

11TH INTERNATIONAL CONFERENCE
ON INDUSTRIAL ECOLOGY
JULY 2-5 2023



Program (June 30 version)

The program is subject to change before and during the conference.
Please refer to the online and mobile app versions of the program for last minute changes:



<https://isie2023.exordo.com/programme>



Welcome to the 11th International Conference on Industrial Ecology (ISIE2023) of the International Society for Industrial Ecology. Following a lengthy delay caused by Covid19, we're excited that the conference makes its way back to Leiden, the Netherlands, where the first ISIE conference was held in 2001.

The theme of the conference is Transitions in a world in turmoil. The way we use energy and resources in our present system is not sustainable. Major changes are necessary in our energy system to make it climate-neutral. At the same time our use of land, water and material resources needs to change dramatically to become sustainable. To avoid further deterioration of nature and our environment and resource supply constraints we must move toward a circular economy, while at the same time ensuring equitable transitions. The Covid19 crisis and the Russian aggression in Ukraine have caused have changed the geopolitical context in which these transitions will have to take place. During the conference, we will discuss the challenges the world is facing, the changes that are necessary to remain within planetary boundaries, and the solutions that could be employed in a technical, behavioural and organisational sense to meet these challenges.

Contact information:

email: isie2023@crawlfield.nl

Website: <https://isie2023netherlands.nl/>

For urgent matters during the conference you can also get support from the reception desk at the KOG building or call +31-85-401-3986. This number is available 8:00-18:00 from Saturday 1 July to Wednesday 5 July.

Conference venues addresses:

Stadsgehoorzaal - Keynotes and opening/closing sessions venue [Breestraat 60, 2311 CS Leiden](#)

Pieterskerk - Poster sessions venue [Kloksteeg 16, 2311 SL Leiden](#)

Kamerlingh Onnes Building (KOG) - Parallel sessions venue [Steenschuur 25, 2311 ES Leiden](#)

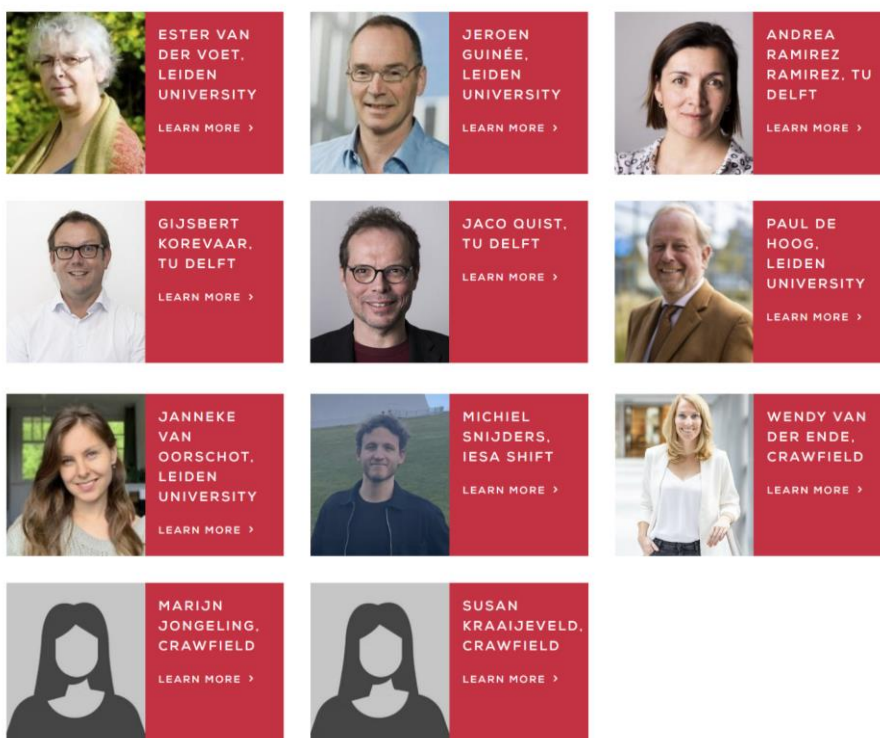
Naturalis - Conference dinner venue [Darwinweg 2, 2333 CR Leiden](#)

Committees

CO-CHAIRS



LOCAL ORGANIZING COMMITTEE



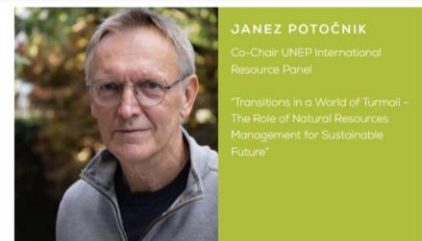
SCIENTIFIC COMMITTEE

Name	Organisation	Country
Alissa Kendall	University of California Davis	United States
Anastasia Papangelou	University of Antwerp	Belgium
Andrea Hicks	Wisconsin	United States
Anna Petit Boix	Autonomous University of Barcelona	Spain
Anu Ramaswami	Princeton University	United States
Arjan de Koning	Leiden University	Netherlands
Bart van Hoof	Universidad de los Andes	Colombia
Benjamin Sprecher	Technical University Delft	Netherlands
Bhavik Bakshi	Ohio State University	United States
Chika Aoki-Suzuki	Institute for Global Environmental Strategies	Japan
Chris Kennedy	University of Victoria	Canada
Christoph Helbig	University of Bayreuth	Germany
Colin Fitzpatrick	University of Limerick	Ireland

Cristina Madrid-López	Autonomous University of Barcelona	Spain
Dan Moran	NTNU Norwegian University of Science and Technology	Norway
David Font Vivanco	Eco Intelligent Growth	Spain
Dominik Noll	University of Évora	Portugal
Dominik Wiedenhofer	University of Natural Resources and Life Sciences (BOKU)	Austria
Dong Liang	City University of Hong Kong	Hong Kong
Edgar Hertwich	NTNU Norwegian University of Science and Technology	Norway
Eugene Mohareb	University of Reading	United Kingdom
Francesca Verones	NTNU Norwegian University of Science and Technology	Norway
Gang Liu	University of Southern Denmark	China
Glenn Aguilar Hernandez	Leiden University	Netherlands
Graham Aid	Ragn-Sells Group	Sweden
Heinz Schandl	Commonwealth Scientific and Industrial Research Organisation (CSIRO)	Australia
Hiroki Tanikawa	Nagoya University	Japan
Hua Cai	Purdue University	United States
Ichiro Daigo	The University of Tokyo	Japan
Joe Bozeman III	Georgia Institute of Technology	United States
John Telesford	T. A. Marryshow Community College	Grenada
Jooyoung Park	Seoul National University	Republic of Korea
Kaihui Song	University of North Carolina at Chapel Hill	United States
Kangkang Tong	Shanghai Jiao Tong University	China
Kazuyo Matsubae	Tohoku University	Japan
Keisuke Nansai	National Institute for Environmental Studies	Japan
Kornelis Blok	Technical University Delft	Netherlands
Kuishuang Feng	University of Maryland	United States
Lewis Akenji	Hot or Cool Institute	Germany
Marian Chertow	Yale University	United States
Matthew Eckelman	Northeastern University	United States
Melissa Bilec	University of Pittsburgh	United States
Michael Martin	IVL-Swedish Environmental Research Institute	Sweden
Ming Xu	Tsinghua University	China
Mohammad Ali Rajaeifar	Newcastle University	United Kingdom
Oliver Heidrich	Newcastle University	United Kingdom
Oludunsin Tunrayo Arodudu	State University of New York	United States
Paul Wolfram	Pacific Northwest National Laboratory	United States
Paulien Deutz	University of Hull	United Kingdom
Peter Berrill	Technical University Berlin	Germany
Peter Lowitt	Devens Enterprise Commission	United States
Peter-Paul Pichler	Potsdam Institute for Climate Impact Research (PIK)	Germany
Ranran Wang	Leiden University	Netherlands
Reid Lifset	Yale University	United States
Richard Wood	NTNU Norwegian University of Science and Technology	Norway
Rupert Myers	Imperial College London	United Kingdom
Ruud Balkenende	Delft University of Technology	Netherlands
Sabrina Spatari	Technion Israel Institute of Technology	Israel
Sebastiaan Deetman	Leiden University	Netherlands
Sebastien Dente	Ritsumeikan University	Japan
Shabbir Gheewala	King Mongkut's University of Technology Thonburi	Thailand
Shauhrat Chopra	City University of Hong Kong	Hong Kong

Shoshanna Saxe	University of Toronto	Canada
Shweta Singh	Purdue University	United States
Simran Talwar	University of Technology Sydney	Australia
Simron Singh	University of Waterloo	Canada
Sina Leipold	Helmholtz Centre for Environmental Research	Germany
Sónia Cunha	Leiden University	Netherlands
Souvik Bhattacharjya	The Energy and Resources Institute	India
Stefan Giljum	Vienna University of Economics and Business (WU)	Austria
Stefan Pauliuk	University of Freiburg	Germany
Stefanie Hellweg	ETH Zürich	Switzerland
Stefano Cucurachi	Leiden University	Netherlands
Stijn van Ewijk	University College London	United Kingdom
Tamar Makov	Ben Gurion University of the Negev	Israel
Tim Baynes	FootprintLab	Australia
Valerie Thomas	Georgia Institute of Technology	United States
Wenjie Liao	Sichuan University	China
Weslyne Ashton	Illinois Institute of Technology	United States
Xiao Li	Xi'an Jiaotong University	China
Xiaoyang Zhong	IASA (International Institute for Applied Systems Analysis)	Austria
Xin Tong	Peking University	China
Yasushi Kondo	Waseda University	Japan
Yuan Yao	Yale University	United States
Zhi Cao	University of Antwerp	Belgium

Keynote speakers



Saturday 1 July



Sunday 2 July

Monday 3 July

Tuesday 4 July

Wednesday 5 July

9:00

Registration
(SGZ, from 8:00)

Parallel sessions
(KOG)

Parallel sessions
(KOG)

Parallel sessions
(KOG)

9:00

9:30

9:30

10:00

Pre-conference events:
(separate registration required)
SIEYP (Symposium on Industrial
Ecology for Young Professionals),
IRTC raw material risks workshop,
Symbiosis section symposium

Opening session
(SGZ)

coffee break
(KOG)

coffee break
(KOG)

coffee break

10:00

10:30

Plenary keynote
(SGZ)

Parallel keynotes
(KOG)

Parallel keynotes
(KOG)

Parallel sessions
(KOG)

10:30

11:00

coffee break
(SGZ)

Break

Break

11:00

11:30

Pre-registration:
Pick up your conference badge
at KOG between 12.00-17.00

Plenary keynote
(SGZ)

Short parallel sessions
(KOG)

Short parallel sessions
(KOG)

11:30

12:00

12:30

Poster sessions with Lunch
(Pieterskerk)

Poster sessions with Lunch
(Pieterskerk)

Lunch
(KOG)

Lunch
(SGZ)

12:30

13:00

13:30

14:00

Excursions,
individual time

Plenary keynote
(SGZ)

13:30

14:30

15:00

Welcome reception
(1st time slot)
(Leiden city hall)

Parallel sessions
(KOG)

Parallel sessions
(KOG)

Closing session
(SGZ)

14:30

15:30

16:00

coffee break
(KOG)

coffee break
(KOG)

15:30

16:30

Welcome reception
(2nd time slot)
(Leiden city hall)

Parallel sessions
(KOG)

Parallel sessions
(KOG)

16:00

16:30

17:00

17:30

Section Meetings
(KOG)

ISIE society events
(KOG)

17:00

17:30

18:00

18:30

19:00

19:30

Conference dinner
(Naturalis, until 23:00)

19:00

19:30

20:00

20:00

Kamerlingh Onnes Building (KOG) floorplan

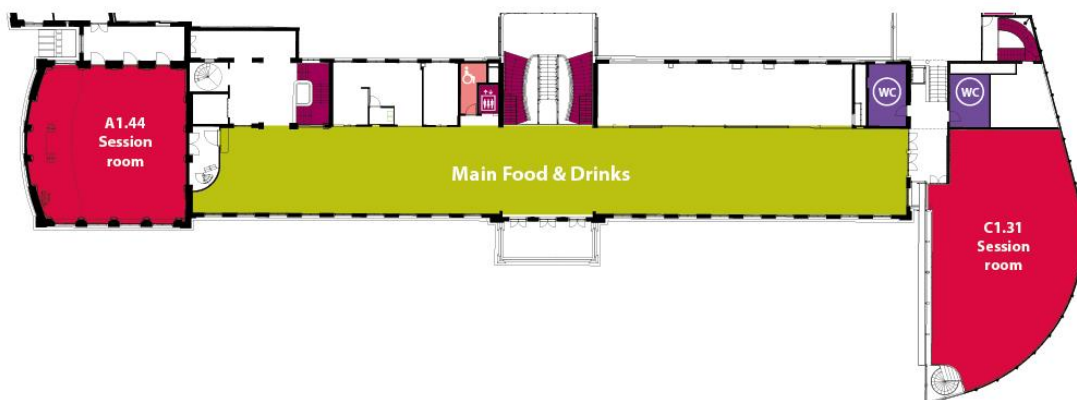
Parallel sessions venue

Steenschuur 25, 2311 ES Leiden

GROUND FLOOR



1ST FLOOR





Saturday, 1 July

09:30 **8th Symposium on Industrial Ecology for Young Professionals (SIEYP)**
A1.44 KOG

10:00 **Pre-conference events - check <https://isie2023netherlands.nl/student-and-satellite-events-for-details>**
SGZ (Stadsgehoorzaal)

10:00 **IRTC workshop Assessing the criticality of raw materials: understanding the EU list**
B0.17 KOG
Chaired by: Alessa Hool and Luis Tercero Espinoza and Dieuwertje Schrijvers

12:00 **Arrived early? Pick up your conference badge at the KOG building between 12:00 - 17:00**
KOG (Kamerlingh Onnes Building)

13:00 **ISIE Symbiosis section symposium**
B0.20 KOG

15:00 **Welcome Reception (1st timeslot. reserve your place by June 23)**
Leiden City Hall

16:30 **Welcome reception (2nd time slot. reserve your place by June 23)**
Leiden City Hall

Sunday, 2 July

08:00 **Registration**
SGZ (Stadsgehoorzaal)

09:00 **Creative Abstract Exhibition and competition**
B0.30 KOG

10:00 **Opening Session**
SGZ (Stadsgehoorzaal)

10:45 **Keynote: Hans Bruyninckx: Sustainability transition from concept to policy approach: a resource use perspective.**
SGZ (Stadsgehoorzaal)
Chaired by: Andrea Ramirez

Sustainability transition from concept to policy approach: a resource use perspective.
» Hans Bruyninckx (Member of International Resource Panel & former EEA Director)

11:30 **Coffee break**
SGZ (Stadsgehoorzaal)

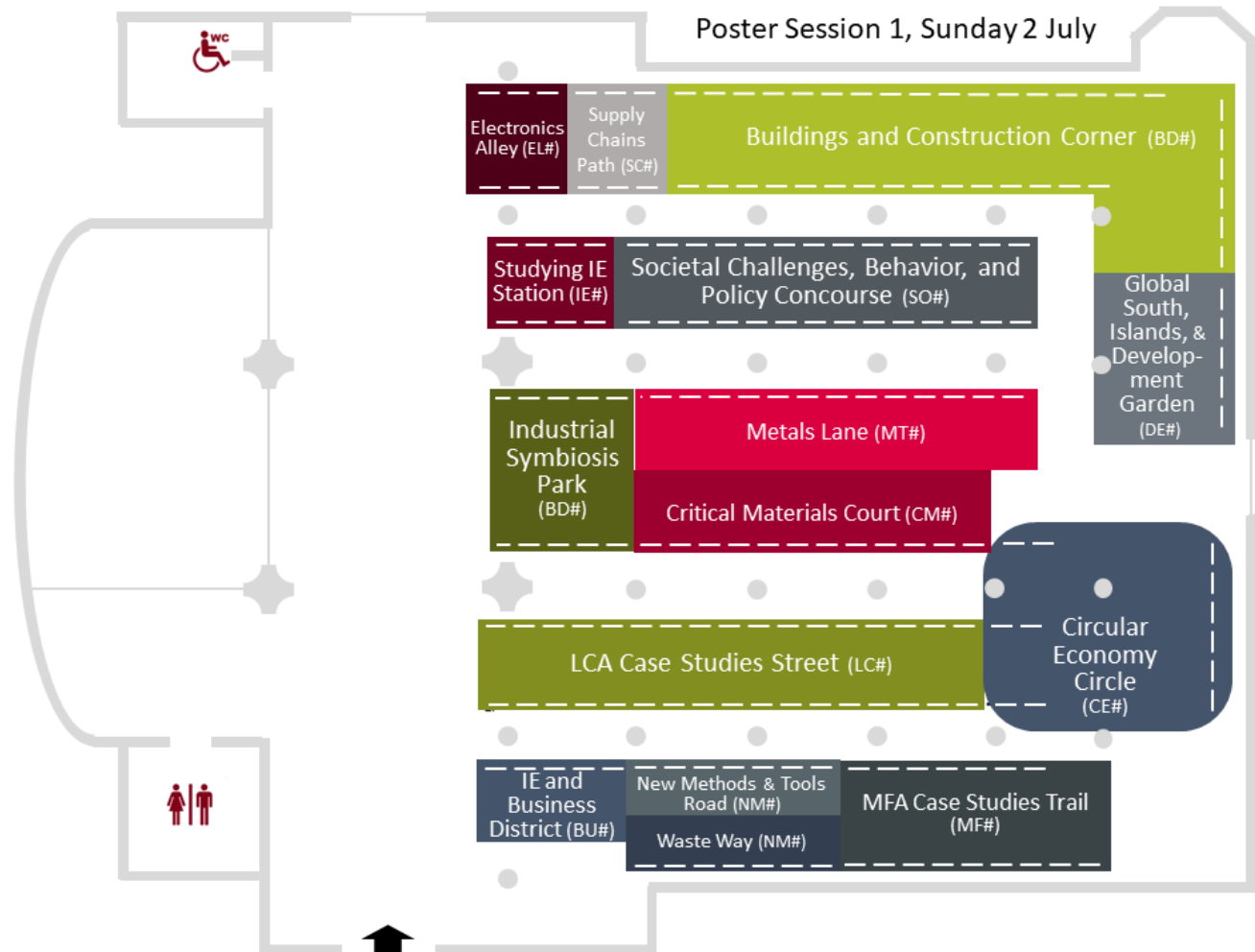
12:00 **Keynote: Janez Potočnik: Transitions in a World of Turmoil - The Role of Natural Resources Management for Sustainable Future**
SGZ (Stadsgehoorzaal)
Chaired by: Ester van der Voet

Transitions in a World of Turmoil - The Role of Natural Resources Management for Sustainable Future
» Janez Potočnik (Co-Chair UNEP International Resource Panel)



Continued from **Sunday, 2 July**

13:00 **Poster session 1 + lunch. See description for poster groups.**
Pieterskerk



Neighborhood	Address	Title	Presenter
Critical Materials Court	CM1	The effects of social life cycle aspects on the criticality assessment of Lithium	Julius Ott, Graz University
	CM3	Understanding the Key Routes of Global Dysprosium Cycle through a Trade-linked Regional Analysis	Disna Eheliyagoda, Aarhus University and Grundfos A/S
	CM5	In-use dissipation of technology-critical elements and their potential threats to human health in the urban sphere of Vienna, Austria	André Baumgart, Institute of Social Ecology (SEC), University of Natural Resources and Life Sciences, Vienna
	CM6	Critical raw materials demand for green & digital pathways in Spain	Martin Lallana, CIRCE Institute – University of Zaragoza
	CM7	Criticality assessment for a sustainable future	Ester van der Voet, Leiden University
	CM8	An economic approach to material criticality assessment	Karan Bhuwarka, Massachusetts Institute of Technology
	MT1	Recycling potential of Aluminium used in passenger vehicles in Latin America	Estefania Orquera, Graduate School of Environmental Studies, Tohoku University
	MT2	Assessing the Physical trade balance of metals	Sebastien Dente, Ritsumeikan University
	MT3	The Criticality Mitigation Potential of the Circular Economy	Wiebke Hagedorn, Institute for Anthropogenic Material Cycles, RWTH Aachen University
Metals Lane	MT4	The centennial gold cycle has widened its accumulation disparity in the Anthroposphere	Ling ZHANG, Nanjing Forestry University
	MT5	Methodology for evaluating the circular use of secondary steel resources under the current steel consumption pattern	Han Gao, The University of Tokyo
	MT6	A parametric life cycle assessment model for ductile cast iron components	Daniel Cooper, University of Michigan
	MT7	Evaluation methodology of recycled content for metals	Taichi Suzuki, The University of Tokyo, UACJ Corporation
	MT8	Estimation of alloying elements input through aluminum scrap to aluminum alloy production by alloy type	Kentarō Takeyama, The University of Tokyo
	MT9	Modelling the regional transformation to hydrogen-based green steel: An integrative and prospective material flow analysis of the North Rhine-Westphalian steel industry	Ali Abdelshafy, Chair of Operations Management - RWTH Aachen University
	MT10	Material Flow Analysis of the Tin Supply Chain	Jessie Bradley, Delft University of Technology
	CE2	An economic complexity tool to analyze Circular Economy capabilities in global economy	Ilaria Lombani, Polytechnic University of Bari, Bari (Italy)
	CE3	The sharing economy is not always greener: A Review and consolidation of empirical evidence	Tamar Meshulam, Ben Gurion University of the Negev
	CE4	Non-optimal carbon mitigation from waste hierarchy	Xinyu HAO, Tongji University; City University of Hong Kong
	CE5	Meta-analysis on greenhouse gas emission reduction potentials, backfire effects, and assessment methods of circular economy strategies	Ryu Koide, Material Cycles Division, National Institute for Environmental Studies
CE6	Hierarchical Bayesian analysis of consumer preferences for data-driven agent-based simulation of Circular Economy	Ryu Koide, Material Cycles Division, National Institute for Environmental Studies	
CE7	Raw materials, global supply chains and local systems in an eco-industrial perspective. A case study from the wood industry	Raffaella Taddeo, Department of Economic Studies - University "G. d'Annunzio" of Chieti-Pescara	
CE8	The Role of Reuse in Circular Economy: Quantifying the Spatial Flows of WEEE Reuse in China Based on Network Analysis	Tao Wang, Peking University	
CE9	How much material can be recovered by improving curbside systems? Insights from a US municipality-level collection model	Karan Bhuwarka, Massachusetts Institute of Technology	
CE10	CIRCULAR ECONOMY AND SUSTAINABILITY INDICATORS FOR THE VALORIZATION OF WINE PRODUCTION WASTE	Elena Cioffi, Dipartimento di Ingegneria, Università degli Studi della Campania "Luigi Vanvitelli", Aversa (CE), Italia	
CE11	Towards Water Resource Recovery Facilities: An Integrated System Assessment of Emerging Sewage Sludge Management Technologies in Sweden	Harry Tibbetts, KTH Royal Institute of Technology	
	BD2	Sectoral Coordination Maximizes China's Provincial Building GHG Emission Mitigation	Qiance Liu, University of Southern Denmark
	BD3	A multi-scale model of the environmental impacts of low-carbon construction in the City of Montreal	Felicity Meyer, McGill University
	BD4	Provision of housing services within planetary limits: a methodological framework for the urban circular economy	Ankita Singhvi, HERUS Lab, EPFL
	BD5	Efficiency Implications for Construction Material Use under Demographic Change – Case Study Evidence	Andreas Blum, Leibniz Institute of Ecological Urban and Regional Development
	BD6	The potential for missing middle to provide more housing with less embodied emissions: quantifying and optimizing material efficiency in low-rise, multi-unit housing	Keagan Hudson Rankin, University of Toronto
	BD8	A new BIM-based method to promote Buildings Circular Economy at a neighborhood scale	Joana Fernandes, IN+ Center for Innovation, Technology and Policy Research, Instituto Superior Técnico, Lisbon, Portugal
	BD9	Building Design for Disassembly and Adaptability – LCA of Flexible Building Structural Systems	Lynette Cheah, Singapore University of Technology and Design

BD10	The Adoption of Failure Mode and Effects Analysis (FMEA) to Assess Environmental Risks in Construction	Wahbi Albasyouni, PhD Student/Junior Research Fellow, Newcastle University
BD11	Opportunities to achieve carbon neutrality in buildings in China	Lulu Song, Key Lab of Urban Environment and Health, Institute of Urban Environment, Chinese Academy of Sciences
BD13	Material Stock-Flow-Service and Circularity Potential of Buildings in Singapore	Lynette Cheah, Singapore University of Technology and Design
BD14	The conceptualisation of circular road construction: A case study in Norway	Alexander Grørdum Vetnes, University of Agder
BD15	Construction material accounting of the Belt and Road Initiative projects	Lingli Hou, Institute of Environmental Sciences (CML) - Universiteit Leiden
BD16	Economic and environmental performance of residential building envelopes in Israel	Vered Blass, Tel-Aviv University
BD17	Evaluating resource use reduction effects of residence-related circular economy actions; differences among housing structures and regions	Teppe Kan, Ritsumeikan University
BD18	Towards a Circular Built Environment: wasteful construction and demolition practices and how to overcome them	Mario Kolkwitz, Tampere University
BD19	Impact Projection of Climate Change Adaptation Measures for Sustainable Urban Built Environment	Hiroki Tanikawa, Nagoya University
BD20	Optimizing Building Material Identification through Integration of Remote Sensing and Machine Learning Techniques	Kun Sun, University of Southern Denmark
BD21	Monitoring needs for a resource efficient construction aggregates cycle in Norway	Jonna Ljunge, Norwegian University of Science and Technology
BD22	The environmental sustainability of green roofs through Life Cycle Assessment: a review of layers materials and purposes	Débora Fiorentin, University of Aveiro
BD23	Impact of energy transition and low-carbon technologies on reduction of embodied carbon in the built environment	Kendra Ho, Energy Studies Institute, National University of Singapore
BD24	Estimation of the material stocks of building in flood-hazard-area in Japan	Hiroaki Shirakawa, Nagoya University
BD25	Cement life cycle analysis: what are the main factors influencing global warming?	Hiam Dahanni, University of Gustave Eiffel, GPEM-MAST, Campus of Nantes
BD26	Estimation of Recycling Potential of Construction Materials: Five Approaches	Matan Mayer, IE University
BD27	Material cadastre and its application to forward circularity in the building stock	Georg Schiller, Leibniz Institute of Ecological Urban and Regional Development
BD28	A CONSTRUCTION PRODUCTS' CARBON FOOTPRINT DATABASE IN SUPPORTING ZERO CARBON INFRASTRUCTURE DESIGN: A METADATA ANALYSIS OF SIX CARBON FOOTPRINT DATABASES	Hoai-Nam TRAN, Duy Tan University
BD29	Bayesian networks for bottom-up component modeling in building stocks	Nils Dittrich, Norwegian University of Science and Technology
BD30	Design Solutions for Cost-Effective Passive Solar Housing in the United States	Jasmina Burek, University of Massachusetts Lowell
BD31	Life cycle assessment of geopolymer concrete made with tailings from ilmenite mining	Reyn O'Born, University of Agder
BD32	Plant-level capacity optimization towards socioeconomic efficiency improvement and carbon neutrality in China's cement industry	Shuntian Xu, Beijing Normal University
BD34	Embodied emissions from building materials at risk of climate-driven flooding hazards	Xiaoyang Zhong, Leiden University
BD35	Internal climate mitigation requirements for considerations of carbon-neutral infrastructure projects – a roadmap perspective towards net-zero carbon emissions in the construction supply chain	Ida Karlsson, Chalmers University of Technology
BD36	The Missing Stock: Exploring Concrete Use in Trondheim's Residential Building Foundations	Pablo Ilgemann, Leiden University, CML
MF1	The Impact of Public Lighting Systems on Mercury Emissions: A Case Study of Ireland's Street Luminaires	Mina Baojahmadi, Electronic and Computer Engineering Department, University of Limerick, Ireland
MF2	Exploring demand reduction and circular economy strategies for bulk materials in China	Zhi Cao, University of Antwerp
MF3	Dynamic nitrogen, phosphorus and potassium flow analysis of the food system in China for 2010-2019	Jing-Yu Liu, Shanghai Jiao Tong University
MF4	A timber flow analysis for the UK	Chi Zhang, University College London
MF5	Comprehensive management of excavated soil and rock: A material flow analysis in Shenzhen, China	Hongzhou WANG, City University of Hong Kong
MF6	Estimating dissipative losses in thermal spray applications: The current status and circular economy recommendations	Mohamad Kaddoura, CIRAI, Polytechnique Montréal
MF7	Tracking the post-1990 sociometabolic transitions in Eastern Europe with dynamic economy-wide material flow analysis	Wensong Zhu, University of Southern Denmark
MF8	Closing the municipal solid waste recycling gap in the United States	Stijn van Ewijk, University College London
MF9	Material Flows and Efficiency	Jonathan Cullen, University of Cambridge
MF10	Modeling the current and future flow of post-consumer textile waste in Flanders and the Netherlands	Veerle Vermeyen, KU Leuven
MF11	Applying industrial ecology methods to fictional worlds: an example on the spice and water cycles on the planet Arrakis from Frank Herbert's Dune	Romain Guillaume Billy, Norwegian Univ. of Science and Technology

