Robert Ayres, INSEAD (France)
- Frans Berkhout, Vrije University (The Netherlands)
- Stefan Bringezu, Wuppertal Institute (Germany)
- Marian Chertow, Yale University (USA)
- Angela Druckman, University of Surrey (UK)
- Faye Duchin, Rensselaer Polytechnic Institute (USA) Suren Erkman, University of Lausanne (Switzerland)
- Peter Eyerer, University of Stuttgart (Germany)
- Paulo Ferrão, Instituto Superior Técnico (Portugal)
- Marina Fischer-Kowalski, IFF-Social Ecology (Austria)
- Robert Frosch, Harvard University (USA)
- Arnulf Grübler, International Institute for Applied Systems Analysis (Austria)
- Eva Heiskanen, National Consumer Research Centre (Finland)
- Christopher Hendrickson, Carnegie-Mellon University (USA)
- John Holmberg, Chalmers University of Technology (Sweden)
- Arpad Horvath, University of California, Berkeley (USA)
- Gjalt Huppes, Leiden University (The Netherlands)

Somporn Kamolsiripichaiporn, Chulalongkorn University (Thailand)

- Gregory Keoleian, University of Michigan (USA)
- Thomas Lindhqvist, International Institute for Industrial Environmental Economics (Sweden)
- Zhongwu Lu, Northeastern University (China)
- Joel Makower, Green Business Network (USA)

William McDonough, William McDonough + Partners (USA)

- Greg Norris, Sylvatica (USA)
- David Pennington, Joint Research Center, European Commission (Italy)
- Robert Pfahl, International Electronic Manufacturing Initiative (USA)
- Yi Qian, Tsinghua University (China)
- Helmut Rechberger, TU Wien (Austria)
- David Rejeski, Woodrow Wilson International Center for Scholars (USA)
- Chris Ryan, University of Melbourne (Australia)
- James Salzman, Duke University (USA)
- Thomas Seager, Arizona State University (USA)
- Sangwon Suh, University of California, Santa Barbara (USA)
- Hiroki Tanikawa, Nagoya University (Japan)
- Arnold Tukker, Leiden University (The Netherlands)
- Eric Williams, Rochester Institute of Technology (USA)

Journal of Industrial Ecology

Disclaimer. The Publisher, Yale University and Editors cannot be held responsible for errors or any consequences arising from the use of information contained in this journal; the views and opinions expressed do not necessarily reflect those of the Publisher, Yale University and Editors, neither does the publication of advertisements constitute any endorsement by the Publisher, Yale University and Editors of the products advertised.

Copyright and Copying (in any format). Copyright © 2018, Yale University. All rights reserved. No part of this publication may be reproduced, stored or transmitted in any form or by any means without the prior permission in writing from the copyright holder. Authorization to copy items for internal and personal use is granted by the copyright holder for libraries and other users registered with their local Reproduction Rights Organisation (RRO), e.g. Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923, USA (www.copyright.com), provided the appropriate fee is paid directly to the RRO. This consent does not extend to other kinds of copying such as copying for general distribution, for advertising or promotional purposes, for republication, for creating new collective works or for resale. Permissions for such reuse can be obtained using the RightsLink "Request Permissions" link onWiley Online Library. Special requests should be addressed to: permissions@wiley.com.

For submission instructions, subscription, and all the latest information, visit http://onlinelibrary.wiley.com/journal/ 10.1111/(ISSN)1530-9290