EcoBalance 2014

The 11th International Conference on EcoBalance

PROGRAM

Creating benefit through life cycle thinking

27–30 October 2014, Tsukuba, Japan

Organized by

The Institute of
Life Cycle Assessment, Japan

Schedule Overview

*[ ] : Spesial Session

		October 27, Monday
18:00 - 20:00		Welcome Party (Restaurant Espoir)

		October 28, Tuesday				
10:00-12:00		Opening Plenary (Main Convention Hall)				
12:00-13:30		Lunch (Multi Purpose Hall) (90 min)				
		Room 101	Room 102	Room 201	Room 202	
		28A	28B	28C	28D	
13:30-14:50	3	*[28A3] Sustainability in the Chemical Industry-1	*[28B3] Tsukuba special session	*[28C3] Global Food Security and Corporate Practices from Life Cycle Perspectives-1	*[28D3] Green ICT-1	
14:50-15:10		Break (20 min)				
15:10-16:30	4	*[28A4] Sustainability in the Chemical Industry-2	[28B4] Material Flow Analysis	*[28C4] Global Food Security and Corporate Practices from Life Cycle Perspectives-2	*[28D4] Green ICT-2	
16:30-16:50		Break (20 min)				
16:50-18:10	5	[28A5] Estimating the Contribution to Avoided Emissions	[28B5] E-waste	*[28C5] Global Food Security and Corporate Practices from Life Cycle Perspectives-3	*[28D5] Driving innovation	

		October 29, Wednesday				
		Room 201	Room 202	Room 303	Room 405	Room 406
		29C	29D	29E	29F	29G
09:00-10:20	1	*[29C1] The Practical Challenge for Sustainable Industry-1	[29D1] LCA Methodology	[29E1] Behavior & Policy	*[29F1] Sustainability of Materials and Industries-1	[29G1] Energy-1
10:20-10:40		Break (20 min)				
10:40-12:00	2	*[29C2] The Practical Challenge for Sustainable Industry-2	[29D2] Supply Chain Risk Management	[29E2] Policy & Visualization	*[29F2] Sustainability of Materials and Industries-2	[29G2] Energy-2
12:00-13:30		Lunch (Multi Purpose Hall) (90 min)				
13:30-14:50	3	*[29C3] The Practical Challenge for Sustainable Industry-3	[29D3] City & Building	[29E3] Agriculture & Foods	*[29F3] Sustainability of Materials and Industries-3	
14:50-15:10		Break (20 min)				
15:10-17:30		Poster Session (Room 101,102)				
18:00-20:00		Banquet (Okura Frontier Hotel Tsukuba)				

		October 30, Thursday			
		Room 101	Room 102	Room 201	Room 202
		30A	30B	30C	30D
09:00-10:20	1	*[30A1] Sustainable Resource Management-1	[30B1] Waste Management & Recycling-1	*[30C1] The Practical Challenge for Sustainable Industry-4	[30D1] Water-1
10:20-10:40		Break (20 min)			
10:40-12:00	2	*[30A2] Sustainable Resource Management-2	[30B2] Waste Management & Recycling-2	*[30C2] The Practical Challenge for Sustainable Industry-5	[30D2] Water-2
12:00-13:30		Lunch (Multi Purpose Hall) (90 min)			
13:30-16:00		Closing Plenary (Convention Hall 300)			
16:15-18:00		Farewell Party (INCAROSE)			

EcoBalance 2014

The 11th International Conference on EcoBalance

Creating benefit through life cycle thinking

PROGRAM

27–30 October 2014
Tsukuba, Japan

Organized by

The Institute of
Life Cycle Assessment, Japan

Contents

Preface

Dear Friends and Colleagues,

Welcome to Tsukuba, the birthplace of EcoBalance!

In the name of the Organizing Committee, I would like to welcome each of you to EcoBalance 2014 in Tsukuba, Japan, from 27 to 30 October 2014.

The theme of EcoBalance 2014 is "Creating Benefit through Life Cycle Thinking." We would like to invite a wide range of participants to share their quests for benefits from life-cycle thinking, and are thus organizing special sessions that focus on sustainability and practical challenges in industry. In recognition of the fact that the benefits sought are diverse, contributions from other sectors are also welcome to identify advantages beyond mere financial considerations in the increasingly globalized supply chain under quickly changing circumstances. In line with previous EcoBalance conferences, therefore, we are keeping our broad scope, including socio-economic metabolism, industrial symbiosis, sustainable resource management, life-cycle management, socio-economic approaches to sustainability, and life-cycle assessment.

Held biennially since 1994, EcoBalance is one of the oldest and most established international conferences on the methodologies and practices of sustainability, based on life-cycle thinking. In commemoration of this twenty-year history of the EcoBalance conferences, we are organizing, in addition to our regular keynote lectures and sessions, a special panel discussion on the prospect of further promoting life-cycle thinking in the next twenty years.

I would like to take this opportunity to thank the people of Tsukuba for joining us and supporting this conference. In the Tsukuba special session, we will introduce pioneering policies and activities that are taking place in Tsukuba, and discuss how these should proceed.

I would like to express my sincere gratitude to all of the participants in EcoBalance 2014. We hope and believe that the conference will be a fruitful opportunity for you to present your research results, network with a wide range of participants, and accomplish our aim of "Creating Benefit through Life Cycle Thinking."

We look forward to seeing you during your time here.

Sincerely,
Yasushi Kondo
Chair of EcoBalance 2014

Organizing Committee

Chair

Yasushi Kondo

Waseda University, Japan

Vice-chairs

Yasuhiro Fukushima

Tohoku University, Japan

Shinsuke Murakami

The University of Tokyo, Japan

Members

Ichiro Daigo	The University of Tokyo, Japan
Minako Hara	NTT Energy and Environment Systems Laboratories, Japan
Seiji Hashimoto	Ritsumeikan University, Japan
Kiyotada Hayashi	National Agriculture and Food Research Organization (NARO), Japan
Hiroki Hondo	Yokohama National University, Japan
Toshiharu Ikaga	Keio University, Japan
Norihiro Itsubo	Tokyo City University, Japan
Shigemi Kagawa	Kyushu University, Japan
Hideki Kakisawa	The University of Tokyo, Japan
Yuki Kudoh	National Institute of Advanced Industrial Science and Technology (AIST), Japan
Kazuyo Matsubae	Tohoku University, Japan
Yasunari Matsuno	The University of Tokyo, Japan
Shigeyuki Miyamoto	NEC Corporation, Japan
Masaharu Motoshita	National Institute of Advanced Industrial Science and Technology (AIST), Japan
Kenichi Nakajima	National Institute for Environmental Studies (NIES), Japan
Shiro Nakajima	Building Research Institute (BRI), Japan
Michiyasu Nakajima	Kansai University, Japan
Keisuke Nansai	National Institute for Environmental Studies (NIES), Japan
Keiichi Okajima	University of Tsukuba, Japan
Hirokazu Sugiyama	The University of Tokyo, Japan
Yasushi Umeda	The University of Tokyo, Japan
Naoki Yoshikawa	Ritsumeikan University, Japan

International Advisory Board

Sponsors

Platinum Sponsors:

PE INTERNATIONAL AG
LCA Society of Japan (JLCA)

Gold Sponsor:

PRé Consultants

Bronze Sponsors:

TCO2 Co., Ltd.
Pacific Consultants Co., Ltd.
Panasonic Corporation
FUJITSU LIMITED
MITSUBISHI ELECTRIC CORPORATION
Toshiba Corporation
Hitachi, Ltd.
Nissan Motor Co. Ltd.

Financial Supports

City of Tsukuba

The Japan World Exposition 1970 Commemorative Fund, KANSAI OSAKA 21st Century Association
Tsukuba Tourist and Convention Association
Watanabe Memorial Foundation for the Advancement of New Technology

Cooperating Government Offices

Ministry of Agriculture, Forestry and Fisheries
Ministry of Education, Culture, Sports, Science and Technology
Ministry of Economy, Trade and Industry
Ministry of Land, Infrastructure and Transport
Ministry of the Environment

Cooperating Organizations

Architectural Institute of Japan
Center for Environmental Information Science
Communications and Information network Association of Japan
Green Purchasing Network (GPN)
Japan Aluminium Association
Japan Association for Chemical Innovation
Japan Association for Techno-innovation in Agriculture, Forestry and Fisheries
Japan Automobile Manufacturers Association, Inc.
Japan Business Machine and Information System Industries Association
Japan Chain Stores Association
Japan Chemical Fibers Association
Japan Chemical Industry Association (JCIA)
Japan Electronics and Information Technology Industries Association
Japan Environment Association
Japan Federation of Construction Contractors
Japan Greenhouse Horticulture Association
Japan LP Gas Association
Japan Packaging Institute

Japan Petrochemical Industry Association
Japan PVC Environmental Affairs Council
Japan Society for Atmospheric Environment
Japan Society of Civil Engineers
Japan Society of Energy and Resources
Japan Society of Material Cycles and Waste Management
Japan Society of Powder and Powder Metallurgy
Japanese Consumers' Co-operative Union
Japanese Society of Agricultural Machinery and Food Engineers
Japanese Society of Farm Work Research
Japanese Society of Soil Science and Plant Nutrition
JSPS 143rd Committee on Process Systems Engineering
Manufacturing Science and Technology Center
National Institute for Materials Science
Nippon Association of Consumer Specialists
Pesticide Science Society of Japan
Petroleum Association of Japan
Plastic Waste Management Institute
Research Institute of Innovative Technology for the Earth
Society for Environmental Economics and Policy Studies
Society of Environmental Science, Japan
SOKEIZAI Center
The Agricultural Society of Japan
The Building Center of Japan
The Ceramic Society of Japan
The Committee for the Promotion of Recycling of Construction By-Product
The Engineering Academy of Japan
The High Pressure Gas Safety Institute of Japan
The Institute of Electrical Engineers of Japan
The Iron and Steel Institute of Japan
The Japan Electrical Manufacturers' Association
The Japan Gas Association
The Japan Institute of Energy
The Japan Institute of Light Metals
The Japan Institute of Metals and Materials
The Japan Iron and Steel Federation
The Japan Petroleum Institute
The Japan Reinforced Plastics Society
The Japan Rubber Manufacturers Association
The Japan Society for Composite Materials
The Japan Society for Precision Engineering
The Japan Society for Technology of Plasticity
The Japan Society of Industrial Machinery Manufacturers
The Japan Society of Mechanical Engineers
The Japan Wood Research Society
The Japanese Society for Biomaterials
The Japanese Society for Food Science and Technology
The Materials Research Society of Japan (MRS-J)
The Mining and Materials Processing Institute of Japan (MMIJ)
The Society for Risk Analysis Japan
The Society of Chemical Engineers, Japan
The Society of Heating, Air-Conditioning and Sanitary Engineers of Japan
The Society of Materials Science, Japan
The Society of Polymer Science, Japan
The Society of Rubber Science and Technology, Japan
The Surface Finishing Society of Japan
Thermal and Nuclear Power Engineering Society
Union of EcoDesigners
Vinyl Environmental Council
Water Reuse Promotion Center
Wood Technological Association of Japan
Ministry of Agriculture, Forestry and Fisheries
Ministry of Education, Culture, Sports, Science and Technology
Ministry of Economy, Trade and Industry
Ministry of the Environment

Exhibitors

TCO2 Co., Ltd.
PE Asia corporation
ifu Hamburg GmbH

Session List

▶ Plenary Sessions

▶ Special Sessions

▶ General Sessions

Invited Speakers

Keynote 1 **Values of life cycle thinking**
Junko Edahiro (Institute for Studies in Happiness, Economy and Society; Environmental Journalist, Japan)

Keynote 2 **Business strategies and environmental visions in the Hitachi**
Ryuichi Otsuki (Hitachi, Ltd., Japan)

Keynote 3 **Life cycle based sustainability solutions: How successful companies turn sustainability solutions into company benefit and business value**
Martin Baitz (PE International AG, Germany)

Closing **EcoBalance+20**
Matthias Finkbeiner (Technische Universität Berlin, Germany)
Guido Sonnemann (University of Bordeaux, France)
Kohmei Halada (National Institute for Materials Science, Japan)
Atsushi Inaba (Kogakuin University, Japan)

28A3-1 **Decision-support tools for designing sustainable chemical products and processes**
Konrad Hungerbühler (ETH Zurich, Switzerland)

28B3-2 **Hydrocarbon production from microalgae and its potential commercial use**
Makoto M Watanabe (University of Tsukuba, Japan)

28B3-3 **Mobility robot technologies in AIST for green innovation**
Osamu Matsumoto (National Institute of Advanced Industrial Science and Technology, Japan)

28C3-1 **Japanese nitrogen footprint model for the prediction of nitrogen loss to the environment**
Hideaki Shibata (Hokkaido University, Japan)

28C3-3 **Scientific robustness of including indirect land use change into life cycle assessment**
Matthias Finkbeiner (Technische Universität Berlin, Germany)

28C4-2 **Environmental impacts of organic rice farming in Thailand by using life cycle assessment to support policy decision on sustainable agriculture**
Rattanawan Mungkung (Kasetsart University, Thailand)

28C4-3 **Water footprint assessment of crops cultivation in Kurdistan Region, Iraq**
Marlia Mohd Hanafiah (National University of Malaysia, Malaysia)

28C4-4 **Life cycle assessment of biogas production in small-scale household digesters in Vietnam**
Van Thi Khanh Vu (National Institute of Animal Sciences, Viet Nam)

28D3-1 **Analyzing the carbon emissions of cloud computing facilities**
Kendra Tupper (City of Boulder, U.S.A.)

