The 15th Biennial International Conference on EcoBalance

EcoBalance 2022

Shifting Paradigms with Life Cycle Thinking

program

October 30 - November 2, 2022, Fukuoka, Japan

Fukuoka International Congress Center

Contents

Preface

On behalf of the conference committee, I would like to welcome all of you participating in the 15th Biennial International Conference on EcoBalance (EcoBalance 2022). As an international conference with the main theme of life cycle assessment, the first International Conference on EcoBalance was held in 1994. We are very proud of the history of this conference, approaching 30 years since its foundation. This historical success is largely attributable to our EcoBalance family, who have contributed to the conference over the years. After the challenging situation due to the COVID-19 pandemic, this year we gladly welcome all EcoBalance participants to both Fukuoka city in person, and online in a new hybrid format EcoBalance conference.

Living within planetary boundaries is of primary importance toward achieving sustainability. Diverse activities across the world in various fields: industry, policy, finance, and science in particular, have been creating strong momentum towards carbon neutrality. We believe that life cycle thinking has the power to progress the required paradigm shifts by connecting such activities with a bird's-eye view of the complex systems that contribute to nature and human society. We would like to create opportunities to advance practice and science, and to connect participants and partners to promote the changes needed to ensure a bright future. With this in mind, the conference theme has been decided as "Shifting Paradigms with Life Cycle Thinking".

I sincerely thank all of you for participating in the conference, as well as our sponsors, review contributors, and International Advisory Board members for providing your cooperation and support toward holding this conference. I earnestly hope that participating in this conference, through the time you spend here and the people that you meet in Fukuoka will provide you with a fruitful and rewarding experience.

We look forward to seeing you in Fukuoka.

Masaharu Motoshita
National Institute of Advanced Industrial Science and Technology (AIST)
Conference chair, EcoBalance 2022

Plenary speakers

Mr. Hiroshi Ozeki

President and Chief Executive Officer
Nissay Asset Management Corporation
CMA
(Chartered Member of the Security Analyst Association of Japan)

Biography

In 1987, Hiroshi joined Nippon Life Insurance Company after graduation from the University of Tokyo, where he garnered most of his professional career. He accumulated ample experience and professional knowledge through various key positions in leading Investment Management as a Domestic Bond Portfolio Manager and a Head of Global Credit and Alternative Investment. In 2013, he became in charge of the Finance and Investment Planning Department as a General Manager. Promoted in 2014 to Chief Investment Officer and a member of the Board Directors & Executive Officer. In 2018, under his new leadership role at Nippon Life's overseas operations (based in New York), he served as the Regional CEO (responsible for the Americas and Europe) and Managing Director & Executive Officer.
Hiroshi speaks and acts widely in promoting efforts to enhance the group's initiatives on ESG investments and Green financing, including initiating the first Green Bond issued by the City of Paris and the first underwriting of women bonds by Banco del Estado de Chile (BancoEstado). He has been invited to speak at both international and domestic conferences on climate change, ESG and SDGs, including CFA, ICMA, the RI Asia, the TCFD Summit, and he gave the opening speech at the PRI Digital Conference 2021.
Hiroshi Ozeki has 34 years of business experience engaging in Corporate Planning and Asset Management, including Loan Portfolio Management, Risk Management, Corporate Strategy, Capital Procurement, IR, ALM, and Asset allocation of Life Insurance General Accounts.

[Plenary talk]

Trends and expectations in the investment industry for carbon neutrality

Abstract

Nissay Asset Management was founded in 1995 as an asset management company of the Nippon Life Group. We signed the United Nations Principles for Responsible Investment (UN-PRI) in 2006 when it was launched, and have been involved in ESG management for more than a decade. The issue of climate change is a topic that the world must work together to address, but there are both risks and opportunities in addressing carbon neutrality, and the role of the asset management industry is becoming increasingly important. As a member of the Net Zero Asset Managers Initiatives (NZAMI), Nissay Asset is striving to achieve net zero CO2 emissions from assets under management by 2050.

Investments related to "ESG" and "carbon neutrality" are now commonplace. In the past, investments in

companies that excelled in ESG initiatives were called "ESG investments. However, in order for society as a whole to move toward carbon neutrality, it is important to invest not only in "good investments" that actively address ESG issues, but also in "bad investments. We must promote a paradigm shift. We believe that it is extremely important to provide transition finance to companies with large carbon footprints that are willing to make the transition to net zero, including business restructuring, or to make impact investments that contribute to net zero through innovation and other means.

In order to achieve carbon neutrality, for example, it is important to optimize the entire cycle of electricity generation, storage, transmission, use, and reuse, rather than partial optimization. Such efforts require technological innovation and infrastructure development in each of these areas, which in turn require a great deal of capital, and as an asset management company, our role in supporting such efforts in the form of transition finance and impact investment is now increasing.

Our corporate slogan is "A Good Investment for the Future" to help realize a sustainable society. As an asset management professional, we hope to play a role in the realization of a sustainable society by identifying and investing in good investment opportunities that will enable us to achieve both a good return and contribute to improving environmental and social sustainability over the medium to long term.

Ms. Justine Bolton

Carbon management and climate resilience specialist
Environmental Sustainability Manager at FirstRand Limited (South Africa)

Biography

A dedicated and driven environmental sustainability and carbon accounting practitioner, Justine is currently involved with measuring carbon footprints including financed emissions; setting science-based decarbonisation targets and understanding a financial institutions portfolio alignment to net zero; measuring physical and transitional climate change related risks in lending and investment portfolios; climate resilience in the agriculture sector; and TCFD and CDP aligned disclosures. Another particular interest is biodiversity footprinting to measure the impact and dependencies of portfolios on biodiversity.

Justine is a Board Member of PBAF (Partnership for Biodiversity Accounting Financials) and participates in the PBAF working groups to help develop guidance for financial institutions to manage and report on biodiversity related risks and opportunities. Justine also participates in core working groups of PCAF (Partnership for Carbon Accounting Financials) and helps to chair the PCAF Africa working group.

Justine studied a B.SC in Wildlife Science at UKZN followed by courses in project management (WITS), environmental law (CEM-NWU), impact measurement (GIBS) and a Master's Degree in Carbon Management at the University of Edinburgh. She is currently studying for a PhD in carbon accounting and Paris alignment for financial institutions at the University of Edinburgh Business School while working full time at FirstRand Limited.

[Plenary talk]

Corporate biodiversity impact assessment using biodiversity footprinting – bridging the gap between nature and business

Abstract

Biodiversity and functioning ecosystems are essential for livelihoods and economies. Biodiversity is important to business in terms of providing inputs, but also in terms of preventing ecosystem collapse and loss of GDP. In addition, nature provides key life support systems in terms of climate change mitigation and adaptation, but poor ecosystem health can also exacerbate these climate risks.

