# Journal of Environmental Accounting and Management

#### **Editors**

**Zhifeng Yang** 

School of Environment Beijing Normal University Beijing 100875, China Fax: +86 10 58800397 Email: zfyang@bnu.edu.cn

#### **Subject Editors**

Biagio Giannetti (Cleaner Production)

Paulista University

Laboratório de Produção e Meio Ambiente (LaProMA)

Sao Paulo, Brazil

Email: biafgian@unip.br

Marco Raugei (Renewable Energies/Life Cycle Assessment)

Dept of Mechanical Engineering and Mathematical Sciences,

Oxford Brookes University

Wheatley, UK

Email: marco.raugei@brookes.ac.uk

Olga Kordas (Urban Systems/Smart Cities)

Department of Sustainable development, Environmental science and Engineering

KTH Royal Institute of Technology

Teknikringen 34, S - 100 44 Stockholm, Sweden

Email: olga.kordas@abe.kth.se

#### **Associate Editors**

#### Mark T. Brown

Department of Environmental Engineering Sciences University of Florida.

Gainesville, FL, USA Fax: 352-392-3624 Email: mtb@ufl.edu

Walter A. Pengue

Universidad Nacional de General Sarmiento

Gepama Fadu UBA Buenos Aires, Argentina

Emails: wapengue@ungs.edu.ar

#### **Editorial Board**

Salvatore Arico

Division of Ecological Sciences UNESCO, Paris, France

Fax: 33 1 4568 5804 Email: S.Arico@unesco.org

Bhavik Bakshi

Department of Chemical Engineering

The Ohio State University Columbus Ohio 43210, USA

Fax: (614)292-3769

Email: bakshi.2@osu.edu

#### **Enrico Benetto**

Luxembourg Institute of Science and Technology ERIN - Environmental Research & Innovation

Department

41, rue du Brill, L-4422 Belvaux

Email: enrico.benetto@list.lu

#### Federico M. Butera

Dept. of Building & Environment Science &

Technology (BEST)

Politecnico di Milano, Milano, Italy

Fax: 02-2399-5151

Email: federico.butera@polimi.it

#### Sergio Ulgiati

Department of Science and Technology Parthenope University of Napoli

Centro Direzionale, Isola C4. 80143 Napoli, Italy

Fax: +39 081 547 6515

Email: sergio.ulgiati@uniparthenope.it

Antonino Marvuglia (Computational Sustainability)

Luxembourg Institute of Science and Technology (LIST)

ERIN - Environmental Research & Innovation Department

5 avenue des hauts fourneaux

L-4362 Esch sur Alzette - Luxembourg

Email: antonino.marvuglia@list.lu

Andrea Genovese (Circular Economy Management & Policy)

Logistics and Supply Chain Management Research Centre

Management School, The University of Sheffield

Room B.063, Conduit Road, Sheffield S10 1FL, UK

E-mail: a.genovese@shef.ac.uk

Feni Agostinho (Emergy/Exergy/Ecological Footprint)

Universidade Paulista (UNIP)

Programa de Pós-Graduação em Engenharia de Produção

Laboratório de Produção e Meio Ambiente (LAPROMA)

Rua Dr. Bacelar, 1212, CEP 04026-002, São Paulo, Brasil

Email: feniagostinho@gmail.com

#### Hans Schnitzer

Institute for Process Engineering Graz University of Technology

Graz, Austria

Fax: 43(0)316-873/7469

Email: hans.schnitzer@tugraz.at

#### Daniel E. Campbell

United States Environmental Protection Agency Wakefield, RI, USA

Fax: 401-783-3945

Email: Campbell.Dan@epamail.epa.gov

#### Guoqian Chen

Dept.of Mechanics and Engineering Science Peking University

Beijing, China

Email: gqchen@pku.edu.cn

# Francesco Cherubini

Dept. of Energy and Process Engineering Norwegian Univ. of Science and Technology

Trondheim, Norway

Email: francesco.cherubini@ntnu.no

#### **Liang Dong**

Institute of Environmental Sciences Leiden University

P.O. Box 9518

 $2333 \; RA \; Leiden, \, the \; Netherlands$ 

Email: l.dong@cml.leidenuniv.nl

#### Brian D. Fath

Department of Biological Sciences

Towson University

Towson, MD 21252, USA

Fax: 410-704-2405

Email: bfath@towson.edu

# Matthias Finkbeiner Department of Sustainable Engineering Techincal

University Berlin, Germany

Fax +49 (0)30 314-21720

Email: matthias.finkbeiner@tu-berlin.de

#### Pier Paolo Franzese

Department of Science and Technology Parthenope University of Napoli Centro Direzionale, Isola C4. 80143 Napoli, Italy