Waste Way	WA2	The Wastepaper Collection System in Hong Kong: Perspectives from Stakeholders, Value Chain and Policy-price-behaviour	PEIXIU CHEN, The Hong Kong University of Science and Technology
	WA3	Spatiotemporal Features of Municipal Solid Waste Generation in China	Xiaomei Jian, Key Lab of Urban Environment and Health, Institute of Urban Environment, Chinese Academy of Sciences Yooan Kim, Seoul National University
	WA4	Unlocking the Environmental and Economic Potential of Agricultural Residues as Resources: Considering the Social Cost of Waste Management	Huimin Chang, Tsinghua University
	WA5	Probability Distribution Analysis of Technical Parameters for Sewage Sludge Management System based on Unit process database	Kasper Lange, Amsterdam University of Applied Sciences
	WA6	Testing multiple policies for organic waste separation at SMEs in cities using collaborative agent-based modelling	Taisei Kagawa, Ritsumeikan University
	WA7	Estimation of hydrogen generation from Silicon sludge based on the Si-water-alkali reaction	Andrea Hicks, Wisconsin Andrea Hicks, Wisconsin
	Studying Industrial Ecology Station	IE1	Teaching life cycle assessment using counter intuitive examples
IE2		Teaching Industrial Ecology Through Disasters: Analysis of Student Reflections	Sina Leipold, Helmholtz Centre for Environmental Research
IE3		Development of a "Co-learning" basis construction method for the realization of a "Beyond Zero-Carbon" society	Ralf Aschemann, University of Graz
IE4		How industrial ecology scholars may shape narratives to advance sustainability transitions	Monica Rodriguez Morris, University of Wisconsin-Madison Devrim Yazan, University of Twente
IE5		Erasmus Mundus Master's Programme in Industrial Ecology: Analysis of its Master's Theses	Matthew Eckelman, Northeastern University
IE6		Teaching life cycle assessment with campus-based projects	Shira Shabtai, Ben Gurion University of the Negev
IE7		Establishment of an Online Sustainable and Resilient Circular Economy Laboratory: SRC-Lab	Suiting Ding, Leiden University, CML
IE8		A new IE textbook: Industrial Ecology and Sustainability	Jingwen Huo, Tsinghua University
Supply Chains Path	SC1	eCommerce Value Chain Analysis in Reverse Logistics - Economic and Environmental Comparison	Bhavik Bakshi, The Ohio State University Utkuhan Genc, Purdue University laurens oei, Water & Energy Intelligence BV
	SC2	Revealing the hidden potentials of IoT - An integrated approach using agent-based modelling and system dynamics to assess sustainable supply chain performance	Jon Halfdanarson, Sintef Manufacturing AS Tim Baynes, Australian National University Chunyan Wang, Tsinghua University
	SC4	Drivers of fluctuating embodied carbon emissions in international services trade	Pi-Cheng Chen, Department of Environmental Engineering, National Cheng Kung University, Tainan City, 70101, Taiwan Jaco Quist, TU Delft
	SC5	Net-zero transition of the chemical industry: framework and results	Liang Dong, City University of Hong Kong
	SC5	A Systematic Review of the Home Appliances Industry Sustainability Reports	Agusta Samodra Putra, Department of Chemical Engineering, Ulsan College, Republic of Korea; Research Center for Sustainable Production System and Life Cycle Assessment, National Research and Innovation Agency, Indonesia Leonie Schlüter, Aalborg University
IE and Business District	BU1	THE INVESTMENT GAP IN THE INDUSTRIAL SECTOR: THE CASE OF THE CHLORINE CLUSTER IN THE PORT OF ROTTERDAM	Hajar Abjeg, TU Delft
	BU2	Life Cycle Assessment – Just do it!	Murat Mirata, Linköping University
	BU3	FootprintLab: Putting Footprints to Work	Yingjie Liu, Tsinghua University
	BU4	CEEG, an energy efficiency grade dataset for white goods in mainland China at regional and household levels	Komal Habib, University of Waterloo Haruhisa Yamamoto, National Institute for Environmental Studies
	BU5	CEEG, an energy efficiency grade dataset for white goods in mainland China at regional and household levels	Manuele Capelli, Empa-Swiss Federal Laboratories for Materials Science and Technology, Technology and Society Laboratory
Industrial Symbiosis Park	IS1	An industrial symbiosis and synergy matching information tool using company-level waste inputs and outputs in Taiwan	Luke Cullen, University of Cambridge
	IS2	Progress in Eco-Industrial and Circular Business Parks: Updated framework and cases from the Netherlands	
	IS3	How industrial symbiosis contributes to carbon neutrality strategy and UN SDGs? An Empirical study on Asia-Pacific region	
	IS4	Characterization of national Eco-Industrial Park projects in China, Korea, and Japan: Bibliometric analysis and systematic literature review	
	IS5	Middle-out evolution of greenfield eco-industrial parks: The case of GreenLab Skive, Denmark	
	IS6	Brine circularity in the desalination industry: case study of the Moroccan Atlantic coast	
	IS7	Business agreements in industrial symbiosis relationships – a categorisation and suggestions for practice and research	
	IS8	Unraveling economic-environmental nexus in China's petrochemical industry towards carbon peaking	
Electronics Alley	EL1	The evolution of electronic waste in Canada	
	EL2	Product obsolescence: relationships with product lifetime, product type, and household characteristics	
	EL3	Expanding the United Nations Framework Classification for Resources (UNFC) to a National Level: A Swiss Case Study on Embedded Electronics	
	NM1	Gap-filling in greenhouse gas emissions datasets using machine learning: A how to guide.	

NM2	An Interpretable Machine Learning Model for Sustainable Biochar Production and Applications	Hannah Wang, Yale University
NM3	What Can Industrial Ecology Learn from Process System Engineering	Bartolomeus Häussling Löwgren, Institute of Environmental Sciences (CML) Universiteit Leiden, VITO EnergyVille
NM4	Preliminary work towards a cross lifecycle design tool for increased high-quality metal recycling	Alissa Tsai, University of Michigan
NM5	Fingerprint 2 Footprint: Enhancing environmental sustainability of animal feed production by combining NIR spectroscopy and environmental footprinting	Anne Ottenbros, Department of Environmental Science, Radboud University, Nijmegen 6525AJ
NM6	Introduction of OpenSankey, a free and open-source online software for interactive Sankey diagram visualization	Jean-Yves Courtonne, STEEP team, Univ. Grenoble Alpes, CNRS, Inria, Grenoble INP, LJK, 38000 Grenoble, France
NM7	Beyond the Industrial Ecology Metaphor – A Complexity Research Agenda for Metabolism Changes	Charis Luedtke, University of Hamburg
LC1	Life cycle assessment of high-value biochemicals: systematic review and recommendations	Shiva Zargar, The University of British Columbia
LC2	Environmental Analysis of Returnable Packaging Systems in Different eCommerce Business Models and Returnable Packaging Management Models: Canadian Case Studies	Jonghun Park, Toronto Metropolitan University
LC3	The MRV Guidelines for Agricultural Products with Life-cycle Perspectives for Sustainable Agriculture	Solhee Kim, Seoul National University
LC4	Prospective life cycle assessment of hemp fiber production versus glass fiber production	Hanie Zarafshani, KUL
LC5	Offshore wind energy and marine biodiversity in the North Sea: life cycle impact assessment for benthic communities	Chen Li, CML Leiden
LC6	Evaluation of Climate-change Adaptation Measures from the Perspective of Co-benefits with Mitigation – Case Study of Logging Trees in River Channels -	Sotaro Takenaka, The University of Tokyo
LC7	Nexus of process integration and life-cycle assessment for industrial decarbonization	Jiaqi Lu, Shanghai University of Engineering Science
LC8	Environmental Impacts of Silver Nanowires and Their Applications	Zhengyin Piao, Center for the Industrial Ecology, Yale School of the Environment, Yale University
LC9	Quantifying the circularity gap: Life Cycle Assessment (LCA) and Circularity Assessment (CA) as complementary methods for the circular redesign of complex products: A case study of industrial footwear	Cris Garcia Saravia Ortiz de Montellano, Aachen-Maastricht Institute for Biobased Materials (AMIBM), Faculty of Science and Engineering, Maastricht University
LC10	Circular economy and CMC: a solution to reduce the environmental footprint of ceramic matrix composites	Florian Halter, University of Augsburg
LC11	Insight study of BIM-LCA Data Processing	Khin Su Su Kyaw, NTNU, Department of Manufacturing and Civil Engineering
LC12	Environmental impacts of biochar production and usage: A review	Antônio Fonseca, University of Aveiro
LC13	When is repair environmentally beneficial? The case of high-voltage electric motors	Adeline Jerome, Chalmers University of Technology
LC14	Knowledge Graph-based Intelligent Strategic Recommendation toward Low Carbon Industrial Design	Jing Guo, School of environment, Tsinghua University
LC15	On Toast - Environmental Impacts of High-Protein Options for Bread Toppings	Jessica Bosseaux, University of Reading
LC16	APPLICATION OF TRANSITION LCA METHOD ON CO2 CAPTURE AND UTILIZATION IN A CEMENT PLANT	Eva Quéheille, Université Gustave-Eiffel
LC17	A Study on the Life Cycle Assessment(LCA) Methodology of In-situ Carbonation Technology Using CO2 emissions from Cement Industry	Eunjin MOON, Korea Conformity Laboratories
LC18	The environmental sustainability of new ways to produce benzene, toluene and xylene	Emma Zuiderveen, Radboud University, Joint Research Centre, European Commission
LC19	Evaluating circular processes with life cycle assessment: the case of denim jeans	Rosalie van Zelm, Department of Environmental Science, Faculty of Science, Radboud University, Nijmegen 6525AJ
LC20	Environmental assessment of source separated urine management. Comparison of three management scenarios in the ICTA-UAB building	Virginia Maiza, Universitat Autònoma de Barcelona
LC21	LIFECYCLE ASSESSMENT AND DESIGN BY SEAMLESS ANALYSIS FROM MATERIAL TO SYSTEM; CASE STUDY OF MATERIAL SELECTION OF THERMAL ENERGY STORAGE SYSTEM	Shoma Fujii, The University of Tokyo
LC22	Closing the concrete loop – how to make it eco-friendly?	Berfin Bayram, Institute of Anthropogenic Material Cycles (ANTS), RWTH Aachen University
LC23	Implementing circular management practices in Mediterranean forests: an environmental assessment of a biorefinery plant	Joan Muñoz-Liesa, Sostenipra research group (2021SGR000734), Institut de Ciència i Tecnologia Ambientals (ICTA) (MdM 2015-0552; CEX2019-000940- M), Universitat Autònoma de Barcelona, C/de les columnes s/n, 08193 Bellaterra, Barcelona, Spain.

LC24	Life Cycle Assessment (LCA) of a Bio-Fuel Cell Fed with Waste Biomass: Potential for Scale-Up and Process Optimization	Eleonora Rossi, Dipartimento di Chimica Industriale "Toso Montanari", Alma Mater Università di Bologna, Viale del Risorgimento, 4, 40136 Bologna (BO)
LC25	Bridging Critical Components Recycling Gaps: Comparative life cycle assessment of permanent magnet recycling processes	Lu Wang, Ganjiang Innovation Academy, Chinese Academy of Sciences
LC26	Reconciling regional costs with global benefits: Lithium from Clays	Venkat Roy, Purdue University
LC27	TEA and LCA of fuels and products from using industrial carbon capture and metabolic engineering	Anthony Roulrier, Northeastern University
LC28	Life cycle assessment of a common healthcare procedure - direct laryngoscopy	Grace Filley, Northeastern University
LC29	Systematically Assessing Environmental Impacts of Pharmaceuticals - Lessons Learned	Lowik Pieters, Centre for Sustainability, Environment and Health, RIVM Dutch National Institute for Public Health and the Environment, Bilthoven, The Netherlands
LC30	Prospective life cycle assessment (pLCA) of emerging carbon capture technologies used in the steel industry	Thomas Hennequin, Radboud University Nijmegen, Department of Environmental Science
DE1	Australian Aboriginal knowledge and alternative designs for the circular economy	Laura Vecoli, Leiden University, CML
DE2	LCA Applications in the Developing World – Current Status, Challenges & Opportunities	Amma Asantewaa Agyei Boakye, Yale University
DE3	Understanding the relationship between resource consumption and development levels	William Mihkelson, The University of Sheffield
DE4	Towards ecological sustainability: A cultural ecosystem service pathway in regenerating Philippines' urban green infrastructure	Eugene Mohareb, University of Reading
SO1	Wellbeing provided by the building stock in Trondheim: Service level and service accessibility	JiaJia Li, Norwegian University of Science and Technology
SO2	A conceptual model for linking wellbeing and prosperity to service provision in the energy service cascade	Stefan Pauliuk, Freiburg University
SO3	Extended Producer Responsibility as enabler for circular value chain	Xin Tong, Peking University
SO4	Capital, Energy, Water and Carbon in the Singapore Economy	Lynette Cheah, Singapore University of Technology and Design
SO5	Sustainable land transition through area neutrality in municipalities	Natchiyar Balasubramanian, Norwegian Univ. of Science and Technology
SO6	Assessing the Influence of Information Feedback on Energy-Efficient Behaviors of Households with Agent-Based Model – A Case Study in the Usage of Residential Air Conditioners	CHIA-KAI LOU, Graduate Institute of Environmental Engineering College of Engineering, National Taiwan University
SO7	How does China's emerging middle-income group reshape consumption patterns and carbon footprint?	Xinzhu Zheng, China University of Petroleum - Beijing
SO8	Risk identification of labour exploitation in medical supply chains	Lihani Du Plessis, University of Cambridge
SO9	Hospital sustainability indicators and actions – a systematic literature review and framework	Katerina Antimisaris, University of Augsburg, Resource Lab / Centre for Climate Resilience
SO10	Energy-human wellbeing relationship moderated by urbanization: insights from subnational analyses in China	Kangkang Tong, Shanghai Jiao Tong University
SO11	Nature Positive Ecolabelling with Life Cycle Impact and Benefit Assessment on Environmental Footprints	Mathilde Vlieg, MalaikaLCT
SO12	Assessing the Social Dimension in Strategic Network Design for a Sustainable Development: The Case of Bioethanol Production in the EU	Lukas Messmann, Resource Lab / Center for Climate Resilience – Augsburg University, Germany
SO13	Handprint assessment: measurement of the positive impact to sustainability. The case for cotton.	Mariana Ortega, Earth Shift Global
SO14	The Short-Term Impact of Air Pollution on Healthcare Expenditures	haofan zhang, State Key Laboratory of Pollution Control and Resource Reuse, School of the Environment, Nanjing University, Nanjing, China
SO15	Approaches to expand the use of the secondhand product: Analyzing the factors influencing consumer acceptability by product type	Dami Moon, Department of Urban Engineering, The University of Tokyo
SO16	Theory of Common Conflicts: Conceptualizing emergent ethics based view of social-ecological systems	Saurabh Vij, City University of Hong Kong
SO17	Expansion of Policy Domain of Sustainable Consumption and Production (SCP): Prospects for Envisioning-based Policy Making	Yasuhiko Hotta, Institute for Global Environmental Strategies
SO18	The mineral basis of climate change mitigation technologies via the lens of patents	Yang Li, Harvard University
SO19	Sustainable consumption – moving from niche to mainstream	Göran Finnveden, KTH
SO20	Metrics for absolute environmentally sustainable foods – case on tunicate burger	Lars Gunnar Furelid Tellnes, Østfold University College
SO21	Generating Resilience in the Entrepreneurial Ecosystem: A Community-Based Approach	Haorui Wu, Dalhousie University
SO22	Life Cycle Sustainability Management (LCSM) in SMEs – Learnings from electronics in the developing economies	Sonia Valdivia, World Resources Forum

SO23	Enabling Shifts Towards Sustainable Circulation of Materials in Transportation Infrastructure: Development and Testing of an Approach Using Systems Thinking	Sara Malmgren, KTH Royal Institute of Technology
SO24	A life cycle sustainability assessment of the miracle tree's leaf powder and seed oil	Yoel Gebrai, University of South Florida
SO25	Developing Mental Skills for Entrepreneurial Resilience: Identifying Best Practices	Erin Wynn, MindFrame Connect
SO26	STiCH: Sustainability Tools in Cultural Heritage	Matthew Eckelman, Northeastern University
SO27	Socio-ecological contagion in urban metabolism	Thomas Elliot, École de technologie supérieure



Continued from **Sunday, 2 July**

- 15:00 **Advancements in MFA methods 1**
C1.31 KOG
Chaired by: Melissa Bilec
- 15:00 **A Framework of Digital Twin-driven Material Flow Analysis (DT-MFA): Demonstrated by Mapping Regional Nutrients Flow**
» [Wei Zhang](#)¹, Thomas To-Hung TSUI², Purusothmn Nair¹, Bhawana Gupta³, Nadja Yang¹, Saher Hasnain³, Kok Siew Ng¹, Aidong Yang¹ (1. University of Oxford, 2. Department of Engineering Science, University of Oxford, 3. Environmental Change Institute, University of Oxford)
- 15:15 **Digital twin by machine learning in MFA reconstruction of biomass valorization**
» [Thomas To-Hung TSUI](#)¹, [Wei Zhang](#)¹, [Kok Siew Ng](#)¹, [Aidong Yang](#)¹ (1. University of Oxford)
- 15:30 **COMPARISON OF MATERIAL AND ELEMENTAL FLOWS IN INDUSTRIAL NETWORKS OF TWO US REGIONS USING PIOT HUB – A NOVEL CLOUD BASED COMPUTATIONAL TOOL**
» [Apoorva Bademi](#)¹, [William Farlessyost](#)¹, [Shweta Singh](#)¹ (1. Purdue University)
- 15:45 **Expert Elicitation and Data Noise Learning for Material Flow Analysis using Bayesian Inference**
» [Daniel Cooper](#)¹, [Shelie Miller](#)¹, [Jiankan Liao](#)¹, [Xun Huan](#)¹ (1. University of Michigan)
- 15:00 **LCA case studies 1**
A1.44 KOG
Chaired by: Eugene Mohareb
- 15:00 **Crab cravings in China causes environmental pressure**
» [Xin LIU](#)¹ (1. Nanjing University)

- 15:15 **Recent trends in the carbon footprint of Peruvian dietary patterns based on the national household survey**
» [Ian Vazquez-Rowe](#)¹, [Joan Sanchez-Matos](#)¹, [Ramzy Kahhat](#)¹ (1. Pontificia Universidad Católica del Perú)
- 15:30 **Evaluating the environmental impacts of U.S. historical oil spill incidents from the life cycle perspective**
» [Yiming Liu](#)¹, [Hua Cai](#)¹ (1. Purdue University)
- 15:45 **Modelling the complex environmental impacts of global freight transport in LCA**
» [Christopher Oberschelp](#)¹, [Jan Lordieck](#)², [Tobias Rieder](#)², [Andreas Froemelt](#)³, [Akshat Sudheshwar](#)⁴, [Ueli Haefeli](#)⁵ (1. ETH Zurich, 2. Rapp AG, 3. Eawag, 4. EMPA, 5. Interface Politikstudien Forschung Beratung AG)
- 15:00 **Special Session: Trans-continental research agenda for inclusive circular urban industrial innovation systems (Part 1)**
A0.51 KOG
Chaired by: Liang Dong
- 15:00 **A large-N analysis of Circular Economy policy accumulation in China from 2006 to 2020**
» [Wenting Ma](#)¹, [Thomas Hoppe](#)², [Martin de Jong](#)³ (1. Harbin Institute of Technology (Shenzhen), 2. Delft University of Technology, 3. Rotterdam School of Management, Erasmus University Rotterdam)
- 15:08 **Promote the deep decarbonization development of Eco-Industrial Parks in China by considering the GHG emissions structures and characters**
» [LU SUN](#)¹, [Fufu Wang](#)² (1. Xi'an Jiaotong University, 2. Xi'an Jiaotong University)
- 15:16 **New Business Models in Post-Consumer Recycling in Urban China**
» [Xin Tong](#)¹ (1. Peking University)



Continued from **Sunday, 2 July**

15:24 **Analysis of efficient waste transportation methods to enable incineration heat supply to Japan's chemical industry**
 » [Makiko Doi](#)¹, Katsuhiko YOSHIKAWA¹, Takashi Tsubouti¹, Masaki Murakami², Toshiro Bandai², Keitaro Ikeda³, Toshiki Kitai³, Minoru Fujii⁴ (1. EX Research Institute Ltd., 2. NIPPON EXPRESS CO., LTD, 3. GUUN Co.,Ltd., 4. National Institute for Environmental Studies)

15:32 **An evolutionary institutional framework to evaluate circular economy performance: Empirical findings from China and Hong Kong**
 » [Benjamin Steuer](#)¹ (1. The Hong Kong University of Science and Technology)

15:40 **Combining woody and waste biomass use for innovative urban symbiosis**
 » [Satoshi Ohnishi](#)¹, Hidetoshi Kuramochi², Takuro Kobayashi², Shogo Nakamura¹, Minoru Fujii¹, Kei Gomi¹ (1. National Institute for Environmental Studies, 2. Material Cycles Division, National Institute for Environmental Studies)

15:48 **Development classification Model of Demand-Place Industries by Text Analysis Using Company Names and Estimated of Spatial Heat Supply Potential from Waste for Circular Economical Potential Evaluation -Case Study on Steam Supply-**
 » [Seiya Maki](#)¹, Satoshi Ohnishi¹, Minoru Fujii¹, Naohiro Goto² (1. National Institute for Environmental Studies, 2. Toyo University)

15:00 **Social Dimensions 1**
B0.13 KOG
 Chaired by: Jooyoung Park

15:00 **Creating pluralistic pathways to city-level food waste management**
 » [Azra Sungu](#)¹, Weslyne Ashton¹, Maura Shea¹ (1. Illinois Institute of Technology)

15:15 **Gender and Plastics: Identifying gender issues in the plastic value chain and circular economy in the case of Korea**
 » Hana Kim¹, Dawoon Jung², Munsol Ju², [Jooyoung Park](#)³ (1. Korea Advanced Institute of Science and Technology, 2. Korea Environment Institute, 3. Seoul National University)

15:30 **Integrating sustainable development objectives into Official Development Assistance: Exploring the effectiveness of French ODA in Vietnam to strengthen the country's capacity to adapt to and mitigate climate change**
 » [Margaux DUHEM](#)¹, Masachika Suzuki¹ (1. Sophia University)

15:45 **Sharing and consuming in space - what is important to know for the planning of a Sharing City?**
 » [Divia Jimenez Encarnacion](#)¹, Leonardo Rosado¹, Liane Thuvander¹ (1. Chalmers University of Technology)

15:00 **Life Cycle Sustainability Assessment**
B0.17 KOG
 Chaired by: Hua Cai

15:00 **Holistic and Integrated Life Cycle Sustainability Assessment: Background, Methods and Results from Two Case Studies**
 » [Walther Zeug](#)¹, Alberto Bezama¹, Daniela Thrän¹ (1. Helmholtz Centre for Environmental Research)

15:15 **Life Cycle Sustainability Assessment (LCSA) of substituting fossil-based with biogenic products under different conditions - a case study on two product systems in the region of Augsburg, Germany**
 » [Felix Assies](#)¹, Lukas Messmann¹, Andrea Thorenz¹, Axel Tuma² (1. Resource Lab / Center for Climate Resilience - Augsburg University, Germany, 2. Chair for Production & Supply Chain Management - Augsburg University, Germany)

15:30 **Model-based LCSA**
 » [Andreas Ciroth](#)¹ (1. GreenDelta)



Continued from **Sunday, 2 July**

15:45 **Differentiated economic assessment of a battery supply chain in a life cycle-oriented analysis**

» [Jan-Linus Popien](#)¹, Alexander Barke¹, Thomas S. Spengler¹ (1. Technische Universität Braunschweig)

15:00 **Ecosystem Services**

B0.31 KOG

Chaired by: Daniela Perrotti

15:00 **Towards A Safe and Just Operating Space: An Ecosystem Services Approach**

» [Yazeed Aleissa](#)¹, Bhavik Bakshi² (1. Department of Chemical and Materials Engineering, Faculty of Engineering, King Abdulaziz University, Jeddah, Saudi Arabia, 2. The Ohio State University)

15:15 **Optimizing building strategies for sustainable urban development: an analysis of material and ecosystem service flows.**

» [Janneke van Oorschot](#)¹, Ester van der Voet¹, Benjamin Sprecher², Roy Remme¹, Mike Slootweg¹ (1. Leiden University, 2. Technical University Delft)

15:30 **How can we assess the role of nature in the metabolic requirements of a city?: An integrated Urban Metabolism and Ecosystem Service analysis**

» [Ursula Cardenas Mamani](#)¹, Daniela Perrotti¹ (1. Louvain Research Institute for Landscape, Architecture and Built Environment (LAB), University of Louvain, UCLouvain)

15:45 **Machine learning based approaches to elucidate the role of pollination ecosystem services for agricultural productivity**

» [Anaís Ostroski](#)¹, Christina Grozinger², Vikas Khanna¹ (1. University of Pittsburgh, 2. Pennsylvania State University)

15:00 **Special Session: Plastics, Chemicals and Sustainability (Part 1)**

B0.41 KOG

Chaired by: Fanran Meng and Jonathan Cullen

15:00 **Planet compatible pathways for transitioning the global chemical industry**

» [Fanran Meng](#)¹, Jonathan Cullen¹ (1. University of Cambridge)

15:15 **Mapping the greenhouse gas emissions of petrochemical production**

» Fanran Meng¹, [Luke Cullen](#)¹, Jonathan Cullen¹ (1. University of Cambridge)

15:25 **How consistent and complete is data on the global petrochemicals sector's emissions?**

» [Rick Lupton](#)¹, Georgie Wellock¹, Stephen Boyle¹, Fanran Meng², Luke Cullen², Jonathan Cullen², Dominika Malkowska¹ (1. University of Bath, 2. University of Cambridge)

15:35 **The Scope of Change for a Circular and Low Carbon Petrochemical Sector in the Context of Economy-wide Energy and Material Flow Analysis**

» [Carey King](#)¹, Neeraj Hanumante¹ (1. University of Texas at Austin)

15:00 **Footprints 1**

C0.06 KOG

Chaired by: Ranran Wang

15:00 **Alternative food supply minimizes global environmental impacts of food system recovered from the Russia-Ukraine conflict**

» [Haoran Zhang](#)¹, Limin Jiao¹, Yuanchao Hu¹ (1. Wuhan University)

15:15 **Evaluating the Waste and CO2 Reduction Potential of Packaging by Reuse Model in Supermarkets in Taiwan**

» [Hsin-Tien Lin](#)¹, Cian-Wei Chiang¹ (1. National Cheng Kung University)

15:30 **Redistribution does not necessarily increase emissions, overconsumption does**

» [Peter-Paul Pichler](#)¹, Ingram Jaccard¹, Helga Weisz¹, Johannes Többen² (1. Potsdam Institute for Climate Impact Research (PIK), 2. The Institute of Economic Structures Research (Gesellschaft für wirtschaftliche Strukturforchung, GWS))