Globally, as awareness and action on climate change grows, there has been a shift in focus towards nature related risks and impacts, and a rapidly growing discourse on natural capital and biodiversity in the business sector.

But time is running out. To achieve the Convention on Biological Diversity's global of protecting and restoring the Earth's biodiversity, and transforming society's relationship with biodiversity and nature over the next decade through post-2020 framework process – businesses, governments and communities

need to support each other and take action now.

Businesses have a role to play by engaging with emerging frameworks such as the Task Force on Nature Related financial disclosures; participating in implementation projects; conducting biodiversity footprints (for example using the PBAF guidance) to understand impacts of their business, as well as the dependencies of their business, on nature; and integrating these considerations into business strategy so as to drivee change through core business. Systemic thinking is needed to address challenges and enhance opportunities, including those of a Just Transition that integrates people, planet and the economy.

Mr. Nuttavut Intarode

Sustainable Development Director,
The Siam Cement PLC (SCG), Thailand

Biography

Nuttavut Intarode is the director of sustainability development of Siam Cement Group (SCG). Since taking a role in sustainability development, he has been driving a net zero transition and orchestrating various sustainability actions through SCG's ESG strategic approaches including set net zero, go green, reduce inequality, and enhance collaboration with trust through transparency in all operations both domestically and regionally.

Nuttavut Intarode has joined with SCG since graduate in bachelor degree - Industrial Chemistry, from the faculty of science, Chiang Mai University in 1995 as a quality assurance engineer in cement business. In 2008, he received SCG's scholarship to pursue his Master Degree in Engineering and Technology Management from Portland State University, Portland, Oregon, USA in 2008. During his career in SCG he held several managerial roles in quality assurance manager in refractory, cement, and construction businesses. Currently he is also a company representative being a workgroup member of Thought Leadership, Global Cement and Concrete Association (GCCA) and an associate member of Thailand Business Council Sustainable Development (TBCSD).

[Plenary talk]

Achieving ESG and Growing Sustainability

Abstract

Achieving ESG – Environmental, Social, and Governance dimensions and growing sustainability helps the corporate establish the resiliency and drive long-term value for the businesses. Thus, ESG has become a must have and huge opportunities to satisfy customers, employees, and other stakeholders. To become a sustainable business, listed companies are required to do thing differently while not enough to turn just a profit. As the world has changed drastically and is facing challenges all around, I do believe that ESG is not just a framework to create a business growth, rather, it is the way to help all sectors including government sector, private sector, and public sector to collectively come together to build the right balance circumstances and deliver a better world for our next generation.

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Abstract review contributors

Martin Baitz	Sphera, Germany
Heidi Beers	Teijin Ltd., the Netherlands
Jonas Bunsen	Technische Universität Berlin, Germany
Jasmina Burek	University of Massachusetts, United States of America
Wei-Qiang Chen	Institute of Urban Environment, Chinese Academy of Sciences, China
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Mark Goedkoop	PRé Sustainability, the Netherlands
Tim Grant	Life Cycle Strategies, Australia
Jeroen Guinee	Leiden University, the Netherlands
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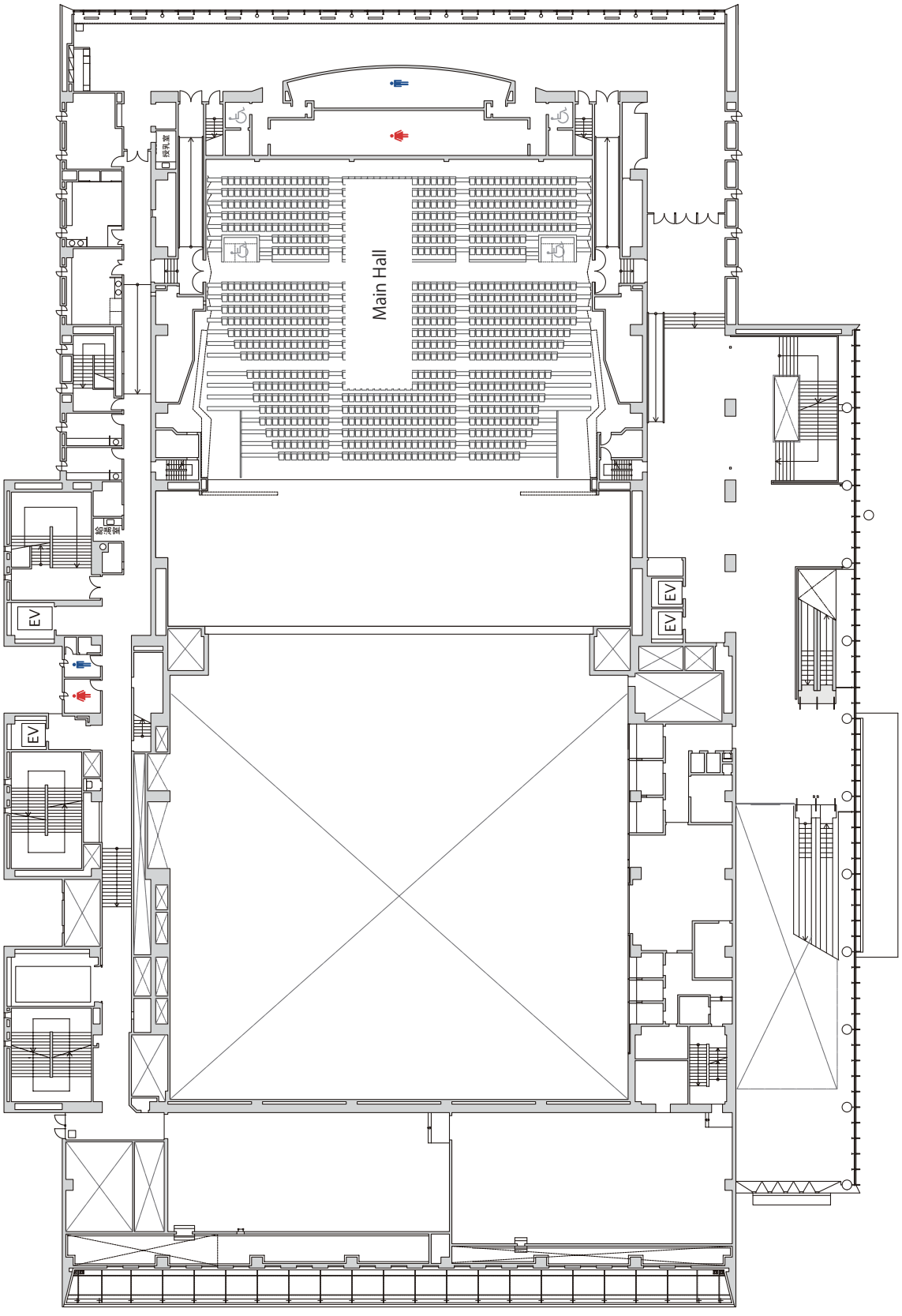
Floor plan Fukuoka Convention Center



