Presentation list: VOD spotlight

October 30, Sunday

V-1

How IoT helps to achieve sustainable supply chain management——A study based on two supply chains

Suiting Ding
Institute of Environmental Sciences (CML), Department of Industrial Ecology, Leiden University, the Netherlands

V-2

Oil price pressure on the Japanese economy: An unit structure analysis

Aoi Tsukioka[1], Sora Matsushima[2], Shigemi Kagawa[3]
[1]School of Economics, Kyushu University, Japan; [2]School of Economics, Kyushu University, Japan; [3]Faculty of Economics, Kyushu University, Japan

V-3

Comparative life cycle assessment of fired clay bricks and alternative concrete blocks used in Bangladesh

Syeda Gulfam -E- Jannat, Shafkat Islam, Sheikh Mokhlesur Rahman
Bangladesh University of Engineering and Technology, Bangladesh, People's Republic of

V-4

Digitalization of sustainable value roadmapping in engineering education

Mélanie Despeisse[1], Yusuke Kishita[2]
[1]Chalmers University of Technology, Sweden; [2]The University of Tokyo, Japan

V-5

A data-driven approach for evaluating the occupant behavior influence on electricity consumption in Taipei City

Kuang-Ly Cheng[1], Remi Chauvy[2], I-Chun Chen*[1]
[1]Chinese Culture University, Taiwan; [2]National Cheng Kung University, Taiwan

V-6

How to build sustainable cities: Research on the local energy governance in Taiwan

Ying-Da Wang, Li-Ting Huang, Ching-Chun Chang, Ting-Hung Wang, Hsiu-Chuan Lin
Industrial Technology Research Institute, Taiwan

V-7

The emergy footprint of a city: comparing supply- and use-extended input-output models for the case of Vienna, Austria.

Oleksandr Galychyn
EPFL, Switzerland

V-8

Extraregional dependence of municipal / industrial plastic waste treatment based on material flow analysis in the 47 prefectures of Japan

Rokuta Inaba[1], Osamu Higashi[2], Daisuke Okamoto[2], Jun Nakatani[3], Yasuo Nemoto[2], Naohisa Yamaguchi[2], Atsushi Fujiyama[4], Yasunori Kikuchi[3], Toru Matsumoto[4]
[1]National Institute for Environmental Studies, Japan; [2]EX Research Institute Ltd.; [3]The University of Tokyo; [4]The University of Kitakyushu

V-9

Evaluation of greenhouse gas reduction effect through the silver recycling

Dayeon Kim[1], YongWoo Hwang[2], Chunsan Kim[3], Eunseo Lee[4]
[1]Progam in Global Industrial & Environmental Engineering, Inha University, Republic of Korea; [2]Department of Environmental Engineering, Inha University, Republic of Korea; [3]Graduate School of Engineering, Inha University, Republic of Korea; [4]Environmental and polymer engineering, Inha University, Republic of Korea

V-10

Heuristic analysis of scale mining: The balance between safety, environmental and social impact and operational performance

Tatiane Marin, Jacopo Seccatore
University Adolfo Ibañez, Chile

V-11

Building an AI-based automatic ESG evaluation estimation model and its application

Aya Ishino[1], Yuriko Nakao[2], Shinya Okuda[3], Yuki Tanaka[4], Naho Nakakubo[5], Katsuhiko Kokubu[6]
[1]Hiroshima University of Economics; [2]Kansai University; [3]Nagoya City University; [4]Hosei University; [5]S&P Global; [6]Kobe University,

V-12

Assessing the social dimension in strategic network design for a sustainable development: The case of bioethanol production in the EU

Lukas Messmann, Lars Wietschel, Andrea Thorenz, Axel Tuma
University of Augsburg, Germany

V-13

Evaluating resource use reduction effects of residence-related 3R behaviors

Teppei Kan, Seiji Hashimoto
Ritsumeikan University, Japan

V-14

The environmental footprint methods: history, state of the art, future developments

Ugo Pretato[1], Elia Rillo[1], Irene Cropanise[1], Alicia Boyano Larriba[2], Michael Knaute[3]
[1]Studio Fieschi & soci, Italy; [2]European Commission, Directorate-General for the Environment, Belgium; [3]Green Soluce, France

V-15

Analysis of approaches to quantifying environmental benefits of reuse in the IT sector

Analysis of approaches to quantifying environmental benefits of reuse in the IT sector

Fraunhofer Institute for Reliability and Microintegration (IZM), Berlin, Germany

Presentation list: Oral sessions

October 31, Monday

9:30am - 10:30am	**Opening**
10:30am - 10:50am	Break
10:50am - 12:10pm	**1-1A: Carbon management for neutrality** Session Chair: **Matthias Finkbeiner**, TU Berlin, Germany Session Chair: **Yosuke Shigetomi**, Nagasaki University, Japan

1-1A-1 **10:50am - 11:10am**

Using CO2 as feedstock to decarbonize the global chemical industry: A feasible reality or an urban myth?

Jing Huo[1], Zhanyun Wang[2], Christopher Oberschelp[1], Gonzalo Guillén-Gosalbez[3], Stefanie Hellweg[1]
[1]ETH Zurich, Switzerland; [2]Environmenal Risk Assessment and Management Group, EMPA, Switzerland; [3]Department of Chemistry and Applied Biosciences, ETH Zurich, Switzerland

1-1A-2 **11:10am - 11:30am**

Detecting insecure supply chains lacking carbon neutral commitments

Keisuke Nansai, Sho Hata, Yasuko Kameyama
National Institute for Environmental Studies, Japan

1-1A-3 **11:30am - 11:50am**

Life cycle assessment on forest resource utilization considering long-term carbon balance

Aya Suzuki[1], Yuichiro Kanematsu[1], Ryoko Shimono[1], Satoshi Kita[2], Iroha Seki[2], Kentaro Nakamura[2], Yasunori Kikuchi[1]
[1]The University of Tokyo; [2]Sumitomo Forestry Co., Ltd.

1-1A-4 **11:50am - 12:10pm**

Matching post-combustion carbon capture technologies in power and industrial sectors based on emission reduction potentials

Koki Yagihara[1], Hajime Ohno[1], Keigo Matsuda[1,2], Yasuhiro Fukushima[1]
[1]Tohoku University, Japan; [2]Yamagata University, Japan

10:50am - 12:10pm	**1-1B: Technology application in local system** Session Chair: **Anja Laqua**, Kuraray Co., Ltd. Session Chair: **Yutaka Genchi**, National Institute of Advanced Industrial Science and Technology, Japan

1-1B-1 **10:50am - 11:10am**

Modeling the effect of improving sewage disposal rate on ecological health for aquatic organism: A case study Gunma prefecture, Japan

Toyohiko Nakakubo[1], Midori Kawabata[1], Yuriko Ishikawa[2], Yuichi Iwasaki[2]
[1]Ochanomizu University, Japan; [2]National Institute of Advanced Industrial Science and Technology, Japan

1-1B-2 **11:10am - 11:30am**

Life cycle assessment of sustainable organic waste treatment in Cimahi Indonesia

Lia Nurbanillah Fujianti[1], Indriyani Rahman[2], Toru Matsumoto[3]
[1]The University of Kitakyushu, Japan; [2]The University of Kitakyushu, Japan; [3]The University of Kitakyushu, Japan

1-1B-3 **11:30am - 11:50am**

Analysis on environmental compatibility and economic feasibility of the ground source heat pump in tropical Asia regarding the lifecycle aspects: a case study in Bangkok, Thailand

Yutaro Shimada, Koji Tokimatsu

Tokyo Institute of Technology, Japan

1-1B-4 **11:50am - 12:10pm**

Comprehensive evaluation of the utilization of bamboo biomass In Kitakyushu city considering the nexus structure of SDGs

Yajuan LI[1], Toru Matsumoto[2]
[1]The University of Kitakyushu, Japan; [2]The University of Kitakyushu, Japan

10:50am - 12:30pm	1-1C: Metallic resources: now and future (1)

Session Chair: **Tomer Fishman**, Leiden University, the Netherlands
Session Chair: **Hiroki Hatayama**, National Institute of Advanced Industrial Science and Technology, Japan

1-1C-1 **10:50am - 11:10am**

Closed-loop recycling of steel products

Nami Kuwana[1,5], Toshio Isohara[2,5], Shiro Watakabe[3,5], Noriaki Takamuku[4,5], Mio Kitayama[1,5], Ryoji Saito[5], Souta Aoki[5], Takumi Watanabe[5]
[1]Nippon Steel Research Institute Corporation; [2]Nippon Steel Corporation; [3]JFE Steel Corporation; [4]Kobe Steel, Ltd; [5]The Japan Iron and Steel Federation

1-1C-2 **11:10am - 11:30am**

A new approach for modelling primary mineral supply scenarios and associated environmental impacts

Stephen Alan Northey[1], Stefan Pauliuk[2], Stefanie Klose[2], Damien Giurco[1], Mohan Yellishetty[3]
[1]University of Technology Sydney, Australia; [2]University of Freiburg, Germany; [3]Monash University, Australia

1-1C-3 **11:30am - 11:50am**

Future projections of global life-cycle mercury emissions under CO2 reduction target toward 2050

Shunsuke Kashiwakura, Shoki Kosai, Eiji Yamasue
Ritsumeikan University, Japan

1-1C-4 **11:50am - 12:10pm**

Production process improvements for niobium-based products

Lígia da Silva Lima[1], Rodrigo A.F. Alvarenga[1], Thiago de Souza Amaral[2], Paulo de Tarso Gonçalves Nolli[2], Jo Dewulf[1]
[1]Sustainable Systems Engineering (STEN), Department of Green Chemistry and Technology, Faculty of Bioscience Engineering, Ghent University, Coupure Links 653, B, 9000, Ghent, Belgium; [2]Brazilian Mining and Metallurgy Company (CBMM), Córrego da Mata, Araxá, Minas Gerais, Brazil

1-1C-5 **12:10pm - 12:30pm**

Evaluation of secondary aluminum cycles under automotive changes in China

Wang Binze, Zhang Zhengyang, Matsubae Kazuyo
Tohoku University, Japan

10:50am - 12:30pm	1-1D: [OS] Doing more with less - Transitioning to circular economy through business model innovation (1)

Session Chair: **Koji Kimita**, The University of Tokyo, Japan

1-1D-1 **10:50am - 11:10am**

How will service-oriented circular economy businesses contribute to environmental sustainability? – An introduction

Yusuke Kishita, Koji Kimita, Eri Amasawa
The University of Tokyo, Japan

1-1D-2 **11:10am - 11:50am**

[Keynote talk] Circular fashion by airCloset

Satoshi Amanuma
airCloset, Inc., Japan

1-1D-3 **11:50am - 12:10pm**

Designing sustainable fashion rentals based on environmental benefit and consumer preference

Eri Amasawa, Tatsuki Yoshida, Koji Kimita, Masahiko Hirao
The University of Tokyo, Japan

1-1D-4 **12:10pm - 12:30pm**

Circular business models for plastics in India

Monique Retamal
University of Technology, Sydney, Australia

10:50am - 12:10pm — 1-1E: Mobility and energy storage

Session Chair: **Mayumi Isobe**, Nissan Motor Co., Ltd., Japan
Session Chair: **Christian Clemm**, Fraunhofer IZM, Germany

1-1E-1 **10:50am - 11:10am**

Comparing approaches to certification and sustainability assessments of minerals used in batteries

Rusty Langdon[1], Fiona Berry[1], Stephen Northey[1], Wen Li[2], Shahjadi Farjana[2], Jay Rutovitz[1], Elsa Dominish[1], Damien Giurco[1]
[1]University of Technology Sydney, Australia; [2]The University of Melbourne, Australia

1-1E-2 **11:10am - 11:30am**

Qualifying CO2 emissions reduction of vehicle to X using life-cycle assessment.