29C2-1 **A new direction for LCA: Organizational LCA**
Matthias Finkbeiner (Technische Universität Berlin, Germany)
Atsushi Inaba (Kogakuin University, Japan)

29F2-2 **Ultra-high temperature materials for higher-efficiency energy conversion of heat engines**
Kyosuke Yoshimi (Tohoku University, Japan)

29F2-3 **Advanced green innovation discovered by self-healing ceramics**
Wataru Nakao (Yokohama National University, Japan)

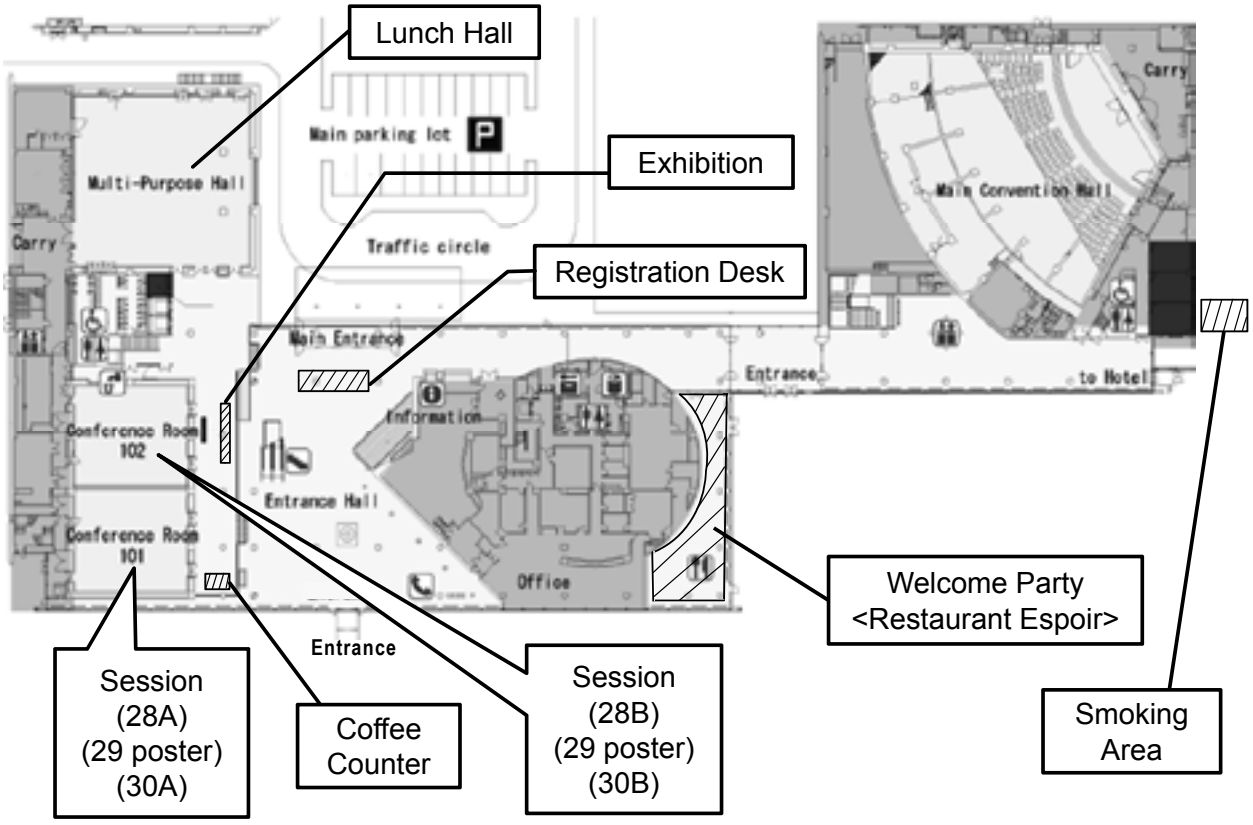
29F3-1 **Minor rare metals concentration from e-waste by combining novel comminution and physical separation**
Shuji Owada (Waseda University, Japan)

29F3-2 **Metal recovery from urban mines by hydrometallurgical methods**
Mikiya Tanaka (National Institute of Advanced Industrial Science and Technology, Japan)

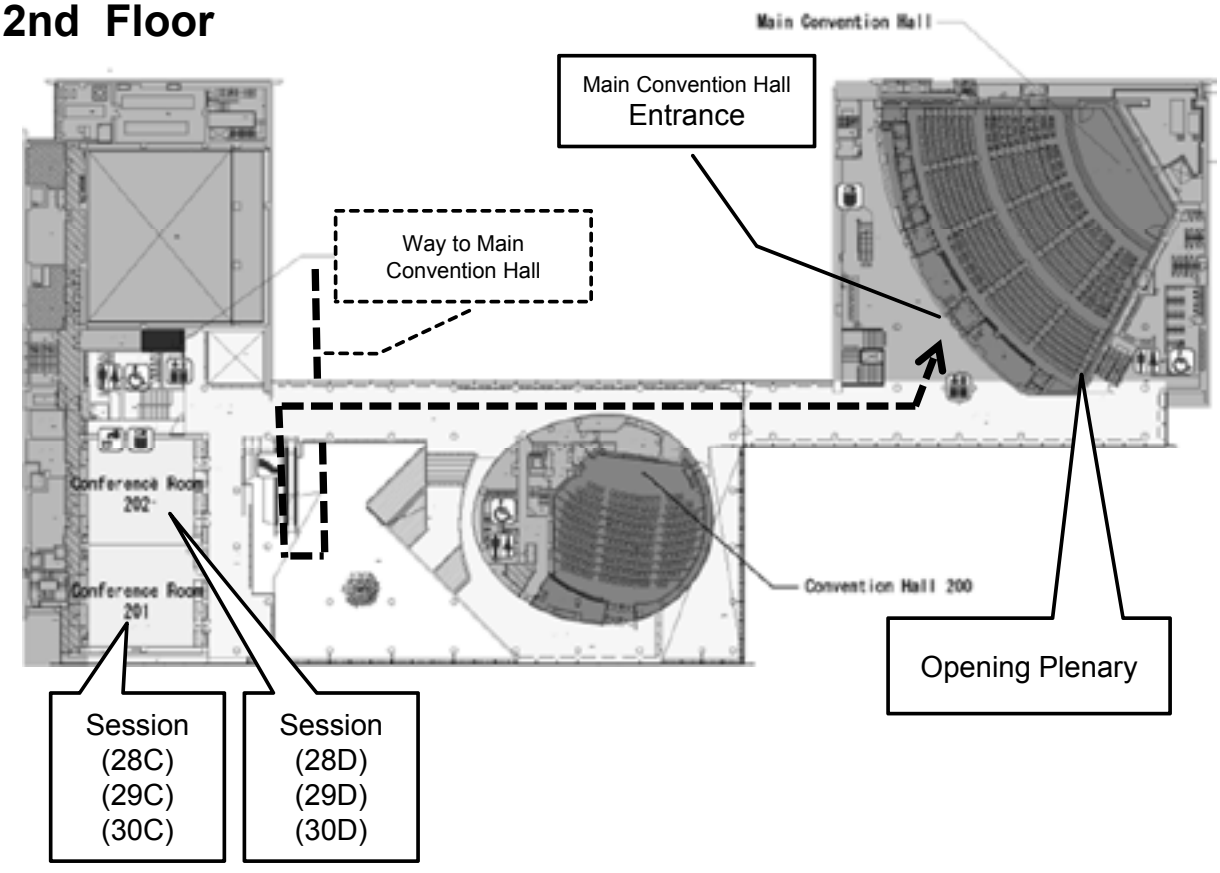
30C1-1 **Material flow cost accounting: Simple approach, untapped opportunities, upcoming tasks**
Bernd Wagner (University of Augsburg, Germany)