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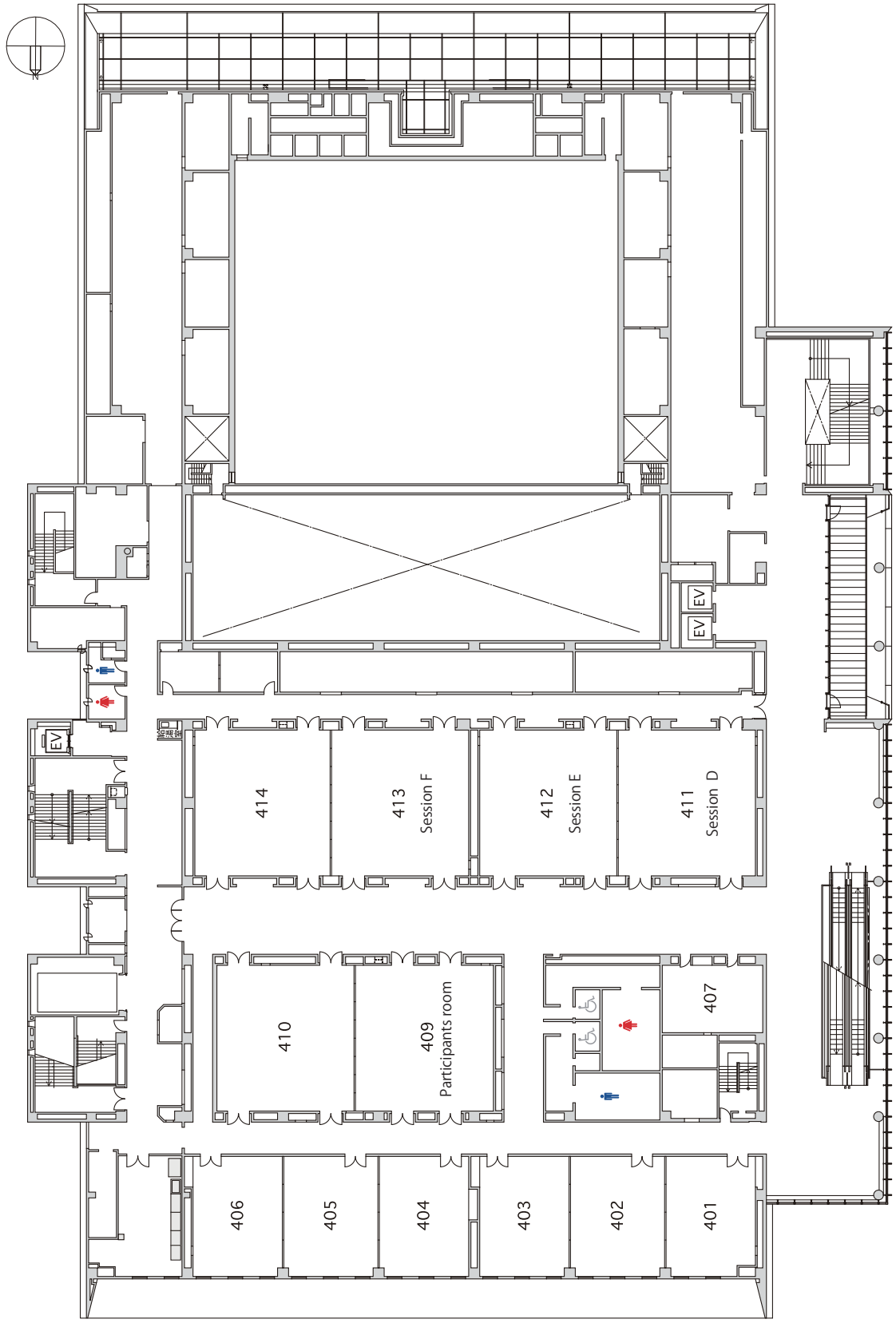
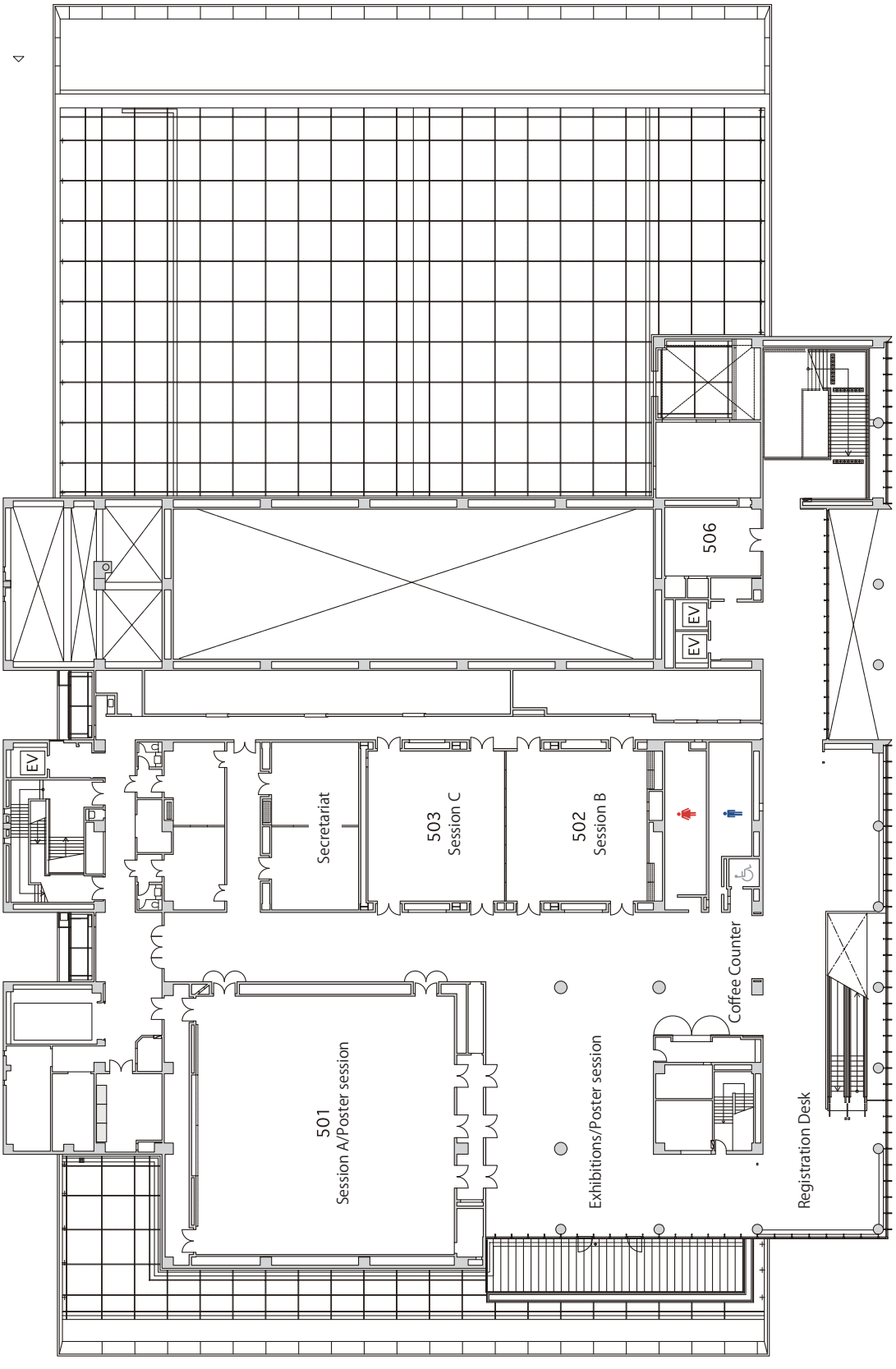
Floor plan Fukuoka Convention Center