Hironobu Kiuchi[1], Kensuke Murai[1], Kenta Suzuki[1], Maki Hoshino[1], Keigo Ikezoe[1], Isoshi Mukai[2], Shumpei Nakada[2], Tomoyo Saito[2], Yusuke Udagawa[2], Yumiko Iwafune[3], Kazuhiko Ogimoto[3]
[1]Nissan Motor Co., Ltd./Japan, Japan; [2]KOZO KEIKAKU ENGINEERING Inc.; [3]Tokyo University

1-1E-3 **11:30am - 11:50am**

Estimation for vehicle LCA considering another way to use

Mayumi Isobe, Maki Hoshino
Nissan Motor Co., Ltd., Japan

1-1E-4 **11:50am - 12:10pm**

Relationship between profitability of recycling business of the lithium-ion battery from electric vehicles and decision-making of dismantling companies

Akira Soyano[1], Shinichirou Morimoto[2], Aya Ishigaki[1]
[1]Tokyo University of Science, Japan; [2]National Institute of Advanced Industrial Science and Technology, Japan

10:50am - 12:10pm — 1-1F: Construction

Session Chair: **T. Reed Miller**, Yale University, United States of America
Session Chair: **Osamu Namikawa**, Hitachi, Ltd., Japan

1-1F-1 **10:50am - 11:10am**

Environmental impact assessment of PEMFC for residential use considering regionality and performance drop

Shota Tochigi[1], Kiyoshi Dowaki[2]
[1]Department of Industrial Administration, Graduate School of Science and Technology, Tokyo University of Science, Japan; [2]Department of Industrial Administration, Faculty of Science and Technology, Tokyo University of Science, Japan

1-1F-2 **11:10am - 11:30am**

Thinking the future – End-of-life life cycle assessment of fiber reinforced concrete

Jana Gerta Backes, Pamela Del Rosario, Anna Luthin, Marzia Traverso
RWTH Aachen University, Germany

1-1F-3 **11:30am - 11:50am**

Carbon footprint analysis of construction technologies in Japan

Seiya Imada, Keitaro Maeno, Shigemi Kagawa

Kyushu University, Japan

1-1F-4 **11:50am - 12:10pm**

Carbon handprint for assessing the positive impacts of constructing low carbon buildings in evolving economies

Jun Kono[1], **York Ostermeyer**[2]
[1]Deloitte Tohmatsu Consulting LLC, Japan; [2]ChillServices GmbH

12:30pm - 2:00pm	Lunch & Poster
2:00pm - 3:20pm	**1-2A: Energy towards carbon neutrality** Session Chair: **Stephen Northey**, University of Technology Sydney, Australia Session Chair: **Shogo Eguchi**, Fukuoka University, Japan

1-2A-1 **2:00pm - 2:20pm**

Environmental impacts of global offshore wind energy development until 2040

Chen Li
Leiden university, the Netherlands

1-2A-2 **2:20pm - 2:40pm**

Life cycle CO2 emissions from ammonia power generation

Yuki Kudoh, **Akito Ozawa**
National Institute of Advanced Industrial Science and Technology, Japan

1-2A-3 **2:40pm - 3:00pm**

Decarbonization by green electricity: The challenges of double counting

Peter Karl Rüdiger Holzapfel, **Vanessa Bach**, **Matthias Finkbeiner**
Technische Universität Berlin, Germany

1-2A-4 **3:00pm - 3:20pm** **Withdrawn**

Co-benefit / trade-off assessment of NH3 energy carrier and NOx recovery

Miangiang Xue, **Bin-Le Lin**, **Kiyotaka Tsunemi**, **Kimitaka Minami**, **Tetsuya Nanba**, **Tohru Kawamoto**
National Institute of Advanced Industrial Science and Technology, Japan

2:00pm - 3:20pm	**1-2B: Technology assessment** Session Chair: **Hajime Ohno**, Tohoku University, Japan Session Chair: **Patricio Neumann**, Universidad del Bío-Bío, Chile

1-2B-1 **2:00pm - 2:20pm**

Life cycle assessment of recycling of polymer-bonded magnets in supercritical hydrothermal reactor

Edis Glogic[1], **Daye Lee**[1], **Elen Duverger-Nedellec**[2], **Guillaume Aubert**[2], **Cyril Aymonier**[2], **Guido Sonnemann**[1]
[1]Institut des Sciences Moléculaires, University of Bordeaux, France; [2]Institut de Chimie de la Matière Condensée de Bordeaux, University of Bordeaux, France

1-2B-2 **2:20pm - 2:40pm**

A system analysis of the impurity removal on a bio-hydrogen production system using granulated neutralized sediment as adsorbent

Kento Torii, **Kiyoshi Dowaki**
Department of Industrial Administration, Graduate School of Science and Technology, Tokyo University of Science

1-2B-3 **2:40pm - 3:00pm**

A life cycle design for FC systems in consideration of Pt catalyst degradation in practical small applications

Ryuta Nagado, **Kiyoshi Dowaki**

Tokyo University of science, Japan

1-2B-4 **3:00pm - 3:20pm**

Identification of high-environmental impact processes in oil and gas upstream industry through life cycle assessment: Case of Borneo, Indonesia

Rizqi Ilma Nugroho[1], Gloria FJ Kartikasari[1], Jessica Hanafi[1], Chandra Sunaryo[2]
[1]PT. Life Cycle Indonesia, Jakarta Barat, DKI Jakarta 11620, Indonesia; [2]PT. Pertamina EP Asset 5, Patra Land Balikpapan Residence, Balikpapan, Kalimantan Timur, Indonesia

2:00pm - 3:40pm	1-2C: Metallic resources: now and future (2)

Session Chair: **Tatiane Marin**, University Adolfo Ibañez, Chile
Session Chair: **Kamrul Islam**, National Institute of Advanced Industrial Science and Technology, Japan

1-2C-1 **2:00pm - 2:20pm**

Boron mining in Turkey: An overview of the environmental impacts using MFA, LCA and abiotic depletion indicator adaptation

Bertrand Laratte[1], Ayşenur Çolak[1,2], Birol Elevli[3], Semra Çoruh[2]
[1]Arts et Métiers Institute of Technology, University of Bordeaux, CNRS, Bordeaux INP, INRAE, I2M Bordeaux, F-33400 Talence, France; [2]Department of Environmental Engineering, Ondokuz Mayis University, Samsun 55139, Turkey; [3]Department of Industrial Engineering, Ondokuz Mayıs University, Samsun 55139, Turkey

1-2C-2 **2:20pm - 2:40pm**

Life cycle assessment and carbon footprint for deep sea mining of polymetallic nodules

Benjamin Fritz, Pia Heidak, Mario Schmidt
Pforzheim University, Germany

1-2C-3 **2:40pm - 3:00pm**

Gold production and mercury consumption from artisanal and small-scale mining

Yingchao Cheng[1], Takuma Watari[1], Kenichi Nakajima[1], Keisuke Nansai[1], Jacopo Seccatore[2], Marcello M. Veiga[3]
[1]Global Resource Sustainability Research Section, Material Cycles Division, National Institute for Environmental Studies, 16-2 Onogawa, Tsukuba, 305-8506, Japan; [2]Faculty of Engineering and Sciences, Adolfo Ibañez University, 7910000 Región Metropolitana, Chile; [3]Department of Mining Engineering, University of British Columbia, Canada 6350 Stores Road, Vancouver, BC, Canada, V6T1Z4

1-2C-4 **3:00pm - 3:20pm**

Life cycle assessment of copper tailings reprocessing: Collaborative, prospective approach

Lugas Raka Adrianto, Stephan Pfister
ETH Zurich, Department of Civil and Environmental Engineering, Institute of Environmental Engineering, Zurich, Switzerland

1-2C-5 **3:20pm - 3:40pm**

Prospective life cycle assessment of mineral and metal recycling from waste incineration slag

Leon Alexander Zacharopoulos, Jutta Geldermann
University Duisburg-Essen, Germany

2:00pm - 3:40pm	1-2D: [OS] Doing more with less - Transitioning to circular economy through business model innovation (2)

Session Chair: **Koji Kimita**, The University of Tokyo, Japan

1-2D-1 **2:00pm - 2:20pm**

Unlocking the sustainability potential of circular business models by design

Daniela Pigosso
Technical University of Denmark, Denmark

1-2D-2 **2:20pm - 2:40pm** **Withdrawn**

Toward the realization of circular economy business for home appliances and industrial equipment

Gaku Miyake
Panasonic Holdings Corporation, Japan

1-2D-3 **2:40pm - 3:00pm**

Development of an indicator system to measure the implementation of the SDG12 on sustainable production and consumption for enterprises in Vietnam

Minh Tu Nguyen[1], Kieu Lan Phuong Nguyen[1,2], Thi Diem Phuc Tran[1], Ba Nhat Minh Le[1], Hong Quan Nguyen[1,3]
[1]Institute for Circular Economy Development, Vietnam; [2]Faculty of Environmental and Food Engineering, Nguyen Tat Thanh University, Ho Chi Minh City 70000, Viet Nam; [3]Center of Water Management and Climate Change, Institute for Environment and Resources, VNU - HCM

3:00pm - 3:40pm

Overall discussion

2:00pm - 3:40pm	**1-2E: Food**
	Session Chair: **Sebastien Dente**, Ritsumeikan University, Japan Session Chair: **Naoki Yoshikawa**, The University of Shiga Prefecture, Japan

1-2E-1 **2:00pm - 2:20pm**

Predicting conservation risks of global agricultural production and consumption

Nguyen Tien Hoang[1], Oliver Taherzadeh[1,2], Haruka Ohashi[3], Daniel Moran[4], Keiichiro Kanemoto[1]
[1]The Research Institute for Humanity and Nature, Japan; [2]Institute of Environmental Sciences, Leiden, the Netherlands; [3]Forestry and Forest Products Research Institute, Tsukuba, Japan; [4]Norwegian University of Science and Technology, Trondheim, Norway

1-2E-2 **2:20pm - 2:40pm**

Development of national baseline for food waste and use of LCA for conducting hot spot analysis of food waste reduction opportunities.

Tim Grant
Lifecycles, Australia

1-2E-3 **2:40pm - 3:00pm**

A follow-up study of the attitudes of middle school students toward composting and food waste

Bozi Yuan[1], Zhaofei Lin[1], Takaaki Kato[1], Yumiko Akiba[2], Megumi Mochida[3], Masatsugu Wanaka[3]
[1]The university of Kitakyushu, Japan; [2]NPO Asobito-Manabi-Kenkyujo; [3]Hayashida Sangyo Co.

1-2E-4 **3:00pm - 3:20pm**

Considering a practical approach that drives consumer behavior change by providing carbon footprint information of food

Hiroya Iwashita, Shoichiro Tsuruta
Sustainable Management Promotion Organization (SuMPO), Japan

1-2E-5 **3:20pm - 3:40pm**

Results of a fact-finding survey on the sustainable diets and smart food services: a case of Japan

Yiyi Ju[1], Ayu Washizu[1], Sayaka Ita[2]
[1]Waseda University, Japan; [2]Tohoku Gakuin University

2:00pm - 3:20pm	**1-2F: EcoDesign**
	Session Chair: **Benjamin McLellan**, Kyoto University, Japan Session Chair: **Hideki Sasaki**, Panasonic Operational Excellence Co., Ltd., Japan

1-2F-1 **2:00pm - 2:20pm**

Assessment of the environmental impact for OLED TV module using LCA

Jewon Yang, Byungkwun Kang, Byunghee Choi, Yongchae Jung

LG Display

1-2F-2 **2:20pm - 2:40pm**

LCA as a tool for innovation: How to leverage LCA to accelerate a sustainable-Tech startup

Shinya Shimizu
Elephantech Inc, Japan

1-2F-3 **2:40pm - 3:00pm**

Integrating Ecodesign approach in high valued materials & processes TRL Referential: the experience of an aeronautical actor.

Maud Lemagnen[1], Bénédicte Le Borgne-Jourdan[2], Nicola Piccirelli[3], Julia Andrieu[4], Bertrand Laratte[5]
[1]Safran Aircraft Engines, France; [2]Safran Composites, France; [3]Safran Tech, France; [4]Safran Engineering Services, France; [5]Arts Et Métiers, Université De Bordeaux, CNRS, Bordeaux INP, I2M Bordeaux, France

1-2F-4 **3:00pm - 3:20pm**

A life cycle assessment modelling approach: Identifying hotspots and improvement opportunities for a recyclable multi-material design of automotive lightweight structures

Suzana Ostojic[1], Marzia Traverso[1], Patrick Haun[2], Levin Schilling[3], Robert Kupfer[3], Maik Gude Gude[3]
[1]RWTH Aachen University, Germany; [2]Porsche AG; [3]TU Dresden

3:20pm - 3:40pm

Overall discussion

3:40pm - 4:00pm	Break
4:00pm - 5:20pm	**Plenary session (1): Shifting Paradigms with Investment** Moderator: **Keiichiro Kanemoto**, RIHN, Japan Moderator: **Michiyo Morisawa**, CDP, Japan Moderator: **Mayumi Isobe**, Nissan Motor Co., Ltd., Japan **[Plenary talk] Trends and expectations in the investment industry for carbon neutrality** **Hiroshi Ozeki** Nissay Asset Management Corporation, Japan **[Plenary talk] Corporate biodiversity impact assessment using biodiversity footprinting – bridging the gap between nature and business** **Justine Bolton** FirstRand Limited, South Africa
5:20pm - 5:40pm	Break
5:40pm - 7:20pm	**Networking events** **1-4A: EcoBalance Young Researchers' Workshop** Session Chair: **Keitaro Maeno (Kyushu University)** **[Invited talk] Life Cycle Assessment in the real world – examples from the automotive industry** **Matthias Finkbeiner** Technical University of Berlin, Germany **(TBC) Flash presentation competition**