Conference Rooms

1st Floor

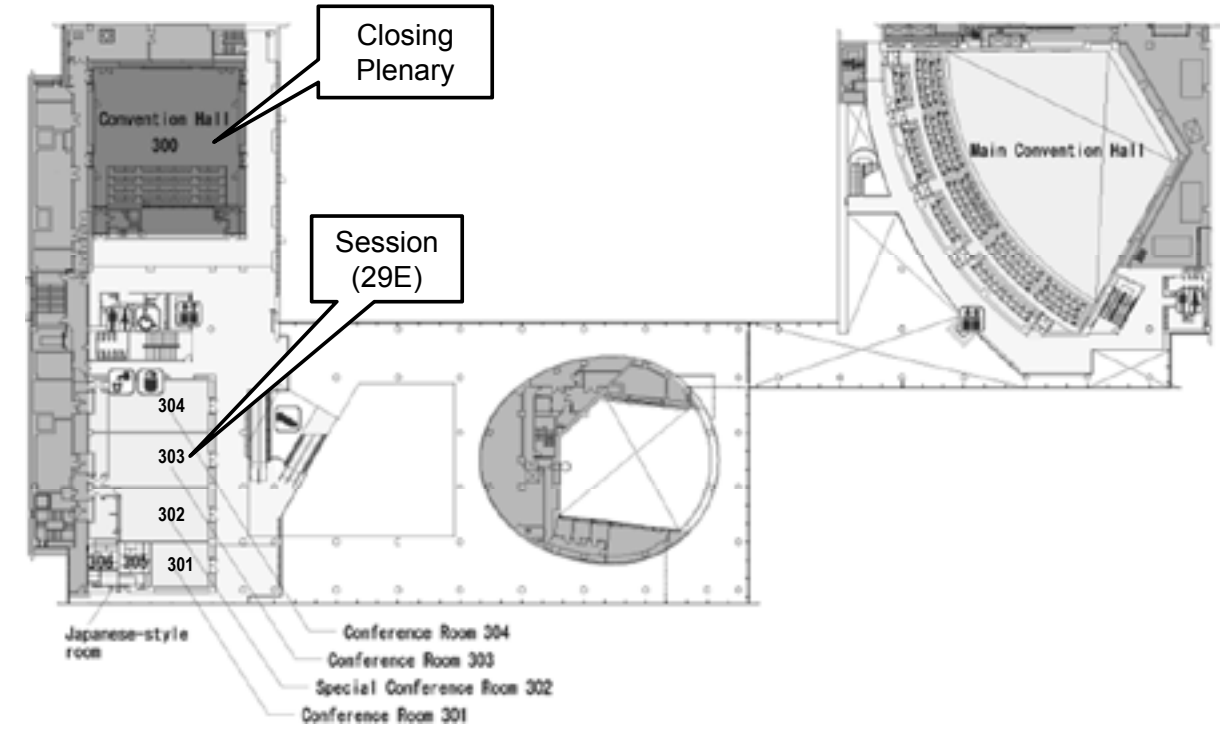


2nd Floor

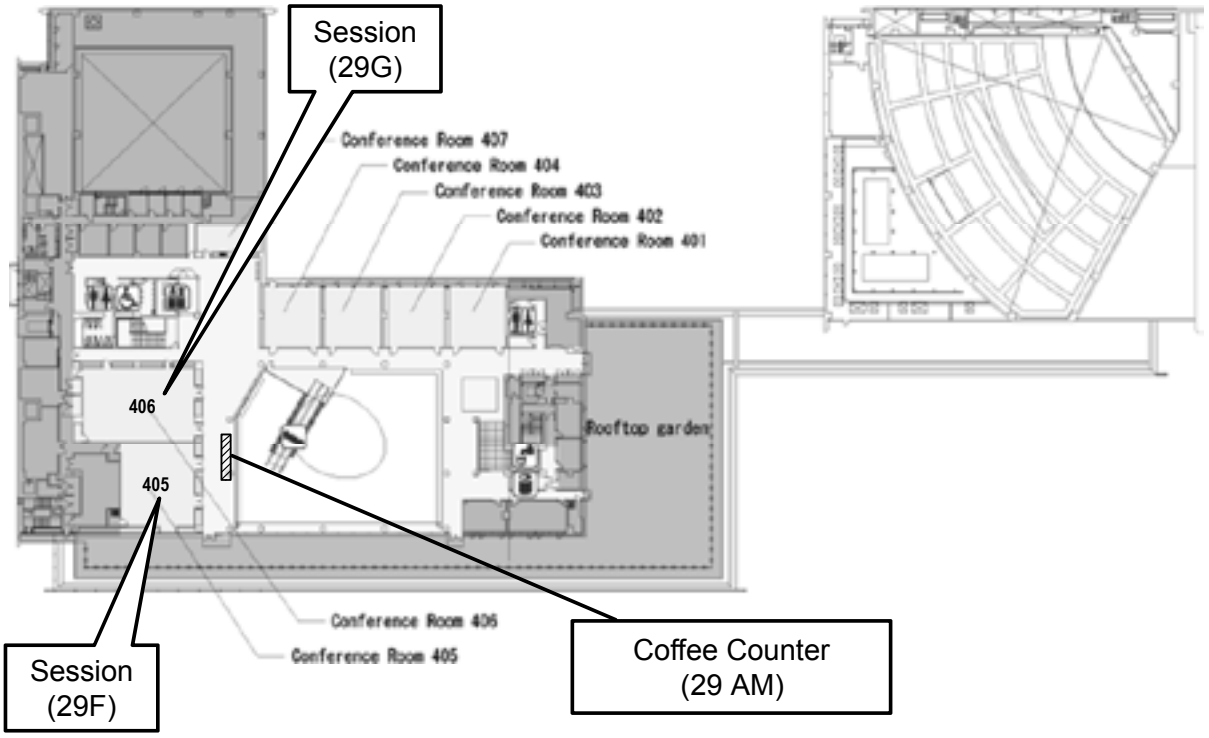


Conference Rooms

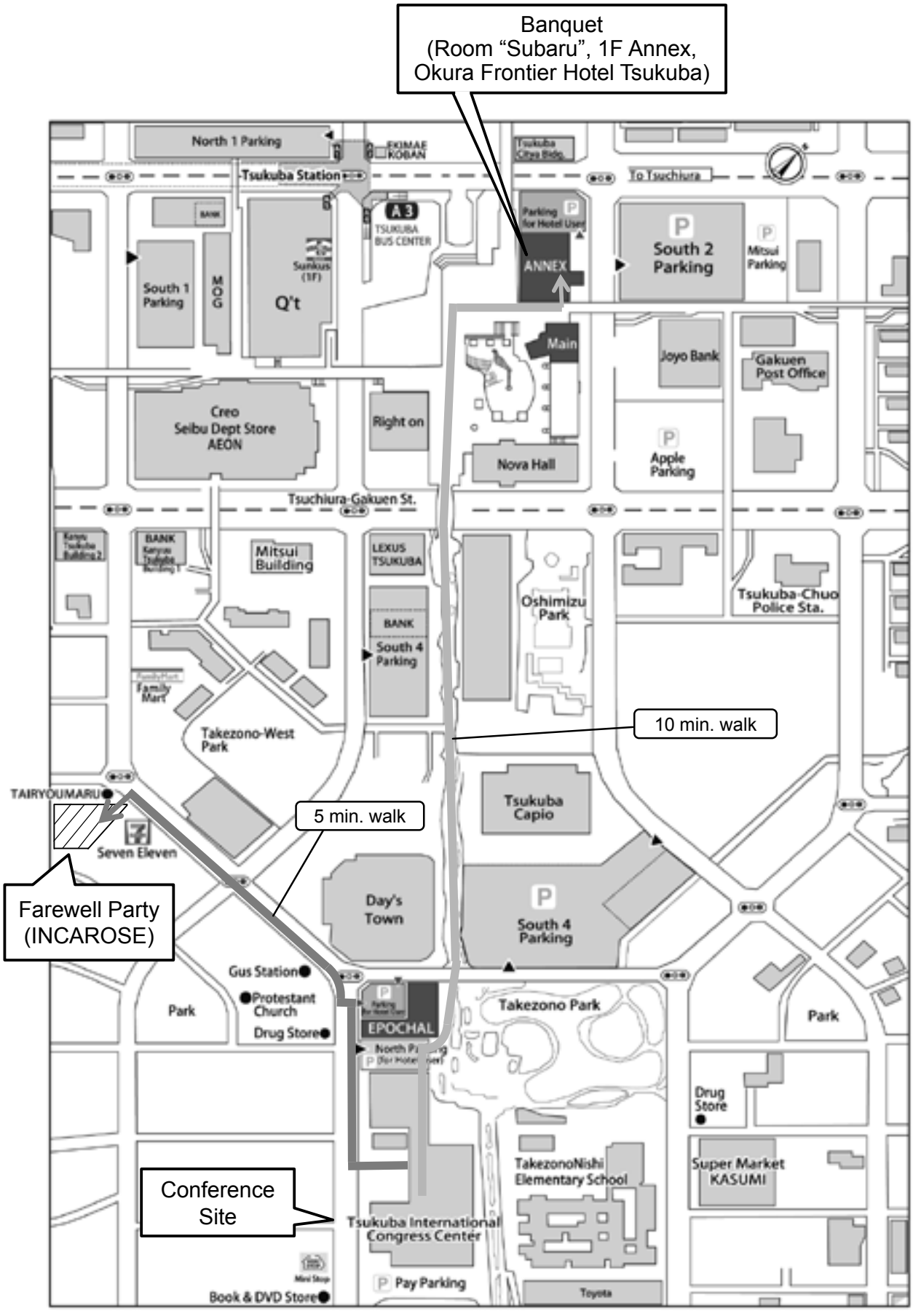
3rd Floor



4th Floor



Banquet and Farewell Party



Program

Opening Plenary

Opening Ceremony and Keynote Lectures (Main Convention Hall) 10:00－12:00 October 28, Tuesday

Chair : Y. Fukushima
Vice-chair of EcoBalance 2014

Opening address **10:00–10:05**

Yasushi Kondo
Chair of EcoBalance 2014

Welcome address **10:05–10:10**

Kenichi Ichihara
Mayor, City of Tsukuba

Keynote 1 **10:10–10:50**

Values of life cycle thinking

Junko Edahiro
Institute for Studies in Happiness, Economy and Society; Environmental Journalist, Japan

Keynote 2 **10:50–11:30**

Business strategies and environmental visions in the Hitachi

Ryuichi Otsuki
Chief Strategy Officer, Information & Telecommunication Systems Company, Hitachi, Ltd., Japan

Keynote 3 **11:30–11:50**

Life cycle based sustainability solutions: How successful companies turn sustainability solutions into company benefit and business value

Martin Baitz
Director Content, PE International, Germany

Closing address **11:50–12:00**

Shinsuke Murakami
Vice-chair of EcoBalance 2014

Closing Plenary

Special Panel Discussion and Closing Ceremony (Convention Hall 300) 13:30–16:00 October 30, Thursday

Special panel discussion **13:30–15:00**

Chair : N. Itsubo

EcoBalance+20

Matthias Finkbeiner
Professor, Department of Environmental Technology, Technical University of Berlin; Chairperson, ISO/TC 207/SC 5 Life Cycle Assessment

Guido Sonnemann
Professor, ISM-CyVi, University of Bordeaux; Co-founder and former Programme Officer, the UNEP/SETAC Life Cycle Initiative

Kohmei Halada
NIMS Invited Researcher, Research Center for Strategic Materials, National Institute for Materials Science; President, The Institute of Life Cycle Assessment, Japan

Atsushi Inaba
Professor, Department of Environmental and Energy Chemistry, Kogakuin University; Former President of The Institute of Life Cycle Assessment, Japan

Closing ceremony **15:00–16:00**

Oral Sessions

▶ October 28, Tuesday

28A3 (Room 101) 13:30－14:50 October 28, Tuesday

Sustainability in the Chemical Industry-1

Chair : H. Sugiyama and M. Yoshikiyo

28A3-1 (invited) **13:30–14:10**

Decision-support tools for designing sustainable chemical products and processes

Konrad Hungerbühler, Stavros Papadokonstantakis

ETH Zurich

28A3-3 **14:10–14:30**

Development of the risk-based management system for chemicals throughout the supply chain

Fumiaki Shono, Satoshi Tokushige

Japan Chemical Industry Association

28A3-4 **14:30–14:50**

Chemicals management for sustainability in small and medium-sized enterprises

Emi Kikuchi-Uehara, Yasunori Kikuchi, Masahiko Hirao

The University of Tokyo

28A4 (Room 101) 15:10－16:30 October 28, Tuesday

Sustainability in the Chemical Industry-2

Chair : H. Sugiyama and M. Yoshikiyo

28A4-1 **15:10–15:30**

The use of LCA as a metrics in advancing and scaling up green chemistry research: The case of black liquor

Amandine Foulet, Hervé Deleuze, Philippe Garrigues, Guido Sonnemann

University of Bordeaux

28A4-2 **15:30–15:50**

Sulphur distribution to products in wet biomass gasification

Kenji Koido, Yutaro Watanabe, Kiyoshi Dowaki

Tokyo University of Science

28A4-3 **15:50–16:10**

Estimating reduction of environmental load for resource recovery from plastic waste by LCA methodology and plastic waste processing pathways

Akihiro Izumi, Hajime Munekuni

Plastic Waste Management Institute

28A4-4 **16:10–16:30**

Applying c-LCA for challenges to global warming at Asahi Kasei Corp.

Junichi Nakahashi

Asahi Kasei Corporation

28A5 (Room 101) 16:50－18:10 October 28, Tuesday

Estimating the Contribution to Avoided Emissions

Chair : A. Inaba

28A5-1 **16:50–17:10**

Guideline on quantifying and reporting the avoided emissions of products

Motozo Yoshikiyo, Kiyoshi Kasai

Japan Chemical Industry Association

28A5-2 **17:10–17:30**

Establishment of Kawasaki mechanism, the certification program of avoided emissions outside Kawasaki city

Shoichiro Tsuruta[1)], Masayuki Kanzaki[1)], Akikazu Kobayashi[2)], Toshifumi Takamizawa[2)], Ichiro Daigo[3)]

[1)]Japan Environmental Management Association for Industry, [2)]City of Kawasaki, [3)]The University of Tokyo

28A5-3 **17:30–17:50**

Program for assessing the contribution of business activities to avoided emissions in Shiga Prefecture, Japan

Maki Ogura[1)], Takeshi Matsuda[1)], Ryota Ii[1)], Madoka Kaito[2)], Kazuomi Okuda[2)]

[1)]Pacific Consultants Co., Ltd., [2)]Shiga Prefecture

28A5-4 **17:50–18:10**

Neutralize CO_2 emissions by product contributions

Ryo Yokoyama, Tetsuya Kuwashima, Yasuyuki Fujioka, Masaru Hirose

TDK Corporation

28B3 (Room 102) 13:30－14:50 October 28, Tuesday

Tsukuba Special Session

Chair : K. Okajima

28B3-1 **13:30–13:40**

Introduction: Tsukuba Environmental Style "SMILe"

Tomokazu Ueta

City of Tsukuba

28B3-2 (invited) **13:40–14:10**

Hydrocarbon production from microalgae and its potential commercial use

Makoto M Watanabe

University of Tsukuba

28B3-3 (invited) **14:10–14:40**

Mobility robot technologies in AIST for green innovation

Osamu Matsumoto

National Institute of Advanced Industrial Science and Technology

Discussion **14:40–14:50**

Oral Sessions

28B4 (Room 102) 15:10－16:30 October 28, Tuesday

Material Flow Analysis

Chair : W.R. Poganietz

28B4-1 **15:10–15:30**

Spatial cluster analysis of global metal flows

Shigemi Kagawa[1)], Keisuke Nansai[2)], Yasushi Kondo[3)]

[1)]Kyushu University, [2)]National Institute for Environmental Studies, [3)]Waseda University

28B4-2 **15:30–15:50**

Impact of resource-use intensity of goods and services and demand structure on national resource productivity: Time series analysis for 10 countries

Arata Ito, Seiji Hashimoto

Ritsumeikan University

28B4-3 **15:50–16:10**

Selection of products for remanufacturing based on the designs of end of life products

Aditi D Joshi[1)], Surendra M Gupta[1)], Tetsuo Yamada[2)]

[1)]Northeastern University, [2)]The University of Electro-Communications

28B4-4 **16:10–16:30**

Mathematical formulation of urban mines design problem

Shinsuke Kondoh, Hitoshi Komoto, Keijiro Masui

National Institute of Advanced Industrial Science and Technology

28B5 (Room 102) 16:50－18:10 October 28, Tuesday

E-waste

Chair : G. Sonnemann

28B5-1 **16:50–17:10**

Sorted collection of used batteries and small home appliances by municipalities

Atsushi Terazono[1)], Masahiro Oguchi[1)], Shigenori Iino[2)], Satoshi Mogi[3)]

[1)]National Institute for Environmental Studies, [2)]Tokyo Metropolitan Research Institute for Environmental Protection, [3)]Bureau of Environment, Tokyo Metropolitan Government

28B5-2 **17:10–17:30**

Life cycle assessment of an automotive lithium-ion battery in large-scale commercial production

Hyung Chul Kim, Timothy J. Wallington

Ford Motor Company

28B5-3 **17:30–17:50**

The impact of demographic change in Japan on supply security footprint of critical metals

Yosuke Shigetomi[1,2,3)], Keisuke Nansai[2)], Susumu Tohno[1)]

[1)]Kyoto University, [2)]National Institute for Environmental Studies, [3)]JSPS Research Fellow