Floor plan Fukuoka Convention Center



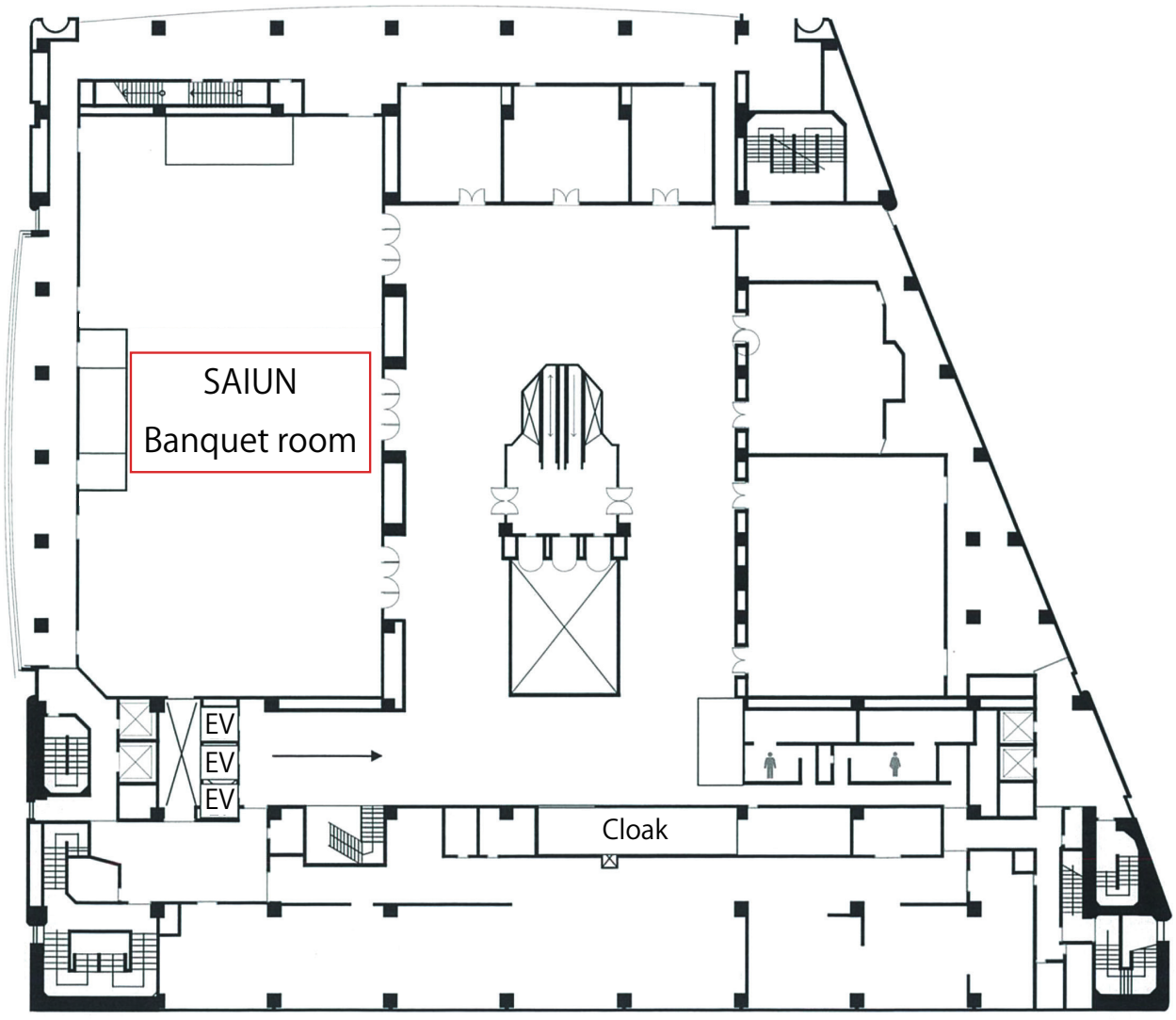
Banquet Solaria Nishitetsu Hotel Fukuoka

November 1, Tuesday
19:00-21:00
8F SAIUN, Solaria Nishitetsu Hotel Fukuoka
TEL:+81 92-752-555
2-2-43, Tenjin, Fukuoka-Shi Chuo-Ku, Fukuoka-Ken, 810-0001, Japan

Google Maps Link

Shuttle bus service between the conference venue and banquet venue will be provided at 6:30pm on November 1. Those who wish to use this service should come and wait at the entrance of the conference venue.

Note: All attendees are requested to bring their name badges and show them at the reception desk.



The participation to banquet is not included for participants with online participation, one day or student ticket (https://www.ecobalanceconference.org/conference/2022/registration/fees.html).
For onsite participants who wish to attend banquet, please purchase the add-on ticket on our website if you've purchased one day ticket or student ticket.