Continued from **Sunday, 2 July**

- 15:45 **Material footprints for providing a decent standard living**
» [Johan Velez](#)¹, Stefan Pauliuk¹ (1. Freiburg University)
- 15:00 **Nexus studies**
B0.25 KOG
Chaired by: Maud Lanau
- 15:00 **Investigating sustainable alternative sanitation systems through the lens of Water-Wastewater-Waste-Energy-Food Nexus in Chilean and Indonesian communities**
» [Vanessa Bolivar Paypay](#)¹, Dinar Suryandari¹, Juan Pablo Gallardo², Maryegli Fuss¹, Witold-Roger Poganietz¹ (1. Karlsruhe Institute of Technology, 2. Pontificia Universidad Católica de Valparaíso)
- 15:15 **Household energy systems in the Global South: Tracing material flows from source to service in rural Ethiopia**
» [Harald Grabher](#)¹, Karlheinz Erb², Simron Singh³, Helmut Haberl⁴ (1. Institute of Social Ecology (SEC), University of Natural Resources and Life Sciences, Vienna, 2. University of Natural Resources and Life Sciences, Vienna (BOKU), 3. University of Waterloo, 4. University of Natural Resources and Life Sciences, Vienna)
- 15:30 **Paving the way to circular infrastructure: Decoupling material demand from service provision in road and rail infrastructure**
» [Martijn van Engelenburg](#)¹, Tomer Fishman², Sebastiaan Deetman³, Paul Behrens⁴, Ester van der Voet⁵ (1. Institute of Environmental Sciences (CML) - Universiteit Leiden, 2. CML Leiden, 3. Deetman@cml.leidenuniv.nl, 4. Leiden University, CML, 5. Leiden University)
- 15:45 **Stocks, Flows, Services and Practices: Nexus Approaches for Socio-metabolic Mobility Studies**
» [Helmut Haberl](#)¹, Doris Virág¹, Sarah Matej¹, Willi Haas¹, Barbara Smetschka¹, Dominik Wiedenhofer², Henrike Rau³ (1. University of Natural Resources and Life Sciences, Vienna, 2. University of Natural Resources and Life Sciences, Vienna (BOKU), 3. Ludwigs-Maximilians-Universität München)

- 15:00 **Special session: 10 insights from industrial ecology for the circular economy: Video screening and discussion**
B0.16 KOG
Chaired by: Stijn van Ewijk
- 16:00 **Coffee break**
KOG (Kamerlingh Onnes Building)
- 16:30 **Parallel Sessions**
KOG (Kamerlingh Onnes Building)
- 16:30 **Special Session: Assessing Progress Towards a Sustainable Circular Economy Across Scales (Part 1)**
C1.31 KOG
Chaired by: Dominik Wiedenhofer and Sina Leipold and Magnus Fröhling
- 16:30 **Cost of a linear plastic economy: A case study of Indonesia**
» [Satabdi Datta](#)¹, Shreya Some², Jeeten Kumar³, Joyashree Roy⁴ (1. Post Doctoral Researcher, South and South East Asia Multidisciplinary Research Network on Transforming Societies of Global South (SMARTS), SERD, Asian Institute of Technology, 2. Post Doctoral Researcher, South and South East Asia Multidisciplinary Research Network on Transforming Societies of Global South (SMARTS), SERD, Asian Institute of Technology, 3. Student Assistant, South and South East Asia Multidisciplinary Research Network on Transforming Societies of Global South (SMARTS), SERD, Asian Institute of Technology, 4. Founder Director, South and South East Asia Multidisciplinary Research Network on Transforming Societies of Global South (SMARTS), SERD, Asian Institute of Technology)
- 16:45 **From material stocks to circular economy potential: integrating reusability assessment into built environment stock analysis**
» [Charles Gillott](#)¹, Danielle Densley Tingley¹, Maud Lanau² (1. The University of Sheffield, 2. Chalmers University of Technology)



Continued from **Sunday, 2 July**

17:00 **Just Copper? – Can a Circular Economy Balance Environmental and Social Concerns in the Metal-Energy Nexus**

» [Sina Leipold](#)¹ (1. Helmholtz Centre for Environmental Research)

17:15 **Circularity strategies for China's building sector: a scenario analysis**

» [Alessio Mastrucci](#)¹, [Fei Guo](#)¹, [Bas van Ruijven](#)¹ (1. International Institute for Applied Systems Analysis)

17:30 **ASSESSING THE IMPACT OF CIRCULAR ECONOMY STRATEGIES ON CO2 EMISSIONS IN THE UK TRANSPORT SECTOR**

» [Gabriel Carmona](#)¹, [Zeus Guevara](#)², [Kai Whiting](#)³, [Jonathan Cullen](#)⁴ (1. Aluminium Stewardship Institute, 2. Tecnológico de Monterrey, 3. Université catholique de Louvain, 4. University of Cambridge)

17:45 **Determining the Average Sustainable Performance of German and Danish Urban Resource Centres**

» [Vitor Souza](#)¹, [Magnus Fröhling](#)¹, [Pedro Lopes Cardoso de Mattos](#)², [Perla Calil Pongeluppe Wadhy Rebehy](#)², [Daniela Pigosso](#)³ (1. Technical University of Munich, 2. University of São Paulo, 3. Technical University of Denmark)

16:30 **Special Session: Assisting a Circularity Transition in the Timber Construction and Wood Sectors**

A1.44 KOG

Chaired by: Wendy Wuyts

16:30 **A systematic analysis for the wood value chain in Norway to define the potential and challenges of end- of-life management**

» [Roja Modaresi](#)¹, [Lone Ross](#)², [Daniel B. Müller](#)³, [Lizhen Huang](#)³, [Erik Trømborg](#)⁴, [Hanne K. Sjølie](#)⁵ (1. (NTI) Norwegian Institute of Wood Technology, 2. Norwegian Institute of Bioeconomy Research, 3. Norwegian University of Science and Technology, 4. Norwegian University of Life Sciences, 5. Inland Norway University of Applied Sciences)

16:45 **Mapping qualities and quantities of waste wood in Norway**

» [Kristina Bringedal Gedde](#)¹, [Daniel Müller](#)², [Andreas Stenstad](#)³, [Erik Larnøy](#)¹, [Lone Ross](#)¹ (1. Norwegian Institute of Bioeconomy Research, 2. Norwegian Univ. of Science and Technology, 3. NTI (Norwegian Institute of Wood Technology))

17:00 **A novel data acquisition method for existing building information modelling**

» [Georgios Triantafyllidis](#)¹, [Lizhen Huang](#)¹ (1. Norwegian University of Science and Technology)

17:15 **The impacts of combined forest management and wooden construction on carbon fixation in Japan**

» [Naho Yamashita](#)¹, [Tomer Fishman](#)², [Chihiro Kayo](#)³, [Yuki Hiruta](#)¹, [Hiroaki Shirakawa](#)¹, [Hiroki Tanikawa](#)¹ (1. Nagoya University, 2. CML Leiden, 3. Tokyo University of Agriculture and Technology)

17:30 **Material flow analysis of wood in the UK from roundwood deliveries to finished product applications.**

» [Rebeka Anspach](#)¹, [Michal Drewniok](#)², [Matt Roberts](#)³, [Stephen Allen](#)¹, [Rick Lupton](#)¹ (1. University of Bath, 2. University of Leeds, 3. University of California, Berkeley)

16:30 **Special Session: Applications of Machine Learning and Data Science in Industrial Ecology**

A0.51 KOG

Chaired by: Qingshi Tu and Nathan Pelletier

16:30 **Generating Life Cycle Inventory for Industrial Systems in Developing Countries with Graph Neural Network: A Case Study on Electricity Production**

» [Hannah Wang](#)¹, [Yuan Yao](#)² (1. Yale University, 2. Center for Industrial Ecology, Yale School of the Environment, Yale University)

16:45 **Machine learning for prediction of life cycle inventory data: Exploring opportunities and challenges using a case study of the Canadian egg industry**

» [Ian Turner](#)¹, [Nathan Pelletier](#)¹ (1. The University of British Columbia)



Continued from **Sunday, 2 July**

- 17:00 **Predict chemical environmental impact using machine learning methods**
» [Chao-Hsu Yang](#)¹, Zih-Ee Lin¹, Pei-Te Chiueh¹ (1. National Taiwan University)
- 17:15 **Data -driven estimation of floor area and building age for residential building stock modeling – A case study of Sweden**
» [Qiyu Liu](#)¹, Maud Lanau¹, Johan Rootzén², Filip Johnsson¹ (1. Chalmers University of Technology, 2. IVL Swedish Environmental Research Institute)
- 17:30 **Data-centric discussion on machine learning applications to LCA**
» Bu Zhao¹, Ming Xu², [Qingshi Tu](#)³ (1. University of Michigan, 2. Tsinghua University, 3. The University of British Columbia)
- 16:30 **IE education**
B0.13 KOG
Chaired by: Andrea Hicks
- 16:30 **Drawing conclusions: The power of comics for critiquing and advancing industrial ecology**
» John Mulrow¹, [Christoph Hinske](#)² (1. Purdue University, 2. Saxion University of Applied Sciences)
- 16:45 **Racial Inequalities in Undertaking Doctoral Study in the UK: A Qualitative Analysis at Newcastle University**
» [Sebih Oruc](#)¹, Rebekah Puttick¹, Michelle Palmer¹, Gail de Blaquiére¹, Hayley Fowler¹, Oliver Heidrich¹ (1. Newcastle University)
- 17:00 **Teaching Industrial Symbiosis at Delft University of Technology**
» [Paola Ibarra Gonzalez](#)¹, Jaco Quist², Dimitrios Xevgenos³, Gijsbert Korevaar¹ (1. Technical University Delft, 2. TU Delft, 3. Delft University of Technology)
- 17:15 **How can Industrial Ecology contribute to making the world more sustainable?**
» [Ichiro Daigo](#)¹ (1. The University of Tokyo)

- 17:30 **A stepwise approach to teaching about wicked problems in industrial ecology**
» [Stefano Cucurachi](#)¹ (1. Institute of Environmental Sciences (CML) - Universiteit Leiden)
- 17:45 **The role of community - based learning in teaching about industrial ecology and sustainability in the context of engineering education: A case study from the field**
» [Andrea Hicks](#)¹ (1. University of Wisconsin-Madison)
- 16:30 **Special Session: Biodiversity Loss and Impact Indicators in LCA**
B0.17 KOG
Chaired by: Francesca Verones and L. Scherer
- 16:30 **Global freshwater eutrophication: regionalized characterization factors for phosphorus and nitrogen impacts on fish biodiversity**
» [Jinhui Zhou](#)¹, José Mogollón², Peter van Bodegom¹, Arthur Beusen³, L. Scherer² (1. Institute of Environmental Sciences (CML) - Universiteit Leiden, 2. Leiden University, CML, 3. Department of Earth Sciences - Utrecht University)
- 16:48 **Biomass to Biodiversity: representing endpoint fishing impacts on marine ecosystems in LCIA**
» [Chloe Stanford-Clark](#)¹, L. Scherer², Francesca Verones³, Arnaud Hélias¹ (1. ITAP, Univ Montpellier, INRAE, Institut Agro, Montpellier, France, 2. Leiden University, CML, 3. NTNU)
- 17:04 **Non-native species impacts on biodiversity in the framework of Life Cycle Assessment**
» [Philip Gjedde](#)¹, Jan Borgelt², Francesca Verones³ (1. NTNU, Department of Energy and Process Engineering, 2. Norwegian University of Science and Technology, 3. NTNU)
- 17:20 **Addressing marine biodiversity loss with expanded impact assessment models**
» Jennifer Anderson¹, [Sedona Anderson](#)² (1. Institute of Environmental Sciences (CML) - Universiteit Leiden, 2. NTNU)



Continued from **Sunday, 2 July**

- 17:36 **Modelling impacts of land use on functional diversity in Europe**
 » Francesca Rosa¹, L. Scherer², Stephan Pfister³, Peter van Bodegom⁴, Stefanie Hellweg³ (1. Institute of Environmental Engineering - ETH Zurich, 2. Leiden University, CML, 3. Institute of Environmental Engineering, ETH Zurich, 4. Institute of Environmental Sciences (CML) - Universiteit Leiden)
- 16:30 **LCA case studies 2**
 B0.31 KOG
 Chaired by: André Serrenho
- 16:30 **Evaluation of Climate Impacts of Dietary Patterns Using Different Nutritional Functional Units: a Case Study of Canadian Provinces**
 » Basak Topcu¹, Gorety Dias² (1. University of Waterloo, 2. University of Waterloo)
- 16:45 **REDEFINING NIGERIA'S RESIDENTIAL BUILDINGS IN THE FACE OF HUMAN DEVELOPMENT AND CLIMATE CHANGE CRISES**
 » Chibuikem Nwagwu¹, Sahin AKIN¹, Edgar Hertwich¹ (1. Norwegian Univ. of Science and Technology)
- 17:00 **Embodied Carbon of Buildings – Review of Recent Policies and A case-study**
 » Rahman Azari¹ (1. Pennsylvania State University)
- 17:15 **Improving the sustainability of the construction sector – Applying streamlined LCA in the planning process of timber houses**
 » Josef Huber¹, Magnus Fröhling¹ (1. Technical University of Munich)
- 17:30 **Minimizing biodiversity trade-offs arising from hydroelectricity production using Life Cycle Assessment**
 » Sif de Visser¹, Francesca Veronesi¹, Martin Dorber² (1. NTNU, 2. Norwegian Univ. of Science and Technology)
- 17:45 **Life cycle assessment of high-value biochemicals: systematic review and recommendations**
 » Shiva Zargar¹, Qingshi Tu¹ (1. The University of British Columbia)

- 16:30 **Plastics: MFA**
 B0.41 KOG
 Chaired by: Jun Nakatani
- 16:30 **Towards a Comprehensive MFA of Plastic Waste in the developing context – a case study of Chennai, India**
 » Sowmya Marrayapillai Ravisandiran¹, Nicolas Navarre¹, Stefano Cucurachi¹ (1. Institute of Environmental Sciences (CML) - Universiteit Leiden)
- 16:45 **Plastics in the Indian economy: A 20-year update on data, issues and interventions**
 » Nargessadat Emami¹, Tim Baynes², Katherine Locock¹, Trinayana Kaushik³, Mandavi Singh³, Souvik Bhattacharjya³ (1. Commonwealth Scientific and Industrial Research Organisation, 2. Australian National University, 3. The Energy and Resources Institute)
- 17:00 **A Markov chain model for evaluation of the global plastic waste management system**
 » Elijah Smith¹, Melissa Bilec¹, Vikas Khanna¹ (1. University of Pittsburgh)
- 17:15 **How much mismanaged plastic waste is reaching the oceans? A methodology to estimate mismanaged plastic flows in emerging and developing nations**
 » Diana Ita-Nagy¹, Ian Vazquez-Rowe¹, Ramzy Kahhat¹ (1. Pontificia Universidad Católica del Perú)
- 17:30 **Circular Economy for Plastic Consumption in Australia: Opportunities and Challenges**
 » Sadegh Taskhiri¹, Heinz Schandl¹ (1. Commonwealth Scientific and Industrial Research Organisation (CSIRO),)
- 17:45 **Opportunities for improving the circularity of plastic polymers. A Norwegian case study.**
 » Miguel Las Heras¹, Golnoush Abbasi¹, Marina Hauser¹, Kees Baldé², Evert Bouman¹ (1. Climate and Environmental Research Institute NILU, 2. United Nations Institute for Training and Research (UNITAR))



Continued from **Sunday, 2 July**

16:30 **Special Session: Can we combine top-down and bottom-up material flow models to top up our assessments?**

C0.06 KOG

Chaired by: Magdalena Klotz

16:30 **MFA case studies 1**

B0.25 KOG

Chaired by: Stefan Pauliuk

16:30

Urban Scale Evaluation of Building Integrated PV Waste: A Dynamic Material Flow Analysis

» [Julius Jandl](#)¹, Helmut Rechberger¹, Bettina Mihalyi-Schneider¹, Abraham Yezioro², Sabrina Spatari² (1. Vienna University of Technology, 2. Technion)

16:45

Modelling the transition towards a low-carbon global aluminium cycle with technology-explicit material flow analysis

» [Moritz Langhorst](#)¹, Romain Guillaume Billy¹, Christian Schwotzer², Felix Kaiser², Daniel B. Müller³ (1. Norwegian Univ. of Science and Technology, 2. RWTH Aachen University, Department for Industrial Furnaces and Heat Engineering, 3. Norwegian University of Science and Technology)

17:00

Bridging climate and circular economy related policy targets: Insights from material requirements in the Swedish renewable electricity system

» [Georgia Savvidou](#)¹, Filip Johnsson¹ (1. Chalmers University of Technology)

17:15

What is the extent and fate of Fossil Carbon accumulation in our Technosphere?

» [Kaan Hidiroglu](#)¹, Stefano Merciai², Franco Ruzzenenti¹, Klaus Hubacek³ (1. Integrated Research on Energy Environment and Society (IREES), Energy Sustainability Research Institute Groningen (ESRIG), University of Groningen, 2. 2.-0 LCA consultants, 3. University of Groningen)

17:30

Helium supply and demand: Material flow analysis of a noble gas

» Anesh Siddhantakar¹, [Komal Habib](#)², Steven B Young³ (1. School of Environment, Enterprise, and Development, University of Waterloo, 2. University of Waterloo, 3. Univeristy of Waterloo)

17:45

Plant-level transformation and joint supply-demand decarbonization pathways of China's steel industry

» [Xin Tian](#)¹, Shuntian Xu¹ (1. Beijing Normal University)

16:30

Industrial Symbiosis 1

B0.16 KOG

Chaired by: Graham Aid

16:30

The growing reach of industrial symbiosis

» [Marian Chertow](#)¹, Koichi Kanaoka² (1. Yale University, 2. Center for Industrial Ecology, Yale School of the Environment, Yale University)

16:45

A business value framework for industrial symbiosis

» [Murat Mirata](#)¹, Axel Lindfors¹, Marianna Lena Kambanou¹ (1. Linköping University)

17:00

Developing curated Eco-Industrial Parks: A scoping review and framework

» [Leonie Schlüter](#)¹, Hamid Bekamiri¹, Lucia Mortensen¹, Lone Kørnøv¹, Allan Næs Gjerding¹ (1. Aalborg University)

17:15

A modelling workflow to advance collaboration and sustainability of industrial symbioses

» Shane Carnohan¹, Rickard Fornell¹, Lovisa Harfeldt-Berg¹, Andrew Simons¹, [Elin Wallin](#)¹, Andreas Nicolaidis¹ (1. RISE Research Institutes of Sweden)



Continued from **Sunday, 2 July**

17:30 **Drivers of the Evolving Coal Gangue Power Industrial Symbiosis in China: a comparison with Kalundborg**

» [Wenting Jiao](#)¹, Lei Shi², Ruitong Zhao¹, Changhong Li¹, Fangqin Cheng¹ (1. Shanxi University, 2. Nanchang University)

17:45 **From the ground up: designing a greenfield eco-industrial park in rural Australia**

» [Tim Baynes](#)¹, Jacob Fry² (1. Australian National University, 2. Shrunk Pty Ltd)

18:00 **Section Meetings**

KOG (Kamerlingh Onnes Building)

18:00 **Life Cycle Sustainability Assessment section meeting**

C1.31 KOG

18:00 **Sustainable Urban Systems Section meeting**

A1.44 KOG

18:00 **Socio-Economic Metabolism section meeting**

A0.51 KOG

18:00 **Sustainable Circular Economy Section meeting**

B0.13 KOG

18:00 **Island Industrial Ecology Section meeting**

B0.17 KOG

18:00 **Environmentally Extended Input Output Section meeting**

B0.31 KOG

18:00 **Industrial Symbiosis and Eco-Industrial Development Section meeting**

B0.41 KOG

Monday, 3 July

09:00 **Parallel Sessions**

KOG (Kamerlingh Onnes Building)

09:00 **EVs and batteries**

C1.31 KOG

Chaired by: Patrícia Baptista

09:00 **Reverse logistics of critical elements derived from electric vehicle lithium-ion batteries**

» [Abhimanyu Raj Shekhar](#)¹, Miriam Stevens¹, Shweta Singh¹ (1. Purdue University)

09:15 **Towards a sustainable battery manufacturing modelling platform**

» [Daniel Perez Clos](#)¹, Joris Baars², Felipe Cerdas³, Sabrina Zellmer², Anders Hammer Strømman¹, Christoph Herrmann³ (1. NTNU, 2. Fraunhofer IST, 3. Technische Universität Braunschweig)

09:30 **ESG reporting for Australian battery materials: comparing data requirements and quality for voluntary and regulatory mechanisms**

» [Rusty Langdon](#)¹, Fiona Berry¹, Stephen Northey¹, Damien Giurco¹, Wen Li² (1. Institute for Sustainable Futures, UTS, 2. The University of Melbourne)

09:45 **Evaluating the implication of cobalt free electric vehicle batteries on the potential for lifetime extension through repurposing in electricity markets**

» [Naries Fallah](#)¹, Colin Fitzpatrick² (1. Dept of Electronic & Computer Engineering, University of Limerick, Limerick, Ireland., 2. •Electronic and Computer Engineering Department, University of Limerick, Ireland)



Continued from **Monday, 3 July**

10:00 **Can second-use of EV batteries in Energy Storage Systems reduce demand for critical raw materials in Europe more than recycling?**

» [Deepjyoti Das](#)¹, Maria Ljunggren¹, Duncan Kushnir² (1. Chalmers University of Technology, Gothenburg, Sweden, 2. Duncan Kushnir, Lund, Sweden)

09:00 **Special Session: Bringing Industrial ecology and the Circular Economy into integrated assessment models (Part 1)**

A1.44 KOG

Chaired by: Vered Blass and Dominik Wiedenhofer and Oreane Edelenbosch

09:00 **Lower energy and materials demand for net-zero GHG futures for industry – a critical review of the potentials, strategies, and modelling approaches required for transformative insights**

» [Dominik Wiedenhofer](#)¹, Jan Streeck², Barbara Plank³, Alessio Mastrucci⁴, Bas van Ruijven⁴, Benigna Boza-Kiss⁴, Gamze Unlu⁴, Leila Niamir⁴, Volker Krey⁴, Arnulf Gruebler⁴, Maria Fernanda Godoy León⁵, Yiyi Ju⁶, Jonathan Norman⁷, Leticia Magalar⁸, Nuno Bento⁹, Frauke Wiese¹⁰, Elena Verdolini¹¹, Joni Jupesta¹², Akimoto Keigo¹², Ayami Hayashi¹², Stefan Pauliuk¹³ (1. University of Natural Resources and Life Sciences (BOKU), 2. University of Natural Resources and Life Sciences, Vienna, 3. University of Natural Resources and Life Sciences, Vienna., 4. International Institute for Applied Systems Analysis, 5. University of Ghent, 6. The University of Tokyo, 7. University of Bath, 8. CENERGIA - Centre for Energy and Environmental Economics, Energy Planning Program, COPPE, UFRJ, 9. ISCTE - University Institute of Lisbon, 10. University of Flensburg, 11. Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici (EIEE/CMCC), 12. Research Institute of Innovative Technology for the Earth (RITE), 13. University of Freiburg)

09:15 **EXPLORING THE POTENTIAL OF DEMAND RESPONSE PARTICIPATION IN JAPAN'S INDUSTRIES BY 2050: SOFT-LINKING IAM AND IO**

» [Yiyi JU](#)¹, Tao Cao², Firdaus Nur³, Baixin Li¹ (1. Waseda University, 2. The University of Tokyo, 3. Kyoto University)

09:30 **The CIRCular Energy Economy model: reconciling Industrial Ecology and Economic concepts**

» [Darius Corbier](#)¹, Laurent Drouet¹, Valentina Bosetti¹ (1. RFF-CMCC European Institute on Economics and the Environment (EIEE) and Centro Euro-Mediterraneo sui Cambiamenti Climatici, via Bergognone 34, 20144 Milan)

09:45 **Resource efficiency at the national level**

» [Jonathan Norman](#)¹, John Barrett¹, Sam Betts-Davies², Rachel Carr-Whitworth¹, Alice Garvey¹, Elliott Johnson¹ (1. Sustainability Research Institute, School of Earth and Environment, University of Leeds, 2. University of Leeds)

10:00 **Modeling the energy-transport nexus in the Israel's economy using the MESSAGE model: combining bottom-up and top-down approaches**

» [Vered Blass](#)¹, Ayelet Davidovitch², Paul KISHIMOTO³, Rotem Izak¹, Anat Tchetchik⁴ (1. Tel-Aviv University, 2. Tel Aviv University, 3. International Institute for Applied Systems Analysis, 4. Bar Ilan University)

09:00 **Special Session: Urban Climate Action toward Carbon Neutrality with enhanced Resource circularity (Part 1)**

A0.51 KOG

Chaired by: Yuli Shan

09:00 **Urban Carbon Inequality**

» [Klaus Hubacek](#)¹, Giovanni Baiocchi², Kuishuang Feng², Yuli Shan³ (1. University of Groningen, 2. University of Maryland, College Park, 3. University of Birmingham)

09:20 **Towards a Nexus Science for Zero-Carbon Cities with Health, Climate Resilience, and Equity Co-benefits**

» [Anu Ramaswami](#)¹ (1. Princeton University)

09:40 **Leveraging Opportunity of Low Carbon Transition by Super-Emitter Cities in China**

» [Heran Zheng](#)¹, Jing Meng¹, Dabo Guan¹, Dan Moran², Kuishuang Feng³ (1. University College London, 2. NTNU, 3. University of Maryland)



Continued from **Monday, 3 July**

09:52 **Carbon Monitor Cities, Near-Real-Time Monitoring of Daily Fossil-Fuel CO2 Emissions from Cities Worldwide**

» [Da Huo](#)¹, [Zhu Liu](#)², [Philippe Ciais](#)³ (1. Tsinghua University and University of Toronto, 2. Tsinghua University, 3. Laboratoire des Sciences du Climate et de l'Environnement LSCE)

10:05 **Assessment to city-level emissions and peak in China**

» [Jinghang Xu](#)¹, [Yuru Guan](#)², [Jonathan Oldfield](#)¹ (1. University of Birmingham, 2. University of Groningen)

10:18 **The Landscape of City-Level GHG Emission Accounts in Africa**

» [Binyuan Liu](#)¹, [Klaus Hubacek](#)², [Riemer Kuik](#)³, [Lazarus Chapungu](#)⁴ (1. Integrated Research on Energy Environment and Society, Energy Sustainability Research Institute Groningen, University of Groningen, 2. University of Groningen, 3. University of Groningen, 4. Institute of corporate Citizenship, University of South Africa)

09:00 **Special Session: Transitioning to a Sustainable Circular Economy: theory, methods and applications**

B0.13 KOG

Chaired by: [Eva Quéheille](#) and [Bhavik Bakshi](#) and [Anne Ventura](#) and [Tom Theis](#)

09:00 **Special Session: Does space Matter? -transition of built environment towards circularity in a spatial context**

B0.17 KOG

Chaired by: [Georg Schiller](#) and [Maud Lanau](#) and [Andreas Blum](#) and [Ning Zhang](#)

09:00 **Circular economy conclusions based on a global analysis on Impacts of urbanisation on construction material consumption**

» [Georg Schiller](#)¹, [Julia Roscher](#)¹ (1. Leibniz Institute of Ecological Urban and Regional Development)

09:15 **Space and place - perspectives on a circular built environment**

» [Andreas Blum](#)¹, [Mustafa Selçuk Çıdık](#)² (1. Leibniz Institute of Ecological Urban and Regional Development, 2. University College London)

09:25 **A review of spatial characteristics influencing circular economy in the built environment**

» [Ning Zhang](#)¹, [Karin Gruhler](#)¹, [Georg Schiller](#)¹ (1. Leibniz Institute of Ecological Urban and Regional Development)

09:35 **Mapping Storage Infrastructure for a Circular Economy**

» [Ling Min Tan](#)¹ (1. The University of Sheffield)

09:45 **Investigating material recycling possibilities for different geographical scales and temporal windows. Opportunities for the Construction sector**

» [Jonathan Cohen](#)¹, [Leonardo Rosado](#)¹, [Jorge Gil](#)¹, [Maud Lanau](#)¹ (1. Chalmers University of Technology)

09:00 **Resources & Materials**

B0.31 KOG

Chaired by: [Chang Yu](#)

09:00 **Environmental sustainability and climate resilient supply chains: the case of advanced biofuel production in the EU**

» [Lars Wietschel](#)¹, [Martin Bruckler](#)², [Lukas Messmann](#)², [Selina Sartor](#)³, [Andrea Thorenz](#)², [Axel Tuma](#)⁴ (1. University of Augsburg, 2. Resource Lab / Center for Climate Resilience – Augsburg University, Germany, 3. University of Augsburg, Resource Lab / Centre for Climate Resilience, 4. Chair for Production & Supply Chain Management – Augsburg University, Germany)