28B5-4 **17:50–18:10**

Material flow analysis of heavy metals in contaminated soil: A case study on the polluted sites in Taoyuan County, Taiwan

Rong-Hua Lee, Yuh-Ming Lee

National Taipei University

28C3 (Room 201) 13:30－14:50 October 28, Tuesday

Global Food Security and Corporate Practices from Life Cycle Perspectives-1

Chair : K. Hayashi

28C3-1 (invited) **13:30–13:50**

Japanese nitrogen footprint model for the prediction of nitrogen loss to the environment

Hideaki Shibata[1)], Lia R Cattaneo[2)], Allison M Leach[2)], James N Galloway[2)]

[1)]Hokkaido University, [2)]University of Virginia

28C3-2 **13:50–14:10**

Aggregation of biodiversity impacts across international value chains

Jan Paul Lindner[1,2)], Laura Brethauer[1,2)], Ulrike Bos[1,2)], Rainer Luick[3)], Michael Jäger[2)]

[1)]Fraunhofer IBP, [2)]University of Stuttgart, [3)]University of Applied Forest Sciences Rottenburg

28C3-3 (invited) **14:10–14:30**

Scientific robustness of including indirect land use change into life cycle assessment

Matthias Finkbeiner

Technische Universität Berlin

28C3-4 **14:30–14:50**

Future perspectives on LCA in agriculture: Lessons from the research in Japan

Masanori Saito

Tohoku University

28C4 (Room 201) 15:10－16:30 October 28, Tuesday

Global Food Security and Corporate Practices from Life Cycle Perspectives-2

Chair : M. Saito

28C4-1 **15:10–15:30**

Assessing impacts of land use change and management intensification: A life cycle perspective on agricultural production

Kiyotada Hayashi

National Agriculture and Food Research Organization

Oral Sessions

28C4-2 (invited) **15:30–15:50**

Environmental impacts of organic rice farming in Thailand by using life cycle assessment to support policy decision on sustainable agriculture

Rattanawan Mungkung, Patthra Pengthamkeerati, Ratcha Chaichana, Saranya Watcharothai, Kittiwan Kitpakornsanti, Supachok Tapananont

Kasetsart University

28C4-3 (invited) **15:50–16:10**

Water footprint assessment of crops cultivation in Kurdistan region, Iraq

Marlia Mohd Hanafiah[1)], Hushiar Raheem Hamarash[1)], Muhammad Muaz Aminordin[1)], Shabbir Gheewala[2,3)]

[1)]National University of Malaysia, [2)]The Joint Graduate School of Energy and Environment, King Mongkut's University of Technology Thonburi, [3)]Ministry of Education, Thailand

28C4-4 (invited) **16:10–16:30**

Life cycle assessment of biogas production in small-scale household digesters in Vietnam

Van Thi Khanh Vu, Quynh Duong Vu, Lars S. Jensen, Sven G. Sommer, Sander Brunn

National Institute of Animal Sciences, Vietnam

28C5 (Room 201) 16:50–18:10 October 28, Tuesday

Global Food Security and Corporate Practices from Life Cycle Perspectives-3

Chair : H.Shibata

28C5-1 **16:50–17:10**

Resource logistics for sustainable management of agricultural nutrients

Kazuyo Matsubae[1)], Kenichi Nakajima[2)], Keisuke Nansai[2)], Tetsuya Nagasaka[1)]

[1)]Tohoku University, [2)]National Institute for Environmental Studies

28C5-2 **17:10–17:30**

Monetary and physically flow analyses on products of agriculture

Yuko Oshita[1)], Yasunori Kikuchi[2)]

[1)]Kobe University, [2)]The University of Tokyo

28C5-3 **17:30–17:50**

Evaluation of environmental improvement by introduction of eco-feed

Hongqin Yu, Hiroshi Yagita

Nippon Institute of Technology

28C5-4 **17:50–18:10**

Uncertainty analysis for greenhouse gas impact of feedstuff in Korea

Yoosung Park, Minhyeok Lee, Kunmo Lee

Ajou University

28D3 (Room 202) 13:30–14:50 October 28, Tuesday

Green ICT-1

Chair : M. Hara

28D3-1 (invited) **13:30–13:50**

Analyzing the carbon emissions of cloud computing facilities

Kendra Tupper

City of Boulder

28D3-2 **13:50–14:10**

New key performance indicators for smart sustainable city

Jiro Nakamura, Minako Hara

NTT Energy and Environment Systems Laboratories

28D3-3 **14:10–14:30**

Social impact assessment of ICT services: Case study and tool realization

Julien Boisseau[1)], Tomoko Tanaka[1)], Ahmed Zeddam[1)], Kazue Takahashi[2)], Takashi Sawada[2)]

[1)]Orange Japan, [2)]NTT Energy and Environment Systems Laboratories

28D3-4 **14:30–14:50**

Multiple environmental impact assessment method on biodiversity for industry

Kazue Ichino Takahashi[1)], Eri Matsunaga[1)], Takashi Sawada[1)], Norihiro Itsubo[2)], Masaharu Motoshita[3)], Kayo Murakami[4)]

[1)]NTT Energy and Environment Systems Laboratories, [2)]Tokyo City University, [3)]National Institute of Advanced Industrial Science and Technology, [4)]Kyoto University

28D4 (Room 202) 15:10–16:30 October 28, Tuesday

Green ICT-2

Chair : K. Tupper

28D4-1 **15:10–15:30**

Case study on effect of mechanics development of telecommunication product on material efficiency

Lauri Smalén[1)], Elisabeth Dechenaux[2)], Topi Volkov[1)], Timo Galkin[1)], Timo Junno[1)], Heikki Karvinen[3)], Marc Aubree[2)]

[1)]Nokia Solutions and Networks, [2)]Orange Labs, [3)]Aalto University

28D4-2 **15:30–15:50**

Five IT thoughts from a waste management proof-of-concept project

Yukihisa Yonemochi, Takashi Sakairi, Hiroshi Horii, Tatsuya Ishikawa, Scott Trent, Heather D Achilles

IBM Research

28D4-3 **15:50–16:10**

Environmental footprint for IT equipment

Takaaki Kumazawa, Osamu Namikawa

Hitachi, Ltd.

Oral Sessions

28D4-4 **16:10–16:30**

Analysis of influence of ICT services including application-service and network-service on CO_2 emission

Jiro Nakamura, Tomomi Nagao, Yuichiro Takei, Atsushi Sakurai, Shinsuke Hannoe, Keiichi Saito

NTT Energy and Environment Systems Laboratories

28D5 (Room 202) 16:50 – 18:10 October 28, Tuesday

Driving innovation

Chair : M. Sagisaka

28D5-1 **16:50–17:10**

Measuring social impacts of products: The Handbook of the Roundtable for Social Metrics

João Fontes, Mark Goedkoop, Anne Gaasbeek

PRé Consultants B.V.

28D5-2 **17:10–17:30**

Policies promoting ecodesign for energy and resource efficiency in Europe: Experiences, barriers and future options

Carl Johan Dalhammar

Lund University

28D5-3 **17:30–17:50**

Reverse flow of knowledge and the development of sustainable energy systems

Harald Ernst Otto

Polytechnic University of Marche

28D5-4 **17:50–18:10**

The international diffusion of environmental innovations: Streamlining the dissemination mechanisms across Asian nations

Helmut Friedrich Yabar[1)], Michinori Uwasu[2)], Keishiro Hara[2)]

[1)]University of Tsukuba, [2)]Osaka University

Oral Sessions

▶ October 29, Wednesday

29C1 (Room 201) 9:00–10:20 October 29, Wednesday

The Practical Challenge for Sustainable Industry-1

Chair : M. Motoshita

29C1-1 **9:00–9:20**

Hitachi's CO_2 visualization effort

Tetsuichi Nomiyama, Hitoshi Maekawa

Hitachi, Ltd.

29C1-2 **9:20–9:40**

Challenges to biofuel production enhancing food production: A food and beverage alcohol company perspective

Satoshi Ohara, Akira Sugimoto, Kazutoshi Kitai, Takaomi Yasuhara

Asahi Group Holdings, Ltd.

29C1-3 **9:40–10:00**

Experience of EPD process certification

Lucia Rigamonti[1)], Mario Grosso[1)], Mino Leo Marucci[2)]

[1)]Politecnico di Milano, [2)]Reno De Medici S.p.A.

29C1-4 **10:00–10:20**

Policy options for LCA deployment in automotive industry

Annekatrin Lehmann[1)], Matthias Finkbeiner[1)], Kirana Wolf[1)], Cees ten Broek[2)]

[1)]Technische Universität Berlin, [2)]World Steel Association

29C2 (Room 201) 10:40–12:00 October 29, Wednesday

The Practical Challenge for Sustainable Industry-2

Chair : M. Nakajima

29C2-1 (invited) **10:40–11:00**

A new direction for LCA: Organizational LCA

Matthias Finkbeiner[1)], Julia Martínez-Blanco[1)], Atsushi Inaba[2)]

[1)]Technische Universität Berlin, [2)]Kogakuin University

29C2-2 **11:00–11:20**

Guidance on organizational LCA by the UNEP/SETAC Life Cycle Initiative

Julia Martínez-Blanco[1)], Sonia Valdivia[2)], Ana Quiros[3)], Llorenç Milà i Canals[5)], Atsushi Inaba[4)], Matthias Finkbeiner[1)]

[1)]Technische Universität Berlin, [2)]World Resources Forum, [3)]ECOGLOBAL, [4)]Kogakuin University, [5)]UNEP-SETAC Life Cycle Initiative

29C2-3 **11:20–11:40**

Activity to evaluate a positive impact of an organization

Seiya Yamazaki, Hiroko Ioka, Takafumi Hashitani

Fujitsu limited

29C2-4 **11:40–12:00**

Proposal for a supplementary calculation method for scope 3 emissions

Sachiko Motoike, Hideki Sasaki, Hiroshi Onishi

Panasonic Corporation

29C3 (Room 201) 13:30–14:50 October 29, Wednesday

The Practical Challenge for Sustainable Industry-3

Chair : M. Motoshita

29C3-1 **13:30–13:50**

Estimating multiple changes of GHG emissions on mitsubishi electric group's supply chain; category11-possible variation of GHG during use stage

Chie Uchiyama

Mitsubishi Electric Corporation

29C3-2 **13:50–14:10**

What allocation method should be taken to provide the data for SCOPE3 by supplier to customer? An example of the printing company

Hiromichi Sasaki, Nobuyasu Tanaka

Sun Messe Co., Ltd.

29C3-3 **14:10–14:30**

Water consumption evaluation along the supply chain

Junichi Nakahashi

Asahi Kasei Corporation

29C3-4 **14:30–14:50**

Supply-chain environmental assessment for sustainable procurement

Kenji Ohashi

Shiseido Co., ltd.

29D1 (Room 202) 9:00–10:20 October 29, Wednesday

LCA Methodology

Chair : Y-M. Lee

29D1-1 **9:00–9:20**

GreenGDP study based on life cycle impact assessment of refinery sector in Thailand

Kultida Kunanuntakij[1)], Viganda Varabuntoonvit[1)], Natanee Vorayos[2)], Thumrongrut Mungcharoen[1)]

[1)]Kasetsart University, [2)]ChiangMai University

29D1-2 **9:20–9:40**

Fast screening of alternative life cycles and system optimization using flexibly linkable process subsystems

Bernhard Steubing, Chris Mutel, Florian Suter, Stefanie Hellweg

ETH Zurich

Oral Sessions

29D1-3 **9:40–10:00**

Investigation of the differences between static and probabilistic LCA/LCC results of different floor finishes

Gantner Johannes[1)], William Fawcett[2)], Matthias Fischer[3)]
[1)]University of Stuttgart, [2)]Cambridge Architectural Research Ltd, [3)]Fraunhofer IBP

29D1-4 **10:00–10:20**

Supporting uncertainty evaluation in prospective assessment of innovations: A case on ecological method in shrimp farming

Heng Yi Teah[1)], Yasuhiro Fukushima[1)], Motoharu Onuki[2)]
[1)]National Cheng Kung University, [2)]The University of Tokyo

29D2 (Room 202) 10:40–12:00 October 29, Wednesday

Supply Chain Risk Management

Chair : K. Tahara

29D2-1 **10:40–11:00**

Development of supply-chain matrix database with IDEA aiming for the application to consequential LCA

Kiyotaka Tahara[1)], Masaharu Motoshita[1,3)], Kotaro Kawajiri[1)], Hiroki Hatayama[1)], Chunyoul Baek[1)], Tomohiko Ihara[2)]
[1)]National Institute of Advanced Industrial Science and Technology, [2)]The University of Tokyo, [3)]Technische Universität Berlin

29D2-2 **11:00–11:20**

Resolution of nuclear power plant construction conflicts: Argument of tsunami issues through concept mapping and lifecycle thinking

Ting-Fang Hsieh, Yuh-Ming Lee
National Taipei University

29D2-3 **11:20–11:40**

LCA system boundary selection using the industrial clustering analysis

Shunsuke Okamoto
Kyushu University

29D2-4 **11:40–12:00**

Assessing climate impact of industrial symbioses: A dynamic approach

François Dumoulin[1,2)], Tom Wassenaar[1)], Jean-Marie Paillat[1)]
[1)]CIRAD, [2)]ADEME