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· Please wear your mask when inside the facility and practice social distancing.
· Please wear your mask on public transportation.
· Please wash your hands thoroughly and use hand sanitizer before entering the room.
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Program

Session overview

October 30, Sunday						
1:30pm - 4:30pm	EcoBalance International School					Room 502
1:30pm - 4:30pm	Partner event (1) : Mercury Legacy in Artisanal and Small-Scale Gold Mining					Room 503
5:00pm - 6:00pm	VOD spotlight					Room 502
6:00pm - 7:30pm	Welcome reception					Room 501

October 31, Monday						
9:30am - 10:30am	Opening					3F Main Hall
10:30am - 10:50am	Break					
10:50am - 12:30pm	**1-1A:** Carbon management for neutrality Room 501	**1-1B:** Technology application in local system Room 502	**1-1C:** Metallic resources: now and future (1) Room 503	**1-1D:** [OS] Doing more with less - Transitioning to circular economy through business model innovation (1) Room 411	**1-1E:** Mobility and energy storage Room 412	**1-1F:** Construction Room 413
12:30pm - 2:00pm	Lunch & Poster					
2:00pm - 3:40pm	**1-2A:** Energy towards carbon neutrality Room 501	**1-2B:** Technology assessment Room 502	**1-2C:** Metallic resources: now and future (2) Room 503	**1-2D:** [OS] Doing more with less - Transitioning to circular economy through business model innovation (2) Room 411	**1-2E:** Food Room 412	**1-2F:** EcoDesign Room 413
3:40pm - 4:00pm	Break					
4:00pm - 5:20pm	Plenary session (1) : Shifting Paradigms with Investment					3F Main Hall
5:20pm - 5:40pm	Break					
5:40pm - 7:20pm	EcoBalance Young Researchers' Workshop					Room 501
5:40pm - 7:00pm	Networking discussion					Room 502/503

November 1, Tuesday						
8:50am - 10:30am	**2-1A:** Energy-material nexus for carbon neutrality Room 501	**2-1B:** [OS] Sustainability visualization software and its role toward 2050 net-zero carbon Room 502	**2-1C:** [OS] Chemical industries' challenge and contribution for carbon neutral and circular society with life cycle thinking (1) Room 503	**2-1D:** Input-output analysis Room 411	**2-1E:** Communication and education Room 412	**2-1F:** Acceleration of sustainability management: Concept and methodologies Room 413
10:30am - 10:40am	Break					
10:40am - 11:40am	Poster session (1)					Room 501 & 5F Lobby
11:40am - 12:30pm	Lunch & Poster					
12:30pm - 1:30pm	Poster session (2)					Room 501 & 5F Lobby
1:30pm - 1:40pm	Break					
1:40pm - 3:20pm	**2-2A:** [OS] Resource issues towards carbon-neutral society Room 501	**2-2B:** [OS] Carbon neutrality and avoided emission (1) Room 502	**2-2C:** [OS] Chemical industries' challenge and contribution for carbon neutral and circular society with life cycle thinking (2) Room 503	**2-2D:** Circular economy business (1) Room 411	**2-2E:** Footprints of household Room 412	**2-2F:** Acceleration of sustainability management: Data Room 413
3:20pm - 3:40pm	Break					
3:40pm - 5:20pm	**2-3A:** Supply risk Room 501	**2-3B:** [OS] Carbon neutrality and avoided emission (2) Room 502	**2-3C:** [OS] Development of corporate value and organization well-being Room 503	**2-3D:** Circular economy business (2) Room 411	**2-3E:** Consequences of consumption Room 412	**2-3F:** Acceleration of sustainability management: Tools Room 413
5:20pm - 5:40pm	Break					
5:40pm - 6:20pm	Plenary session (2) : Shifting Paradigms in Industrial Sustainability					Room 501
7:00pm - 9:00pm	Banquet					Nishitetsu SOLARIA hotel Fukuoka 8F SAIUN

November 2, Wednesday						
10:20am - 11:40am		**3-1B:** Diagnosis of current system (1) Room 502	**3-1C:** Agriculture and aquaculture Room 503	**3-1D:** Circularity Room 411	**3-1E:** Consumer behavior Room 412	
11:40am - 1:10pm	Lunch					
1:10pm - 2:50pm	**3-2A:** Impact assessment Room 501	**3-2B:** Diagnosis of current system (2) Room 502	**3-2C:** Plastics Room 503	**3-2D:** Circularity assessment Room 411	**3-2E:** Sustainability assessment Room 412	**3-2F:** Policy and supporting science Room 413
2:50pm - 3:10pm	Break					
3:10pm - 4:30pm		**3-3B:** Urban system wastes Room 502	**3-3C:** Sorting and classification of wastes Room 503	**3-3D:** Lifecycle thinking for circularity design Room 411	**3-3E:** Organizational sustainability Room 412	
4:30pm - 4:50pm	Break					
4:50pm - 6:00pm	Closing & Networking drinks					Room 501

November 3, Thursday		
1:30pm - 4:30pm	Partner event (2) : Critical minerals for carbon-neutrality and circular economy	Room 411
3:00pm - 5:30pm	Partner event (3) : (TBC) Harmonization and interoperability of LCA	Room 412

Organized sessions at EcoBalance 2022

Organized Session 1

Carbon neutrality and avoided emissions

<Session organizer>
Dr. Atsushi Inaba, Japan Life Cycle Assessment Facilitation Centre
<Session date and time>
Nov. 1 (Tue.) 1:40 pm - 3:20 pm (Japan Standard Time), 2022
Nov. 1 (Tue.) 3:40 pm - 5:20 pm (Japan Standard Time), 2022

Organized Session 2

Chemical Industries' Challenge and Contribution for Carbon Neutral and Circular Society with Life Cycle Thinking

<Session organizer>
Dr. Mayumi Hayashi, Sumitomo Chemical Co. Ltd.,
Hitomi Miura, Sekisui Chemical Co. Ltd.,
<Session date and time>
Nov. 1 (Tue.) 8:50 am - 10:30 am (Japan Standard Time), 2022
Nov. 1 (Tue.) 1:40 pm - 3:20 pm (Japan Standard Time), 2022

Organized Session 3

Doing more with less - transitioning to circular economy through business model innovation

<Session organizer>
Dr. Eri Amasawa, The University of Tokyo
Dr. Yusuke Kishita, The University of Tokyo
Dr. Koji Kimita, The University of Tokyo
<Session date and time>
Oct. 31 (Mon.) 10:50 am - 12:30 pm (Japan Standard Time), 2022
Oct. 31 (Mon.) 1:40 pm - 3:20 pm (Japan Standard Time), 2022

Organized Session 4

Sustainability visualization software and its role toward 2050 net-zero carbon

<Session organizer>
Koichi Shobatake, TCO2 Co. Ltd.
<Session date and time>
Nov. 1 (Tue.) 8:50 am - 10:30 am (Japan Standard Time), 2022

Organized Session 5

Development of corporate value and organization well-being

<Session organizer>
Dr. Minako Hara, NTT Space Environment and Energy Laboratories
<Session date and time>
Nov. 1 (Tue.) 3:40 pm - 5:20 pm (Japan Standard Time), 2022

Organized Session 6

Resource Issues towards Carbon-neutral Society

<Session organizer>
Dr. Eiji Yamasue, Ritsumeikan Univeristy
<Session date and time>
Nov. 1 (Tue.) 1:40 pm - 3:20 pm (Japan Standard Time), 2022

Presentation lists: VOD spotlight

V: VOD spotlight
Time: October 30, Sunday
5:00pm - 6:00pm
Room 502
Session Chair: **Jun Nakatani**, The University of Tokyo, Japan

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

Presentation lists: VOD spotlight

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

Christian Clemm
Fraunhofer Institute for Reliability and Microintegration (IZM), Germany