09:15 **Lignocellulose Biomass as a Chemical Feedstock: Regional Availability and Environmental Impacts till 2050**

» [Jing Huo](#)¹, [Zhanyun Wang](#)², [Pekka Lauri](#)³, [Gonzalo Guillén-Gosálbez](#)⁴, [Stefanie Hellweg](#)¹ (1. Institute of Environmental Engineering, ETH Zurich, 2. Empa-Swiss Federal Laboratories for Materials Science and Technology, Technology and Society Laboratory, 3. International Institute for Applied Systems Analysis, 4. Institute of Chemical and Bioengineering, ETH Zurich)



Continued from **Monday, 3 July**

- 09:30 **Can industrial agglomeration increase the wood resource efficiency?**
 » [Chenlu Tao](#)¹, [Chang Yu](#)² (1. North China Electric Power University, 2. Beijing Forestry University)
- 09:45 **Bulk Materials Supply in a Zero-Emission Future with Uncertain Technology Adoption**
 » [Takuma Watari](#)¹, [Lukas Gast](#)², [André Serrenho](#)² (1. National Institute for Environmental Studies, 2. University of Cambridge)
- 10:00 **Critical Raw Material demand modeling for substitutable materials and future technologies**
 » [Christoph Helbig](#)¹ (1. Ecological Resource Technology, University of Bayreuth, Bayreuth, Germany)
- 10:15 **Assessing the potential supply risk mitigation for strategic raw materials in the EU: Evaluation of the benchmarks from the Critical Raw Materials Act**
 » [Jair SANTILLAN SALDIVAR](#)¹, [Anish KOYAMPARAMBATH](#)², [Guido SONNEMANN](#)², [Daniel MONFORT CLIMENT](#)¹ (1. BRGM, 2. Université de Bordeaux)

09:00 **Buildings & Infrastructure 1**
B0.41 KOG
 Chaired by: Gang Liu

- 09:00 **SDG scoring at building-level for Hong Kong using Big Data and Machine Learning approach**
 » [Apoorva Maheshwari](#)¹, [Shauhrat Chopra](#)¹ (1. City University of Hong Kong)
- 09:15 **Sensors instead of wall insulation? An evaluation of advanced building control as retrofit option**
 » [Hannes Gauch](#)¹, [Scott Jeen](#)¹, [Jack Lynch](#)¹, [André Serrenho](#)¹ (1. University of Cambridge)

09:30 **Identifying the geographical potential of rooftop systems: Space competition and synergy**
 » [Mike Slootweg](#)¹, [Mingming Hu](#)², [Solmaria Halleck Vega](#)³, [Maarten van 't Zelfde](#)², [Eveline van Leeuwen](#)³, [Arnold Tukker](#)² (1. Leiden University, 2. Leiden University, CML, 3. Wageningen University)

09:45 **Scaling building-level heat demand modelling to provide high-resolution insights in support of climate change mitigation and circularity policies across the European Union**
 » [Nikola Milojevic-Dupont](#)¹, [Niko Heeren](#)², [Lukas Franken](#)³, [Peter Berrill](#)¹, [Glenn Pitiot](#)⁴, [Aicha Zekar](#)⁵, [Felix Wagner](#)⁶, [Florian Nachtigall](#)⁶, [Marius Zumwald](#)⁷, [Lynn Kaack](#)⁸, [Peter-Paul Pichler](#)⁹, [Felix Creutzig](#)⁶ (1. Technical University Berlin, 2. City of Zurich, 3. University of Edinburgh, 4. Paris-Saclay Normal School, 5. New York University Abu Dhabi, 6. Mercator Research Institute on Global Commons and Climate Change (MCC), Berlin, 7. ETH Zurich, 8. Hertie School, 9. Potsdam Institute for Climate Impact Research (PIK))

10:00 **Estimating the construction material stocks in developing countries: Case study of Lahore, Pakistan**
 » [Komal Habib](#)¹ (1. University of Waterloo)

10:15 **Achieving net-zero raw material consumption for future urban built environments**
 » [Yupeng Liu](#)¹, [Kangning Huang](#)², [Wei-Qiang Chen](#)¹, [Karen Seto](#)³ (1. Institute of urban environment, CAS, 2. New York University Shanghai, 3. Yale University)

09:00 **Plastics: impacts**
C0.06 KOG
 Chaired by: Xin Tong

09:00 **The environmental potential of plastic recycling from a system perspective**
 » [Magdalena Klotz](#)¹, [Melanie Haupt](#)², [Christopher Oberschelp](#)³, [Cecilia Salah](#)³, [Luc Subal](#)³, [Stefanie Hellweg](#)¹ (1. Institute of Environmental Engineering, ETH Zurich, 2. Realcycle GmbH, 3. ETH Zurich)



Continued from **Monday, 3 July**

09:15 **Quantifying the effect of the Basel Convention Plastic Waste Amendment: How did trade patterns and environmental impacts change?**

» [Kai Li](#)¹, Hauke Ward² (1. Institute of Environmental Sciences (CML), Leiden University, P.O. Box 9518, 2300 RA Leiden, the Netherlands, 2. Institute of Environmental Sciences (CML), Leiden University, P.O. Box 9518, 2300 RA Leiden, the Netherlands. Mercator Research Institute on Global Commons and Climate Change, Berlin 10829, Germany)

09:30 **Do bio-based plastics have a lower environmental impact than petrochemical-based plastics?**

» [Linda Ritzen](#)¹, Benjamin Sprecher¹, Conny Bakker¹, Ruud Balkenende¹ (1. Delft University of Technology)

09:45 **Reducing Greenhouse Gas Emissions through Effective Waste Management in a 100% Bio-Based Plastic Market**

» [ELISABETH VAN ROIJEN](#)¹, Sabbie Miller¹ (1. University of California, Davis)

10:00 **Global supply chain drivers of agricultural plastic pollution in China**

» [Chuan Zhao](#)¹, Zhengyang Zhang¹, Kazuyo Matsubae¹ (1. Graduate School of Environmental Studies, Tohoku University)

10:15 **USING DATA ENVELOPMENT ANALYSIS TO EVALUATE MARINE PLASTIC POLLUTION IN THE PERUVIAN INDUSTRIAL FISHERY.**

» [Alejandro Deville](#)¹, Ian Vazquez-Rowe¹, Ramzy Kahhat¹ (1. Pontificia Universidad Católica del Perú)

09:00 **Ex-ante LCA 1**

B0.25 KOG

Chaired by: T. Reed Miller

09:00 **Well-to-Wake LCA of Liquid Hydrogen Jet Fuel**

» [T. Reed Miller](#)¹, Marian Chertow¹, Edgar Hertwich² (1. Yale University, 2. Norwegian Univ. of Science and Technology)

09:15 **Life Cycle Assessment of microfluidic devices for point-of-care testing: a comparative analysis of PDMS, paper and PLA**

» [Kristie Tjokro](#)¹, Stefano Cucurachi¹, Alina Rwei², Justin Lian¹ (1. Institute of Environmental Sciences (CML) - Universiteit Leiden, 2. Faculty of Applied Sciences - TU Delft)

09:30 **Closing the GHG mitigation gap with measures targeting conventional light-duty vehicles – A scenario-based analysis of the U.S. fleet**

» [Nadine Alzaghini](#)¹, Riddhiman Roy², Alexandre Milovanoff¹, Amir F.N. Abdul-Manan³, Jon McKechnie⁴, I. Daniel Posen¹, Heather L. MacLean¹ (1. Civil and Mineral Engineering, University of Toronto, 35 St. George Street, Toronto, Ontario, M5S 1A4, 2. Engineering Science, University of Toronto, 42 St. George Street, Toronto, Ontario, M5S 2E4, 3. Strategic Transport Analysis Team, Fuel Technology R&D, Research & Development Center, Saudi Aramco, Dhahran, 31311, 4. Sustainable Process Technologies, Faculty of Engineering, University of Nottingham, Nottingham NG7 2RD)

09:45 **Prospective LCA of Emerging Transportation Systems as demonstrated by the Electrification of a Regional Aircraft**

» [Susanne Hanesch](#)¹, Liselotte Schebek¹ (1. Material Flow Management and Resource Economy, Institute IWAR, Technische Universität Darmstadt)

10:00 **Probability Distribution Analysis of Technical Parameters for Sewage Sludge Management System based on Unit process database**

» [Huimin Chang](#)¹, Ming Xu¹, Yan Zhao², Anders Damgaard³, Thomas H. Christensen³ (1. Tsinghua University, 2. Beijing Normal University, 3. Technical University of Denmark)

10:15 **Going beyond generic LCA: A framework for mass-deployment of customized semi-automated carbon footprinting**

» [Marit Salome Rognan](#)¹, Guillaume Majeau-Bettez¹, Manuele Margni¹ (1. CIRAI, Polytechnique Montréal)

09:00 **Special Session: Backcasting and Scenarios for Sustainability Transitions**

B0.16 KOG

Chaired by: Jaco Quist and Mattias Höjer and Yusuke Kishita



Continued from **Monday, 3 July**

- 09:00 **A design framework of backcasting towards developing a users' guide**
 » Yusuke Kishita¹, Mattias Höjer², Jaco Quist³ (1. The University of Tokyo, 2. KTH, 3. TU Delft)
- 09:15 **Backcasting and Visioning for Sustainability Transitions and Industrial Ecology: Comparing Methods, Cases and Impact**
 » [Jaco Quist](#)¹ (1. TU Delft)
- 09:30 **Backcasting sustainable transport futures for Sweden 2035**
 » [Mattias Höjer](#)¹, Jonas Åkerman¹, Hampus Berg Mårtensson¹ (1. KTH)
- 09:45 **□Digitalizing Backcasting Scenario Design in Toyama City, Japan**
 » [Taiki Yokota](#)¹, Yusuke Kishita¹, Kazumasu Aoki² (1. The University of Tokyo, 2. University of Toyama)
- 10:00 **Renewable Energy Scenarios for South Kalimantan using Participatory Backcasting: Methodology and First Results**
 » [Indra al Irsyad](#)¹, Jaco Quist¹, Jannis Langer¹, Kornelis Blok¹ (1. TU Delft)

09:00 **Creative abstracts exhibition and competition**
 B0.30 KOG

10:30 **Coffee Break**
 KOG (Kamerlingh Onnes Building)

11:00 **Parallel Keynotes**
 KOG (Kamerlingh Onnes Building)

11:00 **Keynote Speaker: Ester van der Voet**
 C1.31 KOG
 Chaired by: René Kleijn

The importance of a circular economy in a world of turmoil
 » Ester van der Voet (Leiden University)

11:00 **Keynote Speaker: Weiqiang Chen**
 A1.44 KOG
 Chaired by: Tomer Fishman

Towards a more sustainable societal metabolism and an applied industrial ecology
 » Weiqiang Chen (Institute of Urban Environment, Chinese Academy of Sciences)

11:45 **Break**
 KOG (Kamerlingh Onnes Building)

12:00 **Parallel Sessions**
 KOG (Kamerlingh Onnes Building)

12:00 **Buildings and construction (short presentations)**
 C1.31 KOG
 Chaired by: Tomer Fishman

12:00 **Global sand demand and supply and sustainability implications**
 » [Shurong Zhuang](#)¹, Qiance Liu², Ruishan Chen³, Gang Liu² (1. East China Normal University; University of Southern Denmark, 2. University of Southern Denmark, 3. Shanghai Jiaotong University)



Continued from **Monday, 3 July**

12:07 **A comparative life cycle assessment of a cross-laminated timber and a lightweight steel frame building, a case study in the Netherlands**

» [Mingming Hu](#)¹, Wesley Simon Grul¹, Bernhard Steubing², Mike Sloomweg³ (1. Institute of Environmental Sciences (CML) - Universiteit Leiden, 2. CML Leiden, 3. Leiden University)

12:14 **Estimating Embodied and Operational Emissions of Residential Building Stock in Western Asia and Northern Africa: A Comparative Study**

» [Sahin AKIN](#)¹, Aida Eghbali¹, Chibuikem Nwagwu¹, Niko Heeren², Edgar Hertwich¹ (1. Norwegian Univ. of Science and Technology, 2. City of Zurich)

12:21 **Assessing the Construction Materials Intensities in Buildings: A Historical Case Study in the City of Debrecen**

» [Faisal Aldebei](#)¹, Attila Harangi¹ (1. University of Debrecen)

12:28 **Defining Pathways to Carbon Neutral Concrete: A Life Cycle Carbon Assessment of Biochar Concrete**

» [Harn Wei Kua](#)¹, Alvin Wei liang Ee¹, Hsien Hui Khoo² (1. National University of Singapore, 2. A*Star)

12:35 **Patterns of building material stocks' service provisioning and resource productivity across Europe's cities**

» [Tomer Fishman](#)¹, Yoav Peled² (1. Leiden University, CML, 2. Reichman University)

12:00 **Circular economy (short presentations)**

A1.44 KOG

Chaired by: Magnus Fröhling

12:00 **Systems framework and quantitative methodology to assess polymer circularity**

» Basuhi Ravi¹, [Karan Bhuwalka](#)¹, Richard Roth¹, Elsa Olivetti¹ (1. Massachusetts Institute of Technology)

12:07 **Modelling European steel scrap availability - Underlying assumptions, quality constraints and challenges for establishing a circular economy**

» [Carolin Hundt](#)¹, Frank Pothen¹ (1. Ernst-Abbe-Hochschule Jena University of Applied Sciences)

12:14 **The environmental profile and cost benefit analysis of different linear and circular End-Of-Life management of PV Waste in South Korea**

» [Minhee Son](#)¹, Kendra Ho¹, ojasvee arora² (1. Energy Studies Institute, National University of Singapore, 2. National University of Singapore)

12:21 **Potential of BREEAM-C to Support Building Circularity Assessment**

» Dominique Wong¹, Chunbo Zhang², Francesco Di Maio³, [Mingming Hu](#)¹ (1. Leiden University, CML, 2. University College London, 3. Technical University Delft)

12:28 **Water Circularity Indicator: Development and Application to a Pimpri-Chinchwad City in India**

» [Nikita Kakwani](#)¹, Pradip Kalbar¹ (1. Indian Institute of Technology Bombay, Mumbai)

12:35 **Exploring the impact of a circular economy: A model-based analysis of steel and cement demand for buildings**

» [Meta Thurid Lotz](#)¹, Andrea Herbst¹ (1. Fraunhofer Institute for System and Innovation Research ISI)

12:00 **Special Session: Urban Climate Action toward Carbon Neutrality with enhanced Resource circularity (Part 2)**

A0.51 KOG

Chaired by: Yuli Shan and Xiao Li

12:00 **From Disruptions to Opportunities: The Impact of Covid-19 on Industrial Waste Trading in China**

» Xiao Li¹, [Xuezhao Chen](#)¹, Wen Liu¹, Dong Liu¹, Runlin Yang¹ (1. Xi'an Jiaotong University)



Continued from **Monday, 3 July**

12:15 **City-level inequalities in sustainable development**
 » [Ruogqi Li](#)¹, Yidan Zhou¹, Miaomiao Liu¹, Jun Bi¹ (1. State Key Laboratory of Pollution Control and Resource Reuse, School of the Environment, Nanjing University, Nanjing, China)

12:30 **Greenhouse gas emissions inventory of natural gas pipeline incidents in the United States and Canada from 1980s to 2021**
 » [Hongfang Lu](#)¹ (1. China-Pakistan Belt and Road Joint Laboratory on Smart Disaster Prevention of Major Infrastructures, Southeast University,)

12:00 **New IE developments (short presentations)**

B0.13 KOG

Chaired by: Joe Bozeman III

12:00 **Recent developments in Hybrid Life Cycle Assessment - A systematic review**
 » [Rosalie Hagenaars](#)¹, Ranran Wang¹, Reinout Heijungs², Arnold Tukker³ (1. Institute of Environmental Sciences (CML) - Universiteit Leiden, 2. Department of Econometrics and Operations Research, Vrije Universiteit Amsterdam, 3. Leiden University, CML)

12:07 **SUSTAINABILITY ASSESSMENT OF EMERGING TECHNOLOGIES: TAILORING TO CONTEXT**
 » [Gulnara Shavaliyeva](#)¹, Henrikke Baumann¹ (1. Environmental Systems Analysis, Chalmers University of Technology, 412 96 Gothenburg, Sweden)

12:14 **Prospective life cycle assessment: the way forward**
 » [Rosalie van Zelm](#)¹, Mark Huijbregts¹, Thomas Hennequin², Anne Ottenbros³, Emma Zuiderveen², Mitchell van der Hulst¹ (1. Department of Environmental Science, Faculty of Science, Radboud University, Nijmegen 6525AJ, 2. Radboud University, 3. Department of Environmental Science, Radboud University)

12:21 **Reconciling the economic pillar of sustainability: A conceptual and methodological exploration on life cycle costing**
 » [Chunbo Zhang](#)¹ (1. University College London)

12:28 **Disassembly analysis to promote rare earth permanent magnet recovery from end-of-life electric vehicle motors**
 » [Thomas Maani](#)¹, Sidi Deng¹, Lin Li¹, John Sutherland¹ (1. Purdue University)

12:35 **Towards automated mapping of global mining land use**
 » [Tim Werner](#)¹, Victor Maus², Laura Sonter³ (1. The University of Melbourne, 2. Wirtschaftsuniversität Wien, 3. The University of Queensland)

12:00 **Computational methods (short presentations)**

B0.17 KOG

Chaired by: Sebastien Dente

12:00 **HESTIA: An open-access platform for sharing harmonised agri-environmental data**
 » [Patrik Henriksson](#)¹, Joseph Poore², Valentina Caldart², Guillaume Royer² (1. Stockholm University, 2. University of Oxford)

12:07 **Refining a Hybrid Input-Output Model Built on Process-Driven Physical Data for Bioenergy Footprinting**
 » [Miriam Stevens](#)¹, Shweta Singh¹ (1. Purdue University)

12:14 **What are sustainable plastics? A review of interrelated problems and solutions.**
 » [Sara Gonella](#)¹, Vincent de Gooyert¹ (1. Radboud University)

12:21 **pacha: a python package for simulating agent-based models of socio-technical systems in sustainability research**
 » [Gustavo Larrea-Gallegos](#)¹, Antonino Marvuglia¹, Tomás Navarrete Gutiérrez¹, Enrico Benetto¹ (1. Luxembourg Institute of Science & Technology (LIST))

12:28 **THE INVESTMENT GAP IN THE INDUSTRIAL SECTOR: THE CASE OF THE CHLORINE CLUSTER IN THE PORT OF ROTTERDAM**
 » [laurens oei](#)¹, Yasin Sagdur¹, Emile Chappin², Dimitrios Xevgenos³ (1. Water & Energy Intelligence BV, 2. TU Delft, 3. Delft University of Technology)



Continued from **Monday, 3 July**

- 12:00 **IE and Industry (short presentations)**
B0.31 KOG
Chaired by: Bhavik Bakshi
- 12:00 **Net-zero transition in the cement industry: a case study of China based on plant-level data**
» [Xinke Song](#)¹, Can Wang¹, Gang Liu² (1. School of environment, Tsinghua University, 2. SDU Life Cycle Engineering, Department of Green Technology, University of Southern Denmark)
- 12:07 **The Industrial Ecology Approach to Bioeconomy Monitoring**
» [Hanna Helander](#)¹, Christian Lutz², Martin Distelkamp², Rüdiger Schaldach¹, Meghan Beck-O'Brien¹, Stefan Bringezu¹ (1. Center for Environmental Systems Research (CESR), University of Kassel, 2. The Institute of Economic Structures Research (Gesellschaft für wirtschaftliche Strukturforchung, GWS))
- 12:14 **Net-zero transition of the chemical industry: framework and results**
» Amrita Sen¹, Vyom Thakker¹, George Stephanopoulos², [Bhavik Bakshi](#)¹ (1. The Ohio State University, 2. The Global Kaiteki Center, Arizona State University)
- 12:21 **Enabling sustainable chemical manufacturing from product to industrial ecosystem**
» [Yizheng Lyu](#)¹, Jinping Tian¹, Lyujun Chen¹ (1. School of environment, Tsinghua University)
- 12:28 **Assessing material and energy networks in symbiotic petrochemical clusters**
» [Michael Tan](#)¹, Paola Ibarra Gonzalez¹, Igor Nikolic¹, Andrea Ramirez¹ (1. Delft University of Technology)
- 12:35 **Global production division increases the iron ore supply chain fragmentation and risk**
» [Ludi Liu](#)¹, Xin Tian¹ (1. Beijing Normal University)

- 12:00 **Food Systems (short presentations)**
B0.41 KOG
Chaired by: Claudia R. Binder
- 12:00 **The Efficiency of dietary sustainability and its global transition**
» [Pan He](#)¹, Zhu Liu², Klaus Hubacek³, Giovanni Baiocchi⁴, Dabo Guan⁵ (1. School of Earth and Environmental Sciences, Cardiff University, Cardiff, UK, 2. Tsinghua University, 3. University of Groningen, 4. University of Maryland, College Park, 5. University College London)
- 12:07 **Opportunities for mitigating greenhouse gas emissions in U.S. beef production**
» [Rylie Pelton](#)¹, Clare Kazanski², Shamitha Keerthi², Kelly Racette², Nathaniel Springer¹, Michael Wironen², Eugene Yacobsen², Sasha Gennet², Deepak Ray¹, Kris Johnson², Jennifer Schmitt¹ (1. University of Minnesota, Institute on the Environment, 2. The Nature Conservancy)
- 12:14 **Fingerprint 2 Footprint: Enhancing environmental sustainability of animal feed production by combining NIR spectroscopy and environmental footprinting**
» Maria Cairoli¹, [Anne Ottenbros](#)², Sin Yong Teng¹, Mark Schoot³, Steef Hanssen⁴, Christiaan Kapper³, Rosalie van Zelm⁴, Mark Huijbregts⁴, Jeroen Jansen¹ (1. Department of analytical chemistry and chemometrics, Radboud University, Nijmegen 6525AJ, 2. Department of Environmental Science, Radboud University, Nijmegen 6525AJ, 3. Nutricontrol B.V. Analytical solutions, 4. Department of Environmental Science, Faculty of Science, Radboud University, Nijmegen 6525AJ)
- 12:21 **Food delivery packaging in China: Environmental impact reduction potential from circular economy approaches**
» [PEIXIU CHEN](#)¹, Benjamin Steuer¹ (1. The Hong Kong University of Science and Technology)
- 12:28 **The transition of sustainable food consumption: scenario analysis and psychological factors**
» [Yinglei WU](#)¹, Kiyo Kurisu¹, Kensuke Fukushi¹ (1. The University of Tokyo)



Continued from **Monday, 3 July**

12:35 **Metrics for absolute environmentally sustainable foods – case on tunicate burger**

» [Lars Gunnar Furelid Tellnes](#)¹, Anna-Lena Kjøniksen¹ (1. Østfold University College)

12:00 **Consumption, Policy, and Products (short presentations)**

C0.06 KOG

Chaired by: Chika Aoki-Suzuki

12:00 **Gone too soon: A socio-economic analysis of product repair practices in Pakistan**

» [Hina Habib](#)¹, Jo Dewulf¹ (1. Ghent University)

12:07 **What do people think is good for the environment, and how does LCA-based information influence that perception?**

» [Yoshinobu Hasegawa](#)¹, Kiyo Kurisu¹, Kensuke Fukushima¹ (1. The University of Tokyo)

12:14 **Product obsolescence: relationships with product lifetime, product type, and household characteristics**

» [Haruhisa Yamamoto](#)¹, Masahiro Oguchi¹, Daisuke Nishijima², Shinsuke Murakami³ (1. National Institute for Environmental Studies, 2. Fukushima University, 3. The University of Tokyo)

12:21 **Using agent-based modeling to explore aquaponics**

» [Marissa Breitenstein](#)¹, Elisabeth Bautista¹, Andrea Hicks¹ (1. University of Wisconsin-Madison)

12:28 **How does China's emerging middle-income group reshape consumption patterns and carbon footprint?**

» [Xinzhu Zheng](#)¹ (1. China University of Petroleum - Beijing)

12:35 **Sustainable consumption – moving from niche to mainstream**

» [Göran Finnveden](#)¹, Karin Bradley¹, Mikael Klintman², Jörgen Larsson³, Matthias Lehner², Oksana Mont², Jonas Nässén³, Åsa Svenfelt⁴ (1. KTH, 2. Lund University, 3. Chalmers University of Technology, 4. Linköping University)

12:00 **Critical Raw Materials 1 (short presentations)**

B0.25 KOG

Chaired by: Alessa Hool

12:00 **Lithium-Sulfur Technology Reduces the Environmental Impact of Lithium-Ion Batteries**

» [Heng Yi Teah](#)¹, Qi Zhang¹, Kotaro Yasui¹, Suguru Noda¹ (1. Waseda University)

12:07 **How Do Critical Materials Impact the Carbon-neutral and Fossil-free European Energy System?**

» [Fei Wu](#)¹, Francesco Lombardi², Christian Moretti¹, Adrien Mellot¹, Jaco Quist², Stefan Pfenninger² (1. ETH Zurich, 2. TU Delft)

12:14 **Quantitative assessment of global future Lithium supply: Simulating mining projects and predicting production start times**

» [Laura Buarque Andrade](#)¹, Max Frenzel¹, Britta Bookhagen², Carolin Kresse² (1. Helmholtz-Zentrum Dresden-Rossendorf, Helmholtz Institute Freiberg for Resource Technology, Freiberg, 2. Deutsche Rohstoffagentur (DERA) in der Bundesanstalt für Geowissenschaften und Rohstoffe (BGR))

12:21 **Environmental potential of circular lithium-ion battery production from an overall European market perspective**

» [Raphael Ginster](#)¹, Steffen Blömeke¹, Jan-Linus Popien¹, Jana Husmann¹, Christian Scheller¹, Felipe Cerdas¹, Christoph Herrmann¹, Thomas S. Spengler¹ (1. Technische Universität Braunschweig)

12:28 **Trends in technological readiness, critical raw material use, and electricity consumption of water electrolysis technologies up to the year 2050 – prospective technological and environmental assessment**

» [Jan Christian Koj](#)¹, Petra Zapp¹ (1. Forschungszentrum Jülich, Institute of Energy and Climate Research - Systems Analysis and Technology Evaluation (IEK-STE), 52425 Jülich, Germany)



Continued from **Monday, 3 July**

12:35 **Urban mining future of copper under the low-carbon transition of China's power sector**

» [Min Hao](#)¹, Peng Wang², Wei-Qiang Chen³ (1. College of Life Sciences, Ningde Normal University, 2. Key Lab of Urban Environment and Health, Institute of Urban Environment, Chinese Academy of Sciences, 3. Institute of urban environment, CAS)

12:00 **Energy (short presentations)**

B0.16 KOG

Chaired by: Reid Lifset

12:00 **Energy and feedstock: Material Flow Analysis of Fossil-based Chemical Production in China**

» [Yuheng Cao](#)¹, Meng Jiang², Bing Zhu¹ (1. Tsinghua University, 2. Norwegian Univ. of Science and Technology)

12:07 **Urban Indian Residential Buildings: Now and in the future**

» [Aishwarya Iyer](#)¹, Mohamed Aly Etman², Edgar Hertwich³, Narasimha Rao⁴ (1. Center for Industrial Ecology, Yale School of the Environment, Yale University, 2. Yale School of Architecture, Yale University, 3. Norwegian Univ. of Science and Technology, 4. Yale School of the Environment, Yale University)

12:14 **Using different transport modes: an opportunity to reduce UK passenger transport emissions?**

» [Hugh Thomas](#)¹ (1. University of Cambridge)

12:21 **Linny-R: Elegant diagram-based modeling and simulation of (smart) clusters, energy grids and markets**

» [Pieter Bots](#)¹ (1. Delft University of Technology)