November 1, Tuesday

8:50am - 10:10am	2-1A: Energy-material nexus for carbon neutrality Session Chair: **Damien Giurco**, University of Technology Sydney, Australia Session Chair: **Akihiro Yoshimura**, Chiba University, Japan

2-1A-1 **8:50am - 9:10am**

Future metal production and associated greenhouse gas emissions with implication for climate goals

Ryosuke Yokoi[1], Takuma Watari[2,3], Masaharu Motoshita[1]
[1]National Institute of Advanced Industrial Science and Technology (AIST), Japan; [2]National Institute for Environmental Studies, Japan; [3]University of Technology Sydney

2-1A-2 **9:10am - 9:30am**

Study on medium- to long-term scenarios for achieving net zero greenhouse gas emissions by 2050 in the material cycles and waste management sector

Madoka Yamamoto[1], Ryota Ii[1], Jiayin Wang[1], Yukako Matsushima[1], Mitsuhiro Nakajima[1], Naoya Nagano[1], Yuu Nagatomo[1], Hiroyuki Ueda[2]
[1]Pacific Consultants Co., Ltd., Japan; [2]Mitsubishi UFJ Research and Consulting Co., Ltd., Japan

2-1A-3 **9:30am - 9:50am**

Critical materials and decarbonization: The economic and policy context of 'appropriate" material availability

Roderick Eggert
Colorado School of Mines, United States of America

2-1A-4 **9:50am - 10:10am**

Just energy-resource transitions to clean energy - Engagement and evaluation

Benjamin Craig McLellan
Kyoto University, Japan

8:50am - 10:30am	2-1B: [OS] Sustainability visualization software and its role toward 2050 net-zero carbon Session Chair: **Koichi Shobatake**, TCO2 Co. Ltd., Japan

8:50am - 8:55am

Opening remarks

Koichi Shobatake, TCO2 Co. Ltd., Japan

2-1B-1 **8:55am - 9:05am**

Increasing impact of LCA results through flexible visualization

Eric Mieras, PRé Sustainability, the Netherlands

2-1B-2 **9:05am - 9:15am**

Introduction of questionnaire results for the development of LCA software MiLCA

Ken Yamagishi, Saki Sunaga, Masayuki Kanzaki
Sustainable Management Promotion Organization, Japan

2-1B-3 **9:15am - 9:25am**

Fujitsu's Carbon-Neutral initiative and the trust service to cross-company data exchange in the supply chain

Tomoko Konishi-Nagano, Mitsumasa Matsuike
Fujitsu Limited, Japan

2-1B-4 **9:25am - 9:35am**

GHG emissions calculation and visualization cloud service “zeroboard”

Yoichi Sakamoto
Zeroboard Inc., Japan

9:35am - 10:30am

Panel discussion

Moderator: **Koichi Shobatake**, TCO2 Co. Ltd., Japan

8:50am - 10:30am	2-1C: [OS] Chemical industries' challenge and contribution for carbon neutral and circular society with life cycle thinking Session Chair: **Norihiro Itsubo**, Tokyo City University, Japan

8:50am - 9:00am

Opening remarks

Shigeru Handa, Japan Chemical Industry Association, Japan

2-1C-1 **9:00am - 9:40am**

[Invited talk] Linking decarbonization and resource circulation in the chemical industry through life cycle thinking

Jun Nakatani[1,2]

[1]The University of Tokyo, Japan; [2]National Institute for Environmental Studies, Japan

2-1C-2 **9:40am - 9:55am**

Contribution to additional reduction of greenhouse gases by products through the implementation of LCA methodology

Hitomi Miura

Sekisui Chemical Co., Ltd., Japan

2-1C-3 **9:55am - 10:10am**

Sumitomo Chemical's challenge for carbon neutral society 1. ～Development of carbon footprint of products（CFP）calculation system～

Tomoyuki Izumi, Naoki Yokokawa, Saki Manabe, Mayumi Hayashi, Masaaki Toma

Sumitomo Chemical Co., Ltd., Japan

2-1C-4 **10:10am - 10:25am**

Sustainability in Teijin Group: History and future

Smitha Sundaram, Heidi Beers, Shuichi Osaki

Teijin Limited, Japan

10:25am - 10:30am

Wrap up

Norihiro Itsubo, Tokyo City University, Japan

8:50am - 10:30am	2-1D: Input-output analysis Session Chair: **Jonas Bunsen**, Technische Universität Berlin, Germany Session Chair: **Keiichiro Kanemoto**, RIHN, Japan

2-1D-1 **8:50am - 9:10am**

Visualization of the uncertainty in CO2 emission intensity caused by the price homogeneity assumption in the input-output table.

Sora Matsushima[1], **Shigemi Kagawa**[2], **Keisuke Nansai**[3], **Jinjun Xue**[4]

[1]Graduate School of Economics, Kyushu University, Japan; [2]Faculty of Economics, Kyushu University, Japan; [3]National Institute for Environmental Studies, Japan; [4]Faculty of Economics, Nagoya University, Japan

2-1D-2 **9:10am - 9:30am**

A marginal extraction analysis for green supply chain restructuring

Keitaro Maeno

Kyushu university, Japan

2-1D-3 **9:30am - 9:50am**

Drivers of greenhouse gas emissions in Kenyan industries by resource-consuming countries: An input-output model approach

Benson Senelwa Igesa, Yasushi Kondo
Waseda University, Japan

2-1D-4 **9:50am - 10:10am**

Carbon footprint analysis considering production activities of informal sector: A case study of India

Haruka Mitoma
Kyushu University Graduate school of economics, Japan

2-1D-5 **10:10am - 10:30am**

The devil is in the details: Disaggregating agricultural trade in an existing input-output database for assessing water-related impacts

Jonas Bunsen, Matthias Finkbeiner
Technische Universität Berlin, Germany

8:50am - 10:10am	2-1E: Communication and education

Session Chair: **Andrew Chapman**, Kyushu University, Japan
Session Chair: **Hiroki Tanikawa**, Nagoya University, Japan

2-1E-1 **8:50am - 9:10am**

Climate change communication through narrative

Yuuki Nakano, Hiroki Hondo
Yokohama National University, Japan

2-1E-2 **9:10am - 9:30am** **Withdrawn**

Measuring sustainability education impact through handprints

Jasmina Burek
University of Massachusetts, United States of America

2-1E-3 **9:30am - 9:50am**

Teaching life cycle assessment in higher education - Insights from a global study

Guido Sonnemann[1], Tobias Viere[2], Philip Strothmann[3]
[1]Université de Bordeaux, France; [2]Hochschule Pforzheim, Germany; [3]Forum for Sustainability through Life Cycle Innovation e.V., Germany

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2-1E-4 **9:50am - 10:10am**

Development of life cycle thinking-based environmental education program for childcare workers

Shinya Matsumoto, Orie Oshima
Yokohama National University, Japan

8:50am - 10:30am	2-1F: Acceleration of sustainability management: Concept and methodologies

Session Chair: **Yasushi Furushima**, Mizuho Research & Technologies, Ltd., Japan
Session Chair: **Carl Vadenbo**, ecoinvent Association, Switzerland

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2-1F-1 **8:50am - 9:10am**

Quo vadis LCA? Successful standardized, scientific method or misused and mainstreamed tool? A Review of cases in a decade between freedom of science, industrial innovation, marketing and compulsory reporting.

Martin Baitz[1], Ulrike Bos[1], John Parker[2]
[1]Sphera Solutions GmbH, Germany; [2]Sphera Solutions, Canada

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2-1F-2 **9:10am - 9:30am**

Distributed ledger technology for resource protection and circular economy

Florian Bodrogi[1], **Larissa Coblenzer**[1], **Christian Bergemann**[2], **Christian Kuehne**[2], **Mario Schmidt**[1]
[1]Pforzheim University, Germany; [2]THINK TANK Industrial Resource Strategies at Karlsruhe Institute of Technology (KIT), Germany

2-1F-3 **9:30am - 9:50am**

Semi-automated visualization method of sustainability scenarios using natural language processing

Tianzheng Gao, **Yusuke Kishita**, **Yasushi Umeda**
The University of Tokyo, Japan

2-1F-4 **9:50am - 10:10am**

A case study on the automation of a scenario planning method

Xiaoxi Zhang, **Masahiro Sotoma**, **Minako Hara**
NTT, Japan

2-1F-5 **10:10am - 10:30am** **Withdrawn**

Assessing municipal action CO2 impacts – Direct vs system wide approaches

Erik O Ahlgren
Chalmers Univ of Technology, Sweden

10:30am - 10:40am	Break
10:40am - 11:40am	**Poster session (1)**
11:40am - 12:30pm	Lunch & Poster
12:30pm-1:30pm	**Poster session (2)**
1:30pm - 1:40pm	Break
1:40pm - 3:20pm	**2-2A: [OS] Resource issues towards carbon-neutral society** Session Chair: **Shoki Kosai**, Ritsumeikan University, Japan

2-2A-1 **1:40pm - 2:00pm**

A resource paradox problem of green innovations

Eiji Yamasue, **Shoki Kosai**, **Shunsuke Kashiwakura**, **Takamoto Itoh**, **Seiji Hashimoto**
Ritsumeikan University, Japan

2-2A-2 **2:00pm - 2:20pm**

Life-cycle resource productivity of Japanese food resources

Sebastien M.R. Dente, **Seiji Hashimoto**
Ritsumeikan University

2-2A-3 **2:20pm - 2:40pm**

Global target by 2050 to reduce natural resource use in the automotive industry

Hibiki Takimoto[1], **Shoki Kosai**[1], **Takuma Watari**[2], **Shunsuke Kashiwakura**[1], **Eiji Yamasue**[1]
[1]Ritsumeikan University, Japan; [2]National Institute for Environmental Studies

2-2A-4 **2:40pm - 3:00pm**

Can car-sharing system solve trade-offs between resource consumption and greenhouse gases emission? A simulation based on person-trip survey

Naoki Yoshikawa[1,2], **Nanami Iwabuchi**[2,3], **Towa Kawasaki**[2], **Yasuhiro Shiomi**[2]
[1]The University of Shiga Prefecture, Japan; [2]Ritsumeikan University, Japan; [3]Osaka University, Japan

3:00pm - 3:20pm

Overall discussion

1:40pm - 3:20pm	**2-2B: [OS] Carbon neutrality and avoided emission (1)** Session Chair: **Atsushi Inaba**, Japan Life Cycle Assessment Facilitation Centre, Japan

1:40pm - 1:50pm

Opening address

Atsushi Inaba

Japan Life Cycle Assessment Facilitation Centre, Japan

2-2B-1 1:50pm - 2:05pm

Avoided emission in Japanese industry

Ichiro Daigo

The University of Tokyo, Japan

2-2B-2 2:05pm - 3:00pm

Case studies of the assessment of avoided emission of products and organizations

2-2B-2-1 **Consideration on methodology for assessing the contribution of automotive parts to avoided GHG**

Akira Tanahashi

Denso Corporation, Japan

2-2B-2-2 **Azbil's Organizational Contribution to the Avoided Emissions and its Issues to Consider**

Ayako Nagayama

Azbil Corporation, Japan

2-2B-2-3 **Avoided emission in practice: the case of TwaronR reinforced Conveyer belt by Teijin Aramid**

Noor Hossain

Teijin Aramid BV, the Netherlands

2-2B-2-4 **TBA**

Peter Saling

BASF, Germany

2-2B-3 3:00pm - 3:20pm

Comparative assessment cases of LCA applications

Masaharu Motoshita

National Institute of Advanced Industrial Science and Technology, Japan

1:40pm - 3:20pm	**2-2C: [OS] Chemical industries' challenge and contribution for carbon neutral and circular society with life cycle thinking (2)** Session Chair: **Norihiro Itsubo**, Tokyo City University, Japan

1:40pm - 1:45pm

Opening remarks

Norihiro Itsubo, Tokyo City University, Japan

2-2C-1 1:45pm - 2:25pm

Dealing with upcoming European legislation as a Japanese company

Heidi Beers[1,2], **Shuichi Osaki**[1], **Smitha Sundaram**[1]

[1]Teijin Limited, the Netherlands; [2]Japan Business Council Europe, Belgium

2-2C-2 2:25pm - 2:40pm

Feasibility study of carbon circularity method based on carbon footprint analysis of Japanese petrochemical products.