Presentation lists: Oral sessions

Opening (9:30am - 10:30am)
3F Main Hall

Break (10:30am - 10:50am)

1-1A: Carbon management for neutrality
Time: October 31, Monday
10:50am - 12:10pm
Room 501
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

1-1B: Technology application in local system
Time: October 31, Monday
10:50am - 12:10pm
Room 502
Session Chair: **Anja Laqua**, Kuraray Co., Ltd., Japan
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

Presentation lists: Oral sessions

1-1C: Metallic resources: now and future (1)
Time: October 31, Monday
10:50am - 12:30pm
Room 503
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

1-1D: [OS] Doing more with less - Transitioning to circular economy through business model innovation (1)
Time: October 31, Monday
10:50am - 12:30pm
Room 411
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

1-1E: Mobility and energy storage
Time: October 31, Monday
10:50am - 12:10pm
Room 412
Session Chair: **Mayumi Isobe**, Nissan Motor Co., Ltd., Japan
Session Chair: **Christian Clemm**, Fraunhofer IZM, Germany

Presentation lists: Oral sessions

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

1-1F: Construction

Time: October 31, Monday
10:50am - 12:10pm
Room 413

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

Lunch & Poster (12:30pm - 2:00pm)

1-2A: Energy towards carbon neutrality

Time: October 31, Monday
2:00pm - 3:20pm
Room 501

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

Presentation lists: Oral sessions

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)

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

Mianqiang Xue, Bin-Le Lin, Kiyotaka Tsunemi, Kimitaka Minami, Tetsuya Nanba, Tohru Kawamoto

National Institute of Advanced Industrial Science and Technology, Japan

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1-2B: Technology assessment

Time: October 31, Monday
2:00pm - 3:20pm
Room 502

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

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1-2C: Metallic resources: now and future (2)

Time: October 31, Monday
2:00pm - 3:40pm
Room 503

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

Presentation lists: Oral sessions

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

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

Time: October 31, Monday
2:00pm - 3:40pm
Room 411
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)

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

1-2E: Food

Time: October 31, Monday
2:00pm - 3:40pm
Room 412
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

Presentation lists: Oral sessions

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

1-2F: EcoDesign

Time: October 31, Monday
2:00pm - 3:20pm
Room 413
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

Break (3:40pm - 4:00pm)

Plenary session (1): Shifting Paradigms with Investment

Time: October 31, Monday
4:00pm - 5:20pm
3F Main Hall
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

Break (5:20pm - 5:40pm)

Presentation lists: Oral sessions

Networking events
1-4A: EcoBalance Young Researchers' Workshop
Time: October 31, Monday
5:40pm - 7:20pm
Room501
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

2-1A: Energy-material nexus for carbon neutrality
Time: November 1, Tuesday
8:50am - 10:10am
Room 501
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

2-1B: [OS] Sustainability visualization software and its role toward 2050 net-zero carbon
Time: November 1, Tuesday
8:50am - 10:30am
Room 502
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

Presentation lists: Oral sessions

2-1C: [OS] Chemical industries' challenge and contribution for carbon neutral and circular society with life cycle thinking
Time: November 1, Tuesday
8:50am - 10:30am
Room 503
Session Chair: **Norihiro Itsubo**, Tokyo City University, Japan

8:50am - 9:00am
Opening remarks
Shigeru Honda, 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

2-1D: Input-output analysis
Time: November 1, Tuesday
8:50am - 10:30am
Room 411
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

Presentation lists: Oral sessions

2-1E: Communication and education
Time: November 1, Tuesday
8:50am - 10:10am
Room 412
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)
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

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

2-1F: Acceleration of sustainability management: Concept and methodologies
Time: November 1, Tuesday
8:50am - 10:30am
Room 413
Session Chair: **Yasushi Furushima**, Mizuho Research & Technologies, Ltd., Japan
Session Chair: **Carl Vadenbo**, ecoinvent Association, Switzerland

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

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)
Assessing municipal action CO2 impacts – Direct vs system wide approaches
Erik O Ahlgren
Chalmers Univ of Technology, Sweden

Break (10:30am - 10:40am)

Poster session (1) (10:40am - 11:40am)
Room501&5F Lobby

Lunch & Poster (11:40am - 12:30pm)

Presentation lists: Oral sessions

Poster session (2) (12:30pm - 1:30pm)
Room501&5F Lobby

Break (1:30pm - 1:40pm)

2-2A: [OS] Resource issues towards carbon-neutral society
Time: November 1, Tuesday
1:40pm - 3:20pm
Room 501
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

2-2B: [OS] Carbon neutrality and avoided emission (1)
Time: November 1, Tuesday
1:40pm - 3:20pm
Room 502
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

2-2C: [OS] Chemical industries' challenge and contribution for carbon neutral and circular society with life cycle thinking (2)
Time: November 1, Tuesday
1:40pm - 3:20pm
Room 503
Session Chair: **Norihiro Itsubo**, Tokyo City University, Japan

Presentation lists: Oral sessions

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

2-2D: Circular economy business (1)
Time: November 1, Tuesday
1:40pm - 3:20pm
Room 411
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

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

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

2-2E: Footprints of household
Time: November 1, Tuesday
1:40pm - 3:20pm
Room 412
Session Chair: **Tomohiko Ihara**, The University of Tokyo, Japan
Session Chair: **Dami Moon**, The University of Tokyo, Japan

Presentation lists: Oral sessions

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

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2-2F: Acceleration of sustainability management: Data
Time: November 1, Tuesday
1:40pm - 3:20pm
Room 413
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

Break (3:20pm - 3:40pm)

2-3A: Supply risk
Time: November 1, Tuesday
3:40pm - 5:20pm
Room 501
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

Presentation lists: Oral sessions

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

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2-3B: [OS] Carbon neutrality and avoided emission (2)
Time: November 1, Tuesday
3:40pm - 5:20pm
Room 502
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 ISO14064-1 and ISO/TS14069
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
Fumiyo 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

2-3C: [OS] Development of corporate value and organization well-being
Time: November 1, Tuesday
3:40pm - 5:20pm
Room 503
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

Presentation lists: Oral sessions

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

2-3D: Circular economy business (2)
Time: November 1, Tuesday
3:40pm - 5:00pm
Room 411
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

2-3E: Consequences of consumption
Time: November 1, Tuesday
3:40pm - 5:20pm
Room 412
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

Presentation lists: Oral sessions

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

2-3F: Acceleration of sustainability management: Tools

Time: November 1, Tuesday
3:40pm - 5:00pm
Room 413

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

Break (5:20pm - 5:40pm)

Plenary session (2): Shifting Paradigms in Industrial Sustainability

Time: November 1, Tuesday
5:40pm - 6:20pm
Room 501

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

Banquet (7:00pm - 9:00pm)