29D3 (Room 202) 13:30–14:50 October 29, Wednesday

City & Building

Chair : T. Ikaga

29D3-1 **13:30–13:50**

Towards a low-carbon future in China's rural residential sector

Rui Xing, Tatsuya Hanaoka, Yuko Kanamori, Hancheng Dai, Toshihiko Masui
National Institute for Environmental Studies

29D3-2 **13:50–14:10**

Exploring intersection of product lifecycles: GHG emissions associated with vehicles and pavement influenced by pavement maintenance strategies

Yasuhiro Fukushima, Fitria, Shih-Hsien Yang
National Cheng Kung University

29D3-3 **14:10–14:30**

A cradle-to-cradle assessment framework for green building evaluation: Emphases on energy management and resource recovery

Chia-Lin Hsu, Yuh-Ming Lee
National Taipei University

29D3-4 **14:30–14:50**

A life cycle assessment of silica sand: Comparing the beneficiation processes

Anamarija Grbes
Faculty of Mining, Geology and Petroleum Engineering, Zagreb, Croatia

29E1 (Room 303) 9:00–10:20 October 29, Wednesday

Behavior & Policy

Chair : H. Hondo

29E1-1 **9:00–9:20**

A life cycle thinking assessment framework for land reclamation policy in Taiwan

Lih-Ren Liu, Yuh-Ming Lee
National Taipei University

29E1-2 **9:20–9:40**

Constructing a system thinking model for climate policy making based on national GHG inventory

Yu-Tsang Lu, Yuh-Ming Lee
National Taipei University

29E1-3 **9:40–10:00**

Evaluating the change of psychological factors and pro-environmental behaviors through workshop about life cycle thinking and norms

Eri Aoki, Kiyo Kurisu, Keisuke Hanaki
The University of Tokyo

Oral Sessions

29E1-4 **10:00–10:20**

People's environmental consciousness in daily activities

Ai Hiramatsu, Kiyo Kurisu

The University of Tokyo

29E2 (Room 303) 10:40–12:00 October 29, Wednesday

Policy & Visualization

Chair : K. Nansai

29E2-1 **10:40–11:00**

Visualizing core structure of international carbon network associated with household consumption

Yasushi Kondo

Waseda University

29E2-2 **11:00–11:20**

Life cycle inventory database and its applications to support public policy in Thailand

Thumrongrut Mungcharoen[1,2], Thumrongrut Mungcharoen[1,2]

[1]National Science and Technology Development Agency, [2]Kasetsart University

29E2-3 **11:20–11:40**

Thai CF Pro: A web-based program for evaluating carbon footprint of product

Chantana Yuvaniyama[1], Wanwisa Thanungkano[1], Ruthairat Wisansuwannakorn[1], Athiwatr Jirajariyavech[1], Thepchai Supnithi[2], Nattapol Kritsuthikul[2], Thumrongrut Mungcharoen[3]

[1]National Metal and Materials Technology Center, [2]National Electronics and Computer Technology Center, [3]National Science and Technology Development Agency

29E2-4 **11:40–12:00**

Visualization of comprehensive environmental impacts

Yoshinori Kobayashi, Kiyoshi Sanehira

Toshiba Corporation

29E3 (Room 303) 13:30–14:50 October 29, Wednesday

Agriculture & Foods

Chair : R. Mungkung

29E3-1 **13:30–13:50**

Life cycle assessment of environmental impacts of crop residue management and manure application in Japanese rice cultivation

Ai Leon, Yasuhito Shirato, Shin-ichi Yoshimatsu, Seiya Tsushima, Kazuyuki Yagi, Kazunori Kohyama

National Institute for Agro-Environmental Sciences

29E3-2 **13:50–14:10**

Total material requirement of food production and related materials in Japan

Eiji Yamasue[1], Kazuyo Matsubae[2], Keiichi N Ishihara[1]

[1]Kyoto University, [2]Tohoku University

29E3-3 **14:10–14:30**

Land use change related CO_2 emissions in the LCA of biofuel-based electrification in Mali

Joana Almeida[1], Jeroen Degerickx[1], Wouter M J Achten[2], Bart Muys[1]

[1]KU Leuven, [2]Universite Libre de Bruxelles

29E3-4 **14:30–14:50**

Ecoefficiency analysis of integrated and non-integrated crop, forestry and livestock production systems in the Brazilian Cerrado

Marcela Porto Costa[1,2], Sueli Aparecida de Oliveira[1], Gerson Araujo de Medeiros[2]

[1]FEE- Espaço ECO Foundation- BASF, [2]UNESP- Universidade Estadual Paulista Julio de Mesquita Filho -Sorocaba

29F1 (Room 405) 9:00–10:20 October 29, Wednesday

Sustainability of Materials and Industries-1

Chair : Y. Matsuno

29F1-1 **9:00–9:20**

How much does urban mining reduce the environmental burden?

Kohmei Halada

National Institute for Material Science

29F1-2 **9:20–9:40**

Designing strategic urban mining in Japan for criticality mitigation

Hiroki Hatayama[1], Kiyotaka Tahara[1], Ichiro Daigo[2]

[1]National Institute of Advanced Industrial Science and Technology, [2]The University of Tokyo

29F1-3 **9:40–10:00**

Comparison of end-of-life recycling rates of common metals in Japan

Ichiro Daigo, Kohei Iwata, Yoshikazu Goto

The University of Tokyo

29F1-4 **10:00–10:20**

Framework and applications of time-series material flow and stock analysis

Shotaro Nakanishi, Jun Nakatani, Yuichi Moriguchi

The University of Tokyo

Oral Sessions

29F2 (Room 405) 10:40－12:00 October 29, Wednesday

Sustainability of Materials and Industries-2

Chair : H. Kakisawa

29F2-1 **10:40–11:00**

Value added material flow analysis of NdFeB magnets in Denmark

Komal Habib, Henrik Wenzel

University of Southern Denmark

29F2-2 (invited) **11:00–11:20**

Ultra-high temperature materials for higher-efficiency energy conversion of heat engines

Kyosuke Yoshimi

Tohoku University

29F2-3 (invited) **11:20–11:40**

Advanced green innovation discovered by self-healing ceramics

Wataru Nakao

Yokohama National University

29F2-4 **11:40–12:00**

Environmental barrier coating on SiC fiber-reinforced SiC matrix composites for low pressure turbine in jet engine

Hideki Kakisawa

The University of Tokyo

29F3 (Room 405) 13:30－14:50 October 29, Wednesday

Sustainability of Materials and Industries-3

Chair : K. Halada

29F3-1 (invited) **13:30–13:50**

Minor rare metals concentration from e-waste by combining novel comminution and physical separation

Shuji Owada, Chiharu Tokoro

Waseda University

29F3-2 (invited) **13:50–14:10**

Metal recovery from urban mines by hydrometallurgical methods

Mikiya Tanaka[1)], Hirokazu Narita[1)], Tetsuo Oishi[1)], Takeshi Ogata[1)], Yuiko Tasaki Handa[1)], Kazuya Koyama[1,2)]

[1)]National Institute of Advanced Industrial Science and Technology, [2)]Chiba Institute of Technology

29F3-3 **14:10–14:30**

Development of new processes for precious metals recovery using organic aqua regia

Kana Umehara, Akihiro Yoshimura, Yasunari Matsuno

The University of Tokyo

29F3-4 **14:30–14:50**

A recycling system for poly (methyl methacrylate) in Japan

Yasunori Kikuchi[1)], Masahiko Hirao[1)], Hirokazu Sugiyama[1,2)], Stavros Papadokonstantakis[2)], Konrad Hungerbühler[2)], Takashi Ookubo[3)], Akinobu Sasaki[3)]

[1)]The University of Tokyo, [2)]ETH Zurich, [3)]Mitsubishi Rayon, Co., Ltd.

29G1 (Room 406) 9:00－10:20 October 29, Wednesday

Energy-1

Chair : K. Okajima

29G1-1 **9:00–9:20**

Life cycle inventory of energy technologies: Survey and application to energy scenarios

Andrew John Chapman, Benjamin Craig McLellan, Tetsuo Tezuka

Kyoto University

29G1-2 **9:20–9:40**

Network theory integrated life cycle assessment for an electric power system

Heetae Kim, Petter Holme

Sungkyunkwan University

29G1-3 **9:40–10:00**

Life cycle greenhouse gas emission and land use change impact on compressed natural gas as alternative vehicle fuel in Thailand

Worayut Saibuatrong, Viganda Varabuntoonvit, Thumrongrut Mungcharoen

Kasetsart University

29G1-4 **10:00–10:20**

Life cycle assessment of biodiesel in Hong Kong

Ya Hong Dong, S. Thomas Ng

The University of Hong Kong

29G2 (Room 406) 10:40－12:00 October 29, Wednesday

Energy-2

Chair : K. Dowaki

29G2-1 **10:40–11:00**

Ecological effects from operating a biomass power plant

Akito Murano[2)], Satoshi Nakano[3)], Ayu Washizu[1)]

[1)]Waseda University, [2)]Toyo University, [3)]The Japan Institute for Labour Policy and Training

Oral Sessions

29G2-2 **11:00–11:20**

Load flexible power plant concepts: A comparative analysis from a life-cycle perspective

Witold Roger Poganietz[1)], Yasushi Kondo[2)],
Hans-Joachim Gehrmann[1)], Shinichiro Nakamura[2)]
[1)]Karlsruhe Institute of Technology, [2)]Waseda University

29G2-3 **11:20–11:40**

An analysis of LCI and fuel cost due to Blue Tower process based on the low power purification system

Rui Ohkubo[1)], Mitsuo Kameyama[2)], Yutaro Watanabe[1)],
Kenji Koido[1)], Kiyoshi Dowaki[1)]
[1)]Tokyo University of Science, [2)]Japan Blue Energy Co.,Ltd.

29G2-4 **11:40–12:00**

Small hydro power plants: A modular LCA approach for optimization

Beatrix F. Becker, Liselotte Schebek
Technische Universität Darmstadt

Oral Sessions

▶ October 30, Thursday

30A1 (Room 101) 9:00－10:20 October 30, Thursday

Sustainable Resource Management-1

Chair : B. McLellan

30A1-1 **9:00–9:20**

Global flow of nickel: Identifying its supply chain and implication for sustainable resource management

Kenichi Nakajima[1)], Keisuke Nansai[1)], Hiroya Yamano[1)], Kazuyo Matsubae[2)], Shinsuke MURAKAMI[3)], Yuto OHTSUKA[2)], Yasunori IWATSUKI[3)], Tetsuya NAGASAKA[2)]

[1)]National Institute for Environmental Studies, [2)]Tohoku University, [3)]The University of Tokyo

30A1-2 **9:20–9:40**

Sustainability of rare metal supply chains from unconventional resources

Glen D Corder[1)], Saleem Ali[1,3)], Artem Golev[1)], Benjamin C McLellan[1,2)]

[1)]The University of Queensland, [2)]Kyoto University, [3)]University of Vermont

30A1-3 **9:40–10:00**

Refinement of a simulation model to analyze the formation of urban mines with demonstrative experiments

Hitoshi Komoto, Shinsuke Kondoh, Keijiro Masui

National Institute of Advanced Industrial Science and Technology

30A1-4 **10:00–10:20**

Quality-oriented end-of-life vehicle scrap recycling aimed at efficient utilization of steel alloying elements

Hajime Ohno[1)], Kazuyo Matsubae[1)], Kenichi Nakajima[2)], Yasushi Kondo[3)], Shinichiro Nakamura[3)], Tetsuya Nagasaka[1)]

[1)]Tohoku University, [2)]National Institute for Environmental Studies, [3)]Waseda University

30A2 (Room 101) 10:40－12:00 October 30, Thursday

Sustainable Resource Management-2

Chair : G.D. Corder

30A2-1 **10:40–11:00**

Measuring supply risk footprints of critical metals for Japanese goods and services

Keisuke Nansai[1)], Kenichi Nakajima[1)], Shigemi Kagawa[2)], Yasushi Kondo[3)]

[1)]National Institute for Environmental Studies, [2)]Kyushu University, [3)]Waseda University

30A2-2 **11:00–11:20**

Material flow of cobalt in Taiwan

Lu-Yen Chen, Shun-Tian Huang, Yu-Wen Huang

National United University

30A2-3 **11:20–11:40**

Sustainability and stakeholder interaction in deep ocean mineral resources

Benjamin Craig McLellan[1,2)]

[1)]Kyoto University, [2)]University of Queensland

30A2-4 **11:40–12:00**

Indicators for environmental impacts at mine sites -case studies for large-scale underground mines

Shinsuke Murakami[1)], Tsuyoshi Adachi[2)], Yoshihiko Wada[3)], Satoshi Kojima[4)]

[1)]The University of Tokyo, [2)]Akita University, [3)]Doshisha University, [4)]Institute for Global Environmental Strategies

30B1 (Room 102) 9:00－10:20 October 30, Thursday

Waste Management & Recycling-1

Chair : Y. Oshita

30B1-1 **9:00–9:20**

Repercussion effects of final consumption on production and environmental loads using a China-Japan waste input-output table

Makiko Tsukui[1)], Chen Lin[2)]

[1)]Tokyo International University, [2)]Shandong University

30B1-2 **9:20–9:40**

The implementation of financial incentive on single-use takeout cup source reduction and recycling in Taiwan

Wei-Kai Yang, Ying-Hsuan Lin, Chih-Ku Chen

Sustainable Environmental Technology and Management Co., Ltd.