Hiroyuki Fujii
Mitsubishi Chemical Corporation, Japan

2-2C-3 **2:40pm - 2:55pm**

BASF approaches to reach net-zero CO2 emissions of societies

Kent Yano[1], Peter Saling[2], Takeshi Irie[1]
[1]BASF Japan Ltd., Japan; [2]BASF SE

2-2C-4 **2:55pm - 3:15pm**

Role of carbon neutrality and LCA efforts in the chemical industry

Akio Konishi
Japan Chemical Industry Association, Japan

3:15pm - 3:20pm

Closing remarks

Mayumi Hayashi, Sumitomo Chemical Co., Ltd., Japan

1:40pm - 3:20pm	2-2D: Circular economy business (1)

Session Chair: **Mélanie Despeisse**, Chalmers University of Technology, Sweden
Session Chair: **Mitsutaka Matsumoto**, National Institute of Advanced Industrial Science and Technology, Japan

2-2D-1 **1:40pm - 2:00pm**

Challenges and opportunities for circular fashion in Japan: Outcomes from stakeholder workshop

Masahiko Hirao[1], Eri Amasawa[1], Yoshihiro Mizuguchi[2], Masatoshi Furukawa[2], Taichi Sakumoto[2], Nobuyoshi Miyasaka[3], Natsuki Aramoto[3]
[1]The University of Tokyo, Japan; [2]JGC Holdings Corporation; [3]Teijin Limited

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2-2D-2 **2:00pm - 2:20pm**

Developing architecture for platform-based circular economy business: A case study of container reuse business

Takamitsu Hirota[1,2], Yusuke Kishita[1], Masakuni Tsunezawa[2], Kohei Sugiyama[2], Kazuyuki Tasaka[2], Yasushi Umeda[1]
[1]The University of Tokyo, Japan; [2]KDDI Research, Inc., Japan

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2-2D-3 **2:20pm - 2:40pm**

Circular design practices centered around civic participation: The case of Satsuma Future Commons in Kagoshima prefecture, Japan

Ryota Kamio
Re:public, Inc., Japan

2-2D-4 **2:40pm - 3:00pm**

Environmental effect estimation of mobile phone reuse businesses

Mitsutaka Matsumoto[1], Hamakazu Awazu[2], Junichi Tominaga[2], Keijiro Masui[1]
[1]National Institute of Advanced Industrial Science and Technology (AIST); [2]NewsedTech Inc.

2-2D-5 **3:00pm - 3:20pm**

Perspectives of evaluating product-service systems with life cycle assessment – A case study on power tool rental

Lars Gunnar Furelid Tellnes[1,2], Anna-Lena Kjøniksen[1]
[1]Østfold University College, Norway; [2]Technical University of Cartagena, Spain

1:40pm - 3:20pm	2-2E: Footprints of household

	Session Chair: **Tomohiko Ihara**, The University of Tokyo, Japan Session Chair: **Dami Moon**, The University of Tokyo, Japan

2-2E-1 **1:40pm - 2:00pm**

Household carbon footprint inequality in Vietnam: An input-output analysis

Duy Dang Van, Yasushi Kondo
Graduate School of Economics, Waseda University, Japan

2-2E-2 **2:00pm - 2:20pm**

Regional carbon footprints of EU households in 2010 and 2015

Jemyung Lee, Keiichiro Kanemoto
Research Institute for Humanity and Nature, Japan

2-2E-3 **2:20pm - 2:40pm**

Analyzing the differences in household carbon footprints across age generations in the US

Jiahuan Wang[1], Yosuke Shigetomi[1], Yuki Yamamoto[1], Andrew Chapman[2]
[1]Nagasaki University, Japan; [2]Kyushu University

2-2E-4 **2:40pm - 3:00pm**

The environmental footprints of Indonesian provinces

Irlan Adiyatma Rum, Arnold Tukker, Arjan de Koning
CML, Leiden University, the Netherlands

2-2E-5 **3:00pm - 3:20pm**

Analysis of lifestyle carbon footprint reduction measures towards the 1.5º C target in Brasilia, Brazil

Francisco Contreras[1], Ana Paula Bortoleto[2], Victor Silva[2], Flora Lyn de Albuquerque Fujiwara[1]
[1]University of Brasilia (UnB), Brazil; [2]The University of Campinas (UNICAMP), Brazil

1:40pm - 3:20pm	2-2F: Acceleration of sustainability management: Data Session Chair: **Eric Mieras**, PRé Sustainability, the Netherlands Session Chair: **Yuichiro Kanematsu**, The University of Tokyo, Japan

2-2F-1 **1:40pm - 2:00pm**

Design and development of data platform to accelerate regional system planning based on prospective LCA

Yuichiro Kanematsu, Shoma Fujii, Yasunori Kikuchi
The University of Tokyo

2-2F-2 **2:00pm - 2:20pm**

Integrating crop data, land use statistics, and a resolved multi-regional input-output table to fully regionalize ecoinvent

Sidi Peng, Stephan Pfister
ETH Zurich, Switzerland

2-2F-3 **2:20pm - 2:40pm**

Data foundation for carbon accounting and decarbonization

Hannes Partl, Martin Baitz
Sphera, Germany

2-2F-4 **2:40pm - 3:00pm**

Development of a common system to map the elementary flows (EF) lists from major LCA databases

Selim Karkour[1], Carl Vadenbo[2], Antonio Valente[3], Simone Fazio[2], Ashley Edelen[4], Thomas Sonderegger[2], Koichi Shobatake[1]
[1]TCO2 Co.,Ltd; [2]ecoinvent Association; [3]European Commission, JRC; [4]Eastern Research Group (ERG)

2-2F-5 **3:00pm - 3:20pm**

Directing practices for technology developments with the aid of deductive LCA

Hajime Ohno, Yasuhiro Fukushima
Tohoku University, Japan

3:20pm - 3:40pm	Break
3:40pm - 5:20pm	**2-3A: Supply risk** Session Chair: **Atsushi Terazono**, National Institute for Environmental Studies, Japan Session Chair: **Daye Lee**, University of Bordeaux, France

2-3A-1 **3:40pm - 4:00pm**

GeoPolRisk: Current developments and future mainstreaming opportunities of a life cycle impact assessment method for the supply risk of abiotic resources

Guido Sonnemann[1], Jair Santillan Saldivar[2], Anish Koyamparambath[1], Steven Young[3]
[1]University of Bordeaux; [2]CEA; [3]University of Waterloo

2-3A-2 **4:00pm - 4:20pm**

Investigation of fire accident caused by lithium-ion batteries in the disposal process and evaluation of countermeasures

Atsushi Terazono[1], Hiroyuki Akiyama[2], Toru Hagiwara[2], Hiromitsu Tomozawa[2], Masahiro Oguchi[1], Jo Nakayama[3]
[1]National Institute for Environmental Studies, Japan; [2]Mizuho Research & Technologies, Ltd.; [3]Yokohama National University

2-3A-3 **4:20pm - 4:40pm**

AIST-MeRAM: A free tool embedded with toxicity test data and risk estimation methodologies for ecological risk assessment of chemical substances

Bin-Le Lin[1], Yaobin Meng[2], Wataru Naito[1], Masashi Kamo[1]
[1]National Institute of Advanced Industrial Science and Technology, Japan; [2]Beijing Normal University, China

2-3A-4 **4:40pm - 5:00pm**

Considering synthesis of chemicals in chemical alternative assessment

Zih-Ee Lin[1], Mengshan Lee[2], Pei-Te Chiueh[1]
[1]National Taiwan University, Taiwan; [2]National Kaohsiung University of Science and Technology, Taiwan

2-3A-5 **5:00pm - 5:20pm**

Metals industry's involvement with the SDGs in their SDG reporting

Hiroki Hatayama
National Institute of Advanced Industrial Science and Technology, Japan

3:40pm - 5:20pm	**2-3B: [OS] Carbon neutrality and avoided emission (2)** Session Chair: **Atsushi Inaba**, Japan Life Cycle Assessment Facilitation Centre, Japan

2-3B-1 **3:40pm - 3:50pm**

Carbon Neutrality using ISO 14068

Ian Byrne
Ian Byrne Energy & Carbon Consultancy Services, the United Kingdom

2-3B-2 **3:50pm - 4:00pm**

Avoided emission of IEC/WD 63372

Takako Hiruta
Schneider Electric Japan Holdings Ltd., Japan

2-3B-3 **4:00pm - 4:10pm**

Discussion for ISO 14064-1 and ISO/TS 14069
Romain Poivet
ADEME, France

2-3B-4 **4:10pm - 4:20pm**

Beyond Value Chain Mitigation and Its Role in Achieving the Science-based Emission Reduction Targets
Dedy Mahardika
CDP, Indonesia

2-3B-5 **4:20pm - 4:30pm**

The new Net Zero Guidelines in ISO IWA42
Ian Byrne
Ian Byrne Energy & Carbon Consultancy Services, the United Kingdom

4:30pm - 5:20pm

Panel discussion

Views from investors
Humiyo Harada
Development Bank of Japan, Japan
Wataru Inoue
Nissay Asset Management Co., Ltd., Japan

Discussion
Moderator: **Atsushi Inaba**
Japan Life Cycle Assessment Facilitation Centre, Japan

3:40pm - 5:20pm	2-3C: [OS] Development of corporate value and organization well-being Session Chair: **Minako Hara**, Nippon Telegraph and Telephone Corporation, Japan

2-3C-1 **3:40pm - 4:00pm**

[Keynote talk] Roadmapping for strategic alignment
Robert Phaal
University of Cambridge, United Kingdom

2-3C-2 **4:00pm - 4:20pm**

[Invited talk] How foresight activity contribute LCA and better future development
Kuniko Urashima
NISTEP, Japan

2-3C-3 **4:20pm - 4:40pm**

[Invited talk] Organizational futures literacy in a well-being economy era
Kunio Shirahada
Japan Advanced Institute of Science and Technology, Japan

2-3C-4 **4:40pm - 5:00pm**

Collaborative research of the University of Tokyo and NTT -A case analysis to identify the subjects on the supporting technologies for strategy planning
Minako Hara[1], Machiko Shinozuka[1], Masahiro Sotoma[1], Xiaoxi Zhang[1], Midori Kawada[1], Yusuke Kishita[2]
[1]Nippon Telegraph and Telephone Corporation, Japan; [2]The University of Tokyo

5:00pm - 5:20pm

Overall discussion

3:40pm - 5:00pm	2-3D: Circular economy business (2)
	Session Chair: **Jai Verma**, The University of Sheffield, United Kingdom Session Chair: **Tomoko Konishi-Nagano**, Fujitsu Limited, Japan

2-3D-1 **3:40pm - 4:00pm**

CO2 reduction potential of car sharing services considering used car market

Daisuke Yoshizawa[1], **Yuya Nakamoto**[2], **Shigemi Kagawa**[1]
[1]Kyushu University, Japan; [2]Oita University, Japan

2-3D-2 **4:00pm - 4:20pm**

The impact of consensus building on sustainability in eco-friendly supply chains

Jundai Koketsu, **Aya Ishigaki**
Tokyo University of Science, Japan

2-3D-3 **4:20pm - 4:40pm**

Survival of the fittest or the most efficient?

Marlene Preiss, **Christian Haubach**, **Mario Schmidt**
Pforzheim University, Germany

2-3D-4 **4:40pm - 5:00pm**

Evaluation of energy reduction by the adoption of distributed recycling system using microwave: Obsolete alkaline batteries in Japan as a case study

Keita Kozaki, **Shoki Kosai**, **Shunsuke Kashiwakura**, **Eiji Yamasue**
Ritsumeikan University, Japan

3:40pm - 5:20pm	2-3E: Consequences of consumption
	Session Chair: **Ryu Koide**, National Institute for Environmental Studies, Japan Session Chair: **Jasmina Burek**, University of Massachusetts, United States of America

2-3E-1 **3:40pm - 4:00pm**

Agent-based modeling of consumer behavior and product circulation for ex-ante assessment of emerging circular economy strategies

Ryu Koide[1,2,3], **Shinsuke Murakami**[2], **Haruhisa Yamamoto**[2], **Keisuke Nansai**[1]
[1]National Institute for Environmental Studies; [2]The University of Tokyo; [3]Institute for Global Environmental Strategies

2-3E-2 **4:00pm - 4:20pm**

Consumption value of second hand products: Using transaction data from the online flea market platform

Dami Moon[1], **Kiyo Kuris**[1], **Kiyotaka Tahara**[2]
[1]The University of Tokyo, Japan; [2]National Institute of Advanced Industrial Science and Technology

2-3E-3 **4:20pm - 4:40pm**

Method for assessing the environmental impact of daily food consumption habits: Study on the consumption of land-based protein sources in Japan

Helen Stewart, **Takashi Furutani**, **Masaki Hisada**
Nippon Telegraph and Telephone Corporation, Japan

2-3E-4 **4:40pm - 5:00pm**

Holistic sustainability evaluation framework cognizant of demographics and behaviour

Andrew Chapman, **Tomoaki Nakaishi**
Kyushu University, Japan

2-3E-5 **5:00pm - 5:20pm**

A scenario analysis for exploring the potential for achieving carbon neutrality in Japan's household sector

Yida Jiang[1], **Kiyomi Shirakawa**[2], **Tomohiko Ihara**[1]

[1]The University of Tokyo; [2]Rissho University

3:40pm - 5:00pm	**2-3F: Acceleration of sustainability management: Tools** Session Chair: **Yasuhiro Fukushima**, Tohoku University, Japan Session Chair: **Martijn Gipmans**, Sphera Solutions GmbH, Germany