Email: pierpaolo.franzese@uniparthenope.it

#### Helmut Haberl

Institute of Social Ecology Alpen Adria Universität Vienna, Austria

Email: helmut.haberl@uni-klu.ac.at

Continued on the back materials

# Journal of Environmental Accounting and Management

Volume 4, Issue 4, December 2016

Editors
Zhifeng Yang
Sergio Ulgiati



#### **Publication Information**

Journal of Environmental Accounting and Management (ISSN 2325-6192 (print), eISSN 2325-6206 (online), CN 10-1358/X) is published quarterly (March, June, September, and December) by L & H Scientific Publishing, LLC, P.O. Box 99, Glen Carbon, IL62034, USA. Subscription prices are available upon request from the publisher or from this journal website. Subscriptions are accepted on a prepaid basis only and entered on a calendar year basis. Issues are sent by standard mail (surface in North America, air delivery outside North America). Priority rates are available upon request. Claims for missing issues should be made within six months of the date of dispatch.

### **Changes of Address**

Send address changes to L&H Scientific Publishing, LLC, P.O. Box 99, Glen Carbon, IL62034, USA. Changes of address must be received at L&H Scientific Publishing eight weeks before they are effective.

# **Authors Inquiries**

For inquiries relative to the submission including electronic submission where available, please visit journal website or contact journal Editors-in-Chief.

# **Advertising Information**

If you are interested in adverting or other commercial opportunities, please email via lhscientificpublishing@gmail.com and your enquiry will be handled as soon as possible.

## © 2016 L&H Scientific Publishing, LLC. All rights reserved

L&H Scientific Publishing, LLC requires the authors to sign a Journal Copyright Transfer Agreement for all articles published in L&H Scientific. The Copyright Transfer Agreement is an agreement under which the author retains copyright in the work but grants L& H Scientific Publishing LLC the sole and exclusive right and license to publish the full legal term of copyright.

Authors are responsible for obtaining permission from copyright holders for reproducing any illustrations, tables, figures or lengthy quotations published somewhere previously.

For authorization to photocopy materials for internal or personal use under those circumstances not falling within the fair use provisions of Copyright Act, requests for reprints and translations should be addressed to the permission office of L&H Scientific publishing, LLC via lhscientificpublishing@gmail.com or call: 1-618-402-2267. Permission of the Publisher and payment of a fee are required for all other photocopying, including multiple or systematic copying, copying for advertising or promotional purposes, resale, and forms of document delivery. Special rates are available for educational institutions to make photocopies for non-profit educational classroom use.

Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. Permission of the publisher is required for resale or distribution outside the institution.

Permission of the Publisher is required to store or use electronically any materials contained in this journal, including any entire or partial article, please contact the publisher for advice. Otherwise, no part of this publication can be reproduced, stored in a retrieval systems or transmitted in any form or by means, electronic, mechanical, photocopying, recording or without prior written permission of the Publisher.

#### **Disclaimer**

The authors, editors and publisher will not accept any legal responsibility for any errors or omissions that may be made in this publication. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Printed in USA on acid-free paper.

#### Aims and Scope

The peer-reviewed journal publishes original research results in the field of environmental and ecological science with focus on applications to the sustainable management of natural, human-dominated, and man-made ecosystems. The aim of the journal is to provide a place for a rapid exchange of new ideas and concepts for scientists and engineers in the fields of environmental accounting, human and systems ecology, and environmental management. Manuscripts on environmental accounting and managements are solicited, including: mathematical modeling; computational and management techniques in environmental, ecological, energy and information science; environmental technology and engineering; human managed ecosystems such as agricultural, urban, coastal, riparian, and wetland ecosystems. Topics of interest include, but not limited to:

- Environmental and ecological economics, environmental accounting, environmental impact assessment, ecosystem service assessment, energy and resource use, social factors and management.
- Modeling in environmental conservation and restoration, eco-hydrology and water resources management, ecological process and pattern, climate change effects, environmental engineering and technology.
- Planning and management in human dimension-institutions and patterns for socio-economic systems, industrial ecology, ecological informatics, landscape design, and urban planning.
- Environmental policy, legislation, and innovations with environmental and strategic impact assessment, project appraisal and auditing, and environmental protection.

No length limitations for contributions are set, but only concisely written manuscripts are considered for publication. Brief papers can be published on the basis of Technical Notes. Discussions of previous published papers are welcome.

#### **Peer Review**

Journal of Environmental Accounting and Management adopts the traditional blind-review policy in which the reviewers' names are concealed for submission author(s). Each submitted manuscript is reviewed by at least two expert referees in the related research field.

# **Manuscript Submission Guidelines**

For manuscript submission, authors can send their manuscripts to one of the Editors-in-Chief. Manuscript preparation should follow the sample papers and journal manuscript templates (word file or Latex files), which can be found on the journal website at <a href="https://lhscientificpublishing.com/Journals/JEAM-Default.aspx">https://lhscientificpublishing.com/Journals/JEAM-Default.aspx</a>

# **Proofs and Electronic Offprints**

Authors will receive a PDF proof of their articles and, on publication, electronic offprints of the article.