30B1-3 **9:40–10:00**

Environmental impacts assessment of plastic waste in Thailand

Unchalee Suwanmanee[1)], Thanawadee Leejarkpai[2)], Shinatiphkorn Pongpinyopap[3)], Thumrongrut Mungcharoen[3)]

[1)]Srinakharinwirot University, [2)]National Metal and Materials Technology Center, [3)]Kasetsart University

30B1-4 **10:00–10:20**

Assessing environmental impact of fiber reinforced plastic table top product mixed with non-metallic fraction from printed circuit board waste

Sawanya Jareemit[1)], Suphaphat Kwonpongsagoon[1)], Premrudee Kanchanapiya[2)]

[1)]Mahidol University, [2)]National Metal and Materials Technology Center

Oral Sessions

30B2 (Room 102) 10:40－12:00 October 30, Thursday

Waste Management & Recycling-2

Chair : R. Inaba

30B2-1 **10:40–11:00**

WEEE management in Lombardia region (Italy): An LCA-based evaluation

Laura Biganzoli, Alida Falbo, Federica Forte, Lucia Rigamonti, Mario Grosso

Politecnico di Milano

30B2-2 **11:00–11:20**

Evaluation of environmental effects of recycling of waste from food supply chains using the integrated hybrid analysis

Tamon Maruyama, Jun Nakatani, Yuichi Moriguchi

The University of Tokyo

30B2-3 **11:20–11:40**

Life cycle assessment of municipal solid waste management towards sustainable development in developing countries: A case study of Hanoi metropolitan city, Vietnam

Thanh Trung Hoang[1,2)], Yabar Helmut[1)], Higano Yoshiro[1)]

[1)]University of Tsukuba, [2)]Vietnam Institute of Meteorology, Hydrology and Environment

30B2-4 **11:40–12:00**

Climate co-benefit from improving food waste management: A case of small communities in Thailand

Amornchai Challcharoenwattana, Chanathip Pharino

Chulalongkorn University

30C1 (Room 201) 9:00－10:20 October 30, Thursday

The Practical Challenge for Sustainable Industry-4

Chair : M. Nakajima

30C1-1 (invited) **9:00–9:20**

Material Flow Cost Accounting: Simple approach, untapped opportunities, upcoming tasks

Bernd Wagner

University of Augsburg

30C1-2 **9:20–9:40**

Extending raw material input evaluation in the MFCA framework through implementation of criticality assessments

Christoph Helbig, Christoph Kolotzek, Andrea Thorenz, Axel Tuma

University of Augsburg

30C1-3 **9:40–10:00**

Cost accounting instruments as components in a material flow analysis tool-chain

Andreas Moeller[1)], Martina Prox[2)]

[1)]Leuphana University Lueneburg, [2)]ifu Hamburg GmbH

30C1-4 **10:00–10:20**

New challenge to develop sustainable value chain management by MFCA information

Michiyasu Nakajima, Asako Kimura

Kansai University

30C2 (Room 201) 10:40－12:00 October 30, Thursday

The Practical Challenge for Sustainable Industry-5

Chair : M. Finkbeiner

30C2-1 **10:40–11:00**

Integrating LCA into a design innovation method

Jeremy Faludi

University of California, Berkeley

30C2-2 **11:00–11:20**

Product and organisation environmental footprint: Challenges in theory and practice

Annekatrin Lehmann, Vanessa Bach, Matthias Finkbeiner

Technische Universität Berlin

30C2-3 **11:20–11:40**

20 years of LCA development, have we understood the user needs?

Mark Goedkoop

PRé Consultants B.V.

Discussion **11:40-12:00**

30D1 (Room 202) 9:00－10:20 October 30, Thursday

Water-1

Chair : M. Motoshita

30D1-1 **9:00–9:20**

The significance of land use effects on groundwater resource availability in Japan

Masaharu Motoshita[1,2)], Stephan Pfister[3)], Brad Ridoutt[4)], Yuya Ono[5)], Kiyotaka Tahara[1)], Atsushi Inaba[6)]

[1)]National Institute of Advanced Industrial Science and Technology, [2)]Technische Universität Berlin, [3)]ETH Zurich, [4)]The Commonwealth Scientific and Industrial Research Organisation, [5)]Tokyo City University, [6)]Kogakuin University

30D1-2 **9:20–9:40**

Human health impact models from water use: Comparing to better harmonize

Anne-Marie Boulay[1)], Masaharu Motoshita[2)], Stephan Pfister[3)], Cecile Bulle[1)], Manuele Margni[1)]

[1)]CIRAIG, Ecole Polytechnique, [2)]National Institute of Advanced Industrial Science and Technology, [3)]ETH Zurich

Oral Sessions

30D1-3 **9:40–10:00**

Functional mapping for sustainable consumption: An example through drinking water consumption

Sébastien M.R. Dente, Seiji Hashimoto
Ritsumeikan University

30D1-4 **10:00–10:20**

Economic water productivity of polylactic acid (PLA) production chain in Thailand

Shinatiphkorn Pongpinyopap[1)], Unchalee Suwanmanee[2)], Thumrongrut Mungcharoen[1)]
[1)]Kasetsart University, [2)]Srinakharinwirot University

30D2 (Room 202) 10:40–12:00 October 30, Thursday

Water-2

Chair : A.-M. Boulay

30D2-1 **10:40–11:00**

Environmental life cycle emissions for vegetable oil microemulsion-based biofuels

Noulkamol Arpornpong[1)], Ampira Charoensaeng[1)], Virin Kittithammavong[1)], David A. Sabatini[2)], Sutha Khaodhiar[1)]
[1)]Chulalongkorn University, [2)]The University of Oklahoma

30D2-2 **11:00–11:20**

Life cycle assessment of biofuels and the issue of indirect land use change

Liselotte Schebek, Yalda Cikovani
Technische Universität Darmstadt

30D2-3 **11:20–11:40**

Evaluation of uncertainty in for- and background systems: A case study of municipal wastewater treatment plant

Hiroko Yoshida, Charlotte Schuetz, Thomas H Christensen
Technical University of Denmark

30D2-4 **11:40–12:00**

Basin-scale multi-objective optimization of water and wastewater systems considering global and regional impacts

Seiya Maki, Jun Nakatani, Kiyo Kurisu, Keisuke Hanaki
The University of Tokyo

Poster Sessions

P-001 Life cycle based sustainability solutions: How successful companies turn sustainability solutions into company benefit and business value

Martin Baitz[1)], Masahiro Osumi[2)], Hatori Yukiyoshi[2)], Harald Florin[1)]

[1)]PE International AG, [2)]PE Asia Corporation

P-002 Guidance to assess avoided emissions of GHGs

Atsushi Inaba[2)], Masaharu Motoshita[1,3)]

[1)]National Institute of Advanced Industrial Science and Technology, [2)]Kogakuin University, [3)]Technische Universität Berlin

P-003 Life cycle inventory analysis for environmental footprints: Case study on skin-care and cosmetic products

Hsin-jui Wu, Yuh-Ming Lee

National Taipei University

P-004 Estimation of the workload of calculating GHG emissions of scope 3

Hideki Sasaki, Sachiko Motoike, Hiroshi Onishi

Panasonic Corporation

P-005 An adaptive implementation framework for constructing a green and livable environment

Hui-Ting Tang, Yuh-Ming Lee

National Taipei University

P-006 Application of life cycle assessment and economic rationality: A cost survey

Tomohiro Tasaki[1)], Koichi Shobatake[2)], Ken-ichi Nakajima[1)], Carl Dalhammar[3)]

[1)]National Institute for Environmental Studies, [2)]TCO2 Co. Ltd., [3)]Lund University

P-007 SCOPE3 of Kogakuin University

Atsushi Inaba[1)], Ko Miyata[1)], Koji Tanaka[2)]

[1)]Kogakuin University, [2)]es.feed

P-008 Life-cycle co-benefit of industrial and regional symbiosis: Environmental input-output analysis on typical resource dependent city in China

Liang Dong[1,2)], Tsuyoshi Fujita[1)], Minoru Fujii[1)], Satoshi Ohnishi[1)], Takuya Togawa[1)], Huijuan Dong[1)]

[1)]National Institute for Environmental Studies, [2)]Nagoya University

P-009 Symbiosis of OTEC deep water upwelling & ocean aquaculture

Leighton K. Chong, Tetsuzan Benny Ron

Blue Revolution Hawaii, Inc.

P-010 Projection of demand and supply change of first generation biomass

Yuri Hirako, Kenji Koido, Kiyoshi Dowaki

Tokyo University of Science

P-011 Decision supporting tool for sustainable dairy cow system

Chun-Youl Baek[1)], Kiyotaka Tahara[1)], Kun-Mo Lee[2)], Kyu-Hyun Park[3)]

[1)]National Institute of Advanced Industrial Science and Technology, [2)]Ajou University, [3)]Kangwon National University

P-012 Domestic consumption and household stock storage media in Japan

Junya Yano, Misuzu Asari, Shin-ichi Sakai

Kyoto University

P-013 Eco-efficiency assessment of ICT product systems: An example of set top box

Jun-Yi Chiang, Yuh-Ming Lee

National Taipei University

P-014 A visualization system for carbon footprint of products on mobile devices

Peijiang Zhao, Gun Suzuki, Koji Nagano, Kazuhiko Sato

Muroran Institute of Technology

P-015 Environmental potential benefits and risks of electronic invoicing systems and them implications: Mexican service company case study

Joaquina Niembro-García[1)], Miguel Angel Fernández-Medina[1)], Margarita González-Benítez[2)]

[1)]Universidad Panamericana, [2)]Universitat Politècnica de Catalunya

P-016 Forecasting electricity consumption of the Japanese information and communications sector toward green of ICT

Yusuke Kishita[1)], Kohei Kuroda[)], Yasushi Umeda[)], Yohei Yamaguchi[)], Yoshiyuki Shimoda[)], Minako Hara[)], Hiroki Oka[)], Jiro Nakamura[)]

[1)]Osaka University, [2)]The University of Tokyo, [3)]NTT Energy and Environment Systems Laboratories

P-017 Testing the FineChem tool

Jan Paul Lindner[1,2)], Ida Masoomi[1,2)], Florian Gehring[1,2)]

[1)]Fraunhofer IBP, [2)]University of Stuttgart

Poster Sessions

P-018 A metric for system resilience based on the skills and knowledge of production plant personnel in the chemical industry

Hajime Eguchi[1)], Donal O'Donovan[2)]
[1)]Independent Consultant, [2)]Cork Institute of Technology

P-019 Life cycle assessment of PVC products based on material flow analysis (MFA) in Thailand

Pomthong Malakul, Thanakorn Rodcharoen, Manit Nithitanakul
Chulalongkorn University

P-020 Sustainability of 3D printing vs. machining: Do machine type and size matter?

Jeremy Faludi, Rishi Ganeriwala, Brett Kelly, Toril Rygg, Chi Yang
University of California, Berkeley

P-021 Life cycle-based exergy analysis and its application to Japanese case

Ryota Ii[1)], Eiji Yamasue[2)], Shinsuke Murakami[3)], Jun Nakatani[3)], Takeshi Matsuda[1)], Ken Horiguchi[1)], Yuusuke Kousaka[1)], Rintarou Terada[1)], Kei Gomi[2)], Makoto Inari[4)]
[1)]Pacific Consultants Co., Ltd., [2)]Kyoto University, [3)]The University of Tokyo, [4)]Inari Consulting Office

P-022 Compilation of embodied CO_2 emission inventory using China's input-output tables: Implication for environmental public utilities

Qian Zhang, Jun Nakatani, Yuichi Moriguchi
The University of Tokyo

P-023 Integration of material performance index for a comprehensive change-oriented LCA: The biopolymer case

Bruno De Benedetti, Pierluigi Freni, Paolo Tecchio, Sara Rollino
Politecnico di Torino

P-024 Environmental profile of stonepaper

Atsushi Inaba[1)], Nobuharu Shinozai[1)], Takumi Kawashima[1)], Masaharu Motoshita[2,3)]
[1)]Kogakuin University, [2)]National Institute of Advanced Industrial Science and Technology, [3)]Technische Universität Berlin

P-025 An environmental assessment case study of Rinnai Korea steam-oven product throughout developing the eco-design internal system

SungJoo Lee
Econetwork Co.