2-3F-1 **3:40pm - 4:00pm**

Net Zero in 2050: Implementation of a scalable digital tool for calculating high numbers of product carbon footprints in the chemical industry

Peter Saling[1], Alessandro Pistillo[1], Jan Schöneboom[1], Kent Yano[2]

[1]BASF SE, Germany; [2]BASF Japan Ltd., Japan

2-3F-2 **4:00pm - 4:20pm**

Assessing the sustainability performance of entire product portfolio using PSA: Example from a specialty chemicals company

Martijn Gipmans[1], Angel Vergara[1], Anja Laqua[2], Didier Houssier[3], Yoshihisa Inui[4], Tsuyoshi Date[4], Hiroyuki Ogi[4], Akiko Ide[4], Masahiro Osumi[5]

[1]Sphera Solutions GmbH, Germany; [2]Kuraray Europe GmbH, Germany; [3]EVAL Europe N.V., Belgium; [4]Kuraray Co., Japan; [5]Sphera Solutions Japan K.K., Japan

2-3F-3 **4:20pm - 4:40pm**

Scaling up LCA and LCC with ECOFACT

Emilia Ingemarsdotter, Georgios Pallas, Eric Mieras

PRé Sustainability, the Netherlands

2-3F-4 **4:40pm - 5:00pm**

Social analysis as module of sustainability assessments with SEEbalance®

Peter Saling[1], Thomas Grünenwald[1], Takeshi Irie[2], Kent Yano[2]

[1]BASF SE, Germany; [2]BASF Japan Ltd., Japan

5:00pm - 5:20pm

Overall discussion

5:20pm - 5:40pm	Break
5:40pm - 6:20pm	**Plenary session (2): Shifting Paradigms in Industrial Sustainability** Moderator: **Hajime Ohno**, Tohoku University, Japan Moderator: **Kazuyo Matsubae**, Tohoku University, Japan **[Plenary talk] Achieving ESG and Growing Sustainability** **Nuttavut Intarode** The Siam Cement PLC (SCG), Thailand
7:00pm - 9:00pm	**Banquet**

November 2, Wednesday

10:20am - 11:40am	**3-1B: Diagnosis of current system (1)** Session Chair: **Kazue Takahashi**, Musashino university, Japan Session Chair: **Jessica Hanafi**, PT Life Cycle Indonesia, Indonesia

3-1B-1 **10:20am - 10:40am**

Resource intensity of the transportation system considering the infrastructure development: Japan as a case study

Naotaka Haraguchi, Shoki Kosai, Shunsuke Kashiwakura, Eiji Yamasue
Ritsumeikan, Japan

3-1B-2 **10:40am - 11:00am**

Structural decomposition analysis of changes in South Korea's industrial hazardous waste generation

Daye Lee[1,2,3], Guido Sonnemann[3], Junbeum Kim[2], Hung-Suck Park[1]
[1]University of Ulsan, South Korea; [2]University of Technology of Troyes, France; [3]University of Bordeaux, France

3-1B-3 **11:00am - 11:20am**

Regional freshwater overconsumption induced by the agricultural crop production in a highly dense population setting

Kamrul Islam, Ryosuke Yokoi, Masaharu Motoshita
National Institute of Advanced Industrial Science and Technology, Japan

3-1B-4 **11:20am - 11:40am**

Life cycle assessment of coal: from mining to combustion

Gloria FJ Kartikasari[1], Jessica Hanafi[1], Didik Triwibowo[2], Gema Khusnul Fitrika[2], Presto Janu Saputra[2], Erwin Haris[1]
[1]PT Life Cycle Indonesia, Indonesia; [2]PT Adaro Indonesia

10:20am - 11:40am	**3-1C: Agriculture and aquaculture** Session Chair: **Elmer Bautista**, Philippine Rice Research Institute, Philippines Session Chair: **Kiyotada Hayashi**, National Agriculture and Food Research Organization, Japan

3-1C-1 **10:20am - 10:40am**

Environmental life cycle assessment of precision agriculture technologies – A case study of crop production in Austria

Francisco Javier Medel Jimenez
University of Natural Resources and Life Sciences Vienna, Austria

3-1C-2 **10:40am - 11:00am**

Estimating regional distribution of greenhouse gas emissions from paddy rice production using farm household surveys: The case study in the Philippines

Elmer Bautista[1], Lemuel Preciados[2], Alice Mataia[1], Kiyotada Hayashi[3]
[1]Philippine Rice Research Institute (PhilRice), Philippines; [2]Visayas State University (VSU), Philippines; [3]National Agriculture and Food Research Organization, Japan

3-1C-3 **11:00am - 11:20am**

Towards environmentally sustainable aquaculture: Investigation on the environmental impact of the pearl oyster farming using life cycle assessment

Dheanara Pinka, Zhengyang Zhang, Kazuyo Matsubae
Tohoku University, Japan

3-1C-4 **11:20am - 11:40am**

Beyond recycling – Using LCA to support emerging technology development and benchmarking

Zoe Chunyu Miao, Vanessa Zeller, Liselotte Schebek
Technical University of Darmstadt, Germany

10:20am - 11:40am	**3-1D: Circularity** Session Chair: **Guido Sonneman**, University of Bordeaux, France Session Chair: **Seiji Hashimoto**, Ritsumeikan University, Japan

3-1D-1 **10:20am - 10:40am**

LC3SA framework: Addressing circularity and criticality of materials in LCSA

Isadora Hackenhaar, Gustavo Moraga, Gwenny Thomassen, Jo Dewulf
Research Group Sustainable Systems Engineering – Department of Green Chemistry & Technology – Ghent University. Coupure Links 653, 9000 Ghent, Belgium

3-1D-2 **10:40am - 11:00am** Withdrawn

Circularity metrics in context of circular economy transition: A review and critical assessment of material circularity indicator

Jai Verma, Andrea Genovese
Sheffield University Management School, The University of Sheffield, United Kingdom

3-1D-3 **11:00am - 11:20am**

Sustainability and Circularity

Lucia Rigamonti[1], Eliana Mancini[2]
[1]Politecnico di Milano, Italy; [2]Università Degli Studi "G. D'Annunzio", Italy

3-1D-4 **11:20am - 11:40am**

Production-consumption-waste management material flow analysis as a tool for circularity measurement: Macadamia products plant

Siriporn Borrirukwisitsak[1], Kannika Khwamsawat[2], Jarinee Singja[3], Sunaree Namyuak[3]
[1]Faculty of Science and Technology, Songkhla Rajabhat University, Thailand; [2]Center of Excellence on Hazardous Substance Management, Chulalongkorn University, Thailand; [3]Mae Fah Luang Foundation under Royal Patronage, Thailand

10:20am - 11:40am	**3-1E: Consumer behavior** Session Chair: **Monique Retamal**, University of Technology, Sydney, Australia Session Chair: **Nariaki Nishino**, The University of Tokyo, Japan

3-1E-1 **10:20am - 10:40am**

Estimation of telework efficacy rate during COVID-19 Pandemic considering time-series changes in human behavior rule

Machiko Shinozuka, Masahiro Sotoma, Xiaoxi Zhang, Midori Kawada, Minako Hara
NTT, Japan

3-1E-2 **10:40am - 11:00am**

Understanding public acceptance of energy harvesting technology from already existing radioactive waste

Yoon-Young Chun, Takeshi Fujiwara, Takehiro Shimaoka, Yukako Kato, Hitoshi Umezawa, Yasushi Shoji, Takashi Matsumae
National Institute of Advanced Industrial Science and Technology (AIST), Japan

3-1E-3 **11:00am - 11:20am**

Perceived air quality, socio-economic characteristics, and willingness to pay for improved air quality by installing new energy buses

Zaiqiang Liu, Takaaki KATO, Toru Futawatari
The University of Kitakyushu, Japan

3-1E-4 **11:20am - 11:40am**

Feasibility study of Kawasaki city contributing to citizens' change of environmentally conscious behavior

Motoi Funase, Hironori Shimamura, Tomoko Konishi-Nagano, Aruga Takafumi, Akira Miyazaki, Akiko Yamada
Fujitsu Lmited, Japan

11:40am - 1:10pm	Lunch

1:10pm - 2:50pm	3-2A: Impact assessment Session Chair: **Stephan Pfister**, ETH Zurich, Switzerland Session Chair: **Ryosuke Yokoi**, National Institute of Advanced Industrial Science and Technology, Japan

3-2A-1 **1:10pm - 1:30pm**

Spatially explicit characterization factors for impacts of nitrogen emissions on biodiversity

Lars P. G. Laumen[1], Juan Gallego-Zamorano[1], Rosalie van Zelm[1], Aafke M. Schipper[1,2], Mark A. J. Huijbregts[1]
[1]Department of Environmental Science, Radboud Institute for Biological and Environmental Sciences (RIBES), Faculty of Science, Radboud University, Nijmegen, the Netherlands; [2]PBL Netherlands Environmental Assessment Agency, The Hague, the Netherlands

3-2A-2 **1:30pm - 1:50pm**

Development of ecosystem service impact pathways and endpoints in LCA

Tim Grant
Lifecycles, Australia

3-2A-3 **1:50pm - 2:10pm**

Dietary impacts on human health for food LCAs

Olivier Jolliet[1], Eliseu Verly Jr[2], Aline Martins De Carvalho[3]
[1]Technical University Denmark, Denmark; [2]UERJ; [3]Pública Universidade de São Paulo

3-2A-4 **2:10pm - 2:30pm**

Marine invasions in life cycle assessment: Towards a global impact assessment

Philip Gjedde, Francesca Verones
norwegian university of science technology (NTNU), Norway

3-2A-5 **2:30pm - 2:50pm**

Development of Thai weighting factors in LCIA using conjoint analysis

Chantima Rewlay-ngoen[1], Seksan Papong[2]
[1]Faculty of Engineering, Rajamangala University of Technology Phra Nakhon, Thailand; [2]National Science and Technology Development Agency (NSTDA), Thailand

1:10pm - 2:50pm	3-2B: Diagnosis of current system (2) Session Chair: **Viganda Varabuntoonvit**, Kasetsart University, Thailand Session Chair: **Kazuyo Matsubae**, Tohoku University, Japan

3-2B-1 **1:10pm - 1:30pm**

Towards sustainable nitrogen use: The launch of inter- and trans-disciplinary research

Kentaro Hayashi[1,2], Keisuke Koba[3], Kazuyo Matsubae[4], Koichi Kuriyama[3], Hideaki Shibata[5]
[1]Research Institute for Humanity and Nature, Japan; [2]National Agriculture and Food Research Organization, Japan; [3]Kyoto University, Japan; [4]Tohoku University, Japan; [5]Hokkaido University, Japan

3-2B-2 **1:30pm - 1:50pm**

Post-consumer polyethylene terephthalate (PET) waste management in Thailand

Viganda Varabuntoonvit[1,2], Kultida Boonyarith[1], Panarin Pakornkarn[1], Yoon-Young Chun[3]
[1]Department of Chemical Engineering, Kasetsart University, Thailand; [2]Center of Excellence on Petrochemical and Materials Technology, Kasetsart University, Thailand; [3]National Institute of Advanced Industrial Science and Technology, Japan

3-2B-3 **1:50pm - 2:10pm**

Life-cycle environmental performance of sludge anaerobic digestion and land application under different management practices

Patricio Neumann[1,2], Cristian Riquelme[1], Javier Cartes[3], Mathias Kuschel-Otárola[3], Almudena Hospido[4], Gladys Vidal[2,3]
[1]Universidad del Bío-Bío, Chile; [2]Centro de Recursos Hídricos para la Agricultura y Minería, Chile; [3]Universidad de Concepción, Chile; [4]Universidad de Santiago de Compostela, Spain

3-2B-4 **2:10pm - 2:30pm**

Estimation of greenhouse gas emissions from wastewater treatment plants: A case study of Ulaanbaatar, Mongolia

Tumurtogtokh Oyunchimeg
The University of Kitakyushu, Japan

3-2B-5 **2:30pm - 2:50pm**

Analysis of nitrogen flows in wastes in the urban environment of Tokyo

Yue Zhang[1], Binle Lin[2], Kiyotaka Tsunemi[2], Kiyotaka Tahara[2], Tomohiko Ihara[1]
[1]Department of Environment Systems, Graduate School of Frontier Sciences, The University of Tokyo, 5-1-5, Kashiwanoha, Kashiwa, Chiba, 277-8563, Japan; [2]Research Institute of Science for Safety and Sustainability, National Institute of Advanced Industrial Science and Technology, 16-1 Onogawa, Tsukuba, Ibaraki, 305-8569, Japan

1:10pm - 2:50pm	3-2C: Plastics
	Session Chair: **Lucia Rigamonti**, Politecnico di Milano, Italy Session Chair: **Jun Nakatani**, The University of Tokyo, Japan