12:28 **Market and Grid Required for Renewables-Dominated Electricity Systems**

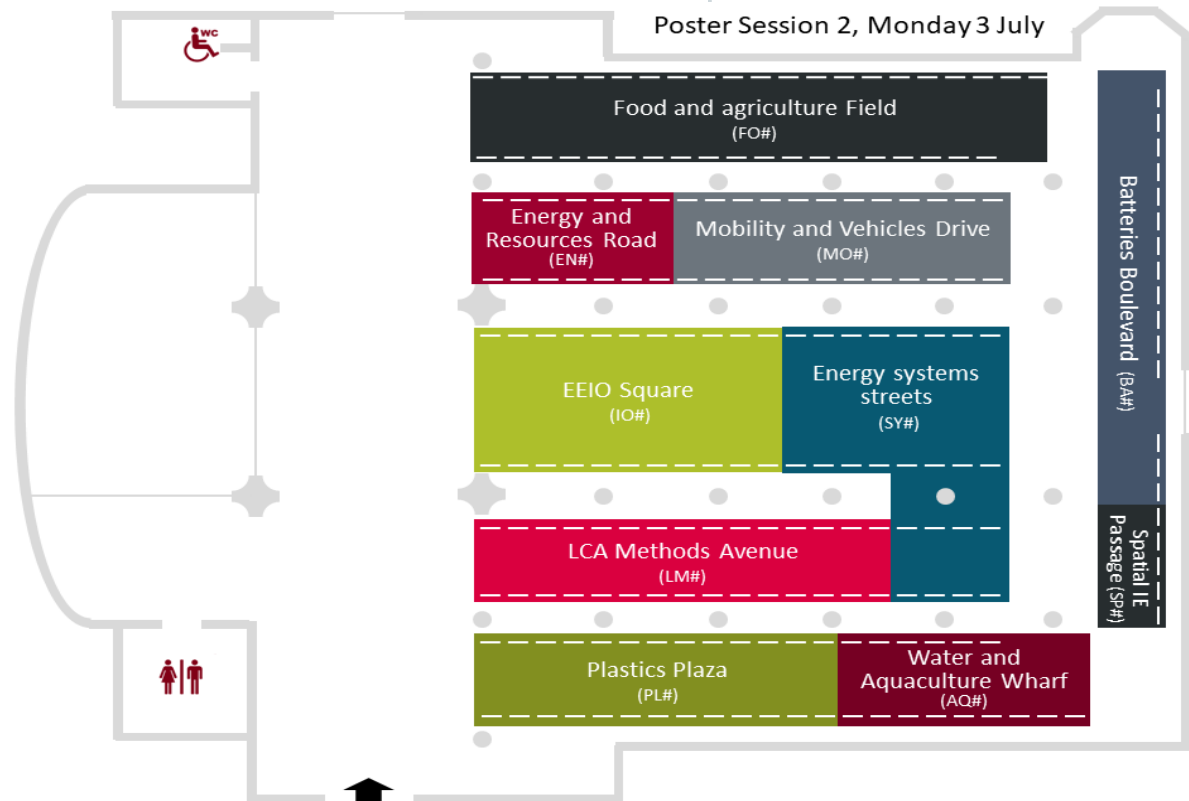
» [Gjalt Huppes](#)¹, Ruben Huele¹ (1. Leiden University, CML)

13:00 **Poster session 2 + lunch. See description for poster groups.**

Pieterskerk



Continued from Monday, 3 July



15:00

Special Session: Trans-continental research agenda for inclusive circular urban industrial innovation systems (Part 2)

C1.31 KOG

Chaired by: Martin de Jong

15:00

Towards a framework for inclusive and circular urban waste management systems: regeneration as a binding element

» [Daan Schraven](#)¹, [Liang Dong](#)² (1. Integral Design & Management, Delft University of Technology, 2. City University of Hong Kong)

Neighborhood	Address	Title	Presenter
Batteries Boulevard	BA1	Life Cycle Assessment of Gum Waste Batteries	Afsoon Mansouri Aski, Bavarian Center for Battery Technology (BayBatt), University of Bayreuth, Bayreuth, Germany
	BA2	Life cycle assessment of electric vehicle battery repurpose use cases	Benedikte Wralsen, University of Agder
	BA3	Policy measures towards advancing battery reuse and recycling in Norway	Chloe Depledge, University of Agder
	BA5	Development and assessment of biodegradable and compostable primary batteries	Joan Muñoz-Liesa, Sostenipra research group (2021SGR000734), Institut de Ciència i Tecnologia Ambientals (ICTA) (MdM 2015-0552; CEX2019-000940- M), Universitat Autònoma de Barcelona, C/de les columnes s/n, 08193 Bellaterra, Barcelona, Spain.
	BA6	Value chains and process-based modelling of Li-ion batteries production and their environmental impacts	Lorenzo Usai, NTNU
	BA7	Estimating the material flow of used lithium-ion batteries in Japan	Masahiro Oguchi, National Institute for Environmental Studies
	BA8	Material flow analysis of end-of-life electric vehicle batteries using agent-based modeling	Miriam Stevens, Purdue University
	BA9	Future greenhouse gas emissions of sodium ion batteries	Shan Zhang, Swedish University of Agricultural Sciences
	BA10	Raw material provisions and recycling of Lithium-ion Batteries	Shannon Davies, Newcastle University
	BA11	Critical raw-material requirements for lithium-ion batteries for the electrification of the Swedish passenger car fleet	Simon Davidsson Kurland, Uppsala University
	BA12	Prediction of the end-of-life NCM batteries considering elongation of lifespan in China until 2035	Wenjing Gong, The University of Tokyo
	BA13	Life-cycle assessment of Li-ion batteries with focus on water risks related to critical metals	Yan Du, Chemical and Environmental Engineering, Yale University
	BA14	Bottom-up characterization of the urban metabolism of reusing electric vehicle batteries	Mateo Sanclemente Crespo, Sostenipra research group (2021SGR000734), Institut de Ciència i Tecnologia Ambientals (ICTA) (MdM 2015-0552; CEX2019-000940- M), Universitat Autònoma de Barcelona, C/de les columnes s/n, 08193 Bellaterra, Barcelona, Spain.
	EEIO Square	IO1	Disassemblability, recyclability and ecodesign assessment to promote the circular economy in the automotive sector
IO2		The Belt and Road Initiative countries play an increasingly important role in global value chains with high carbon emission costs	Ailin Kang, Beijing Normal University
IO3		Strategic scenario analysis of EU CBAM	Bertram F. de Boer, Institute of Environmental Sciences (CML) - Universiteit Leiden
IO4		Pattern of carbon peaking for China's urban agglomerations	Chengqi Xia, Tsinghua University
IO5		Global spread of water scarcity risk through trade	Chenyang Shuai, Chongqing University
IO6		Socioeconomic driving forces of industrial hazardous waste generation within industrial supply chain	Daye Lee, University of Bordeaux
IO7		Multi-model assessments for anticipated agricultural non-CO2 footprints reduction driven by the demand of non-food commodities	Haoran Zhang, University College London
IO8		A Top-Down approach for downscaling sectoral emission budgets. A case study of Canada's construction sector	Hatzav Yoffe, University of Toronto
IO9		The consequences of consumer behaviors and environmental consciousness among various races on household carbon footprints in the United States	Jiahuan Wang, Nagasaki University
IO10		Unveiling the nexus profile of embodied water–energy–carbon–value flows of the Yellow River Basin in China	Lei Cheng, School of environment, Tsinghua University
IO11		Consumption-based Regional Emissions Budgeting Framework - A case study of the South Yorkshire	Ling Min Tan, The University of Sheffield
IO12		Global trading impact on Biodiversity loss in Africa	Ludi Liu, Beijing Normal University
IO13		Methodological Comparison of Prospective LCAs and EE-MRIO for Modelling Circular Economy Measures: A Case Study on Smartphones in Germany	Malte Besler, Fraunhofer Institute for System and Innovation Research ISI
IO14		Substitution of joint-production processes in a sustainable future	Max Koslowski, NTNU
IO15		Assessing the Global Sustainability Impacts of Energy Procurement Switching Strategies: the case of Italy during the Russia-Ukraine war	Michele De Nicolo', Department of Mechanics, Mathematics, and Management, Polytechnic University of Bari
IO16		Advancing Sector Footprint Monitoring: Integrating Bottom-Up data into Top-Down Approaches for Estimating the Environmental Impacts of Healthcare	Michelle Steenmeijer, Centre for Sustainability, Environment and Health, RIVM Dutch National Institute for Public Health and the Environment, Bilthoven, The Netherlands
IO17		The Effect of City-Level Circular Economic Strategies on Reducing Carbon Footprints: A Case Study of Seoul	Minji Yoon, Independent Scholar
IO18		The energy footprint of a city: comparing supply- and use-extended input-output models for the case of Vienna, Austria.	Oleksandr Galychyn, Finnish Environmental Institute (SYKE)
IO19		Factors driving China's carbon emissions after the COVID-19 outbreak	xinlu sun, University College London
Road	EN1	A systematic comparison of low carbon hydrogen production pathways that align with net zero roadmaps. What are the trade-offs to consider?	Alice Bennett, University of Cambridge
	EN2	Digesting fossil infrastructure: producing hydrogen with repurposed materials	Hauke Schlesier, Empa - Swiss Federal Laboratories for Materials Science and Technology, Technology and Society Laboratory
	EN3	Could solar PV adoption in rural Africa catalyse charcoal production – an examination of rural Zambia	Hillary Chanda, University of Reading
	EN4	The rapid energy transition and resource extraction lock-in	John Mulrow, Purdue University

EN5	A circular economy potential for Solar photovoltaic in the South East Asian region – Using Life Cycle Assessment and Material Flow Analysis approach	Minhee Son, Energy Studies Institute, National University of Singapore
EN7	Uncovering the spatiotemporal evolution of the global wind energy system: A high spatial resolution material stock and flow analysis	Shangjun Ke, University of Southern Denmark
EN8	Environmental Impacts Assessment of Future Hydrogen Production	Shijie Wei, Leiden University, CML
EN9	Dynamic analysis of the critical material requirements and recycling opportunities of the U.S. energy transition	Tessa Lee, Yale University
EN10	Economic and environmental feasibility of hydrogen production from gasifying mixed plastic waste with carbon capture and storage	Yuan Yao, Center for Industrial Ecology, Yale School of the Environment, Yale University
EN11	Financing high-cost measures for deep emission cuts in the basic material industry	Anna Hörbe Emanuelsson, Chalmers University of Technology
EN12	Environmental impacts and potential improvements of rare earth mining	Maarten Koese, Leiden University, CML
EN13	Exploring the impact of a circular economy: A model-based analysis of steel and cement demand for buildings	Meta Thuri Lotz, Fraunhofer Institute for System and Innovation Research ISI
SY1	Integrating environmental parameters in energy system modeling	Alexander de Tomás Pascual, LIVEN Lab, Sostenipra Group. Institute of Environmental Science and Technology (ICTA-UAB), Maria de Maeztu Unit (CEX2019-0940-M)
SY2	Demand and deployment of hydrogen liquefaction plants in Europe	Alicia Torres Gomez, University of Cambridge
SY3	Transport dependence on oil: Could transport electrification offset near-future strains on net energy flows from liquid fossil fuels?	Antonin Berthe, Inria
SY4	Carbon Footprint of Household Energy Use in the United States	Benjamin Goldstein, McGill University
SY5	Comparative Analysis of Energy Transportation Modes: Economic and Environmental Considerations for the Low-Carbon Energy Transition	Ella Jennings, University of Cambridge
SY6	Low-carbon hydrogen production, integration, and impacts in oil refineries	Erik Lopez Basto, Technical University Delft
SY7	A life-cycle perspective on the benefits of renewable electricity generation in the EU27	Evert Bouman, Climate and Environmental Research Institute NILU
SY8	Market and Grid Required for Renewables-Dominated Electricity Systems	Gjalt Huppel, Leiden University, CML
SY9	The spatiotemporal evolution of carbon emissions and resource inequality in China's interprovincial coal trade	Guangying Pu, School of Environment, Tsinghua University, Beijing, China
SY10	The impact of energy transition policies on land use changes affects regional ecosystem services	Hungxin Chen, National Taiwan University
SY11	Study of Vehicle-to-Grid introduction to reduce curtailment of renewable energy in a remote Island in Japan : Case Study of Tanegashima island	Kazuki IGARASHI, Shibaura Institute of Technology
SY12	Analysis to identify key parameters for estimating generation of used PV panels	Ken MATSUOKA, The University of Tokyo
SY13	Current and prospective environmental consequences of integrated vs added photovoltaic roof applications	Mara Hauck, TNO, Climate, Air and Sustainability
SY14	Linny-R: Elegant diagram-based modeling and simulation of (smart) clusters, energy grids and markets	Pieter Bots, Delft University of Technology
SY15	Charging toward decarbonized electrification: Revisiting Beijing's power system	Qian Zhang, Queen's University
SY16	LIFE CYCLE ASSESSMENT OF DIMETHYL ETHER produced from algal biomass	Raja Chowdhury, Indian Institute of Technology, Roorkee, India
SY17	Developing an Optimal Energy Supply System to Support the Regional Decarbonization: A Case Study from Kitakyushu City, Japan	Richao Cong, The University of Kitakyushu
SY18	Accounting of Greenhouse Gas Emissions in China's Electricity Generation and Consumption	Ruoxi Xiong, School of environment, Tsinghua University
SY19	Contributions of key countries, enterprises and refineries to greenhouse gas emissions in global oil refining 2000-2021	Shijun Ma, University College London
FO1	Quantifying material flows to integrate tomato greenhouse horticulture into a circular industrial ecosystem	Alexander van Tuyl, Wageningen University & Research, Business Unit Greenhouse Horticulture
FO2	Environmental performance of trawling fishing	Ana Cláudia Dias, University of Aveiro
FO3	Tracing nitrogen flows associated with beef supply chains in the United States: a consumption-based perspective	Anaís Ostroski, University of Pittsburgh
FO4	Subnational trade flows of nitrogen for the Japanese agriculture-related consumption	Azusa Oita, National Agriculture and Food Research Organization (NARO)
FO5	Deriving Product Nutrient Inventories from Nitrogen and Phosphorous Flow Accounting of U.S. Agricultural commodities	Christine Costello, Pennsylvania State University
FO6	Evaluating the sustainability potential of Black soldier fly meal for laying hens' feed using LCA	Daniela Dominguez Aldama, The University of British Columbia
FO7	Nitrogen and Phosphorus Footprints of the Agriculture Sector in Indonesia	Farah Wirasenjaya, Graduate School of Environmental Studies, Tohoku University
FO8	Land-free Bioenergy from Circular Agroecology – A Diverse Option Space	Fei Wu, ETH Zurich
FO9	Environment-Health performance of culinary patterns in traditional recipes across the China	fengyin xiong, University of Southern Denmark
FO10	Can circular strategies contribute to sustainable food production in cities? The case of nutrients circulation in a metropolitan area for urban agriculture.	gara villalba, Universitat Autònoma de Barcelona
FO11	The Potential of Controlled Environment Agriculture in Canada: A life cycle assessment of container farming and aquaponics	Goretty Dias, School of Environment, Enterprise, and Development, University of Waterloo

FO12	Food demands transition in China's ageing society challenges planetary boundary	Han Zhang, Northwest A & F University
FO13	Unpacking domains and trends in food environments - a bibliometric analysis	Isaac Guzman Estrada, University of Reading
FO14	An Assessment of Emissions from the United Kingdom Food System	Jedidiah Oru-Bo, University of Reading
FO16	Global assessment of plate food waste in schools	lei feng, Chongqing University
FO17	Change in nitrogen inputs to the Chesapeake Bay watershed with the introduction of herbaceous feedstock	Lucas de Lima Casseres dos Santos, The Pennsylvania State University
FO18	Sustainable and fair transitions in agriculture: the case for leveraging native maize in Mexico	Mariana Ortega-Ramírez, Alianza por Nuestra Tortilla
FO19	Challenges in aquaponic food production – considering the social paradigm of sustainability	Marissa Breitenstein, University of Wisconsin-Madison
FO20	Assessing the environmental implications of sustainable and circular public procurement food	Michael Martin, IVL Swedish Environmental Research Institute
FO21	Assessing the environmental performance of a containerized vertical farm: Case study from IKEA	Michael Martin, KTH
FO22	Could Norway supply its own fertilizer? A high-resolution analysis of the agricultural phosphorus cycle.	Miguel Las Heras, Climate and Environmental Research Institute NILU
FO23	Assessing Agricultural Environmental Impacts using EE-MRIO Multipliers	Mohamed Badr, NTNU
FO25	Food waste-Energy-Water-Emissions (FEWE) Nexus in the Food Service Sector: Comparative Life Cycle Assessment of Locally Produced vs Imported Meal	Paschal Milindi, City University of Hong Kong
FO26	Sustainability trade-offs among blue foods in North Sumatra	Patrik Henriksson, Stockholm University
FO27	Environmental sustainability of oyster production in Portugal	Paula Quinteiro, University of Aveiro
FO28	How to improve efficiency of coupled crop-livestock farming system?	Qian Zhang, College of Land Science and Technology, China Agricultural University, Beijing, China
FO29	Sustainable Aquafeeds: Using Aquafarmer Preference to Inform a Multi-criteria Decision Analysis	Ramin Ghamkhar, Associate Consultant of Sustainability
FO30	A novel technique for mapping material and information flow in food traceability systems	Samantha Islam, University of Cambridge
FO31	Digital food sharing and food insecurity in the COVID-19 era	Tamar Makov, Ben Gurion University of the Negev
FO32	Revealing and addressing the pesticide tradeoff of sustainable diets	Xinhan Yin, Chongqing University
FO33	Comparing Biodiversity Impacts of Recipes across the World	Yeqing Zhang, Norwegian Univ. of Science and Technology
FO34	The strategies to improve the circularity of Taiwan's food system: Findings from nitrogen and phosphorus flows	Yi-Hsiang Lee, Graduate Institute of Environmental Engineering, National Taiwan University
FO35	Decarbonisation of Food Loss and Waste: A Case Study of Chicken Feet Supply Chain in the UK	Yiming Sui, University of Reading
FO36	The societal and environmental opportunities of reducing sugar consumption	Zhongxiao Sun, College of Land Science and Technology, China Agricultural University, Beijing, China
FO37	Life cycle assessment of swine breeding and manure management: A case study in Yunlin county, Taiwan	Zih-Ee Lin, National Taiwan University
LM1	Decarbonizing future cement production: A prospective Life Cycle Assessment using global Scenarios from an Integrated Assessment Model	Amelie Mueller, Leiden University, Institute of Environmental Sciences (CML)
LM2	A parametrized approach to regionalizing recycling life-cycle assessment inventories	Arianne Provost-Savard, CIRAI, Polytechnique Montréal
LM3	Normalization factor database for life cycle impact assessment in China	beijia huang, University of Shanghai for Science and Technology
LM4	Life cycle assessment of demand-side management in energy systems: A system-wide perspective	Benedikt Nilges, Institute of Technical Thermodynamics, RWTH Aachen University
LM5	Absolute Environmental Sustainability Assessment of Chemical Products – transgression level of nature's carrying capacity and potential for nature-based solutions	Bhavik Bakshi, The Ohio State University
LM6	Spatially explicit LCA of silicon production: the importance of system levels in environmental assessments.	Elisa Pastor Vallés, Norwegian Univ. of Science and Technology
LM7	Reviewing life cycle assessments of carbon capture and utilisation - unclear goals lead to unclear results	Evelina Nyqvist, Environmental Systems Analysis, Chalmers University of Technology, 412 96 Gothenburg, Sweden
LM8	A theoretical method to evaluate and compare changes in energy consumption reduction of vehicles	Guillaume Majeau-Bettez, CIRAI, Polytechnique Montréal
LM9	Regionalization of water scarcity characterization factors to Peruvian basins using the AWARE method	Joan Sanchez-Matos, Pontificia Universidad Católica del Perú
LM10	Methodology development for decision on the allocation factor considering recycling effect	Junxi LIU, Department of Materials Engineering, School of Engineering, The University of Tokyo, Japan
LM11	A software for recommending weighting method(s) tailored to LCA studies	L. Scherer, Leiden University, CML
LM12	Contribution Analysis: What is it and which questions does it answer?	Marc van der Meide, CML - Leiden University
LM13	Improving the Modelling Framework for Terrestrial Acidification in Life Cycle Impact Assessment	Marion Lebrun, NTNU
LM14	Going beyond generic LCA: A framework for mass-deployment of customized semi-automated carbon footprinting	Marit Salome Rognan, CIRAI, Polytechnique Montréal
LM15	Nature-positive LCA of Production and Consumption Systems	Mathilde Vlieg, MalaikaLCT
LM16	Prospective life cycle assessment to avoid unintended consequences of net-zero solutions and its challenges	Mohammad Ali Rajaeifar, School of Engineering, Newcastle University, Newcastle Upon Tyne, NE1 7RU, United Kingdom
LM18	Integration of chemical engineering models in waste management LCA: Case of composting	Nomena Ravoahangy, Université de Technologie de Compiègne, ESCOM, TIMR ; Polytechnique Montréal, CIRAI
LM19	Net Positive LCA Beyond Negative Realms	Olivia Manzart, The Evah Institute, Tamborine Mountain QLD

LM20	Capturing "More-good" and "less bad" social impacts: the methodology revealed	Pasan Dunuwila, The University of Tokyo
LM21	Prospective life cycle assessment: the way forward	Rosalie van Zelm, Department of Environmental Science, Faculty of Science, Radboud University, Nijmegen 6525AJ Rylie Pelton, LEIF
LM22	Prospective Life Cycle Inventories for Rapid Innovation Technologies: A hotspot scenario analysis for global integrated circuit manufacturing	
LM23	Development of a spatially explicit model to evaluate widespread impacts of reduced ocean pH and calcite saturation levels	Sedona Anderson, NTNU
LM24	WasteFootprint: A Python tool in the Brightway2 framework to categorise and quantify waste flows in LCA	Stewart Charles McDowall, CML Leiden
LM25	Dynamic Life Cycle Assessment (dLCA) of a Biorefinery Employing Bakery Waste Oil for Sophorolipids Production with Evolving Technologies	Yahui Miao, City University of Hong Kong
MO1	Leading the transition of the European automotive supply chain towards a circular future - TREASURE	Abel Ortego, CIRCE Institute – Universidad de Zaragoza, Spain
MO2	Future material demand for electrification of the UK Light Duty Vehicle Fleet	Ben Davies, Sustainable Process Technologies, Faculty of Engineering, University of Nottingham, Nottingham NG7 2RD
MO3	Light-Duty Passenger Vehicle Electrification in China and Associated Greenhouse Gas Emissions from 2021 to 2050: A Dynamic Fleet Perspective	Bin Shui, City University of Hong Kong
MO4	Analysis of the transport sector to establish deep-decarbonization strategies in Peruvian cities	Claudia Cucchi, Pontificia Universidad Católica del Perú
MO5	Smart Mining Fleet Dispatching System to Reduce Greenhouse Gas Emissions Using Deep Reinforcement Learning	Da Huo, University of Toronto
MO6	What is the Greenest Last-mile Delivery Option for Consumers' Online Purchases	Davide Alessi, University of Trento
MO7	Would you Change your Travel Mode if you know its Carbon Footprint?	Erin Bulson, University of Wisconsin-Madison
MO8	Levelized cost of inter-city electric vehicles charging option in China	HAO HAN, City University of Hong Kong
MO9	TranSensusLCA: Developing a harmonized LCA approach for E-mobility	Hazem Eltohamy, Institute of Environmental Sciences (CML) - Universiteit Leiden
MO11	Using different transport modes: an opportunity to reduce UK passenger transport emissions?	Hugh Thomas, University of Cambridge
MO12	Material efficiency and carbon emission reduction strategies of passenger vehicles: a case study of the Yangtze River Delta region	Huimei Li, Faculty of Environment and Natural Resources, University of Freiburg
MO13	Environmental Impacts of Residential Relocation in the Autonomous Vehicle Era	Kendrick Hardaway, Purdue University
MO14	Sustainability assessment of heavy duty transport using the multi-criteria analysis (MCA)	Konrad Smolarczyk, Environmental Technology and Management, Department of Management and Engineering, Linköping University, SE-581 83 Linköping, Sweden
MO15	Undoing the lock-in of urban sprawl: integrated modelling of materials and GHG emissions of urban transformation for decreasing car dependency	Laura Pérez Sánchez, Universitat Autònoma de Barcelona
MO16	Stocks and flows analysis of settlements in the Greater Oslo: an investigation of Resource Efficiency Strategies	Lola Rousseau, Norwegian Univ. of Science and Technology
MO17	Sustainable Mobility in Times of Crises	Mira Kopp, Friedrich Schiller University Jena
MO18	Establishing the potential contribution of public transport to climate neutrality based on high resolution urban environment modeling	Patrícia Baptista, IN+ Center for Innovation, Technology and Policy Research, LARSys, Instituto Superior Técnico, Universidade de Lisboa, Portugal
MO20	Robust comparative LCA of circular pavement designs using a probabilistic approach	Zhaoxing Wang, University of Antwerp
MO21	Life cycle greenhouse gas emissions and mitigation opportunities of High Speed Railway in China	Zimeng Cai, School of environment, Tsinghua University
MO22	Understanding Interconnection in Resilient Multimodal Public Transportation Networks: A Case Study from Hong Kong	Zizhen Xu, City University of Hong Kong
PL1	A Dynamic Probabilistic Material Flow Analysis of the Norwegian Plastic Cycle and its Associated Environmental Emissions	Ahmed Marhoon, Norwegian University of Science and Technology
PL2	Consumer Preference Evaluation of Plastic Container Recovery Systems Using Conjoint Analysis	Atsushi Fujiyama, The University of Kitakyushu
PL3	Quantifying the stocks and flows of microplastics across Canada	Cassandra Sherlock, University of Waterloo
PL4	Environmental and Human Health Implications of Bioplastic Production Using CO ₂ as Feedstock	Danyi Feng, Department of Civil and Environmental Engineering, University of Wisconsin-Madison, Madison, WI, 53706, USA
PL5	Willingness-to-pay for Bioplastic Bottles	Danyi Feng, Department of Civil and Environmental Engineering, University of Wisconsin-Madison, Madison, WI, 53706, USA
PL6	Plastics have lower greenhouse gas emissions than their alternatives in most current applications	Fanran Meng, University of Cambridge
PL7	Analyzing the effect of promoting reusable containers for takeaway food through policies in Taiwan	Hsin-Tien Lin, National Cheng Kung University
PL8	Material Flow Analysis of the Portuguese plastic management	João Serra, University of Aveiro
PL9	Trade-offs between material efficiency and environmental performance for managing plastics packaging waste	John Laurence Esguerra, Linköping University
PL10	Linking resource circulation of plastics with the industry-wide decarbonization through life cycle thinking	Jun Nakatani, The University of Tokyo; National Institute for Environmental Studies, Japan
PL11	Scenario analysis of the environmental impact and economic feasibility of expanding bio-based and bio-degradable PHBH production	Kota Chida, Department of Chemical System Engineering, The University of Tokyo