Nishitetsu SOLARIA hotel Fukuoka 8F SAIUN

3-1B: Diagnosis of current system (1)

Time: November 2, Wednesday
10:20am - 11:40am
Room 502

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

Presentation lists: Oral sessions

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

3-1C: Agriculture and aquaculture

Time: November 2, Wednesday
10:20am - 11:40am
Room 503

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

3-1D: Circularity

Time: November 2, Wednesday
10:20am - 11:40am
Room 411

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)

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

Presentation lists: Oral sessions

3-1E: Consumer behavior
Time: November 2, Wednesday
10:20am - 11:40am
Room 412
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

Lunch (11:40am - 1:10pm)

3-2A: Impact assessment
Time: November 2, Wednesday
1:10pm - 2:50pm
Room 501
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

Presentation lists: Oral sessions

3-2B: Diagnosis of current system (2)
Time: November 2, Wednesday
1:10pm - 2:50pm
Room 502
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

3-2C: Plastics
Time: November 2, Wednesday
1:10pm - 2:50pm
Room 503
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

Presentation lists: Oral sessions

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

3-2D: Circularity assessment

Time: November 2, Wednesday
1:10pm - 2:30pm
Room 411

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

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3-2E: Sustainability assessment

Time: November 2, Wednesday
1:10pm - 2:50pm
Room 412

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

Presentation lists: Oral sessions

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

3-2F: Policy and supporting science
Time: November 2, Wednesday
1:10pm - 2:30pm
Room 413
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

Break (2:50pm - 3:10pm)

3-3B: Urban system
Time: November 2, Wednesday
3:10pm - 4:30pm
Room 502
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

Presentation lists: Oral sessions

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

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3-3C: Material and waste flow

Time: November 2, Wednesday
3:10pm - 4:30pm
Room 503

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]The 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

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3-3D: Lifecycle thinking for eco-design

Time: November 2, Wednesday
3:10pm - 4:30pm
Room 411

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

3-3E: Organizational and regional sustainability

Time: November 2, Wednesday
3:10pm - 4:30pm
Room 412

Session Chair: **Timothy Grant**, Lifecycles, Australia
Session Chair: **Yoshinori Kobayashi**, Toshiba Corporation, Japan

Presentation lists: Oral sessions

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

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

Break (4:30pm - 4:50pm)

Closing & Networking drinks (4:50pm - 6:00pm)
Room501

Presentation lists: Poster sessions

Poster session
Time: November 1, Tuesday
10:40am - 11:40am
12:30pm – 1:30pm
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

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

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

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

Presentation lists: Poster sessions

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

Presentation lists: Poster sessions

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

Presentation lists: Poster sessions

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

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]
[1]Department of Civil Engineering, The University of Tokyo, Japan; [2]Institute for Future Initiatives, The University of Tokyo, Japan

P-41: Core time 1

LCA evaluation of freon reclamation and destruction

Yoshihito Yasaka[1], Koichi Shobatake[1], Fumiaki Yakushiji[2], Yoshiki Shimizu[2], Masahiro Tomita[2], Norihiro Itsubo[3]
[1]TCO2 Co., Ltd., Japan; [2]DAIKIN INDUSTRIES, LTD., Japan; [3]Tokyo City University, Japan

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

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]
[1]Program in Global Industrial & Environmental Engineering, Inha University, Republic of Korea; [2]Department of Environmental Engineering, Inha University, Republic of Korea; [3]Program in Environmental and Polymer Engineering, Inha University, Republic of Korea

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

Presentation lists: Poster sessions

P-49: Core time 1

The carbon footprint of Kishiwada Danjiri Festival

Ryusei Murata[1], Issei Kawamoto[2], Norihiro Itsubo[1]
[1]Tokyo City University, Japan; [2]Rematec R&D Corp, Japan

P-50: Core time 2

Evaluating the environmental performance of silver nanoparticles syntheses

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

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]
[1]Univ. Bordeaux, Bordeaux INP, CNRS, ISM - UMR 5255; [2]CNRS, Univ. Bordeaux, Bordeaux INP, ICMCB - UMR 5026; [3]Imerys; [4]University of Coimbra; [5]UPS, CNRS, IRD,CNES, GET - UMR 5563

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]
[1]Department of Applied Chemistry, Waseda University; [2]Waseda Research Institute for Science and Engineering, Waseda University

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]
[1]Institute of Environmental Sciences (CML), Leiden University, 2333 CC Leiden, the Netherlands.; [2]Delft Institute of Applied Mathematics, Delft University of Technology, 2628 CD Delft, the Netherlands.

P-54: Core time 2

Modelling product loss within the packaging sector

Jeremy Francis Macdonald Grant[1,2]
[1]RMIT University, Australia; [2]Lifecycles

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]
[1]Department of Civil Engineering, The University of Tokyo, Tokyo, Japan; [2]Center for Global Commons, Institute for Future Initiatives, The University of Tokyo, Tokyo, Japan

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)

Presentation lists: Poster sessions

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

Withdrawn P-63 : Core time 1

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]
[1]Mechanical Engineering, Faculty of Engineering, Rajamangala University of Technology Phra Nakhon, Thailand; [2]National Science and Technology Development Agency (NSTDA), Thailand

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]
[1]Graduate School of Engineering, University of Tokyo, Tokyo, Japan.; [2]Institute for Future Initiatives (IFI), University of Tokyo, 7-3-1 Hongo, 113-8654, Tokyo, Japan

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]
[1]University of Brasilia, Brazil; [2]University of Campinas, Brazil

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]
[1]Tokyo city university, Japan; [2]Forestry and Forest Products Research Institute

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]
[1]Department of Industrial Administration, Graduate school of Science and Technology, Tokyo University of Science, Chiba, Japan; [2]Department of Electrical Engineering, Graduate school of Science and Technology, Tokyo University of Science, Chiba, Japan

Presentation lists: Poster sessions

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, [6]Graduate 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]
[1]Kyushu university, Japan; [2]International Institute for Carbon-Neutral Energy Research, Kyushu University, Japan; [3]Faculty of Economics, Kyushu University, Japan

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 Univercity, 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

Presentation lists: Poster sessions

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]
[1]Graduate School of Economics, Kyushu University, Japan; [2]International Institute for Carbon-Neutral Energy Research, Kyushu University, Japan; [3]Faculty of Economics, Kyushu University, Japan

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]
[1]Program in Global Industrial & Environmental Technology Convergence, 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

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]
[1]EFPRO LLC., Japan; [2]Department of Mechanical Engineering, Yamaguchi University, Japan; [3]Paper Industry Center, Ehime University, Japan

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]
[1]The Knowledge-based Environmental Service Specialized Graduate School Program, Inha University, Republic of Korea; [2]Program in Global Industrial & Environmental Technology Convergence, Graduate School, Inha University, Republic of Korea; [3]Department of Environmental Engineering, Inha University, Republic of Korea