P-026 LCA for environmental policy in case of Japanese local governments

Yasuyoshi Taruta, Yoshiteru Nakamori
Japan Advanced Institute of Science and Technology

P-027 Biodegradability and environmental migration of PDMAS polymers in an anaerobic sequencing batch reactor

Zhiwei Liang, Shangyuan Yang, Yunlong Wang
Zhejiang University

P-028 Eco-design of tableware from palm fiber bio-composite

Singh Intrachooto, Rattanawan Mungkung, Kanokon Hancharoen, Chiravoot Petchyen
Kasetsart University

P-029 Critical material footprint of household consumption

Stefan Pauliuk
NTNU

P-030 Life cycle assessment (LCA) of the supercritical production of barium titanate nanomaterials

Michael Tsang, Gilles Philippot, Cyril Aymonier, Guido Sonnemann
University of Bordeaux

P-031 Integration of geopolitical related criticality assessment for resources into the life cycle assessment framework

Eskinder Demisse Gemechu[1)], Christoph Helbig[2)], Guido Sonnemann[1)], Andrea Thorenz[2)], Axel Tuma[2)]
[1)]University of Bordeaux, [2)]University of Augsburg

P-032 Exploring potentials of a data-intensive approach for sustainability quantification

Ali Kharrazi, Yarime Masaru
The University of Tokyo

P-033 Toward sustainable energy business using woody biomass in rural communities

Yusuke Kishita, Noriaki Nakatsuka, Yukari Fuchigami, Fumiteru Akamatsu
Osaka University

P-034 Combining product lifetime distribution analysis with multi-regional waste input-output analysis: A case study of automobiles in Japanese prefectures

Daisuke Nishijima[1)], Ryoji Hasegawa[2)], Kenichi Nakajima[3)], Shigemi Kagawa[1)]
[1)]Kyushu University, [2)]Osaka International University, [3)]National Institute for Environmental Studies

Poster Sessions

P-035 Urban metabolism, industrial structure and city sustainability based on data envelopment analysis: A case study of Taiwan's major cities

Wen-Chi Yang[1,2)], Yuh-Ming Lee[2)]
[1)]National ChengChi University, [2)]National Taipei University

P-036 System dynamics model for sustainability assessment of mineral resource consumption considering both environmental and resource constraints

Tatsuhiko Kawamoto, Shinsuke Murakami, Jiro Yamatomi
The University of Tokyo

P-037 Global supply chain analysis for sustainable utilization of nickel

Yuto Ohtsuka[1)], Hajime Ohno[1)], Kazuyo Matsubae[1)], Kenichi Nakajima[2)], Keisuke Nansai[2)], Tetsuya Nagasaka[1)]
[1)]Tohoku University, [2)]National Institute for Environmental Studies

P-038 Mining impact on the changes in land use measured by satellite images analysis

Yasunori Iwatsuki[1)], Kenichi Nakajima[2)], Hiroya Yamano[2)], Shinsuke Murakami[1)]
[1)]The University of Tokyo, [2)]National Institute for Environmental Studies

P-039 Potential self supply of local resources towards regional sustainability: Case study of Shinjo Village in Okayama Prefecture, Japan

Kazutoshi Tsuda[1)], Hirokazu Makino[2)], Keishiro Hara[1)], Michinori Uwasu[1)]
[1)]Osaka University, [2)]Independent

P-040 Applying TRIZ and concept mapping to green design: An example of green take-away packaging

Hui-Ting Tang, Yuh-Ming Lee
National Taipei University

P-041 Anthropogenic earth movement analysis based on geomorphological change by digital elevation model

Keisuke Yoshida, Kenji Sugimoto, Keijiro Okuoka, Hiroki Tanikawa
Nagoya University

P-042 A review of methodology for critical materials evaluation

Lu-Yen Chen[1)], Jia-Huei Huang[1)], Mei-Chiun Chou[2)]
[1)]National United University, [2)]National Taiwan University

P-043 Modeling climate effects of biogenic carbon flows from forests and wood products at the national level

Bernhard Steubing[1)], Florian Suter[1)], Stefanie Hellweg[1)], Esther Thurig[2)], Golo Stadelmann[2)]
[1)]ETH Zurich, [2)]Swiss Federal Institute for Forest

P-044 Material flow analysis of the Swiss waste management system

Melanie Haupt, Carl Oskar Vadenbo, Bernhard Steubing, Stefanie Hellweg
ETH Zurich

P-045 Metrics for performance measurement of advanced repair-to-order, disassembly-to-order and refurbishment-to-order

Ammar Yahya Alqahtani[1)], Surendra M. Gupta[2)], Kenichi Nakashima[3)]
[1)]King Abdulaziz University, [2)]Northeastern University, [3)]Kanagawa University

P-046 The role of socio-economic factors in household solid waste management in Mumbai, India

Sangeeta Vinod Sharma[1)], Vinod Kumar Sharma[2)]
[1)]National Ecology and Environment Foundation, [2)]Indira Gandhi Institute of Development Research

P-047 An estimation of ship waste quantities at port: A case study in Haiphong, Vietnam

Thang Ngoc To, Takaaki Kato
The University of Kitakyushu

P-048 Optimal improvement of waste plastics recycling system in Tianjin based on environmental evaluation and GIS

Richao Cong[1)], Toru Matsumoto[1)], Takamasa Hayashi[2)], Wenchao Li[3)]
[1)]The University of Kitakyushu, [2)]NTT DATA Institute of Management Consulting, Inc., [3)]Nankai University

P-049 Life cycle assessment of reuse system for surgical gowns

Naoki Yoshikawa[1)], Nobumitsu Kitanishi[2,1)], Koji Amano[1)], Koji Shimada[1)]
[1)]Ritsumeikan University, [2)]Takasago Thermal Engineering Co., Ltd.

P-050 Bulk material flow analysis of MSW management in Nongkaem transfer station region of Bangkok

Saravanee Singtong, Chanathip Pharino
Chulalongkorn University

P-051 Analysis of contamination of impurities in steel recycling

Chihiro Murayama, Ichiro Daigo, Yoshikazu Goto
The University of Tokyo

Poster Sessions

P-052 Evaluation of the recyclability of concrete rubble using total material requirement index

Keijiro Okuoka, Hiroki Tanikawa

Nagoya University

P-053 Study on methane oxidation activity and methanotrophic bacteria community composition of Festuca ovina rhizosphere in a simulated landfill bio-cover soil

Yunlong Wang

Zhejiang Academy of Agricultural Sciences

P-054 Matching reused products with users considering their satisfaction

Yuki Yamamori, Keisuke Nanjo, Hiroyuki Hiraoka

Chuo University

P-055 Analysis of benefits of introducing integrated waste management approach in developing countries: Case study in Kathmandu City

Rajeev Kumar Singh, Helmut Yabar, Yoshiro Higano, Takeshi Mizunoya

University of Tsukuba

P-056 A system dynamic assessment of municipal solid waste recycling and its contribution to sustainable development

Wen-Chi Yang, Yuh-Ming Lee

National Taipei University

P-057 Life cycle inventory analysis of biogas utilization from sewage treatment plants: A case study on Dihua Sewage Treatment Plants

Jie Yang, Yuh Ming Lee

National Taipei University

P-058 Review of excessive packaging restriction implementation in Taiwan

Chih-Ku Chen[1)], Hsin-Ying Chuang[1)], Wei-Kai Yang[1)], Chin-Wei Tang[1)]

[1)]Sustainable Environmental Technology and Management Co., Ltd., [2)]International Solid Waste Association, [3)]Taiwan Packaging Design Association

P-059 Estimation of operational efficiency of municipal solid waste collection alternatives by LCA/ LCC methodologies in Danang City, Vietnam

Trang Thi Thu Do, Yasuhiro Matsui, Thanh Phuc Nguyen, Anh Thi Yen Tran

Okayama University

P-060 International interdependencies analysis using detailed Asian international input-output table

Hiroshi Yamaguchi, Hiroshi Yamaguchi, Norihiro Itsubo

Tokyo City University

P-061 Study on framework of life cycle sustainability assessment and social life cycle assessment: As a subject of biorefinery

Tomoko Fuchigami[1)], Xiao-Zheng Sun[2)], Yutaka Genchi[2)]

[1)]The University of Tokyo, [2)]National Institute of Advanced Industrial Science and Technology

P-062 Global scale fate factor of nitrogen for aquatic eutrophication using water circulation model

Masahiaru Motoshita[2,3)], Norihiro Itsubo[1)]

[1)]Tokyo City University, [2)]National Institute of Advanced Industrial Science and Technology, [3)]Technische Universität Berlin

P-063 Methodology to assess sustainability of biomass utilisation in East Asia

Yuki Kudoh[1)], Masayuki Sagisaka[1)], Sau Soon Chen[2)], Jessie C. Elauria[3)], Shabbir H. Gheewala[4)], Udin Hasanudin[5)], Jane Romero[6)], Vinod K. Sharma[7)], Xunpeng Shi[8)]

[1)]National Institute of Advanced Industrial Science and Technology, [2)]SIRIM Berhad, [3)]University of the Philippines Los Baños, [4)]The Joint Graduate School of Energy and Environment, King Mongkut's University of Technology Thonburi, [5)]University of Lampung, [6)]Asian Development Bank, [7)]Indira Gandhi Institute of Development Research, [8)]National University of Singapore

P-064 New version of simple LCA software including a comprehensive inventory database (IDEA)

Kuan Jay Bartel, Kiyotaka Tahara

National Institute of Advanced Industrial Science and Technology

P-065 Land use, an important midpoint category indicator in agriculture: How should we deal with it?

Takahiro Nakashima, Shoko Ishikawa

National Agriculture and Food Research Organization

P-066 Setting method of the evaluation boundary from the viewpoint of uncertainty management in LCA for transport infrastructure provision

Ryoko Morimoto[4)], Hirokazu Kato[1)], Naoki Shibahara[2)], Yuki Masuda[3)]

[1)]Nagoya University, [2)]Japan Environmental Management Association for Industry, [3)]JR-Central Consultants Company, [4)]Nagoya University (former)

P-067 Uncertainty analysis for infrastructure LCA

Hirokazu Kato[1)], Yuki Masuda[2)], Naoki Shibahara[3)], Ryoko Morimoto[4)], Koh Kanai[1)]

[1)]Nagoya University, [2)]JR-Central Consultants Company, [3)]Japan Environmental Management Association for Industry, [4)]Nagoya University (former)

Poster Sessions

P-068 Calculation and comparison of weighting factors based on different approaches in LCIA

Ryosuke Yokoi[1)], Jun Nakatani[1)], Masaharu Motoshita[2)], Yuichi Moriguchi[1)]

[1)]The University of Tokyo, [2)]National Institute of Advanced Industrial Science and Technology

P-069 Spatial variation of health damage factors for $PM_{2.5}$ on a continent level

Longlong Tang[1)], Tatsuya Nagashima[1)], Kouichi Hasegawa[2)], Toshimasa Ohara[1)], Kengo Sudo[3)], Norihiro Itsubo[4)]

[1)]National Institute for Environmental Studies, [2)]Chuden CTI Co., Ltd., [3)]Nagoya University, [4)]Tokyo City University

P-070 The role of world structural changes on CO_2 emissions

Kayoko Shironitta, Kayoko Shironitta, Shunsuke Okamoto, Shigemi Kagawa

Kyushu University

P-071 Pedagogical training for environmental education based on life cycle thinking for engineers

Hatsuna Tadaka[1)], Shinya Matsumoto[1)], Reiko Tomaru[2)], Chiake Fukasawa[2)]

[1)]Yokohama National University, [2)]Sanden Kankyo Mirai Zaidan

P-072 Eliminating mottainai product features for our sustainable society

Masatsugu Kitamura, Hidataka Hayashi

EcoDesign Promotion Network

P-073 Environmental performance of biodiesel productions using waste cooking oil

Shogo Eguchi[1)], Shigemi Kagawa[1)], Sangwon Suh[2)], Yuki Kudoh[3)]

[1)]Kyushu University, [2)]University of California, Santa Barbara, [3)]National Institute of Advanced Industrial Science and Technology

P-074 Life cycle CO_2 emission of wind energy at optimum locations in the world

Kotaro Kawajiri

National Institute of Advanced Industrial Science and Technology

P-075 Life cycle environmental impacts of electricity from renewable sources in Turkey

Burcin Atilgan, Adisa Azapagic

The University of Manchester

P-076 Water-based life cycle assessment of power generation and supply in Thailand

Tomohiro Okadera[1)], Shabbir H. Gheewala[2,3)]

[1)]National Institute for Environmental Studies, [2)]The Joint Graduate School of Energy and Environment, King Mongkut's University of Technology Thonburi, [3)]Ministry of Education, Thailand

P-077 The concept of efficiency in the context of sustainable energy consumption: Theoretical considerations and legacy

Harald Ernst Otto

Polytechnic University of Marche

P-078 Life cycle energy and environmental assessment of the production and utilization of compressed biogas (CBG) in Thailand

Pomthong Malakul[1,2)], Seksan Papong[2)], Thawach Chatchupong[3)]