Plastics	PL12	LIFE CYCLE ASSESSMENT OF THREE NOVEL TECHNIQUES FOR REJUVENATING "OLD PVC": REMADYL CASE STUDY, CHALLENGES AND BENEFITS	Luigi D'Elia, eLoop s.r.l, V.le A. Gramsci 17/B, Napoli 80122, Italy; Department of Chemical Sciences, University of Naples Federico II, Naples 80126 , Italy;
	PL13	Human Behavior at Point of Disposal of PLA	Monica Rodriguez Morris, Department of Civil and Environmental Engineering, University of Wisconsin-Madison, Madison, WI, 53706, USA
	PL14	Effect factors for ecotoxicity from plastic additives in the aquatic ecosystem	Naiara Casagrande, MARE - Marine and Environmental Sciences Centre ARNET - Aquatic Research Network Associate Laboratory, NOVA School of Science and Technology, NOVA University Lisbon
	PL15	A life cycle perspective of the second-generation polylactic acid and its integration with chemical recycling	Ricardo Rebolledo-Leiva, Universidade de Santiago de Compostela
	PL16	Climate benefits of PLGA: A novel plastic based on atmospheric carbon	Sara Gonella, Radboud University
	PL17	What are sustainable plastics? A review of interrelated problems and solutions.	Sara Gonella, Radboud University
	PL18	Current and future key factors for the environmental performance of plastic packaging waste management	Sarah Schmidt, Research Center for Resource Management and Solid Waste Engineering, Faculty of Civil and Environmental Engineering, University of Kassel, Mönchebergstraße 7, 34125 Kassel, Germany
	PL19	Towards a Circular Economy for PET bottles in the US - a System-Dynamics Approach	Tapajyoti Ghosh, National Renewable Energy Laboratory
	PL20	Optimization of the Circulation Strategy of Plastic Waste based on the Life-cycle Consideration of Spatial Factors and Technologies of Recycling Plants	Toru Matsumoto, The University of Kitakyushu
	Spatial IE Passage	SP1	The Design of Transportation Pipelines for Carbon Capture and Storage in Taiwan with GIS
SP2		Towards automated mapping of global mining land use	Tim Werner, The University of Melbourne
SP3		Estimation of entity-level land use and its application in urban sectoral land use footprint: A bottom-up model with emerging geospatial data	Yutao Wang, Fudan University
Water and Aquaculture Wharf	AQ1	Exploring the Economics of Urban Water: Valuation, Recycling, and Sustainability	Carlos López-Morales, El Colegio de México
	AQ3	Water loss and return flows matter for water stress mitigation in China	Dan Wang, Integrated Research on Energy Environment and Society, Energy Sustainability Research Institute Groningen, University of Groningen
	AQ5	Streamflow uncertainty to mean areal precipitation: impact on precipitation station selection	Hakkwan Kim, Seoul National University
	AQ6	Integrating black soldier fly decentralised facilities into the food waste treatment infrastructure system: Potential in Megacity Beijing	Haoran Qiao, Peking University
	AQ7	Towards a circular economy of water- Integrated process modeling, technoeconomic analysis, and life cycle assessment for anaerobic membrane bioreactor platform for wastewater management	Madison Kratzer, University of Pittsburgh
	AQ8	Learning with case studies: scientific contributions and solutions applicable to water-Energy-food-waste Nexus in the Global South	Maryegli Fuss, Karlsruhe Institute of Technology
	AQ9	Water Circularity Indicator: Development and Application to a Pimpri-Chinchwad City in India	Nikita Kakwani, Indian Institute of Technology Bombay, Mumbai
	AQ10	Water-Energy Nexus Tool: an energy assessment model for the wastewater treatment plants	Shalini Nakkasunchi, School of Engineering, Newcastle University, Newcastle Upon Tyne, NE1 7RU, United Kingdom
	AQ11	Understanding resilience of urban food-energy-water system: Insights from the Beijing Megacity	Xinqing Li, Beijing Normal University
	AQ12	Lifecycle Energy and Carbon Emissions of Water Supply in a Water-Stressed City: Comparing Long-range Piped and Decentralized Water Supply in Paju, Korea	Yiseul Hong, Korea university
	AQ13	Enhancing household water consumption prediction by the water-energy nexus concept: a case of Beijing, China	Zonghan Li, Tsinghua University



Continued from **Monday, 3 July**

- 15:08 **A study on maximizing energy efficiency of manufacturing and disposal of plastics for the promotion of carbon-neutral plastic circular economy**
 » [Minoru Fujii](#)¹, Satoshi Ohnishi¹, Seiya Maki¹, Kosuke Kawai¹, Liang Dong² (1. National Institute for Environmental Studies, 2. City University of Hong Kong)
- 15:16 **Impact Assessment on Direct Circulation of Positive Electrode Active Materials from Spent Lithium-ion Batteries Through Innovative Separation Technologies**
 » [Yi Dou](#)¹, Aya Heiho¹, Izuru Suwa¹, Yasunori Kikuchi¹ (1. The University of Tokyo)
- 15:24 **A solution in household: Is there an alternative beyond the currently widespread pathways of food waste management?**
 » [Hengxing Yin](#)¹, Ling Han¹, Xin Tong¹ (1. Peking University)
- 15:32 **Just transition: moving toward socio-ecological justice in the sustainable development era**
 » [Yuhang Sun](#)¹, Liang Dong¹ (1. City University of Hong Kong)
- 15:00 **MFA case studies 2**
A1.44 KOG
 Chaired by: Ichiro Daigo
- 15:00 **Coexistence of improving material flow indicators and reducing carbon emissions in Japan**
 » [Sho Hata](#)¹, Keisuke Nansai¹, Kenichi Nakajima¹ (1. National Institute for Environmental Studies)
- 15:15 **Dynamic material flow analysis of lithium-ion battery materials: The impact of vehicle sharing**
 » [Daniel Johansson](#)¹, Simon Davidsson Kurland², Johannes Morfeldt¹ (1. Chalmers University of Technology, 2. Uppsala University)

- 15:30 **ASEAN4 EW-MFA with Perspectives on Well-Being Indicators**
 » [\(Anthony\) Shun Fung Chiu](#)¹, Liang Dong², Marianne Faith Martinico-Perez¹ (1. De La Salle University, 2. City University of Hong Kong)
- 15:45 **How much sorting is required for a circular low carbon aluminium economy?**
 » [Julien Pedneault](#)¹, Guillaume Majeau-Bettez¹, Manuele Margni¹ (1. CIRAI, Polytechnique Montréal)
- 15:00 **Special Session: Plastics, Chemicals and Sustainability (Part 2)**
A0.51 KOG
 Chaired by: Fanran Meng and Jonathan Cullen
- 15:00 **How to feed the global population with less greenhouse gas emissions from nitrogen fertilisers?**
 » Yunhu Gao¹, [André Serrenho](#)¹ (1. University of Cambridge)
- 15:15 **Driving a Net-Zero U.S. Ammonia Industry Considering Technology Evolutions and Policy Strategies**
 » Banafsheh Jabarivelisdeh¹, [Enze Jin](#)¹, Phillip Christopher¹, Eric Masanet¹ (1. University of California, Santa Barbara)
- 15:25 **A dynamic material flow analysis of the global demand of polymers**
 » [Yunhu Gao](#)¹, André Serrenho¹ (1. University of Cambridge)
- 15:35 **Re-evaluation of end-of-life treatment options for plastics**
 » Fanran Meng¹, [Jonathan Cullen](#)¹, André Serrenho¹ (1. University of Cambridge)
- 15:00 **EEIOA cases 1**
B0.13 KOG
 Chaired by: Kaihui Song
- 15:00 **The exotic species footprint of traded commodities**
 » [Jan Borgelt](#)¹, Francesca Veronesi¹, Konstantin Stadler¹ (1. NTNU)



Continued from **Monday, 3 July**

- 15:15 **Tracing carbon footprints to supply chain intermediaries in the United Kingdom**
 » [Diana Ivanova](#)¹, Hanspeter Wieland² (1. University of Leeds, 2. University of Natural Resources and Life Sciences (BOKU))
- 15:30 **Quantifying and understanding urban metabolism based on the national socioeconomic metabolism**
 » [Sónia Cunha](#)¹, [Paulo Ferrão](#)¹ (1. IN+ Center for Innovation, Technology and Policy Research, Instituto Superior Técnico, Lisbon, Portugal)
- 15:45 **Evaluating the decoupling of economic growth from material consumption based on the socioeconomic metabolism characterization of European countries**
 » [Sónia Cunha](#)¹, Marta Abrantes², Patrícia Baptista², Paulo Ferrão³ (1. Institute of Environmental Sciences (CML), Leiden University, Leiden, the Netherlands, 2. IN+ Center for Innovation, Technology and Policy Research, LARSyS, Instituto Superior Técnico, Universidade de Lisboa, Portugal, 3. IN+ Center for Innovation, Technology and Policy Research, LARSyS, Instituto Superior Técnico, Universidade de Lisboa, Lisbon, Portugal)
- 15:00 **Advances in MFA methods 2**
B0.17 KOG
 Chaired by: Glenn Aguilar-Hernandez
- 15:00 **Taxes and crises: modeling time-dependent changes in lifetime**
 » [Kamila Krych](#)¹, Johan Pettersen² (1. NTNU, 2. Norwegian Univ. of Science and Technology)
- 15:15 **Regional Sensitivity Analysis to determine the appropriate combination of CE strategies**
 » Yusuke FUJII¹, Ken MATSUOKA¹, Ryu Koide², [Shinsuke Murakami](#)¹ (1. The University of Tokyo, 2. Material Cycles Division, National Institute for Environmental Studies)

- 15:30 **Parameter reconciliation for designing biophysically consistent socio-technical alternatives**
 » Olivier Mauviel¹, [Jean-Yves Courtonne](#)¹, Guillaume Mandil¹, Peter Sturm¹ (1. STEEP team, Univ. Grenoble Alpes, CNRS, Inria, Grenoble INP, LJK, 38000 Grenoble, France)
- 15:45 **Estimating dissipative losses in thermal spray applications: The current status and circular economy recommendations**
 » [Mohamad Kaddoura](#)¹, Guillaume Majeau-Bettez¹, Ben Amor², Manuele Margni¹ (1. CIRAI, Polytechnique Montréal, 2. LIRIDE, Université de Sherbrooke)
- 15:00 **Complex supply chains and flows**
B0.31 KOG
 Chaired by: Takuma Watari
- 15:00 **Mapping the economic complexity of green supply chains**
 » [Yang Li](#)¹ (1. Harvard University)
- 15:15 **Assessing Supply Risks and Unveiling Holistic Insights: A Comprehensive Analysis of the Global Nickel Supply Chain**
 » [Simone Della Bella](#)¹, Burak Sen², Gang Liu³ (1. SDU Life Cycle Engineering, Department of Green Technology, University of Southern Denmark, 2. SAU Center for Research & Development, and Applied Research (SARGEM) Faculty of Engineering, Sakarya University, 3. University of Southern Denmark)
- 15:30 **Substance Flow Analysis of Pathogens for Epidemics Control**
 » [Gjalt Huppes](#)¹, Ruben Huele¹ (1. Leiden University, CML)
- 15:45 **Anthropogenic potassium metabolism and world trade network**
 » [Yashar Perhat](#)¹, Shinsuke Murakami² (1. Department of Technology Management for Innovation, Graduate School of Engineering, The University of Tokyo, 2. The University of Tokyo)
- 15:00 **Energy systems 1**
B0.41 KOG
 Chaired by: Michael Martin



Continued from **Monday, 3 July**

15:00 **Delivery of energy sustainability: Applications of the “STAR” protocol to the Sustainable Development Goal 7 index and its interaction analysis**

» [Dandan Zhao](#)¹, Olli Varis¹, Jialiang Cai¹, Lei Shei², Ayman Elshkaki³, Junguo Liu⁴ (1. Aalto University, 2. University of Chinese Academy of Sciences, 3. Chinese Academy of Sciences, 4. North China University of Water Resources and Electric Power)

15:15 **Biogas potential studies: A review of their scope, approach and relevance**

» [Natasia Angel Setiawan Tjutju](#)¹, Jonas Ammenberg¹, Axel Lindfors¹ (1. Linköping University, Biogas Solutions Research Center)

15:30 **Towards a circular green hydrogen supply chain: a fieldwork research**

» [Pamela Salinas-Velarde](#)¹, Ruth Carrasco-Gallego², Alberto Abánades³ (1. 1. ETSII, Universidad Politécnica de Madrid (UPM), c/ José Gutiérrez Abascal 2, 28006 Madrid, Spain/ 2. Department of Global Innovation, Iberdrola S.A., C. Tomás Redondo, 1, 28033 Madrid, Spain, 2. Department of Organizational Engineering, Business Administration and Statistics, ETSII, Universidad Politécnica de Madrid (UPM), c. José Gutiérrez Abascal 2, 28006 Madrid, Spain, 3. Department of Energy Engineering, ETSII, Universidad Politécnica de Madrid (UPM), c/ José Gutiérrez Abascal 2, 28006 Madrid, Spain)

15:45 **Carbon Tax Design and Revenue Recycling in Line with National Redistribution Policy and Global Justice Principles**

» [Xiangjie Chen](#)¹, Daniele Malerba², Kuishuang Feng¹, Yannick Oswald³, Klaus Hubacek⁴ (1. Department of Geographical Sciences, University of Maryland, College Park, 2. German Institute of Development and Sustainability (IDOS), Research Programme “Transformation of Economic and Social Systems”, 3. School of Geography, University of Leeds, 4. Integrated Research on Energy Environment and Society, Energy Sustainability Research Institute Groningen, University of Groningen)

15:00 **LCA case studies 3**

C0.06 KOG

Chaired by: Yuan Yao

15:00 **The Social Structure of Technology: Exploring the Potential of Social Accounting Matrices for Social Life-Cycle Analysis**

» [Carlos López-Morales](#)¹, Miriam Boyer² (1. El Colegio de México, 2. Humboldt Universität zu Berlin)

15:15 **Social Life Cycle Assessment of formal and informal waste collectors using UNEP/SETAC guidelines - a case study in Uttara, Dhaka**

» [AZAD ASHRAF](#)¹, Eugene Mohareb², Maria Vahdati², Elina Adam¹, Sruthi Udayakumar¹, Rohail Tahir¹ (1. University of Doha for Science and Technology, 2. University of Reading)

15:30 **The full picture: Life cycle assessment of Norwegian household MSW generation - Impacts and potential environmental benefits of the complete waste management system**

» [Kim Rainer Mattson](#)¹, Johan Pettersen² (1. Norwegian University of Science and Technology, 2. Norwegian Univ. of Science and Technology)

15:00 **Urban Metabolism**

B0.25 KOG

Chaired by: Chris Kennedy

15:00 **What does “urban metabolism” mean? A conceptual engineering approach**

» [Nicola Bertoldi](#)¹, Daniela Perrotti² (1. Louvain Research Institute for Landscape, Architecture, Built Environment (LAB) (primary), Centre de Philosophie des Sciences et Sociétés (CEFISES) (secondary), University of Louvain, UCLouvain, 2. Louvain Research Institute for Landscape, Architecture and Built Environment (LAB), University of Louvain, UCLouvain)

15:15 **Integrating urban metabolism and smart cities technologies**

» [Federica Geremicca](#)¹, Melissa Bilec¹ (1. University of Pittsburgh)

15:30 **Urban Bioeconomy: Mapping Organic Resource Streams and the Bio-Symbioses in Cities through Material Flow Analysis**

» [Nan-Hua Nadja Yang](#)¹, Aidong Yang¹ (1. University of Oxford)



Continued from **Monday, 3 July**

15:45 **Teleconnections and spatial metabolic rifts in urban material circularity**

» [Thomas Elliot](#)¹, Marie Vigier¹, Annie Levasseur¹ (1. École de technologie supérieure)

15:00 **Social Dimensions 2**

B0.16 KOG

Chaired by: Sina Leipold

15:00 **Status of Smartphone Garbage Applications Provided by Japanese Local Governments**

» [Seiji Hashimoto](#)¹, Riki Yukawa¹ (1. Ritsumeikan University)

15:15 **Towards linking social metabolism with the behaviour of individual agents**

» [Raphael Asada](#)¹, Julia Wenger¹, Claudia Mair-Bauernfeind¹, Michael Kriechbaum¹, Tobias Stern¹ (1. Institute of Environmental Systems Sciences, University of Graz, Austria)

15:30 **Impacts of working arrangements and lifestyle factor importance on environmental consciousness**

» [Andrew Chapman](#)¹, Shamal Karmaker², Yosuke Shigetomi³ (1. Kyushu University, 2. University of Dhaka, 3. Nagasaki University)

15:45 **The Status and Trend of Indonesian Provinces' Sustainability: A Genuine Savings Approach**

» [Viktor Pirmana](#)¹, Armida S. Alisjahbana², Arief Ansory Yusuf² (1. Padjadjaran University, 2. Padjadjaran University)

16:00 **Coffee break**

KOG (Kamerlingh Onnes Building)

16:30 **Parallel sessions**

KOG (Kamerlingh Onnes Building)

16:30 **Special Session: Bringing Industrial ecology and the Circular Economy into integrated assessment models (part 2)**

C1.31 KOG

Chaired by: Vered Blass and Oreane Edelenbosch and Dominik Wiedenhofer

16:30 **An analytical framework to assess circular action contributing to climate change mitigation**

» [Oreane Edelenbosch](#)¹, Detlef van Vuuren² (1. Copernicus Institute Utrecht University, 2. PBL Netherlands Environmental Assessment Agency)

16:45 **The role of chemicals in the transition towards a low-carbon and circular society: an integrated assessment modeling approach**

» [Gamze Unlu](#)¹, Florian Maczek¹, Jihoon Min¹, Volker Krey¹ (1. International Institute for Applied Systems Analysis)

17:00 **Representing battery value chains for electromobility in MESSAGEix-Materials-Transport. Towards improved integration of industrial ecology data in IAMs.**

» [Lorenzo Usai](#)¹, Anders Hammer Strømman¹, Gamze Unlu², Jihoon Min², Volker Krey² (1. NTNU, 2. International Institute for Applied Systems Analysis)

17:15 **A round-trip around the world: Scenarios on circular material use in vehicles worldwide**

» [Sebastiaan Deetman](#)¹, Ester van der Voet², Vassilis Daioglou³, Martijn van Engelenburg⁴, Oreane Edelenbosch⁵, Detlef van Vuuren⁶ (1. Deetman@cml.leidenuniv.nl, 2. Leiden University, 3. PBL Netherlands Environmental Assessment Agency,, 4. Institute of Environmental Sciences (CML) - Universiteit Leiden, 5. Copernicus Institute Utrecht University, 6. PBL Netherlands Environmental Assessment Agency)

17:30 **Adding Materials to the Climate Mitigation Picture: Material and Circular Economy Dynamics in Cost-Benefit Integrated Assessment Modeling**

» [Lucas Straub](#)¹, Kaj-Ivar van der Wijst¹, Sebastiaan Deetman², Oreane Edelenbosch¹, Detlef van Vuuren³ (1. Copernicus Institute Utrecht University, 2. Leiden University, CML, 3. PBL Netherlands Environmental Assessment Agency)



Continued from **Monday, 3 July**

- 16:30 **Industrial symbiosis 2**
A1.44 KOG
Chaired by: Marian Chertow
- 16:30 **Facilitator functions for knowledge sharing during the emergence of IS networks**
» [Katrin Katana](#)¹, Besma Glaa¹ (1. Linköping University)
- 16:45 **Uncovering industrial symbiosis in the United States: Statistical exploration of the Northeast and influencing factors**
» [Koichi Kanaoka](#)¹ (1. Center for Industrial Ecology, School of the Environment, Yale University)
- 17:00 **Pricing in industrial symbiosis: Challenges and solutions**
» [Marianna Lena Kambanou](#)¹, Murat Mirata¹ (1. Linköping University)
- 17:15 **Waste inventory for industrial symbiosis: is it worth it? An Enterprise Input-Output approach**
» [Luca Fraccascia](#)¹, Devrim Yazan², Vito Albino³ (1. Sapienza University of Rome, Rome (Italy), 2. University of Twente, 3. Polytechnic University of Bari, Bari (Italy))
- 17:30 **A location-based optimization model for development of agricultural greenhouses running by waste heat of industries to practice industrial symbiosis**
» FARZANEH REZAEI¹, Stephan Pfister², Vanessa Burg³, Stefanie Hellweg², [Ramin Roshandel](#)¹ (1. Department of Energy Engineering, Sharif University of Technology, 2. Institute of Environmental Engineering, ETH Zurich, 3. Institute of Environmental Engineering ETH Zürich)
- 17:45 **Untangling spatiotemporal generation and recycling of solid waste in China's coal-fired electricity sector**
» [Hanbo Gao](#)¹, Yang Guo², Haozhi Xu¹, Jinping Tian³, Lyujun Chen³ (1. Tsinghua University, 2. Princeton University, 3. School of environment, Tsinghua University)

- 16:30 **Food, agriculture, and biomass**
A0.51 KOG
Chaired by: Angelica Mendoza Beltran
- 16:30 **Characterization and sustainability analysis of the redistribution of unsold meals from collective catering to associations: role of new operators**
» [Barbara Redlingshöfer](#)¹, Hong-Minh Hoang² (1. Université Paris-Saclay, INRAE, AgroParisTech, UMR SADAPT, 22 place de l'agronomie, 91120 PALAISEAU, France, 2. Université Paris-Saclay, INRAE, UR FRISE, 92761 Antony, France)
- 16:45 **Dryland cropping: net-zero or resource efficiency?**
» [M Sevenster](#)¹, Lindsay Bell¹, Aaron Simmons² (1. Commonwealth Scientific and Industrial Research Organisation (CSIRO),, 2. NSW Department of Primary Industries, Orange)
- 17:00 **Optimized urban vegetable supply to reduce system-wide greenhouse gas emissions**
» [Yuanchao Hu](#)¹, Haoran Zhang¹ (1. Wuhan University)
- 17:15 **Towards a holistic carbon accounting framework for harvested wood products at sub-national level units**
» [Oludunsin Tunrayo Arodudu](#)¹, Obste Therasme¹, Timothy Volk¹ (1. State University of New York, College of Environmental Sciences and Forestry)
- 16:30 **EEIOA cases 2**
B0.13 KOG
Chaired by: Stefano Cucurachi
- 16:30 **Improving the Sustainability Assessment of the Olympic Games through Environmentally-Extended Input-Output Analysis**
» [Frederike Arp](#)¹, Ranran Wang¹, Tomer Fishman² (1. Institute of Environmental Sciences (CML) - Universiteit Leiden, 2. CML Leiden)
- 16:45 **Aligning nutrition with planetary boundaries: changing consumption alone is not enough**
» [Martin Bruckner](#)¹, Stefan Trsek², Julia Kreimel² (1. ETH Zurich, 2. Wirtschaftsuniversität Wien)



Continued from **Monday, 3 July**

17:00 **Sharing economy rebound: The case of peer-to-peer sharing of food waste**

» [Tamar Meshulam](#)¹, David Font Vivanco², Vered Blass³, Tamar Makov¹ (1. Ben Gurion University of the Negev, 2. eointelligentgrowth, 3. Tel-Aviv University)

17:15 **Risk of intact forest landscape loss goes beyond global agricultural supply chains**

» [Siyi Kan](#)¹, Bin Chen², Martin Persson³, Guoqian Chen⁴, Yutao Wang², Jiashuo Li⁵, Jing Meng¹, Heran Zheng¹, Rui Li⁶, Mingxi Du⁷, Thomas Kastner⁸ (1. University College London, 2. Fudan University, 3. Chalmers University of Technology, 4. Peking University, 5. Shandong University, 6. Beijing Forestry University, 7. Xi'an Jiaotong University, 8. Senckenberg Biodiversity and Climate Research Centre)

17:30 **A model to assess the environmental, social, and financial performance of reusing buildings services**

» [Sébastien Loreau](#)¹, André Stephan¹, Daniel Cooper², Anne-Laure Maerckx³ (1. Louvain Research Institute for Landscape, Architecture, Built Environment, Université catholique de Louvain, 1348 Louvain-la-Neuve, Belgium, 2. University of Michigan, 3. Cenergie, Avenue Urbain Britsiers 5, 1030 Bruxelles, Belgium)

17:45 **European Green Deal: The road to the European clean energy transition could be paved with its critical mineral resources**

» [Etienne Berthet](#)¹, Julien Lavalley¹, Candy Deck², Fernanda Sophia Ballesteros³, Konstantin Stadler², Ugur Soytaş¹, Michael Hauschild¹, Alexis Laurent¹ (1. Technical University of Denmark, 2. NTNU, 3. Deutsche Institut für Wirtschaftsforschung)

16:30 **Energy Systems 2**

B0.17 KOG

Chaired by: Cristina Madrid-López

16:30 **The Change in Electricity Demand Structure after the COVID-19 Pandemic in the Greater Tokyo Area**

» [Yuki Hiruta](#)¹, Naho Yamashita¹, Hiroaki Shirakawa¹, Hiroki Tanikawa¹ (1. Nagoya University)

16:45 **Are global net-zero proposals feasible, given the limited availability of key Zero-Emissions Resources?**

» [Jennifer Hawkin](#)¹, Julian Allwood¹ (1. University of Cambridge)

17:00 **Aligning policy responses to rising energy prices with the long-term climate neutrality objective**

» [Edgar Hertwich](#)¹ (1. Norwegian Univ. of Science and Technology)

17:15 **Optimization of Regional Cooperation Among Municipalities for Renewable Energies in Japan**

» [Takahiko Date](#)¹, Kiyo Kurisu¹, Kensuke Fukushi¹ (1. The University of Tokyo)

17:30 **Environmental assessment of energy planning: the case of Spain 2015-2030**

» [Miguel Sierra](#)¹, Joaquín Amenábar¹, Alexander de Tomás Pascual¹, Cristina Pérez-Sánchez¹, Cristina Madrid-López² (1. LIVEN Lab, Sostenipra Group. Institute of Environmental Science and Technology (ICTA-UAB), Maria de Maeztu Unit (CEX2019-0940-M), 2. Universitat Autònoma de Barcelona (UAB))

17:45 **Decarbonisation of Corporate Electricity Procurement: Impact Assessment of the European Trade with Guarantees of Origin**

» [Aaron Paris](#)¹, Ron-Hendrik Hechelmann¹, Nadja Buchenau¹ (1. University of Kassel)

16:30 **Footprints 2**

B0.31 KOG

Chaired by: Dan Moran

16:30 **Food nitrogen footprint of states and union territories in India**

» Aurup Ratan Dhar¹, Azusa Oita², Himadri Kaushik³, Ananta Narayan Panda³, Tapan Kumar Adhya³, [Kazuho Matsubae](#)⁴ (1. Graduate School of Environmental Studies, Tohoku University, and Research Institute for Humanity and Nature, 2. Institute for Agro-Environmental Sciences, National Agriculture and Food Research Organization, 3. School of Biotechnology, Kalinga Institute of Industrial Technology (Deemed University), 4. Graduate School of Environmental Studies, Tohoku University)



Continued from **Monday, 3 July**

- 16:45 **THE EVOLUTION OF NITROGEN FOOTPRINT EMBEDDED IN THE GLOBAL FOOD SUPPLY CHAIN FROM 1986-2020**
 » [Yue Xiao](#)¹, Martin Bruckner², Stefan Trsek¹, Quanliang Ye³, Anna Muntwyler² (1. Wirtschaftsuniversität Wien, 2. ETH Zurich, 3. Aalborg University)
- 17:00 **Material-carbon nexus of urban systems**
 » [Juudit Ottelin](#)¹, Julia Sborz¹ (1. NTNU)
- 17:15 **Green technological developments, sustainable consumption, and relocation strategies: relative effectiveness to reduce the carbon footprint of France by 2050**
 » [Bruno Fontaine](#)¹, Fanny Vicard², Antoine Teixeira³, Julien Lefèvre⁴ (1. CIRED, 2. ADEME, 3. ADEME / CIRED, 4. AgroParisTech / CIRED)
- 17:30 **Uncovering the household carbon footprint of people certified for long-term care in Japan**
 » [Narumi Kira](#)¹, Yosuke Shigetomi¹ (1. Nagasaki University)
- 17:45 **Avoiding turmoil. Achieving targets. Attempting NetZero: Perspectives from the Water Sector**
 » [Anna Christy](#)¹, Oliver Heidrich¹, Marwa Elnahass², Anthony Browne³, Jaime Amezaga¹, Andrew Moore³ (1. School of Engineering, Newcastle University, Newcastle Upon Tyne, NE1 7RU, United Kingdom, 2. Newcastle University, 3. Northumbrian Water Limited)
- 16:30 **Special Session: Experiences and Impacts of User-Centric Research that can lead to much-needed Transition**
B0.41 KOG
 Chaired by: Oliver Heidrich
- 16:30 **Identifying research diversity of the Living Labs across different sectors**
 » [Shalini Nakkasunchi](#)¹, Oliver Heidrich¹ (1. School of Engineering, Newcastle University, Newcastle Upon Tyne, NE1 7RU, United Kingdom)

- 16:45 **Making Data Analytics Less Biased: Applying the Wells-Du Bois Protocol for Achieving Systemic Equity**
 » [Ayushi Aggarwal](#)¹, Tyrek Shepard¹, Thema Monroe-White², [Joe Bozeman III](#)¹ (1. Georgia Institute of Technology, 2. Berry College)
- 17:00 **What are circular economies without community input? Advancing and Scaling the Circularity Assessment Protocol**
 » [Melissa Bilec](#)¹, Jenna Jambeck², Nicole Bell¹, Madison Werner² (1. University of Pittsburgh, 2. University of Georgia)
- 17:15 **The Promise of Sustainable Transportation and Its Hidden Unintended Environmental Consequences**
 » Wissam Kontar¹, [Andrea Hicks](#)², Soyoung Ahn¹ (1. University of Wisconsin-Madison, 2. Wisconsin)
- 17:30 **Environmental risks and climate change adaptation and mitigation measures in a small island: The case of Rodrigues island.**
 » [Vimi Dookhun](#)¹, Franceau Grandcourt², Rudee Parmasse² (1. University of Mauritius, 2. Rodrigues Regional Assembly)
- 17:45 **Understanding the Role of Value-Based Choice in Green Building and Neighbourhood Living Labs through Q-Methodology**
 » [Darren McCauley](#)¹, Kerry Pettigrew², Ryan Holmes³, Inge Meems⁴, Victoria Unverzagt⁴ (1. Newcastle University, 2. Teesside University, 3. GCU-London, 4. Erasmus University Rotterdam)
- 16:30 **Built environment MFA**
C0.06 KOG
 Chaired by: Zhi Cao
- 16:30 **Development of building stock model for Thane City in India: Learnings for future stock management**
 » [Namya Sharma](#)¹, Pradip Kalbar¹, Muhammad Salman¹ (1. Indian Institute of Technology Bombay, Mumbai)
- 16:45 **Material flow analysis of Great Britain's road network**
 » [Daniel Grossegger](#)¹, Kristen MacAskill¹ (1. University of Cambridge)