3-2C-1 **1:10pm - 1:30pm**

Integrate the impact of marine plastic debris on carbon sequestration into life cycle impact assessment

Fei Song, Martin Dorber, Francesca Verones, Johan Berg Pettersen
Norwegian University of Science and Technology, Norway

3-2C-2 **1:30pm - 1:50pm**

Achievable circularity of plastic material flows and related environmental benefits

Magdalena Klotz, Melanie Haupt, Stefanie Hellweg
ETH Zurich, Switzerland

3-2C-3 **1:50pm - 2:10pm**

Recycled plastic packaging from the Dutch food sector pollutes Asian oceans

Nicolas Navarre[1], José Mogollón[1], Arnold Tukker[1], Valerio Barbarossa[1,2]
[1]Institute of Environmental Sciences, Faculty of Science, Leiden University; [2]Department of Nature and Rural Areas, PBL Netherlands Environmental Assessment Agency

3-2C-4 **2:10pm - 2:30pm**

Designing the future resource circulation system of plastics in line with changes in the structure of the arterial industries towards decarbonization

Daiki Kata, Jun Nakatani, Tsuyoshi Fujita
The University of Tokyo, Japan

3-2C-5 **2:30pm - 2:50pm**

Integrated assessment of environmental, economic, and social impacts of waste plastic recycling in Japan

Baixin Li, Yasushi Kondo
Waseda University, Japan

1:10pm - 2:30pm	3-2D: Circularity assessment
	Session Chair: **Roderick Eggert**, Colorado School of Mines, United States of America Session Chair: **Eiji Yamasue**, Ritsumeikan University, Japan

3-2D-1 **1:10pm - 1:30pm**

Resource efficiency account with considering the quality of circulated material

Kohmei Halada[1], Kiyotaka TAHARA[2], Mitsutaka MATSUMOTO[2]
[1]Sustainability Design Institute, Japan; [2]National Institute of Advanced Industrial Science and Technology (AIST)

3-2D-2 **1:30pm - 1:50pm**

Analysis of model selection for electrical and electronic equipment based on lifespan and breakeven point

Keita Hamasuna, **Shoki Kosai, Shunsuke Kashiwakura, Eiji Yamasue**
Ritsumeikan University, Japan

3-2D-3 **1:50pm - 2:10pm**

Ecodesign of EEE: optimizing circularity by integrating recycled plastics from WEEE

Nicolas Nève[1,2,3,4], Carole CHARBUILLET[1,4], Nicolas PERRY[1,2,3], Stéphane POMPIDOU[1,2,3]
[1]Arts et Métiers Institute of Technology, France; [2]University of Bordeaux, France; [3]I2M Bordeaux, Bordeaux INP, CNRS, INRAE, France; [4]Institut Arts et Métiers de Chambéry, France

3-2D-4 **2:10pm - 2:30pm**

Evaluation framework of environmental policies considering its effects on product lifetime

Daisuke Nishijima[1], Masahiro Oguchi[2]
[1]Fukushima University, Japan; [2]National Institute for Environmental Studies (NIES), Japan

1:10pm - 2:50pm | 3-2E: Sustainability assessment

Session Chair: **Tomoko Mori**, Kokushikan University, Japan
Session Chair: **Isabel Schestak**, Bangor University, United Kingdom

3-2E-1 **1:10pm - 1:30pm**

Even LCA-based absolute environmental sustainability assessment is relative

Jeroen Guinée[1], Arjan de Koning[1], Reinout Heijungs[1,2]
[1]Leiden University, the Netherlands; [2]Vrije Universiteit Amsterdam, the Netherlands

3-2E-2 **1:30pm - 1:50pm**

Introducing a multi-level approach for operationalising life cycle sustainability assessment

Mauro Cordella[1], Till Bachmann[2], Rafael Horn[3], Hanna Pihkola[4], Alessandra Zamagni[5], Luca Zampori[6], Isadora Hackenhaar[7]
[1]Tecnalia, Spain; [2]EIFER, Germany; [3]Fraunhofer, Germany; [4]VTT, Finland; [5]Ecoinnovazione, Italy; [6]PRé, the Netherlands, [7]Ghent University, Belgium

3-2E-3 **1:50pm - 2:10pm**

Global commons stewardship index: Safeguarding the shared resources of the planet

Zachary A. Wendling[2], T. Reed Miller[1], Salma Dahir[2], Akiyuki Kawasaki[3], Guillaume Lafortune[2], Daniel C. Esty[1], Naoko Ishii[3]
[1]Yale University, Center for Environmental Law & Policy, United States of America; [2]Sustainable Development Solutions Network; [3]University of Tokyo, Institute for Future Initiatives, Japan

3-2E-4 **2:10pm - 2:30pm**

Novel SLCA method to overview more-good and less-bad social impacts

Pasan Dunuwila[1], Ichiro Daigo[1], V.H.L. Rodrigo[2], Hiroki Hatayama[3], Koichi Shobatake[4], Kiyotaka Tahara[3], Takeo Hoshino[1]
[1]The University of Tokyo, Japan; [2]Rubber Research Institute of Sri Lanka; [3]National Institute of Advanced Industrial Science and Technology; [4]TCO2 Co.,Ltd.

3-2E-5 **2:30pm - 2:50pm**

Linking the UN sustainable development goals to product-level impact information

Rosan Harmens, Shaniq Pilay, Eric Mieras
PRé Sustainability, the Netherlands

1:10pm - 2:30pm | 3-2F: Policy and supporting science

Session Chair: **Martin Baitz**, Sphera, Germany
Session Chair: **Makiko Tsukui**, Tokyo International University, Japan

3-2F-1 **1:10pm - 1:30pm**

What countries induce the world asbestos flow? : A multi-regional input-output approach

Makiko Tsukui
Tokyo International University, Japan

3-2F-2 **1:30pm - 1:50pm**

Quantification of the material flow from the modal shift of motorcycle electrification under climate change adaption policy in Taiwan

Kuo-Che Weng, Falk Schneider, Hsin-Tien Lin
National Cheng Kung University, Taiwan

3-2F-3 **1:50pm - 2:10pm**

The role of the distance-to-target weighting method in life cycle assessment: A case study of membrane capacitive deionization (MCDI)

Chih-Chi Huang, Mengshan Lee
National Kaohsiung University of Science and Technology, Taiwan

3-2F-4 **2:10pm - 2:30pm**

LCA implementation in policy: National adoption of life cycle assessment in Indonesia

Jessica Hanafi[1], Sigit Reliantoro[2]
[1]Indonesian Association of Life Cycle Assessment and Sustainability Professionals (PROLCAS); [2]Ministry of Environment and Forestry, Republic of Indonesia

2:50pm - 3:10pm	Break
3:10pm - 4:30pm	**3-3B: Urban system** Session Chair: **Seksan Papong**, National Science and Technology Development Agency, Thailand Session Chair: **Bin-Le Lin**, National Institute of Advanced Industrial Science and Technology, Japan

3-3B-1 **3:10pm - 3:30pm**

Floating urban development for sustainable coastal communities

Gil Wang[1], Sebastian Schreier[1], Tomer Fishman[2], Fransje Hooimeijer[3]
[1]Delft University of Technology (TU Delft), Faculty of Mechanical, Maritime and Materials Engineering (3mE); [2]Leiden University, Institute of Environmental Science (CML); [3]Delft University of Technology (TU Delft), Faculty of Architecture and the Built Environment

3-3B-2 **3:30pm - 3:50pm**

Estimation of life cycle CO2 emission and analysis of factors associated with medium-capacity passenger transport systems

Yuma Yamada, Hirokazu Kato, Suil Park
Nayoya University, Japan

3-3B-3 **3:50pm - 4:10pm**

Quantifying greenhouse gases emission from buildings and vehicles in redeveloped areas under the transit-oriented development strategy: A case study in Taipei city, Taiwan

Hsueh-Hsun Lee, Pei-Te Chiueh
National Taiwan University, Taiwan

3-3B-4 **4:10pm - 4:30pm**

Toward Sustainability: Comparative life cycle assessment framework of green road pavement using industrial by-product as alternative materials

Manouchehr Shokri, Marzia Traverso, Rose Nangah Mankaa
Institute of Sustainability in Civil Engineering (INaB)Faculty of Civil Engineering at RWTH Aachen, Germany

3:10pm - 4:30pm	**3-3C: Material and waste flow** Session Chair: **Hsin-Tien Lin**, National Cheng Kung University, Taiwan Session Chair: **Daisuke Nishijima**, Fukushima University, Japan

3-3C-1 **3:10pm - 3:30pm**

Identifying flow of aluminum alloy to aluminum alloy recycling through end-use products using matrix optimization

Kentaro Takeyama, Ichiro Daigo, Takeo Hoshino
The University of Tokyo, Japan

3-3C-2 **3:30pm - 3:50pm**

Systematic synthesis of mixed waste plastic sorting scenarios

Yasuhiro Fukushima, Hajime Ohno, Yuki Kato
Tohoku University, Japan

3-3C-3 **3:50pm - 4:10pm**

Evaluation method of recycled content and classification of scraps for materials

Taichi Suzuki[1,2], Ichiro Daigo[1]
[1]University of Tokyo; [2]UACJ Corporation

3-3C-4 **4:10pm - 4:30pm**

Time series analysis of capital-embodied material footprint in Japan towards a material flow management in a carbon-neutral society

Sho Hata[1,2], Keisuke Nansai[1], Kenichi Nakajima[1,2]
[1]National Institute for Environmental Studies, Japan; [2]The University of Tokyo

3:10pm - 4:30pm	3-3D: Lifecycle thinking for eco-design
	Session Chair: **Jeroen Guinée**, Leiden University, the Netherlands Session Chair: **Komei Halada**, Sustainability Design Institute, Japan

3-3D-1 **3:10pm - 3:30pm**

Supporting technology developers to upscale rare-earth-magnet recycling systems for sustainability

Brenda Miranda Xicotencatl, Sander van Nielen, Rene Kleijn
Institute of Environmental Sciences, Leiden University

3-3D-2 **3:30pm - 3:50pm**

Multifaceted approach to achieve increased polyester textile monomer recycling with reduced GHG emissions

Mikiaki Hasegawa, Noriko Tatsumi
JGC Corporation, Japan

3-3D-3 **3:50pm - 4:10pm**

Closing the silicon loop: A lifecycle environmental implication of upcycling Japan's solar panel wastes into next-generation thin-film silicon solar PV cells

Heng Yi Teah[1], Ziyi Han[2]
[1]Waseda Research Institute for Science and Engineering, Waseda Universty; [2]Department of Applied Chemistry, Waseda University

3-3D-4 **4:10pm - 4:30pm**

Environmental trade-offs of decarbonisation pathways for domestic water heating

Isabel Schestak, A. Prysor Williams
Bangor University, United Kingdom

3:10pm - 4:30pm	3-3E: Organizational and regional sustainability
	Session Chair: **Timothy Grant**, Lifecycles, Australia Session Chair: **Yoshinori Kobayashi**, Toshiba Corporation, Japan

3-3E-1 **3:10pm - 3:30pm**

New assessment method for companies' ESG activities toward well-being society

Minako Hara, Xiaoxi Zhang, Machiko Shinozuka, Midori Kawada, Masahiro Sotoma
Nippon Telegraph and Telephone Corporation

3-3E-2 **3:30pm - 3:50pm**

From waste towards carbon neutrality: An innovative paradigm shift to material flow cost accounting 2.0

Aline Hendrich[1], Andreas Moeller[2], Mario Schmidt[1]
[1]Institute for Industrial Ecology INEC Pforzheim University, Germany; [2]Leupahana University Lueneburg, Germany

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3-3E-3 **3:50pm - 4:10pm**

Recursive calculation of scope-3 emissions in the supply chain with input-output analysis

Alexandra Vogt[1], Pia Heidak[1], Christian Kühne[2], Moritz Nill[3], Mario Schmidt[1]
[1]Pforzheim University, Germany; [2]Karlsruhe Institute of Technology, Germany; [3]ctrl+s GmbH, Germany

3-3E-4 **4:10pm - 4:30pm**

Proposal and verification of global comparison framework of eco-industrial parks

Tiejia Zhang, Toru Matsumoto
The University of Kitakyushu, Japan

4:30pm - 4:50pm	Break
4:50pm - 6:00pm	**Closing & Networking drinks**

Presentation list: Poster session

November 1, Tuesday

10:40am - 11:40am **12:30pm – 1:30pm**	**Poster session** **10:40am -** Core time 1: odd-numbered presentations **1:30pm -** Core time 2: even-numbered presentations

P-1 **Core time 1**

System development of resource logistics toward minimizing supply chain risks of mineral resources