[1)]Chulalongkorn University, [2)]National Metal and Materials Technology Center, [3)]PTT Public Company Limited

P-079 Analysis of the socio-economic and environmental benefits of introducing technology innovation and regulations in the energy sector in China: A regional case study

Qian Zhou, Helmut Yabar, Takeshi Mizunoya, Yoshiro Higano

University of Tsukuba

P-080 Externality assessment of NIMBY facilities incorporating distance effects: A case study on the construction of the Longmen Nuclear Power Plant

Ya Chen Tasi, Yuh-Ming Lee

National Taipei University

P-081 The concept of efficiency in the context of sustainable energy consumption: Current practice and shortcomings

Harald Ernst Otto

Polytechnic University of Marche

P-082 Evaluating the greenhouse gas emissions and the life cycle cost of thermoelectric generators for passenger automobiles

Yusuke Kishita, Yuji Ohishi, Michinori Uwasu, Masashi Kuroda, Hiroyuki Takeda, Keishiro Hara

Osaka University

Poster Sessions

P-083 A proposal of the eco-efficiency of the fuel cell co-generation system of "Ene-Farm" in consideration of LCCO$_2$ emission and metal resources depletion

Yusuke Jinno, Kenji Koido, Kiyoshi Dowki

Tokyo University of Science

P-084 Cost, CO$_2$ emission and energy consumption of bioethanol production from a lignocellulosic energy crop, Erianthus sp. by SRB-CaCCO process

Takahiro Orikasa[1)], Ken Tokuyasu[2)], Masakazu Ike[2)], Rui Zhao[2)], Mitsuru Gau[3)], Shoji Koide[1)], Takeo Shiina[2,4)]

[1)]Iwate University, [2)]National Food Research Institute, NARO, [3)]NARO Kyushu Okinawa Agricultural Research Center, [4)]Chiba University

P-085 Comparative analysis of energy use and CO$_2$ emissions between life cycles of compressed natural gas and thermal energy gas for final use in light vehicles

Mauro Pereira Hill, Rogerio De Aragao Bastos Do Valle, Bruna Vaz Duarte

Federal University of Rio de Janeiro

P-086 Evaluation of power interchange potential and supply-demand balance of distributed generation in Kinki

Daisuke Fukuhara, Naoki Yoshikawa, Koji Amano, Koji Shimada

Ritsumeikan University

P-087 A framework to assess impacts of grid mix changes in Japan using input-output tables

Shunichi Hienuki[1)], Yuki Kudoh[1,2)], Hiroki Hondo[1)]

[1)]Yokohama National University, [2)]National Institute of Advanced Industrial Science and Technology

P-088 Analysis of environmental loads and benefits of a bio-coke production factory: A case study in Osaka

Yukari Fuchigami[1)], Keishiro Hara[1)], Takeo Kita[2)], Michinori Uwasu[1)], Shuji Kurimoto[1)]

[1)]Osaka University, [2)]Osaka Prefecture Forest Owners Association

P-089 Input-output analysis of introducing smart grid systems in Japan

Satoshi Nakano[2)], Ayu Washizu[1)]

[1)]Waseda University, [2)]The Japan Institute for Labour Policy and Training

P-090 Benefits of biogas projects from local and global perspectives

Aya Heiho, Hiroki Hondo, Yue Moriizumi

Yokohama National University

P-091 Carbon footprint labelling certification of railway operating service in Korea

Jae-Young Lee[1)], Woo-Sung Jung[1)], Cheul-Kyu Lee[1)], Hee-Man Kim[2)]

[1)]Korea Railroad Research Institute, [2)]Korea Railroad Corporation

P-092 A review of the life cycle assessment of nearly zero-energy residential buildings

Markus Weißenberger[1)], Werner Jensch[1)], Werner Lang[2)]

[1)]University of Applied Sciences Munich, [2)]Technical University Munich

P-093 An aggregative assessment of environmental impacts on reservoir catchments imposed by public construction projects: A case study on Feitsui Reservoir

Yu-An Lin, Yuh-Ming Lee

National Taipei University

P-094 Environmental impacts of portland cement manufacturing and developed process with alternative technologies in Thailand

Unchalee Suwanmanee[1)], Suthida Authayanun[1)], Worayut Saibuatrong[2)], Viganda Varabuntoonvit[2)], Thumrongrut Mungcharoen[2)]

[1)]Srinakharinwirot University, [2)]Kasetsart University

P-095 Eco-benefit analysis of multifunctional building products

Michael Jäger[1)], Johannes Gantner[1)], Sarah Homolka[2)], Hannes Krieg[1)]

[1)]University of Stuttgart, [2)]Fraunhofer Institute for Building Physics IBP

P-096 Development of a combined LCA and LCC tool for refurbishment measures of districts

Rafael Horn[2)], Johannes Gantner[1)], Michael Baumann[1)]

[1)]University of Stuttgart, [2)]Fraunhofer IBP

P-097 A study on environmental impact of Korean wooden house using life cycle assessment

Whi-Lim Son, Joo-Saeng Park, Moon-Jae Park

Korea Forest Research Institute

Poster Sessions

P-098 Macro analysis of life cycle CO_2 from urban passenger transport systems in Asian developing countries

Kei Ito[1)], Naoki Shibahara[2)], Hirokazu Kato[3)], Koh Kanai[3)]

[1)]Nagoya City Hall, [2)]Japan Environmental Management Association for Industry, [3)]Nagoya University

P-099 Estimation method of the change in life cycle CO_2 from mass transit system applying micro-scopic traffic flow simulation

Naoki Shibahara[1)], Ryoko Morimoto[4)], Nozomi Kudo[2)], Hirokazu Kato[3)]

[1)]Japan Environmental Management Association for Industry, [2)]National Traffic Safety and Environment Laboratory, [3)]Nagoya University, [4)]Nagoya University (former)

P-100 Net CO_2 emissions by the change of consumption in consequential LCA

Kotaro Kawajiri[1)], Masaharu Motoshita[1,2)], Tomohiko Ihara[3)], Hiroki Hatayama[1)], Kiyotaka Tahara[1)]

[1)]National Institute of Advanced Industrial Science and Technology, [2)]Technische Universität Berlin, [3)]The University of Tokyo

P-101 Modeling consumer's choice and its GHG implication under simultaneous consideration of available income and time

Koji Takase[1)], Yasushi Kondo[2)]

[1)]Shizuoka University, [2)]Waseda University

P-102 Determinants of environment-conscious behavior in eating habits

Tomohiko Ihara[1)], Wakana Zaima[1)], Hideaki Kurishima[2)]

[1)]The University of Tokyo, [2)]Shibaura Institute of Technology

P-103 Product differentiation and eco-behavior by using carbon footprint

Akai Kenju, Haruaki Tamura, Nishino Nariaki

The University of Tokyo

P-104 Analysis of the effects of low-carbon technologies and individual activity schedule on carbon dioxide emissions

Chika Ishida[1)], Hiroyoshi Morita[3)], Yoshimi Kanaoka[2)], Hirokazu Kato[1)]

[1)]Nagoya University, [2)]Urban Renaissance Agency, [3)]Nippon Engineering Consultants Company

P-105 Emission metrics for climate policies and their implications to life cycle assessment

Katsumasa Tanaka

Institute for Advanced Sustainability Studies (IASS)

P-106 Evaluating the relationship between agricultural workers and agricultural residues production: A case study in the Hyogo Prefecture

Tomohiro Tabata, Yukako Sakon

Kobe University

P-107 Land constraints associated with future food and biofuel demands

Kento Tamura, Naoki Yoshikawa, Koji Amano, Seji Hashimoto

Ritsumeikan University

P-108 Web-based system development for GHG emission from livestock sector

Guen-Young Lee[1)], Sung-Mo Yeon[1)], Kun-Mo Lee[2)], Yoo-Sung Park[2)]

[1)]WECOS, [2)]Ajou University

P-109 Greenhouse gas emission of rice production system in the Philippines based upon life cycle inventory analysis

Elmer G. Bautista[2)], Masanori Saito[1)]

[1)]Tohoku University, [2)]Philippine Rice Research Institute

P-110 A proposal of the CF index of rice in consideration of consumer's health condition

Takashi Oi, Kenta Shiokawa, Kenji Koido, Kiyoshi Dowaki

Tokyo University of Science

P-111 LC-CO_2 analysis on a fresh tomato in consideration of quality degradation

Sho Ushikubo, Keisuke Nishimoto, Eidelweijs Adririnjani Putri, Kenji Koido, Kiyosi Dowaki

Tokyo University of Science

P-112 Influence of management practices on life cycle greenhouse gas emissions from rice production in Yamagata Prefecture, Japan

Katsushi Yokoyama[1)], Kiyotada Hayashi[2)]

[1)]Yamagata Integrated Agricultural Research Center, [2)]National Agriculture and Food Research Organization

Poster Sessions

P-113 Potential reductions in life-cycle greenhouse gas emissions from paddy rice production: Assessing the influence of puddling, transplanting density, and irrigation depth

Motoko Shimura[1)], Hidehiro Takahashi[1)], Chiharu Ito[2)], Makoto Shibuya[2)], Kiyotada Hayashi[3)], Kenji Matsumori[1)]

[1)]NARO Western Region Agricultural Research Center, [2)]Akita Prefectural Agricultural Experiment Station, [3)]NARO Agricultural Research Center

P-114 Life cycle CO_2 emission of konjac production via an overwintering methodology in Gunma, Japan

Kenji Koido, Yusuke Akaike, Yousuke Isshi, Keisuke Ide, Shou Ushikubo, Masanori Kou, Kenta Komiya, Katsuya Shimizu, Takumi Minami, Kiyoshi Dowaki

Tokyo University of Science

P-115 Low-carbon footprint Thai pork sausage by biogas system application at pig farms

Apiwan Suwannatee[1)], Rattanawan Mungkung[1)], Shabbir Gheewala[2)]

[1)]Kasetsart University, [2)]The Joint Graduate School of Energy and Environment, King Mongkut's University of Technology Thonburi

P-116 Life cycle cost analysis of willow production on small-scale field

Hidetsugu Morimoto[1)], Shigeru Satoh[2)], Kimiharu Ishizawa[3)], Takeshi Arai[1)]

[1)]Tokyo University of Science, [2)]Kyoto Prefectural University, [3)]Miyagi University of Education

P-117 Life cycle inventory analysis for small scale trawl fishery in Sendai Bay

Kazuhito Watanabe[1)], Kiyotaka Tahara[2)]

[1)]Miyagi Prefecture Kesennuma Regional Promotion Office, [2)]National Institute of Advanced Industrial Science and Technology

P-118 Improving the environmental efficiency of woody biomass utilization: Focusing on the manufacturing of high value-added products in Maniwa, Japan

Moon Dami, Kitagawa Naomi, Genchi Yutaka, Sagisaka Masayuki

National Institute of Advanced Industrial Science and Technology

P-119 Potential for energy saving of dairy farming system dependent upon land utilization

Tatsuo Hishinuma

Utsunomiya University

P-120 Substance flow analysis on agricultural nutrients focusing on nitrogen and phosphorus

Takashi Yamamoto[1)], Masafumi Mizoguchi[1)], Kazuyo Matsubae[1)], Kenichi Nakajima[2)], Keisuke Nansai[2)], Tetsuya Nagasaka[1)]

[1)]Tohoku University, [2)]National Institute for Environmental Studies

P-121 Combining duo technique of MFA and GIS for evaluating nitrogen flux in the agricultural system: Case study in Kuala Terengganu region

Latifah Abdul Ghani[1)], Noor Zalina Mahmood[1)], Nora'aini Ali[2)]

[1)]Universiti Malaysia Terengganu, [2)]University of Malaya

P-122 Water security and socio-economic metabolism in China: Toward an integrated assessment

Tao Wang, Seiji Hashimoto

Ritsumeikan University

P-123 Water footprint assessment of machine tool

Jahau Lewis Chen[1)], Yen-Bou Chen[1)], Hua-Chih Huang[2)]

[1)]National Cheng Kung University, [2)]ITRI

P-124 Evaluation of water use in paddy-rice production on the basis of differential water footprint

Susumu Uchida

Ibaraki University

P-125 Development of water footprint inventory database of Asian countries

Soya Iida, Yuya Ono, Norihiro Itsubo

Tokyo City University

EXHIBITORS

TCO2
Insights for Sustainability

TCO2 Co.,Ltd.

PE INTERNATIONAL
EXPERTS IN SUSTAINABILITY

PE Asia corporation

ifu hamburg
material flows and software.

ifu Hamburg GmbH

SPONSORS

Platinum sponsors

PE INTERNATIONAL
SUSTAINABILITY PERFORMANCE

JLCA
Life Cycle Assessment Society of Japan

Gold sponsor

Bronze sponsors

TCO2
Insights for Sustainability

We add value for a bright future.
PACIFIC CONSULTANTS CO.,LTD.

Panasonic

FUJITSU

MITSUBISHI ELECTRIC
Changes for the Better

TOSHIBA
Leading Innovation

HITACHI
Inspire the Next

NISSAN MOTOR CORPORATION