Continued from **Monday, 3 July**

17:00 **A material flow analysis of sand use in the Netherlands**
 » [Catrin Böcher](#)¹, Tomer Fishman², José Mogollón¹, Ester van der Voet³ (1. Leiden University, CML, 2. CML Leiden, 3. Leiden University)

17:15 **Spatially-refined stock-flow modeling to reveal locational impacts of envelope improvements and climate change on China's housing energy use**
 » [Zhi Cao](#)¹ (1. University of Antwerp)

17:30 **Building Decarbonisation at Scale: Dynamic Stock-Flow Modelling of Pathways Across Germany's 10,000+ Municipalities**
 » [Jakob Napiontek](#)¹, Tomer Fishman², Peter-Paul Pichler¹, Helga Weisz¹ (1. Potsdam Institute for Climate Impact Research (PIK), 2. CML Leiden)

17:45 **Unsaturated and Accelerating Material Stock Accumulation in China's Megacities as Urbanization Approaches 80%**
 » [Chenling Fu](#)¹, Yan Zhang², Ming Xu¹ (1. Tsinghua University, 2. Beijing Normal University)

16:30 **LCA and circularity**
B0.25 KOG
 Chaired by: Matthew Eckelman

16:30 **Improved land management by growing wheat in rotation with lupine and fallow**
 » SARA LAGO OLVEIRA¹, [Ricardo Rebolledo-Leiva](#)², Fernando Almeida-García¹, María Teresa Moreira², Sara González-García² (1. Universidad de Santiago de Compostela, 2. Universidade de Santiago de Compostela)

16:45 **Closing the NPK Cycle in Urban Areas. The Use of OMSW Compost for Peri-urban and Urban Agriculture.**
 » [Juan David Arosemena](#)¹, Susana Toboso¹, gara villalba² (1. Universitat Autònoma de Barcelona, 2. Universitat Autònoma de Barcelona (UAB))

17:00 **Life Cycle Assessment and Techno-Economic Analysis of Waste-Based Enhanced Weathering in the United States**
 » [Jennifer Kroeger](#)¹, Bingquan Zhang¹, Noah Planavsky², Yuan Yao¹ (1. Center for Industrial Ecology, Yale School of the Environment, Yale University, 2. Yale University)

17:15 **Environmental Consequences of Shifting Hardwood Utilization from Energy Use to Material Application - A Regional Case Study in Germany**
 » [Anna Sander-Titgemeyer](#)¹, Gabriele Weber-Blaschke¹ (1. Technical University of Munich)

17:30 **Evaluation methodology of recycled content for metals**
 » [Taichi Suzuki](#)¹, Ichiro Daigo² (1. The University of Tokyo, UACJ Corporation, 2. The University of Tokyo)

17:45 **Current and future key factors for the environmental performance of plastic packaging waste management**
 » [Sarah Schmidt](#)¹, David Laner¹ (1. Research Center for Resource Management and Solid Waste Engineering, Faculty of Civil and Environmental Engineering, University of Kassel, Mönchebergstraße 7, 34125 Kassel, Germany)

16:30 **Vehicles**
B0.16 KOG
 Chaired by: Shoshanna Saxe

16:30 **An ethnography of the automobile: A participatory tool for understanding human behavior in automotive recycling context**
 » [Veronica Davidov](#)¹, Ivan Cukeric² (1. Monmouth University, 2. Edgeryders OU)

16:45 **US-Mexico Second-hand Vehicle Trade: Implications for North American EV circularity, infrastructure and regional policy**
 » [Francisco Pares Olguin](#)¹, Galym Iskakov¹, Alissa Kendall¹ (1. University of California, Davis)

17:00 **Decarbonising vehicle fleets - the case for hydrogen**
 » [Simon Edwards](#)¹, Philip Blythe¹ (1. Newcastle University)



Continued from **Monday, 3 July**

17:15 **End-of-Life Lithium-Ion Battery Management Including Safety Perspectives**
 » [Atsushi Terazono](#)¹, Masahiro Oguchi¹, Hiroyuki Akiyama², Hiromitsu Tomozawa², Toru Hagiwara², Miyuki Shintomi³, Shingo Kano³, Jo Nakayama⁴ (1. National Institute for Environmental Studies, 2. Mizuho Research and Technologies, Ltd., 3. E&E Solutions Inc., 4. Yokohama National University)

17:30 **CIRCULAR ECONOMY IN CAR ELECTRONICS - A CASE STUDY OF THE COMBIMETER AND THE INFOTAINMENT OF THE SEAT LEON II MODEL**
 » [Abel Ortego](#)¹, Alicia Valero¹, Antoinette van Schaik², Marta Iglesias³, Markus Reuter⁴, Samuel Alcoceba Pascual¹ (1. CIRCE Institute - Universidad de Zaragoza, Spain, 2. Material Recycling and Sustainability (MARAS), 3. SEAT S.A & Sostenipra Research Group (SGR 01412), Institut de Ciència i Tecnologia Ambientals ICTA - UAB (MDM - 2015 - 0552), 4. SMS-Group GmbH)

18:00 **Industrial Ecology, Yale, and the Journal of Industrial Ecology (JIE)**
 C1.31 KOG

19:00 **An ISIE Town Hall**
 C1.31 KOG
 Chaired by: Ming Xu and Irena Bitunjac

Tuesday, 4 July

09:00 **Parallel sessions**
 KOG (Kamerlingh Onnes Building)

09:00 **Special Session: Alternative Proteins and Cellular Agriculture**
 C1.31 KOG
 Chaired by: Tamar Makov

09:00 **Environmental impacts of cellular agriculture**
 » [Hanna Tuomisto](#)¹ (1. University of Helsinki and Natural Resources Institute Finland (Luke))

09:20 **The environmental impacts of a proposed 250kL cultured meat production facility, based on industrial data**
 » [Benjamin Sprecher](#)¹, Tamar Makov² (1. Technical University Delft, 2. Ben Gurion University of the Negev)

09:30 **Environmental Life Cycle Assessment of Cultivated Meat Burgers**
 » [Sunghoon Kim](#)¹, Bhavik Bakshi¹ (1. The Ohio State University)

09:40 **Environmental impacts of large-scale industrial production of cultured meat**
 » [Tamar Meshulam](#)¹, Tamar Makov¹ (1. Ben Gurion University of the Negev)

09:50 **Environmental impact and resource use of alternative protein sources and meat substitutes**
 » [Sergiy Smetana](#)¹ (1. German Institute of Food Technologies (DIL e.V.))

09:00 **Special Session: The metabolism of Islands**
 A1.44 KOG
 Chaired by: Simron Singh and Bart van Hoof

09:00 **A political-industrial ecology of houses and mining infrastructures in Svalbard**
 » [Wendy Wuyts](#)¹ (1. Omtre AS)



Continued from **Tuesday, 4 July**

- 09:15 **Tools for a regenerative and inclusive circular economy: Applications at a European and at an island level**
 » [Filippos Zisopoulos](#)¹, Daan Schraven², Martin de Jong¹ (1. Rotterdam School of Management, Erasmus University Rotterdam, 2. Integral Design & Management, Delft University of Technology)
- 09:30 **Socio-metabolic Risks and Tipping Points on Islands**
 » [Simron Singh](#)¹ (1. University of Waterloo)
- 09:45 **Island circularity and Indigenous systems: the Hawaiian Ancestral Circular Economy and environmental justice in Hawai'i**
 » [Kamanamaikalani Beamer](#)¹, Kahiokala Elkington¹, Pua Souza¹, Axel Tuma², Andrea Thorenz³, Sandra Köhler⁴ (1. University of Hawaii, 2. Chair for Production & Supply Chain Management – Augsburg University, Germany, 3. Resource Lab / Center for Climate Resilience – Augsburg University, Germany, 4. University of Augsburg, Resource Lab / Centre for Climate Resilience)
- 10:00 **Interdisciplinary island metabolism: intersection of flows and socio-geography approaches to investigate vulnerability, waste colonialism and externalization in the cases of Comoros and New Caledonia.**
 » [Jean-Baptiste Bahers](#)¹ (1. CNRS, UMR ESO, Université de Nantes)
- 10:15 **Sustainable Textiles and Circularizing Organic Waste of Grenada (SIDS)**
 » [Shannon Henry](#)¹ (1. The Kaylia Group)

09:00 **LCA methods 1**
A0.51 KOG
 Chaired by: Jeroen Guinée

09:00 **Influence of Irrelevant Alternatives on Choices with Environmental Attributes**
 » Mirel Yavuz¹, Guia Bianchi², [Charles Corbett](#)¹, Tayler Bergstrom¹, Aimee Drolet¹, Timothy Malloy³, Deepak Rajagopal⁴, Rakesh Sarin¹, Francesco Testa⁵ (1. UCLA Anderson School of Management, 2. European Commission, Joint Research Centre, Sevilla, 3. UCLA School of Law, 4. UCLA Institute of the Environment and Sustainability, 5. Sant'Anna School of Advanced Studies, Pisa)

09:15 **Towards Intelligent Life Cycle Assessment: Solutions and Potentials of Large Language Models**
 » [Jianchuan Qi](#)¹, Nan Li¹, Jing Guo¹, Ming Xu¹ (1. School of environment, Tsinghua University)

09:30 **Characterizing impacts of macroplastic debris on marine biodiversity**
 » [Marthe Alnes Høiberg](#)¹, Francesca Veronesi², Konstantin Stadler² (1. Norwegian Univ. of Science and Technology, 2. NTNU)

09:45 **Coupling Mobility Model and Life Cycle Assessment to Ecodesign Neighbourhood Project**
 » [Cyrille Francois](#)¹, Nicolas Coulombel² (1. Université Gustave-Eiffel, 2. Laboratoire Ville Mobilité Transport - Ponts ParisTech)

10:00 **Mind the incertitude: a call for mainstream adoption of global sensitivity analysis and Bayesian approaches in LCA**
 » Carlos Felipe Blanco¹, [Stefano Cucurachi](#)¹ (1. Institute of Environmental Sciences (CML) - Universiteit Leiden)

10:15 **Guiding Technology Development for Economy-Wide Decarbonization with GREET Life Cycle Analysis and Scenario Modeling**
 » [Troy Hawkins](#)¹, Uisung Lee¹, Farhad Masum¹, Pahola Thathiana Benavides¹, Saurajyoti Kar¹, Doris Oke¹, Udayan Singh¹, Peter Chen¹, Tai-Yuan Huang¹, Chris Kolodziej¹, Taemin Kim¹, Michael Wang¹ (1. Systems Assessment Center, Argonne National Laboratory)

09:00 **Special Session: Tipping points towards sustainability: what role can industrial ecology play?**
B0.13 KOG
 Chaired by: Claudia R. Binder



Continued from **Tuesday, 4 July**

- 09:00 **Analyzing Tipping Points in Socio-Ecological Technical Systems**
» [Claudia R. Binder](#)¹, Aristide Athanassiadis¹, Maria Anna Hecher¹ (1. HERUS Lab, EPFL)
- 09:15 **Biophysical Economic Interpretation of the Great Depression: A Critical Episode of an Energy Transition**
» [Chris Kennedy](#)¹ (1. University of Victoria)
- 09:30 **Fundamentals and challenges of modeling bifurcation and catastrophic transition dynamics in socio-ecological technical systems**
» [David Bristow](#)¹ (1. University of Victoria)
- 09:00 **Special Session: How Can Resource Classification Help Communicate the Future Availability of Raw Materials on the National level?**
B0.17 KOG
Chaired by: Christoph Helbig
- 09:00 **Dynamic Material Flow Analysis of Tantalum in the United States: a 19-Year (2002-2020) Perspective of Stocks and Flows**
» [Abraham J. Padilla](#)¹, Nedal T. Nassar¹ (1. U.S. Geological Survey)
- 09:15 **A practical approach for resource management using national level datasets for primary resources.**
» [Tom Bide](#)¹ (1. British Geological Survey)
- 09:30 **HOW CAN RESOURCE CLASSIFICATION HELP COMMUNICATE THE FUTURE AVAILABILITY OF RAW MATERIALS ON THE NATIONAL LEVEL?**
» [Soraya Heuss-Assbichler](#)¹, Christoph Helbig², Ulrich Kral³, Helmut Rechberger⁴, Julia Stegemann⁵, Patrick Wäger⁶, Iman Dorri¹ (1. Ludwigs-Maximilians-Universität München, 2. Ecological Resource Technology, University of Bayreuth, Bayreuth, Germany, 3. Environment Agency Austria, 4. Vienna University of Technology, 5. University College London, 6. Empa-Swiss Federal Laboratories for Materials Science and Technology, Technology and Society Laboratory)

- 09:00 **Future resources**
B0.31 KOG
Chaired by: Hiroki Tanikawa
- 09:00 **Decoupling global environmental pressures from economic growth and human wellbeing: a preview of results of the Global Resources Outlook 2024**
» [Heinz Schandl](#)¹, Detlef van Vuuren², Petr Havlik³, Yingying Lu¹, Sebastiaan Deetman⁴ (1. Commonwealth Scientific and Industrial Research Organisation (CSIRO),, 2. PBL Netherlands Environmental Assessment Agency, 3. IIASA, 4. Deetman@cml.leidenuniv.nl)
- 09:15 **Quantifying material demand for the global solar photovoltaic supply chain in the terawatt era**
» [Chengjian Xu](#)¹, Olindo Isabella¹, Malte Vogt¹ (1. Delft University of Technology)
- 09:30 **Estimating material use in the Netherlands in 2030 on the basis of physical supply-use tables; the appropriate level of detail**
» [Arian de Koning](#)¹, S. Cap¹, L. Scherer¹ (1. Leiden University, CML)
- 09:45 **The circular economy and upscaling potential of modular floating structures for urban development offshore**
» [Gil Wang](#)¹, Tomer Fishman², Lieke Bikker³, Sebastian Schreier⁴ (1. Coastal and Marine Engineering Research Institute - CAMERI, 2. CML Leiden, 3. Leiden University, 4. TU Delft)
- 10:00 **A Top-Down approach for downscaling sectoral emission budgets. A case study of Canada's construction sector**
» [Hatzav Yoffe](#)¹, Keagan Hudson Rankin², Christian Bachmann³, I. Daniel Posen¹, Shoshanna Saxe¹ (1. University of Toronto, 2. University of Toronto, 3. University of Waterloo)
- 10:15 **Modelling the regional transformation to hydrogen-based green steel: An integrative and prospective material flow analysis of the North Rhine-Westphalian steel industry**
» Rainer Radloff¹, [Ali Abdelshafy](#)¹, Grit Walther¹ (1. Chair of Operations Management - RWTH Aachen University)



Continued from **Tuesday, 4 July**

- 09:00 **Buildings & Infrastructure 2**
B0.41 KOG
Chaired by: Peter Berrill
- 09:00 **Forecasting embodied housing emissions and material efficiency scenarios in Ontario, Canada.**
» [Keagan Hudson Rankin](#)¹, [Aldrick Arceo](#)¹, [Hatzav Yoffe](#)¹, [Kaan Isin](#)¹, [Shoshanna Saxe](#)¹ (1. University of Toronto)
- 09:15 **Promoting Actionable Science for Urban Sustainability**
» [Jens Peters](#)¹, [Matan Mayer](#)², [Santiago Perez Rodriguez](#)³ (1. University of Alcalá, 2. IE University, 3. University of Technology of Troyes, France.)
- 09:30 **Assessment of climate change mitigation potential of wood-based construction and textiles**
» [Elias Hurmekoski](#)¹, [Janni Kuntu](#)¹, [Tero Heinonen](#)², [Timo Pukkala](#)², [Heli Peltola](#)² (1. University of Helsinki, 2. University of Eastern Finland)
- 09:45 **High-Resolution Mapping of the Material Stocks in Buildings and Infrastructures in China**
» [Bowen Cai](#)¹, [Helmut Haberl](#)², [Dominik Wiedenhofer](#)³, [Zhenfeng Shao](#)⁴ (1. School of Remote Sensing and Information Engineering, Wuhan University, 2. University of Natural Resources and Life Sciences, Vienna, 3. University of Natural Resources and Life Sciences, Vienna (BOKU), 4. State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing)
- 10:00 **The environmental impacts of transitioning from fossil-based to agricultural-based feedstocks for cement**
» [Alyson Kim](#)¹, [ELISABETH VAN ROIJEN](#)¹, [Sabbie Miller](#)¹ (1. University of California, Davis)
- 10:15 **Drivers and barriers of plastic circularity in the construction industry - the case of Sweden**
» [Shuang Wang](#)¹, [Leonardo Rosado](#)¹, [Maud Lanau](#)¹, [Magnus Österbring](#)², [Holger Wallbaum](#)¹ (1. Chalmers University of Technology, 2. NCC Sverige AB)

- 09:00 **Ex-ante LCA 2**
C0.06 KOG
Chaired by: Tapajyoti Ghosh
- 09:00 **Life-cycle Assessment Integration into Scalable Open-source Numerical models (LiAISON) for analyzing emerging low-carbon technologies**
» [Tapajyoti Ghosh](#)¹, [Patrick Lamers](#)¹, [Shubhankar Upasani](#)¹, [Romain Sacchi](#)², [Vassilis Daioglou](#)³ (1. National Renewable Energy Laboratory, 2. Paul Scherrer Institute, 3. PBL Netherlands Environmental Assessment Agency.)
- 09:15 **Future environmental impacts of passenger vehicles**
» [JORIS ŠIMAITIS](#)¹, [Stephen Allen](#)¹, [Rick Lupton](#)¹, [Christopher Vagg](#)¹, [Isabela Butnar](#)² (1. University of Bath, 2. University College London)
- 09:30 **Learning curves: using historic trends in forecasting and backcasting environmental footprints**
» [Mitchell van der Hulst](#)¹, [Mark Huijbregts](#)¹, [Rosalie van Zelm](#)¹, [Mara Hauck](#)² (1. Department of Environmental Science, Faculty of Science, Radboud University, Nijmegen 6525AJ, 2. TNO, Climate, Air and Sustainability)
- 09:45 **Understanding the performance of a novel technology to produce hexanoic acid from CO2 and renewable electricity**
» [Jisiwei Luo](#)¹, [Mar Perez-Fortes](#)¹, [Adrie Straathof](#)¹, [Andrea Ramirez](#)² (1. Delft University of Technology, 2. Technical University Delft)
- 10:00 **Evaluating the impact of background system on carbon capture and utilization (CCU) pathways in Canada from 2020-2050**
» [Mengqing Kan](#)¹, [Sylvia Sleep](#)², [Heather L. MacLean](#)³, [I. Daniel Posen](#)³ (1. University of Toronto, 2. University of Calgary, 3. Civil and Mineral Engineering, University of Toronto, 35 St. George Street, Toronto, Ontario, M5S 1A4)
- 10:15 **A life-cycle perspective on the benefits of renewable electricity generation in the EU27**
» [Evert Bouman](#)¹, [Francis Barre](#)¹, [Gaylord Booto](#)¹, [Babak Ebrahimi](#)¹ (1. Climate and Environmental Research Institute NILU)



Continued from Tuesday, 4 July			
09:00	<p>New questions, new methods <i>B0.25 KOG</i> Chaired by: Peter-Paul Pichler</p>	09:00	<p>Creative abstracts exhibition and competition <i>B0.30 KOG</i></p>
09:00	<p>CO2 utilization from biomethane production in Europe: potential and assessment of alternatives » Stephanie Cordova¹, Marcus Gustafsson¹, Mats Eklund¹, Niclas Svensson¹ (1. Environmental Technology and Management, Department of Management and Engineering, Linköping University, SE-581 83 Linköping, Sweden)</p>	10:30	<p>Coffee break <i>KOG (Kamerlingh Onnes Building)</i></p>
09:15	<p>Unraveling the impact of using alternative carbon sources in existing petrochemical clusters » Andrea Ramirez¹, Mar Perez-Fortes¹, Paola Ibarra Gonzalez², Michael Tan¹, Tonny Manalal¹, Inna Stepchuk¹ (1. Delft University of Technology, 2. Technical University Delft)</p>	11:00	<p>Parallel Keynotes <i>KOG (Kamerlingh Onnes Building)</i></p>
09:30	<p>Utilization of Machine Learning for Satellite Image Analysis: the Land Use Change Induced by Copper Mining » Junbin Xiao¹, Yoko Yamakata², Takeshi Komai¹, Kazuyo Matsubae¹ (1. Graduate School of Environmental Studies, Tohoku University, 2. Graduate School of Information Science and Technology, The University of Tokyo)</p>	11:00	<p>Keynote: Conny Bakker <i>C1.31 KOG</i> Chaired by: Jeroen Guinée</p>
09:45	<p>Quantifying Biodiversity and Climate Security from Water and Carbon Capture » Biji Kurup¹, Delwyn Jones² (1. Environmental Wisdom, EN-WIS, 2. The Ecuate Evah Institute, Tamborine Mountain QLD)</p>		<p>Product Design in a Circular Economy » Conny Bakker (Delft University of Technology (TU Delft))</p>
10:00	<p>OpenGHGMap And the Roadmap Toward High Spatial Resolution Models of the Economy » Dan Moran¹ (1. NTNU)</p>	11:00	<p>Keynote Speaker: Björn Sandén <i>A1.44 KOG</i> Chaired by: Gijsbert Korevaar</p>
10:15	<p>Integrated assessment modeling shows environmental leakage of aggressive decarbonization goals » Kaixin Huang¹, Matthew Eckelman¹ (1. Northeastern University)</p>		<p>The role of transition thinking in environmental assessment and assessment in transition thinking: on the interplay between two fields of sustainability science. » Björn Sandén (Chalmers University of Technology)</p>
		11:45	<p>Break <i>KOG (Kamerlingh Onnes Building)</i></p>
		12:00	<p>Parallel sessions <i>KOG (Kamerlingh Onnes Building)</i></p>



Continued from **Tuesday, 4 July**

12:00 **Upcycling & Recycling (short presentations)**
C1.31 KOG
Chaired by: Kazuyo Matsubae

12:00 **Transforming landfill to a relative carbon-negative sector by mining its overlooked carbon stock**
» [Shijun Ma](#)¹, Chuanbin Zhou² (1. University College London, 2. RCEES)

12:07 **Materials Catalogue for Novel and Responsive Materials**
» [Layla van Ellen](#)¹, Ben Bridgens¹, Oliver Heidrich² (1. Hub for Biotechnology in the Built Environment, Newcastle University, NE1 7RU, Newcastle-Upon-Tyne, UK, 2. School of Engineering, Newcastle University, Newcastle Upon Tyne, NE1 7RU, United Kingdom)

12:14 **Leveraging Drone Technology and Data Analysis Techniques to Transform Illegal Waste Sites into Valuable Resources: An Exploratory Study**
» Adi Mager¹, [Vered Blass](#)² (1. Tel Aviv University, 2. Tel-Aviv University)

12:21 **Ex-ante LCA of new magnet recycling technology**
» [Sander van Nielen](#)¹, Brenda Miranda Xicotencatl¹, René Kleijn¹ (1. Leiden University, CML)

12:28 **Prediction of China's municipal solid waste generation and carbon neutrality potential under the shared socioeconomic pathways**
» [Huijuan Dong](#)¹ (1. Shanghai Jiao Tong University)

12:00 **Mitigation Policies (short presentations)**
A1.44 KOG
Chaired by: Weslyne Ashton

12:00 **Towards a comprehensive and inclusive European Carbon Border Adjustment Mechanism**
» [Timothé Beaufils](#)¹, [Hauke Ward](#)², Michael Jakob³, Leonie Wenz¹ (1. Potsdam Institute for Climate Impact Research (PIK), 2. Institute of Environmental Sciences (CML), Leiden University, P.O. Box 9518, 2300 RA Leiden, the Netherlands. Mercator Research Institute on Global Commons and Climate Change, Berlin 10829, Germany, 3. Mercator Research Institute on Global Commons and Climate Change (MCC), Berlin)

12:07 **Challenges and opportunities of city-level Scope 3 emission reporting and policies**
» [Kaihui Song](#)¹, Angel Hsu¹ (1. University of North Carolina at Chapel Hill)

12:14 **Theory of Common Conflicts: Conceptualizing emergent ethics based view of social-ecological systems**
» [Saurabh Vij](#)¹, Shauhrat Chopra¹ (1. City University of Hong Kong)

12:21 **Evaluation of Climate-change Adaptation Measures from the Perspective of Co-benefits with Mitigation - Case Study of Logging Trees in River Channels -**
» [Sotaro Takenaka](#)¹, Kiyo Kurisu¹, Kensuke Fukushi¹ (1. The University of Tokyo)

12:28 **Sectoral Coordination Maximizes China's Provincial Building GHG Emission Mitigation**
» [Qiance Liu](#)¹, Kairui You², Xin Ouyang³, Weiguang Cai², Gang Liu¹ (1. University of Southern Denmark, 2. Chongqing University, 3. University of Chinese Academy of Sciences)

12:00 **Critical Raw Materials 2 (short presentations)**
A0.51 KOG
Chaired by: René Kleijn

12:00 **Toward China's carbon neutrality: critical rare earth elements supply and demand**
» [Shijiang Xiao](#)¹ (1. Shanghai Jiao Tong University)



Continued from Tuesday, 4 July

- 12:07 **A dynamic analysis of Rare Earth Elements in the UK electric vehicle stock**
» [Wan-Ting Hsu](#)¹, Evi Petavratzi¹ (1. British Geological Survey)
- 12:14 **Tracking the Global Anthropogenic Gallium Cycle during 2000-2020: a Trade-Linked Multiregional Material Flow Analysis**
» [Ziyan Gao](#)¹, Yong Geng¹, Meng Li¹, Jing-Jing Liang¹ (1. Shanghai Jiao Tong University)
- 12:21 **Towards Circularity for Copper: An Analysis of Regional Characteristics and Challenges from a Global Point of View**
» [Antonia Loibl](#)¹, Luis Tercero Espinoza¹ (1. Fraunhofer Institute for System and Innovation Research ISI)
- 12:28 **Battery mineral demands and recycling potentials from electric vehicles under 1.5-degree compatible scenario: an Australian case**
» [Haiwei Zhou](#)¹, Wen Li², Prakash Singh² (1. The University of Melbourne, 2. The Univeristy of Melbourne)
- 12:35 **Critical raw materials demand for green & digital pathways in Spain**
» [Martin Lallana](#)¹, Jorge Torrubia¹, Alicia Valero² (1. CIRCE Institute – University of Zaragoza, 2. CIRCE Institute – Universidad de Zaragoza, Spain)
- 12:00 **Mobility (short presentations)**
B0.13 KOG
Chaired by: Shauhrat Chopra
- 12:00 **How do active travel modes enhance transportation equity and why people don't use them?**
» [Utkuhan Genc](#)¹, Hao Luo¹, Hua Cai¹ (1. Purdue University)
- 12:07 **Assessment of Environmental Impacts for Autonomous Vehicle Data Management**
» [Kendrick Hardaway](#)¹, Oscar Teran¹, Hua Cai¹ (1. Purdue University)

- 12:14 **Vehicle electrification & fuel electrification: Two complementary paths to decarbonize China's passenger road fleet**
» [Jianxin Li](#)¹, Xin Sun¹, Jon McKechnie², Amir F.N. Abdul-Manan³, Li Fu¹, Xianhui Jiao¹, Jinlong Wu¹ (1. AUTOMOTIVE DATA OF CHINA CO., LTD, 2. Sustainable Process Technologies, Faculty of Engineering, University of Nottingham, Nottingham NG7 2RD, 3. Strategic Transport Analysis Team, Fuel Technology R&D, Research & Development Center, Saudi Aramco, Dhahran, 31311)
- 12:21 **Undoing the lock-in of urban sprawl: integrated modelling of materials and GHG emissions of urban transformation for decreasing car dependency**
» [Laura Pérez Sánchez](#)¹, Tomer Fishman², Paul Behrens³ (1. Universitat Autònoma de Barcelona, 2. CML Leiden, 3. Leiden University, CML)
- 12:28 **Siting Solar Charging Stations for Shared Electric Bikes**
» Yue Li¹, [Hua Cai](#)¹ (1. Purdue University)
- 12:35 **Low Carbon Development Strategies and Transformation Pathways of Automotive Industry**
» [Xin Sun](#)¹, Jianxin Li¹ (1. AUTOMOTIVE DATA OF CHINA CO., LTD)
- 12:00 **Urban IE (short presentations)**
B0.17 KOG
Chaired by: Alissa Kendall
- 12:00 **Analysis of Urban GHG Mitigation progress - a Case Study of UK Local Authorities**
» [Eugene Mohareb](#)¹, Thomas Butt¹, Kelvin Egbor¹, Arman Hashemi², Oliver Heidrich³ (1. University of Reading, 2. University of East London, 3. Newcastle University)
- 12:07 **Bottom-up characterization of the urban metabolism of reusing electric vehicle batteries**
» [Mateo Sanclemente Crespo](#)¹, Laura Talens Peiró¹, Xavier Gabarrell i Durany¹ (1. Sostenipra research group (2021SGR000734), Institut de Ciència i Tecnologia Ambientals (ICTA) (Mdm 2015-0552; CEX2019-000940- M), Universitat Autònoma de Barcelona, C/de les columnes s/n, 08193 Bellaterra, Barcelona, Spain.)