Kazuyo Matsubae[1], Kenichi Nakajima[2], Kazuyo Hirose[3], Yoko Yamakata[4], Zhengyang Zhang[1], Eiji Yamasue[5], Ichiro Daigo[4], Shinsuke Murakami[4]
[1]Tohoku University, Japan; [2]National Institute for Environmental Studies; [3]Japan Space Systems; [4]The University of Tokyo; [5]Ritsumeikan University

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P-2 **Core time 2**

A framework for modelling transport modal shifts in relation to planetary boundaries and the impacts of battery mineral supply

Bernardo Mendonca, Damien Giurco, Stephen Northey
Institute for Sustainable Futures, Australia

P-3 **Core time 1**

Evaluation of atmospheric carbon dioxide balance associated with forest growth and utilization

Hirotaka Komata[1], Takanobu Aikawa[2], Chihiro Kayo[3]
[1]Hokkaido Research Organization Forest Products Research Institute, Japan; [2]Renewable Energy Institute, Japan; [3]Tokyo University of Agriculture and Technology, Japan

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P-4 **Core time 2**

Global supply-chain network analysis for environmentally-important shipping routes and ports

Tomomi Shoda, Keitaro Maeno, Shigemi Kagawa, Taiga Shimotsuura
Kyushu University, Japan

P-5 **Core time 1**

Biomass-based plastics strategies based on material characteristics, product application, and recycling methods

Hiroaki Kuroda, Eri Amasawa, Jun Nakatani, Masahiko Hirao
The University of Tokyo, Japan

P-6 **Core time 2**

Exploring low-cost pathways to achieve the 2050 decarbonisation goals of airlines

Minami Kito[1], Hirotaka Takayabu[2], Keisuke Nansai[1]
[1]National Institute for Environmental Studies, Japan; [2]Kindai University, Japan

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P-7 **Core time 1**

The role of urban structures on the CO2 emissions

Chisato Hososhima, Daisuke Yoshizawa, Shigemi Kagawa
Kyushu University

P-8 **Core time 2**

Natural resource use in west Asia: Status and trends of environmental impacts using enhanced MRIO

Viktoras Kulionis, Stephan Pfister
ETH Zurich, Switzerland

P-9 **Core time 1**

Consumption patterns of primary and secondary steel resources based on market share of steel in different economic conditions

Han Gao, Ichiro Daigo
Department of Advanced Interdisciplinary Studies, Graduate School of Engineering, The University of Tokyo

P-10 **Core time 2**

Quantifying the linkage between fatalities from tailings dam failures and automobile industry activities

Tomoya Sugiyama[1], Zhengyang Zhang[1], Kenichi Nakajima[2], Kazuyo Matsubae[1]
[1]Tohoku University, Japan; [2]National Institute for Environmental Studies

P-11 **Core time 1**

Nationwide waste footprint using the Japanese input-output table and impact assessment method

Tomoya Kitami, Yuki Ichisugi, Norihiro Itsubo
Tokyo City University, Japan

P-12 **Core time 2**

Carbon footprint for outdoor sports events

Shino Ichihara, Norihiro Itsubo
Tokyo City University, Japan

P-13 **Core time 1**

Development of a business model for bioplastics recycling acorn by-products

Sang Hyun Oh[1], Yong Woo Hwang[2], Young Woon Kim[1]
[1]Program in Global Industrial & Environmental Engineering, Inha University, Republic of Korea; [2]Department of Enviromental Engineering, Inha University, Republic of Korea

P-14 **Core time 2**

Mercury legacy: Use, trade, and anthropogenic emission

Kenichi Nakajima[1], Tatsuya Hanaoka[1], Yingchao Cheng[1], Shoki Kosai[2], Masaaki Fuse[3], Eiji Yamasue[2], Kazuyo Matsubae[4], Keisuke Nansai[1]
[1]National Institute for Environmental Studies, Japan; [2]Ritsumeikan University; [3]Graduate School of Advanced Science and Engineering, University of Hiroshima; [4]Graduate School of Environmental Studies, Tohoku University

P-15 **Core time 1**

Comparison of the environmental performance of small to medium scale sewage treatment plants in south-central Chile

María Jesús Rivas[1], Michelle Díaz[1], Cristian Riquelme[1], Patricio Neumann[1,2]
[1]Universidad del Bío-Bío, Chile; [2]Centro de Recursos Hídricos para la Agricultura y Minería (CRHIAM), Chile

P-16 **Core time 2**

Vanadium redox flow battery to support the use of renewable energy in stationary applications

Lígia da Silva Lima[1], Mattijs Quartier[1], Astrid Buchmayr[1], David Sanjuan-Delmás[1,2], Hannes Laget[3], Dominique Corbisier[3], Jan Mertens[4,5], Jo Dewulf[1]
[1]Research Group Sustainable Systems Engineering (STEN), Ghent University, Coupure Links 653, 9000 Ghent, Belgium; [2]Eurecat, Centre Tecnològic de Catalunya, Waste, Energy and Environmental Impact Unit, 08243 Manresa, Spain; [3]Engie Laborelec, Rodestraat 125, 1630 Linkebeek, Belgium; [4]Engie Research, 1 pl. Samuel de Champlain, 92930 Paris-la Défense, Paris, France; [5]Department of Electromechanical, System and Metal Engineering, Ghent University, Technologiepark Zwijnaarde 131, Zwijnaarde, Belgium

P-17 **Core time 1**

Digital WEEE manifest as a potential tool for WEEE management: Case study of Thailand

Siriporn Borrirukwisitsak[1], Kannika Khwamsawat[2], Wanida Kanarkard[3], Surus Tangpaitoon[4], Nubol Khumpong[5]
[1]Faculty of Science and Technology, Songkhla Rajabhat University, Thailand; [2]Center of Excellence on Hazardous Substance Management, Chulalongkorn University, Thailand; [3]Faculty of Engineering, Khon Kaen University, Thailand; [4]Electrical and Electronics Institute, Thailand; [5]Electricity Generating Authority of Thailand, Thailand

P-18 **Core time 2**

Comparative analysis of environmental impacts for Fenton-based wastewater treatment processes

Deqian Liu[1], Chihchi Huang[1], Yu-Jen Huang[2], Mengshan Lee[1]
[1]National Kaohsiung University of Science and Technology, Taiwan; [2]Ever Clean Environmental Engineering Co.

P-19 **Core time 1**

A life cycle assessment of electric and conventional motorcycles in Taiwan

Hsin-Tien Lin, Falk Schneider, Daniel Castillo, Kuo-Che Weng
National Cheng Kung University, Taiwan

P-20 **Core time 2**

A shifting paradigm with life cycle thinking for material flows analysis to atmospheric aerosol loading

Mehri Sadat Alavinasab Ashgezari[1], Gholamreza Nabi bidhendi[1], Fatemeh Sadat Alavinasab Ashkezari[2]
[1]School of the Environment, College of Engineering, University of Tehran, Iran, Islamic Republic of; [2]Islamic Azad University of Tehran Southern Branch-Faculty of Arts and Architecture, Iran, Islamic Republic of

P-21 **Core time 1**

A human toxicity assessment in LCA applying a risk-based approach for chemicals

Peter Saling[1], Takeshi Irie[2], Kent Yano[2]
[1]BASF SE, Germany; [2]BASF Japan Ltd., Japan

P-22 **Core time 2**

Can introduction of PVC de-chlorination technology bring circularity benefits? - An analysis using a multi-objective, multi-regional technology choice model

Ryodai Makino, Yasuhiro Fukushima, Hajime Ohno
TOHOKU UNIVERSITY, Japan

P-23 **Core time 1**

Sectoral similarity analysis of production technologies and lifestyles of nations

Waka Nishifuji[1], Kayoko Shironitta[2], Haruka Mitoma[1], Shigemi Kagawa[1]
[1]Kyushu University, Japan; [2]Fukuoka Women's University, Japan

P-24 **Core time 2**

Effects of environmental labels for packaging on consumer behavior

Takahiro Hashimoto[1], Maki Shibata[2], Takumi Abe[3], Norihiro Itsubo[1]
[1]Tokyo City Univercity, Japan; [2]NPO Corporation City Colaboration, Japan; [3]Setagaya City Cleaning and Recycling Department, Japan

P-25 **Core time 1**

Comparative LCA of wood waste treatments - A case in Taiwan

Hao-Hsiang Hsu, Hsin-Tien Lin, Po-Lin Wu, Falk Schneider
National Cheng Kung University, Taiwan

P-26 **Core time 2**

Environmental performance of Komatsuna in use of natural impurities adsorbent

Haruna Hirose, Kiyoshi Dowaki
Tokyo University of Science, Japan

P-27 **Core time 1**

Environmental impact assessment of direct air capture with biogas power plant

Hayato Suzuki, Norihiro Itsubo
Tokyo City University, Graduate school of Environmental Information studies, Japan

P-28 **Core time 2**

Dynamic substance flow analysis of indium in Japan

Yuma Nishioka[1], Akihiro Yoshimura[2], Yasunari Matsuno[2]

[1]Faculty of Science and Engineering, Chiba University; [2]Graduate School of Science and Engineering, Chiba University

P-29 **Core time 1**

Evaluating carbon inequality by household type across prefectures in Japan

Yuzhuo Huang[1], Ken'ichi Matsumoto[2], Yosuke Shigetomi[1]
[1]Nagasaki University; [2]Toyo University

P-30 **Core time 2**

Consideration of nitrogen balance between Input and output flow in IDEA

Yuki Ichisugi, Kenichiro Tsukahara, Kiyotaka Tahara
National Institute of Advanced Industrial Science and Technology, Japan

P-31 **Core time 1**

Life cycle assessment for solar panel recycling considering the resources of glass

Akihiro Murayama, Toru Matsumoto
University of Kitakyushu, Japan

P-32 **Core time 2**

Copper-smelting-related mercury emissions reduced by promoting recycling and introducing countermeasure technology in major copper-smelting countries

Ryota Yamamoto, Seiji Hashimoto
Ritsumeikan University, Japan

P-33 **Core time 1**

Feasibility of applying leachate treatment equipment from final disposal sites to methane fermentation facilities after completion of landfill disposal

Takao Yamada[1], Akifumi Nakao[2], Noboru Yoshida[2]
[1]Graduate School of Wakayama University, Japan; [2]Wakayama University, Japan

P-34 **Core time 2**

Cooperation across the value chain – An important condition for resource efficiency

Marlene Preiss, Christian Haubach, Mario Schmidt
Pforzheim University, Germany

P-35 **Core time 1**

Analysis of the effect of load leveling on the energy supply function by waste incineration facility

Akari Sudo[1], Toyohiko Nakakubo[2]
[1]Pacific Consultants, Japan; [2]Ochanomizu University, Japan

P-36 **Core time 2**

Effects of showing volunteer-Related movies on children's voluntary attitudes and behavior

Zhaofei Lin, Takaaki Kato
The university of Kitakyushu, Japan

P-37 **Core time 1**

Uncertainty of electricity generation efficiency of variable renewable energy power plants: The case of Japanese photovoltaic power plants

Yuya Nakamoto[1], Shogo Eguchi[2], Hirotaka Takayabu[3]
[1]Oita university; [2]Fukuoka University; [3]Kindai University

P-38 **Core time 2**

A methodology for assessing mobility revolution with low carbonization

Suil Park, Hirokazu Kato, Hiroyoshi Morita, Marjan Khaleghi
Nagoya University, Japan

P-39 **Core time 1**

Policy driven compact cities: A literature review on the effect of compact city on carbon emissions

Tianhui Fan[1], Andrew Chapman[1,2]
[1]Graduate School of Economics, Kyushu University, Japan; [2]International Institute for Carbon-Neutral Energy Research,Kyushu University, Japan

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P-40 **Core time 2**

Integrated analysis of overseas global environmental impacts induced by Japanese food production activities -Proposal for production and distribution system transformation-

Toshinori Isogawa[1], Akiyuki Kawasaki[1,2]
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P-41 **Core time 1**

LCA evaluation of freon reclamation and destruction

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P-42 **Core time 2**

Design for fostering life cycle thinking through a speculative scenario picture book about mending with mycelium in a local circular network

Emma Huffman, Kazutoshi Tsuda, Daijiro Mizuno
Kyoto Institute of Technology, Japan

P-43 **Core time 1**

International trade in mercury and its uncontrolled risk

Hiromu Oda[1], Hiroki Noguchi[1], Kenichi Nakajima[2], Masaaki Fuse[1]
[1]University of Hiroshima, Japan; [2]National Institute for Environmental studies, Japan

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P-44 **Core time 2**

Association of air pollution and meteorological variables with COVID-19 pandemic event in DKI Jakarta

Merita Gidarjati, Toru Matsumoto
The University of Kitakyushu, Japan

P-45 **Core time 1**

A proposal of multiple indexes in vegetable consumption flow in terms of environmental impacts and nutrition