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]
[1]School of Chemical Engineering, Konkuk University, Republic of Korea; [2]School of Forestry and Landscape Architecture, Konkuk University, Republic of Korea; [3]School of Civil and Environmental Engineering, Konkuk University, Republic of Korea

Presentation lists: Poster sessions

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]
[1]Knowledge-based Environmental Service Engineering, Inha University, Republic of Korea; [2]Department of Environmental Engineering, Inha University, Republic of Korea; [3]Progam in Global Industrial & Environmental Engineering, Inha University, Republic of Korea

Partner events of EcoBalance 2022

Partner Event 1

Mercury Legacy in Artisanal and Small-Scale Gold Mining

<Event date and time>

Oct. 30 (Sun.) 1:30pm-4:40pm (Japan Standard Time), 2022

<Venue >

Room 503, Fukuoka International Congress Center (Fukuoka, Japan) : invited speakers only
+ Online (Zoom)

<Outline of the event>

Artisanal and small-scale gold mining (ASGM), or gold mining by low-income families or small enterprises, is widespread across the globe. It is estimated that over 25 million people, including women and children, are involved with ASGM in more than 50 countries. Despite the small-scale activity of any individual ASGM site, each site is significantly important to its local economy and collectively, to the global economy. Nonetheless, ASGM has been the biggest contributor to global mercury emissions. Mercury is a toxic element that has numerous wide-ranging deleterious effects on humans, biota, and the environment. In response to the global issues associated with mercury, the Minamata Convention on Mercury entered into force on the 16th of August, 2017 to solve the mercury problem.

However, there are still many issues in ASGM that should be addressed. This would include site detection using geological information and remote sensing, detection of the informal flow of mercury from global trade to the ASGM sector, illegal trading of mercury between countries despite the phasing out of mercury, risk assessment of mercury contamination from ASGM, and identification of unintended consequences of mercury mitigation. To achieve sound mercury management in ASGM, this side event aims at providing the grounds for researchers to collaborate on decreasing the use, the flow, and the emissions from mercury in the ASGM sector.

Organized Session 2

Critical minerals for carbon-neutrality and circular economy

<Event date and time>

Nov. 3 (Thu.) 1:30pm-4:30pm (Japan Standard Time), 2022

<Venue >

Room 411, Fukuoka International Congress Center (Fukuoka, Japan)
+ Online (Zoom)

<Outline of the event>

Critical minerals, such as rare earths, cobalt, lithium, nickel, copper, and aluminium, are used for advanced applications, which related to renewable energy and generally face supply risks and vulnerability of the supply chain because of minor and biased occurrence in the world. Therefore, maintaining a circular flow of the critical minerals is expected to achieve a circular economy and sometimes national security.

This event, as a support event of EcoBalance 2022, provides the latest related research,

standardization and rulemaking situation about a criticality assessment, traceability system for carbon footprint, and established value networks.

Organized Session 3

GLAM, GLAD and the road towards global harmonization and interoperability of LCA

<Event date and time>

Nov. 3 (Thu.) 3:00pm-5:30pm (Japan Standard Time), 2022

<Venue >

Room 412, Fukuoka International Congress Center (Fukuoka, Japan)
+ Online (Zoom)

<Outline of the event>

The Global Guidance for Life Cycle Assessment Indicators and Methods (GLAM) focuses on establishing a comprehensive, consistent, and global Environmental Life Cycle Impact Assessment (LCIA) method, covering classification, midpoint and damage characterization, normalization, and weighting to assess the life cycle impacts of products and services on human health, ecosystems, and natural resources. The Global LCA Data Access Network (GLAD) is the largest directory of LCA datasets that helps users find the LCA datasets they need and aims to increase the interoperability between independent LCA database providers. Both initiatives operate under the umbrella of the Life Cycle Initiative and continue efforts to harmonize the methodologies of LCA globally. However, despite the work accomplished so far, there is still a long way to reach a state where bidirectional interoperability is ensured between multiple LCA databases evaluated by a single impact assessment method, with numerous LCA software producing identical (or permissible) results. In other words, the LCA community still has many issues to solve before generating reasonable impact assessment result comparisons across multiple LCA databases.

In this workshop, we will introduce the recent activities of GLAM and GLAD. We will also discuss the challenges needed to harmonize LCA impact assessment results at the global level and the GLAM x GLAD interaction required for the next steps.

Networking event

EcoBalance Young Researchers' Workshop

<Event organizer >
Keitaro Maeno, Kyushu University, Japan

<Event date and time>
Oct. 31 (Mon.) 5:40pm-7:20pm (Japan Standard Time), 2022

<Venue >
Room 501, Fukuoka International Congress Center (Fukuoka, Japan)
+ Online (Zoom): only for lecture (not for flash presentation competition)

<Outline of the event>
YR-WS gives participants a great opportunity for communication with other attendees in an informal situation.
We invite not only young researchers but anyone who feels young and those who want to connect with the young researchers.

<Session schedule>
1. A lecture about LCA accounting by firms (5:40pm-6:20pm)
Title: ***Life Cycle Assessment in the real world – examples from the automotive industry***
Guest speaker: Prof. Dr. Matthias Finkbeiner
Technical University of Berlin, Germany

2. Flash presentation competition (6:25pm-7:20pm)
Through this presentation, presenters can showcase and advertise themselves and their research to the participants! The guidance and rules for this session are as follows.

- Presenters have only 1 slide.
- Presentations are a maximum of two minutes. (strictly enforced)
- You can present whatever you want! (Self-introduction, an outline of your research, a brief introduction of your findings, ideas for your future research projects, etc.)

The audience will evaluate the presenters through a voting form which we will send to the participants.

3. Dinner party (7:30pm-9:30pm)
Only for pre-registered participants for dinner party
Place: Fukuoka International Congress Center (the conference site).

EcoBalance International School 2022

International School

Refresh, (re)connect, and engage with LCA!

<Event organizer >

Eri Amasawa, The University of Tokyo, Japan

<Event date and time>

Oct. 30 (Sun.) 1:30pm-4:40pm (Japan Standard Time), 2022

<Venue >

Room 502, Fukuoka International Congress Center (Fukuoka, Japan)
+ Online (Zoom): only for LCA refresher lecture (not for workshop)

<Outline of the event>

Ecobalance International School has been organizing invited lectures from experts on topics around LCA. This year, we will take you through an LCA refresher lecture to revive or learn the basics of LCA, and then a workshop to connect with others sharing the same challenge you may be facing. During the workshop, we will have moderators who are experts in LCA in each group to navigate the discussion.

<Session schedule>

1. LCA refresher lecture – 90 min
   Lecturer: Prof. Dr. Guido Sonnemann, University of Bordeaux, France

2. Break – 10 min
3. Workshop: Share and engage around LCA on emerging issues – 60 min - 75 min