#### **Open Access**

After manuscripts acceptance, author(s) have a right to request the accepted manuscripts published by L&H Scientific publishing with open access, and the author(s) have a responsibility to paying the open access publication fee with US\$30 per page. The copyright is still held by the Publisher. Without any request of the open access publication, the accepted manuscripts are assumed to be published traditionally.

#### Continued from insider front cover

**Gordon Huang** 

Dept. of Environmental Systems Eng. University of Regina Regina, Saskatchewan, Canada Fax: (306) 585-4855,

Email: gordon.huang@uregina.ca

Shu-Li Huang

Graduate Institute of Urban Planning, National Taipei University, Taiwan

Fax: 886 (2) 8671-8801, Email: shuli@mail.ntpu.edu.tw

Wesley W. Ingwersen

Sustainable Technology Division National Risk Management Research Laboratory, US EPA Cincinnati, OH 45268, USA

Email:Ingwersen.Wesley@epamail.epa.gov

**Christine Jasch** 

Vienna Institute for Environmental Management and Economics, IÖW Rechte Wienzeile 19/10 A-1040 Vienna, AUSTRIA

Email: jasch.christine@ioew.at

**Christer Jonasson** 

Department of Earth Sciences Uppsala University

Sweden

Fax: +46 920 22 84 11

Email: christer.jonasson@ans.polar.se

Dan L. Johnson

Department of Geography University of Lethbridge Alberta, Canada Fax: (403) 332-4039 Email: dan.johnson@uleth.ca

Sven Erik Jørgensen

Institute A, Environmental Chemistry Copenhagen University Copenhagen, Denmark Fax: +45 35305968

Email: msijapan@hotmail.com

**Noam Lior** 

Dept. of Mech. Eng. & Applied Mech. University of Pennsylvania Philadelphia, PA 19104, USA Fax: +1-215 573 6334

Email: lior@seas.upenn.edu

**Editorial Assistants** 

Gengyuan Liu

School of Environment Beijing Normal University

Beijing, China

Email: liugengyuan@bnu.edu.cn

Hongfang Lu

South China Botanical Garden Chinese Academy of Science Guangzhou, China Fax: 020-37084273

Email: luhf@scbg.ac.cn

David Maradan

Department of Economics University of Geneva Genève, Switzerland Fax: (+4122) 705-8293 Email: maradan@ecosys.com

Paolo Masoni

The LCA and Ecodesign Laboratory **ENEA** via Martiri di Monte Sole, 4

40129 Bologna, Italy Email: paolo.masoni@enea.it

Antonio Messineo

Department of Engineering and Architecture University of Enna Kore

Enna, Italy

Fax. +39 0935 536391

Email: antonio.messineo@unikore.it

Andrzej Nienartowicz

Institute of Ecology and Protection of the Environment Nicolaus Copernicus University

Torun, Poland

Email: anienart@umk.pl

**Enrique Ortega** 

School of Food Engineering, the State University of Campinas

Campinas, São Paulo, Brazil Fax: +55 19 3521 4027 Email: ortega@fea.unicamp.br

B. Sudhakara Reddy

Indira Gandhi Institute of Development Research

Goregaon, Mumbai, INDIA Fax: 022 2840 2752 Email: sreddy@igidr.ac.in

Joseph A. Tainter

Department of Environment and Society

Utah State University Logan, UT 84322, USA Email: Joseph.Tainter@usu.edu David R. Tilley

Dept.of Environmental Science and Tech. University of Maryland,

College Park, MD 20742, USA

Fax: (301) 405-8027 Email: dtilley@umd.edu

Alicia Valero

Department of Mechanical Engineering

University of Zaragoza Zaragoza, SPAIN Fax: +34 976 732 078 Email: aliciavd@unizar.es

Cecilia M. Villas Bôas de Almeida

Dept. of Production Engineering Paulista University Rua Doutor Bacelar 1212 Sao Paulo 04026-002, Brazil

Email: cmvbag@unip.br

Mathis Wackernagel Global Footprint Network 312 Clay Street, Suite 300 Oakland, CA 94607-3510, USA Email: mathis@footprintnetwork.org

Maochao Yan

Institute of Geographical Science and Natural Resource Research China Agricultural University

Beijing 100094, China Email: yanmc@igsnrr.ac.en

Maciej Zalewski

Department of Applied Ecology

University of Lodz

Poland

Fax:(+48) 42 665 58 19

Email: m.zalewski@erce.unesco.lodz.pl

Xiaoling Zhang

Department of Public Policy City University of Hong Kong Hong Kong, China

Fax: (+852) 3442-0413

Email: xiaoling.zhang@cityu.edu.hk

Silvio Viglia

Department of Science and Technology Parthenope University of Napoli

Centro Direzionale, Isola C4. 80143 Napoli, Italy

Email: silvio.viglia@uniparthenope.it