Misaki Takemoto, Shan Miao, Kiyoshi Dowaki
Tokyo University of Science, Japan

P-46 **Core time 2**

Evaluation of secondary aluminum cycles under automotive changes in China

Wang Binze, Zhang Zhengyang, Matsubae Kazuyo
Tohoku University, Japan

P-47 **Core time 1**

Analysis of the (H)EV permanent magnets recycling trend for rare earth sustainability improvement

So Jeong Jang[1], Yong Woo Hwang[2], Hong Yoon Kang[1], Jun Ho Choi[3]
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P-48 **Core time 2**

Environmental and social impact assessment of cultural contents considering the economic ripple effect of visits to drama location

Akihiko Tsutsumi, Norihiro Itsubo
Tokyo City University, Japan

P-49 **Core time 1**

The carbon footprint of Kishiwada Danjiri Festival

Ryusei Murata[1], Issei Kawamoto[2], Norihiro Itsubo[1]
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P-50 **Core time 2**

Evaluating the environmental performance of silver nanoparticles syntheses

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P-51 **Core time 1**

Ex ante life cycle assessment of synthetic talc production based on supercritical hydrothermal flow process

Guido Sonnemann[1], Edis Glogic[1], Marie Claverie[3], Muhammad Jubayed[4], Valentina Musumeci[2], Christel Careme[3], Francois Martin[5], Cyril Aymonier[2]
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P-52 **Core time 2**

A concurrent technology development and life cycle assessment of lithium-sulfur battery

Qi Zhang[1], Kotaro Yasui[1], Suguru Noda[1,2], Heng Yi Teah[2]
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P-53 **Core time 1**

Mineral resource demands for building power transmission grids associated with wind and solar PV plants by 2050 under the energy transition

Zhenyang Chen[1], Rene Kleijn[1], Hai Xiang Lin[1,2]
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P-54 **Core time 2**

Modelling product loss within the packaging sector

Jeremy Francis Macdonald Grant[1,2]
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P-55 **Core time 1**

Mitigating fossil energy consumption in protected horticulture: Life cycle assessment of a water heat pump system for strawberry production

Longlong Tang, Kiyotada Hayashi
National Agriculture and Food Research Organization (NARO), Japan

P-56 **Core time 2**

A cradle-to-gate greenhouse gases emission perspective for assessment of CCU technologies - Comparison of process options in non-reductive CO2 utilization for poly-carbonate diol production

Seokjin Hong, Hajime Ohno, Jialing Ni, Yasuhiro Fukushima
Tohoku University, Japan

P-57 **Core time 1**

Determinants of changes in footprints of crucial environmental indicators for global commons stewardship in China

HANZhao[1], Akiyuki Kawasaki[1,2]
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P-58 **Core time 2**

Web scraping approach for secondary data collection in life cycle assessment and life cycle cost analysis

Dong-hyeon Kim, Yu-jeong Choi, Seong-gwon Lee, Ye-won Hwang, Tak Hur
School of Chemical Engineering, Konkuk University

P-59 **Core time 1**

Biodiversity damage assessment integrating carbon and land footprint

Kiichiro Takahashi, Norihiro Itsubo
Tokyo City University, Japan

P-60 **Core time 2**

Developing product lifetimes information system

Levon Amatuni[1], José Mogollón[1], Kees Baldé[2], Tales Yamamoto[1]
[1]CML, Leiden University, the Netherlands; [2]United Nations Institute for Training and Research (UNITAR)

P-61 **Core time 1**

Investigating power generation efficiency of PV power plants in Japan focusing on new market entrants

Shogo Eguchi[1], Yuya Nakamoto[2], Hirotaka Takayabu[3]
[1]Fukuoka University, Japan; [2]Oita University, Japan; [3]Kindai University, Japan

P-62 **Core time 2**

Economic and environmental efficiency analysis of medical sector in Japan

Daigo Ushijima, Tomoaki Nakaishi, Haruka Mitoma, Shigemi Kagawa
Kyushu University, Japan

P-63 **Core time 1** Withdrawn

Safe by design in product development through combining risk assessment and life cycle assessment

Jeroen Guinée, Vrishali Subramanian
Leiden University, the Netherlands

P-64 **Core time 2**

A framework of environmental risk analysis of chemical accident-induced atmospheric pollution

Jo Nakayama[1], Michiya Fujita[2], Shunichi Hienuki[1]
[1]Yokohama National University, Japan; [2]The University of Tokyo, Japan

P-65 **Core time 1**

Comparison of the externality cost of biodiesel from palm oil, soybean, and rapeseed as renewable fuel by using endpoint analysis

Siripol Tongorn[1], Chantima Rewlay-ngoen[1], Seksan Papong[2]
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P-66 **Core time 2**

How can LCA contribute to the evaluation of sustainable tourism?

Naoki Shibahara
Chubu University, Japan

P-67 **Core time 1**

A mixed recipe choice benefits nutrient cycle closing in a sustainable manner

Yin Long[1], Liqiao Huang[1], Yoshikuni Yoshida[1], Fujie Rinakina[1], Alexandros Gasparatos[2]
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P-68 **Core time 2**

Carbon footprint analysis of food packaging in Brasilia, Brazil

Flora Lyn de Albuquerque Fujiwara[1], Francisco Contreras[1], Victor Silva[2]
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P-69 **Core time 1**

The development of LCIA methodology and damage factors for biodiversity loss with extended impact categories.

Runya Liu[1], Haruka Ohashi[2], Akiko Hirata[2], Tetsuya Matsui[2], Norihiro Itsubo[1]
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P-70 **Core time 2**

Greenhouse gas emission and reduction due to rice husks biochar application: The impact of capital goods production

Masaya Kanai, Minako Doi, Akira Shibata, Katsuyuki Nakano
Ritsumeikan University, Japan

P-71 **Core time 1**

Air conditioning energy analysis using big data

Genta Sugiyama[1], Tomonori Honda[2], Norihiro Itsubo[1]
[1]Tokyo City University, Japan; [2]National Institute of Advanced Industrial Science and Technology

P-72 **Core time 2**

A new H2 storage scheme for a fuel cell assisted bicycle in uses of exhaust gas and insulator coating

Shan Miao[1], Nagado Ryuta[1], Sakai Satoshi[1], Shimogawa Junnosuke[2], Noboru Katayama[2], Kiyoshi Dowaki[1]
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P-73 **Core time 1**

Life cycle assessment to assess circular economy business models: case of lithium-ion battery remanufacturing

Benedikte Wrålsen, Reyn O'Born
University of Agder, Norway

P-74 **Core time 2**

Carbon footprint of stationary type water server

Tomoya Kitami[1], Saori Aoyama[2], Yuuya Yamashita[2], Yukio Kobayashi[2], Yasuo Koseki[3], Norihiro Itsubo[1]
[1]Tokyo City University, Japan; [2]Mitsubishi Chemical Cleansui Corporation; [3]Koseki Environment Office

P-75 **Core time 1**

Life cycle externality cost of battery electric vehicles, hybrid vehicles, and conventional gasoline vehicles in Thailand based on end-point impacts

Chantima Rewlay-ngoen[1], Siripol Tongorn[1], Adchara Chinsorn[2], Seksan Papong[2]
[1]Faculty of Engineering, Rajamangala University of Technology Phra Nakhon, Thailand; [2]National Science and Technology Development Agency (NSTDA), Thailand

P-76 **Core time 2**

Modeling the relationship between life cycle environmental impacts of ripened peach and food loss reduction induced by transportation packaging

Yuma Sasaki[1,2], Rina Shinozaki[3], Takahiro Orikasa[2,3], Nobutaka Nakamura[4], Kiyotada Hayashi[1], Yoshihito Yasaka[5], Naoki Makino[5], Koichi Shobatake[5], Shoji Koide[2,3], Takeo Shiina[6]
[1]Institute for Agro-Environmental Sciences, NARO, [2]United Graduate School of Agricultural Sciences, Iwate University, [3]Faculty of Agriculture, Iwate University, [4]Food Research Institute, NARO, [5]TCO2 Co., Ltd, 6Graduate School of Horticulture, Chiba University

P-77 **Core time 1**

Environmental and social impacts assessment caused by the growing demand for electric vehicles

Sayaka Kakiuchi, Norihiro Itsubo
Tokyo City university, Japan

P-78 **Core time 2**

Analyzing variable factors of water supply-demand balances derived from food production and consumption

Yohei Yamaguchi, Naoki Yoshikawa, Seiji Hashimoto, Koji Amano
Ritsumeikan University, Japan

P-79 **Core time 1**

Economic and environmental consequences of the COVID-19 pandemic through foreign tourists demand in Japan.

Yusuke Oga[1], Tomoaki Nakaishi[2], Shigemi Kagawa[3]
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P-80 **Core time 2**

Life cycle assessment of photocatalytic reduction of CO2 to methanol

David Petrovic, Yukio Furukawa, Heng Yi Teah
Waseda University, Japan

P-81 **Core time 1**

Analyzing the carbon foot print of IT display products

Byunghee Choi, Byungkwun Kang, Jiwon Yang, Yongchae Jung, Changgone Kim
LG Display, Korea, Republic of (South Korea)

P-82 **Core time 2**

Case study of applying smart & safety solution using DT/AI

Jae wook Ahn, Yong woo Hwang, Hong yoon Kang, In tae Kim
INHA University, Korea, Republic of (South Korea)

P-83 **Core time 1**

Life cycle assessment of alcoholic beverage produced by highly refined Japanese rice

Marika Muramoto, Norihiro Itsubo
Tokyo city university, Japan

P-84 **Core time 2**

Evaluation of greenhouse gas emissions from bagasse-derived clothing

TOSHIRO Semba[1], NAOTO Yamamoto[2], SHINJI Odo[2], MASASHI Shimizu[2], GAKU Tomii[2], NORIHIRO Itsubo[1]
[1]Tokyo City University; [2]Curelabo Company, Limited

P-85 **Core time 1**

Life cycle assessment of imported jackets

Shino Ichihara, Norihiro Itsubo
Tokyo City University, Japan

P-86 **Core time 2**

Estimation of greenhouse gas emissions from mercury-contaminated municipal solid waste treatment in Japan

Katsuyuki Nakano[1], Shoki Kosai[1], Eiji Yamasue[1], Masaki Takaoka[2]
[1]Ritsumeikan University, Japan; [2]Kyoto University, Japan

P-87 **Core time 1**

Factor decomposition analysis of changes in CO2 emissions from container operating companies

Taiga Shimotsuura[1], Tomoaki Nakaishi[2], Shigemi Kagawa[3]

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P-88 **Core time 2**

Latest practices and issues with avoided greenhouse gas emissions by ICT contributing to Green Transformation

Tomoko Konishi-Nagano, Takuya Nagamiya, Satomi Hirooka, Yuta Musha, Masayuki Hamakawa
FUJITSU LIMITED, Japan

P-89 **Core time 1**

Greenhouse gas emission reduction potential of vehicle-to-grid technology: A case study in Kyushu, Japan

Kazuho Toyoda, Katsuyuki Nakano
Ritsumeikan University, Japan

P-90 **Core time 2**

An environmental impact and economic analysis of palladium recovery in low concentration spent catalyst solution

Taek-Kwan Kwon[1], Yong-Woo Hwang[2], Chun-san Kim[3]
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[3]Graduate School of Engineering, Inha University, Republic of Korea

P-91 **Core time 1**

Efficient utilization of palm oil residue as material / energy products

Tomoko Fuchigami[1], Koichi Goda[2], Ken-ichiro Tanoue[2], Hirokazu Ito[3]
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P-92 **Core time 2**

Comparison of disassembly and assembly works using optical motion capture for circular economy

Ryuto Kawane, Hiromasa Ijuin, Ryosuke Nakajima, Masao Sugi, Tetsuo Yamada
The University of Electro-Communications, Japan

P-93 **Core time 1**

Quantification of the environmental impacts associated with human labour

Lucia Rigamonti, Federica Carla Carollo
Politecnico di Milano, Italy

P-94 **Core time 2**

Analysis of material flow in mercury recovery process for determining the characteristics of mercury behavior

In Tai Kim[1], Hee Won Park[2], Yong Woo Hwang[3]
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P-95 **Core time 1**

Carbon-circularity-based evaluation of recycling process with dynamic MFA approach

Yosuke Nagase, Hajime Ohno, Yasuhiro Fukushima
Tohoku University, Japan

P-96 **Core time 2**

LCA experts training graduate program supported by the Korean government

Dong-hyeon Kim[1], Myung-Seok Choi[1], Jae-hyun Kim[2], Sung-Ki Lim[1], Young Sunwoo[3], Tak Hur[1]
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P-97 **Core time 1**

Environmental impact assessment for polyester T-shirts -Prospective LCA for chemical recycling

Hiroyuki Nakamura, Norihiro Itsubo
Tokyo City University, Japan

P-98 **Core time 2**

Analysis of treatment and resources circulation for marine litter

Yeong Hun Choe[1], Yong Woo Hwang[2], Ji Woo Choi[3]
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