Continued from **Tuesday, 4 July**

12:14 **Beyond greenhouse gases – staying within planetary boundaries in urban and regional Australia**

» [Kylie Goodwin](#)¹, Thomas Wiedmann¹, Mengyu Li² (1. UNSW Sydney, 2. The University of Sydney)

12:21 **A UM-LCA framework to estimate environmental impacts of regional and urban areas**

» [Ioana Bastos](#)¹, Riccardo Fraboni², Rita Garcia³, Leonardo Rosado⁴ (1. European Commission, Joint Research Centre (JRC), Directorate for Energy, Mobility and Climate, Clean Air and Climate Unit; Institute for Renewable Energy, Eurac Research, 2. Institute for Renewable Energy, Eurac Research, 3. Itecons – Institute for Research and Technological Development in Construction, Energy, Environment and Sustainability, 4. Chalmers University of Technology)

12:28 **The spatial dimension of urban metabolism. A design atlas of resource-sensitive urban archetypes.**

» [Daniel Otero Peña](#)¹, Daniela Perrotti¹ (1. Louvain Research Institute for Landscape, Architecture and Built Environment (LAB), University of Louvain, UCLouvain)

12:35 **Supply chain Design and Spatial Optimization of Kitchen Waste compost as urban green space Fertilizer: Take Haidian District of Beijing as an example**

» Ling Han¹, [Wenrui Shen](#)¹, Yilong Xiao¹, Xin Tong² (1. College of Environmental Sciences and Engineering, Peking University, 2. College of Urban and Environmental Sciences, Peking University)

12:00 **Scenarios (short presentations)**

B0.31 KOG

Chaired by: Stijn van Ewijk

12:00 **Methodological framework for scenario analysis of national consumption-based greenhouse gas emissions**

» [Johannes Morfeldt](#)¹, Jörgen Larsson¹, Daniel Johansson¹ (1. Chalmers University of Technology)

12:07 **Dish-specific trade-off and scenario analysis can inform sustainable diet selection in Japan**

» [Yin Long](#)¹, Liqiao Huang¹, Lie Sun¹ (1. The University of Tokyo)

12:14 **Meaning before measure: A review and critique of reported methods to quantify SDG interlinkages**

» [Rega Sota](#)¹, Sandra Venghaus¹ (1. School of Business and Economics, RWTH Aachen)

12:21 **Scotland's Net Zero by 2045: Modeling metabolic potentials and scenarios toward emissions reductions.**

» [Jean Boucher](#)¹, Keith Matthews¹ (1. The James Hutton Institute)

12:28 **Trade-offs between material efficiency and environmental performance for managing plastics packaging waste**

» [John Laurence Esguerra](#)¹, Annica Carlsson¹, Stefan Anderberg¹, Joakim Johansson¹ (1. Linköping University)

12:35 **Enabling Shifts Towards Sustainable Circulation of Materials in Transportation Infrastructure: Development and Testing of an Approach Using Systems Thinking**

» [Sara Malmgren](#)¹, Kristina Lundberg², Rajib Sinha¹ (1. KTH Royal Institute of Technology, 2. Ecoloop AB)

12:00 **Transitions (short presentations)**

B0.41 KOG

Chaired by: Xiao Li

12:00 **The impacts of beachcast harvest on the nitrogen flows on Gotland, Sweden.**

» [Vita Xu](#)¹, Jiechen Wu², Daniel Franzen² (1. KTH, 2. KTH Royal Institute of Technology)

12:07 **Using integrated MFA approaches to model industrial transformation: Case studies from the construction sector in Germany**

» [Ali Abdelshafy](#)¹, Grit Walther¹ (1. Chair of Operations Management - RWTH Aachen University)



Continued from Tuesday, 4 July

- 12:14 **Sustainable land transition through area neutrality in municipalities**
 » [Natchiyar Balasubramanian](#)¹, Aleksander Storebø Bachke¹, Emma Tagseth¹, Ottar Michelsen¹ (1. Norwegian Univ. of Science and Technology)
- 12:21 **Carbon neutrality of China's passenger car sector requires coordinated short-term behavioral changes and long-term technological solutions**
 » [Wu Chen](#)¹, Xin Sun², Xiaojie Liu³, Quansheng Ge³, Edgar Hertwich⁴, Gang Liu¹ (1. University of Southern Denmark, 2. China Automotive Technology and Research Center, 3. Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, 4. Norwegian Univ. of Science and Technology)
- 12:28 **Demand and deployment of hydrogen liquefaction plants in Europe**
 » [Alicia Torres Gomez](#)¹, Graham Pullan¹ (1. University of Cambridge)
- 12:35 **Towards Water Resource Recovery Facilities: An Integrated System Assessment of Emerging Sewage Sludge Management Technologies in Sweden**
 » [Harry Tibbetts](#)¹, Lara Carvalho², Jiechen Wu¹, Sebastian Schwede², Ali Ahmad Shah Nawazi² (1. KTH Royal Institute of Technology, 2. Mälardalen University)

12:00 **Water 1 (short presentations)**
 C0.06 KOG
 Chaired by: Gijsbert Korevaar

- 12:00 **The more wastewater reclamation, the less water stress?**
 » [Dan Wang](#)¹, Reetik-Kumar Sahu², Taher Kahil², Ting Tang², Yuli Shan³, Klaus Hubacek⁴ (1. Integrated Research on Energy Environment and Society (IREES), Energy Sustainability Research Institute Groningen (ESRIG), University of Groningen, 2. International Institute for Applied Systems Analysis, 3. University of Birmingham, 4. University of Groningen)

- 12:07 **Life Cycle Environmental Impacts of Using Wastewater-derived Products**
 » [Ka Leung Lam](#)¹ (1. Duke Kunshan University)
- 12:14 **The water-energy nexus in a drinking water supply system**
 » [Francesco Arfelli](#)¹, Luca Ciacci¹, Fabrizio Passarini¹ (1. University of Bologna)
- 12:21 **Ecological network analysis of the life cycle impacts of drinking water and wastewater in Ukraine**
 » [Oleksandr Galychyn](#)¹, Brian Fath², Nikita Strelkovskii³ (1. Finnish Environmental Institute (SYKE), 2. Towson University, 3. International Institute for Applied Systems Analysis)
- 12:28 **Carbon, water and economic benefits of infrastructure symbiosis between coal power and wastewater treatment**
 » [Yang Guo](#)¹, Denise Mauzerall¹, Yizheng Lyu², Wanqiu Hu³, Jinping Tian², Lyujun Chen² (1. Princeton University, 2. School of environment, Tsinghua University, 3. Tsinghua University)
- 12:35 **Overconsumption of freshwater hidden in agricultural production and international trade**
 » [Nguyen Tien Hoang](#)¹, Masaharu Motoshita², Keiichiro Kanemoto³ (1. Research Institute for Humanity and Nature, 2. National Institute of Advanced Industrial Science and Technology, 3. Graduate School of Environmental Studies, Tohoku University, and Research Institute for Humanity and Nature)

12:00 **Flows and emissions (short presentations)**
 B0.25 KOG
 Chaired by: Tim Baynes

- 12:00 **Footprints of the wasteful dragon: Quantifying China's food loss and waste and embodied environmental impacts**
 » [Li Xue](#)¹, Gang Liu² (1. China Agricultural University, 2. College of Urban and Environmental Sciences, Peking University)



Continued from **Tuesday, 4 July**

- 12:07 **Carbon Emissions from China's Plastic Production and Consumption**
» Yucheng Ren¹, Jian Jiang¹, Meng Jiang², Bing Zhu¹ (1. Tsinghua University, 2. Norwegian Univ. of Science and Technology)
- 12:14 **Global flow of timber embodied in trade from income-based perspective**
» Chang Yu¹ (1. Beijing Forestry University)
- 12:21 **Factors driving China's carbon emissions after the COVID-19 outbreak**
» xinlu sun¹, Zhifu Mi¹ (1. University College London)
- 12:28 **Socioeconomic drivers of India's rising atmospheric mercury emissions**
» .Jetashree¹, Sai Liang² (1. Department of Environmental Science, Faculty of Science, Radboud University, Nijmegen 6525AJ, 2. Key Laboratory for City Cluster Environmental Safety and Green Development of the Ministry of Education, Institute of Environmental and Ecological Engineering, Guangdong University of Technology, Guangzhou, Guangdong 510006)
- 12:35 **On the way to food self-sufficiency in 2030: The case of Singapore's food stock flow**
» Ludwig Paul Cabling¹, Lynette Cheah² (1. University of Victoria, 2. Singapore University of Technology and Design)

12:00 **Impacts (short presentations)**
B0.16 KOG
Chaired by: Kangkang Tong

12:00 **Evaluation of Per- and Polyfluoroalkyl Substances in Metal Shredder Residue: Preliminary Results**
» Erin Bulson¹, Christina Remucal², Andrea Hicks² (1. University of Wisconsin-Madison, 2. Department of Civil and Environmental Engineering, University of Wisconsin-Madison, Madison, WI, 53706, USA)

12:07 **Parametric model for the evaluation of environmental impacts of different earth construction techniques**
» Paula HIGUERA¹ (1. PhD Student)

12:14 **Systematically Assessing Environmental Impacts of Pharmaceuticals - Lessons Learned**
» Lowik Pieters¹, Martijn van Bodegraven¹, Rosalie van Zelm² (1. Centre for Sustainability, Environment and Health, RIVM Dutch National Institute for Public Health and the Environment, Bilthoven, The Netherlands, 2. Department of Environmental Science, Faculty of Science, Radboud University, Nijmegen 6525AJ)

12:21 **APPLYING A HYBRID LCA FRAMEWORK TO QUANTIFY CONSTRUCTION PRODUCT CARBON FOOTPRINT IN SUPPORTING LOW-CARBON BUILT-ENVIRONMENT DESIGN: A CASE STUDY OF READY MIX CONCRETE**
» Shih-Hsien Yang¹, Hoai-Nam TRAN², Han-Ruen Yue¹, Bo-Kai Chiou³, Ching-Wei Yang¹ (1. National Cheng Kung University, 2. Duy Tan University, 3. Industrial Technology Research Institute)

12:28 **On Toast - Environmental Impacts of High-Protein Options for Bread Toppings**
» Jessica Bosseaux¹, Eugene Mohareb¹, Cristina Madrid-López² (1. University of Reading, 2. Universitat Autònoma de Barcelona (UAB))

12:45 **Lunch**
KOG (Kamerlingh Onnes Building)

12:45 **ISIE Career Committee Mentoring Discussion Lunch**
B0.13 KOG
Chaired by: T. Reed Miller and Qingshi Tu

14:00 **Excursions: <https://isie2023netherlands.nl/excursions> , Individual time**
KOG (Kamerlingh Onnes Building)



Continued from **Tuesday, 4 July**

19:30 **Conference Dinner**
Naturalis

Wednesday, 5 July

09:00 **Parallel sessions**
KOG (Kamerlingh Onnes Building)

09:00 **Special Session: Secondary Raw material recovery and impacts**
C1.31 KOG
Chaired by: José Mogollón

09:00 **Waste flows and environmental impacts in Life Cycle Assessment: A macro-scale application of the WasteFootprint Python tool.**
» [Stewart Charles McDowall](#)¹, Elizabeth Lanphere¹, Carlos Felipe Blanco¹, Stefano Cucurachi¹ (1. Institute of Environmental Sciences (CML) - Universiteit Leiden)

09:15 **Sustainable Neodymium Recycling for Energy Transition: Insights from the SUSMAGPRO Project**
» [Brenda Miranda Xicotencatl](#)¹, Sander van Nielen¹, René Kleijn¹ (1. Leiden University, CML)

09:30 **Techno-economic-environmental categorization of secondary raw material production processes**
» [Martin Hillenbrand](#)¹, Christoph Helbig¹ (1. Ecological Resource Technology, University of Bayreuth, Bayreuth, Germany)

09:45 **Developing a Model for Evaluating the Role of Refining Technologies in Increasing High-Value Recycling of End-of-Life Aluminum Scrap**
» [Alissa Tsai](#)¹, Yongxian Zhu¹, Seyed Heidari¹, Daniel Cooper¹ (1. University of Michigan)

10:00 **The regional circularity of zinc - A dynamic MFA approach**
» [Leon Rostek](#)¹, Antonia Loibl¹ (1. Fraunhofer Institute for System and Innovation Research ISI)

10:15 **Evaluating the costs and benefits of using recycled aggregate concrete in buildings: Does recycling lead to long-term sustainability for sure?**
» [Xiang Xie](#)¹, Haoyu Huang¹ (1. School of Engineering, Newcastle University, Newcastle Upon Tyne, NE1 7RU, United Kingdom)

09:00 **Special Session: Transition towards Sustainable Agri-Food systems: Can Financial Incentives Steer Dietary Behavior?**
A1.44 KOG
Chaired by: Amelie Michalke and Lukas Messmann and Sandra Köhler

09:00 **True Cost Accounting of organic and conventional food production**
» Amelie Michalke¹, [Sandra Köhler](#)², Lukas Messmann², Andrea Thorenz², Axel Tuma³, [Tobias Gaugler](#)⁴ (1. University of Greifswald, 2. Resource Lab / Center for Climate Resilience – Augsburg University, Germany, 3. Chair for Production & Supply Chain Management – Augsburg University, Germany, 4. Technische Hochschule Nürnberg)

09:15 **Customers' behavior towards true prices of food: lessons learnt from informational campaigning and factual intervention**
» [Amelie Michalke](#)¹, Christoph Semken², Lennart Stein¹, Tobias Gaugler³ (1. University of Greifswald, 2. Universität Pompeu Fabra, 3. Technische Hochschule Nürnberg)

09:30 **Internalizing the environmental costs of food products: Effects on price-demand equilibria and environmental impacts**
» Carlo Schmid¹, [Lukas Messmann](#)², Amelie Michalke³, Arndt Feuerbacher¹ (1. University of Hohenheim, 2. Resource Lab / Center for Climate Resilience – University of Augsburg, 3. University of Greifswald)



Continued from **Wednesday, 5 July**

09:45 **Towards True Prices in Food Retailing: The Value Added Tax as an Instrument for Agricultural Transformation**

» Benjamin Oebel¹, [Lennart Stein](#)², Amelie Michalke², Tobias Gaugler¹ (1. Technische Hochschule Nürnberg, 2. University of Greifswald)

10:00 **Impact Measurement and Valuation: a way for businesses to contribute to sustainable transformation?**

» [Zoe Elsner](#)¹, Amelie Michalke², Jakob Hafele¹, Tobias Gaugler³ (1. Zoe Institute for future-fit economics, 2. University of Greifswald, 3. Technische Hochschule Nürnberg)

09:00 **Special Session: Assessing Progress Towards a Sustainable Circular Economy Across Scales (Part 2)**

A0.51 KOG

Chaired by: Dominik Wiedenhofer and Magnus Fröhling and Sina Leipold

09:00 **Comparative assessment of national indicator system towards a circular economy in Japan, China, the EU, and individual EU countries**

» [Chika Aoki-Suzuki](#)¹, Seiji Hashimoto² (1. Institute for Global Environmental Strategies, 2. Ritsumeikan University)

09:15 **Assessing circular economy's compatibility with 'sustainable work'**

» [Anran Luo](#)¹ (1. Helmholtz Centre for Environmental Research)

09:30 **How can a city get circular? Comprehensively Monitoring Urban Circularity and Deriving Policy-Relevant Indicators. The case of Vienna, Austria.**

» [Nina Eisenmenger](#)¹, Christian Dorninger¹, Willi Haas², Andreas Mayer¹, Lisa Kaufmann¹, André Baumgart³, Dominik Wiedenhofer¹ (1. University of Natural Resources and Life Sciences, Vienna (BOKU), 2. University of Natural Resources and Life Sciences, Vienna, 3. Institute of Social Ecology (SEC), University of Natural Resources and Life Sciences, Vienna)

09:45 **Towards a system-wide and consistent understanding of material use in product- and sectoral stocks – insights from economy-wide, dynamic material flow analysis**

» [Jan Streeck](#)¹, Hanspeter Wieland¹, Helmut Haberl¹, Fridolin Krausmann¹, Barbara Plank², Stefan Pauliuk³, Dominik Wiedenhofer¹ (1. University of Natural Resources and Life Sciences, Vienna, 2. University of Natural Resources and Life Sciences, Vienna., 3. Freiburg University)

10:00 **Circularity strategies for the provision of goods and services, and their synergies and trade-offs with climate change mitigation**

» [Eugénie Ioltreau](#)¹, Elena Verdolini¹, Cristina Cattaneo¹ (1. Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici (EIEE/CMCC))

09:00 **Building & Infrastructure 3**

B0.13 KOG

Chaired by: Sebastiaan Deetman

09:00 **Embodied greenhouse gas reductions in single-family dwellings: Drivers of greenhouse gas emissions and variability between Toronto, Perth, and Luzon**

» Aldrick Arceo¹, [Shoshanna Saxe](#)¹, Heather L. MacLean² (1. University of Toronto, 2. Civil and Mineral Engineering, University of Toronto, 35 St. George Street, Toronto, Ontario, M5S 1A4)

09:15 **The Urban Stock in an Andean city and its comparison with coastal areas of Peru**

» [Ramzy Kahhat](#)¹, Claudia Cucchi¹, Matias Gutierrez¹, Carlos Mesta², Samy Garcia¹, Alexis Dueñas¹, Johan Fellner³ (1. Pontificia Universidad Católica del Perú, 2. University School for Advanced Studies IUSS Pavia, 3. Vienna University of Technology)

09:30 **Evaluating the Role of Embedded Materials in Fossil Fuel Infrastructure for the Energy Transition**

» [Yanan Liang](#)¹, Sebastiaan Deetman², René Kleijn³, Ester van der Voet⁴ (1. y.liang@cml.leidenuniv.nl, 2. Deetman@cml.leidenuniv.nl, 3. Leiden University, CML, 4. Leiden University)



Continued from **Wednesday, 5 July**

09:45 **Society's material stocks as carbon storage: insights from a socio-metabolic perspective**

» [Lisa Kaufmann](#)¹, [Michaela Theurl](#)², [Christian Lauk](#)¹, [Zhi Cao](#)³, [Dominik Wiedenhofer](#)¹, [Helmut Haberl](#)⁴ (1. University of Natural Resources and Life Sciences, Vienna (BOKU), 2. Environment Agency Austria, 3. University of Antwerp, 4. University of Natural Resources and Life Sciences, Vienna)

10:00 **Contaminant cycles in buildings and infrastructure: a case study on lead in PVC window recycling in Germany**

» [David Laner](#)¹, [Sarah Schmidt](#)¹, [Katrina-Magdalena Lindemann](#)¹, [Thomas Gibon](#)² (1. Research Center for Resource Management and Solid Waste Engineering, Faculty of Civil and Environmental Engineering, University of Kassel, Mönchebergstraße 7, 34125 Kassel, Germany, 2. Luxembourg Institute of Science & Technology (LIST))

10:15 **Linking urban resource use, energy and emissions to urban typology and service provision: a conceptual framework**

» [Lisa Winkler](#)¹, [Stefan Pauliuk](#)¹ (1. Freiburg University)

09:00 **Special Session: Securing raw materials supply for electric vehicles Part 1: Future raw material demand for vehicle batteries – Challenges and Opportunities**

B0.17 KOG

Chaired by: Romain Guillaume Billy

Evaluating strategies for reducing material use in lithium-ion batteries for electric vehicles

» [Fernando Aguilar Lopez](#)¹, [Romain Guillaume Billy](#)¹, [Daniel B. Müller](#)² (1. Norwegian Univ. of Science and Technology, 2. Norwegian University of Science and Technology)

Anticipating the Impacts of Global Second-Hand Electric Vehicle Trade Flows on Lower and Middle Income Countries

» [Alissa Kendall](#)¹, [Galym Iskakov](#)², [Nadiyah Helal](#)¹, [Francisco Pares Olguin](#)², [Margaret Slattery](#)¹, [Lewis Fulton](#)¹ (1. University of California Davis, 2. University of California, Davis)

Using electric vehicle batteries to provide energy storage support for the electricity grid -- Case study for Europe

» [Fernando Aguilar Lopez](#)¹, [Dirk Lauinger](#)², [Francois Vuille](#)³, [Daniel B. Müller](#)⁴ (1. Norwegian Univ. of Science and Technology, 2. Massachusetts Institute of Technology, 3. Etat de Vaud, 4. Norwegian University of Science and Technology)

Analysing multiple reuse and recycling in a batteries-as-a-service case

» [Maria Ljunggren](#)¹, [Harald Helander](#)¹ (1. Chalmers University of Technology)

How lithium-iron-phosphate batteries could affect food security and the global phosphorus cycle

» [Fernando Aguilar Lopez](#)¹, [Anna Eide Lunde](#)², [Daniel B. Müller](#)³ (1. Norwegian Univ. of Science and Technology, 2. PWC, 3. Norwegian University of Science and Technology)

Economics-informed material flow analysis to assess and address battery mineral criticality: a case study on copper

» [John Rytter](#)¹, [Karan Bhuwalka](#)², [Richard Roth](#)², [Elsa Olivetti](#)² (1. United States Geological Survey, 2. Massachusetts Institute of Technology)

09:00 **IE and business**

B0.31 KOG

Chaired by: Colin Fitzpatrick

09:00 **The roles of Regenerative businesses in Industrial and Urban Symbiosis development**

» [Kristina Nyström](#)¹, [Murat Mirata](#)¹ (1. Linköping University)

09:15 **Challenges for military decarbonization: how Industrial Ecology can help**

» [Mohammad Ali Rajaeifar](#)¹, [Oliver Heidrich](#)¹ (1. School of Engineering, Newcastle University, Newcastle Upon Tyne, NE1 7RU, United Kingdom)

09:30 **Climate Innovation: From carbon accounting to business integration**

» [Dara O'Rourke](#)¹ (1. University of California, Berkeley)



Continued from **Wednesday, 5 July**

- 09:45 **Modernizing cement manufacturing in China leads to significant environmental gains**
 » [beijia huang](#)¹ (1. University of Shanghai for Science and Technology)
- 10:00 **The environmental costs of consumer product returns**
 » [Tamar Makov](#)¹, [Rotem Rotem](#)¹, [Benjamin Sprecher](#)², [Shira Shabtai](#)¹, [Vered Blass](#)³ (1. Ben Gurion University of the Negev, 2. Technical University Delft, 3. Tel-Aviv University)
- 09:00 **Integrating IE methods**
B0.41 KOG
 Chaired by: [Guillaume Majeau-Bettez](#)
- 09:00 **Towards an Integration of Material Flow Analysis and Life Cycle Assessment Databases: an Efficient Estimation of Flows and Compositions in Ecoinvent.**
 » [Han De Wachter](#)¹, [Guillaume Majeau-Bettez](#)¹ (1. CIRAI, Polytechnique Montréal)
- 09:15 **MaLCAP: a flexible, open-source LCA-MFA process modelling framework**
 » [Guillaume Majeau-Bettez](#)¹ (1. CIRAI, Polytechnique Montréal)
- 09:30 **Total Material Requirement (TMR) of Vehicle Production in China: Integrating Trade-linked Material Flow Analysis and Life Cycle Assessment**
 » [Binze Wang](#)¹, [Qiance Liu](#)², [Zhengyang Zhang](#)¹, [Gang Liu](#)², [Kazuyo Matsubae](#)¹ (1. Graduate School of Environmental Studies, Tohoku University, 2. University of Southern Denmark)
- 09:45 **Life cycle risk assessment framework as an integrative method to establish effective solar technology companies worldwide**
 » [Angela Ciotola](#)¹, [Richmond Kuleape](#)², [Maryegli Fuss](#)¹, [Witold-Roger Poganietz](#)¹, [Simone Colombo](#)³ (1. Karlsruhe Institute of Technology, 2. University of Freiburg, 3. Politecnico di Milano)

- 10:00 **Exploratory System Dynamics Modelling and Analysis of Metal Supply Chains**
 » [Jessie Bradley](#)¹, [Benjamin Sprecher](#)², [René Kleijn](#)³, [Jan Kwakkel](#)¹, [Willem Auping](#)¹ (1. Delft University of Technology, 2. Technical University Delft, 3. Leiden University, CML)
- 10:15 **Mat-dp: An Open-Source Material Demand Projections Model and its Application To Energy and Transport**
 » [Karla Cervantes Barron](#)¹, [Jonathan Cullen](#)¹ (1. University of Cambridge)
- 09:00 **LCA methods 2**
C0.06 KOG
 Chaired by: [Benjamin Sprecher](#)
- 09:00 **Towards a multifunctional version of the ecoinvent 3.9.1 database**
 » [Jeroen Guinée](#)¹, [Reinout Heijungs](#)¹, [Guillaume Bourgault](#)² (1. Leiden University, 2. ecoinvent)
- 09:15 **Substitution coproduction modeling is actually compatible with attributional life-cycle assessment**
 » [Arianne Provost-Savard](#)¹, [Guillaume Majeau-Bettez](#)¹ (1. CIRAI, Polytechnique Montréal)
- 09:30 **Solving multifunctionality in LCAs of circular systems: the case of building-integrated agriculture**
 » [Joan Muñoz-Liesa](#)¹, [Jeroen Guinée](#)², [Anna Petit Boix](#)¹, [Xavier Gabarrell i Durany](#)¹, [Eva Cuerva](#)³, [Santiago Gassó-Domingo](#)³ (1. Sostenipra research group (2021SGR000734), Institut de Ciència i Tecnologia Ambientals (ICTA) (MdM 2015-0552; CEX2019-000940- M), Universitat Autònoma de Barcelona, C/de les columnes s/n, 08193 Bellaterra, Barcelona, Spain., 2. Leiden University, 3. Department of Project and Construction Engineering (EPC), Group of Construction Research and Innovation (GRIC), Universitat Politècnica de Catalunya (UPC), Edifici H, Av. Diagonal, 647, Barcelona, Spain)
- 09:45 **Quantifying spatially and temporally explicit life cycle impacts of Midwestern US corn - cover crop - soybean systems to inform cover crop marketization initiatives**
 » [Kathryn Phillips](#)¹, [Timothy Smith](#)¹ (1. University of Minnesota, Department of Bioproducts and Biosystems Engineering)



Continued from **Wednesday, 5 July**

10:00 **Spatiotemporal analysis on the future carbon footprint of renewable energy by a dynamic life-cycle assessment: a case study on solar electricity in the United States**
 » [Jiaqi Lu](#)¹, Jing Tang¹, Rui Shan², Guanghui Li¹, Pinhua Rao¹, Nan Zhang³ (1. Shanghai University of Engineering Science, 2. University of North Carolina at Chapel Hill, 3. The University of Manchester)

10:15 **Quantifying Collision and Electrocutation Impacts of the Electric Grid on Biodiversity**
 » [Dafna Gilad](#)¹, Roel May², Bård G. Stokke², Francesca Veronesi¹ (1. NTNU, 2. NINA)

09:00 **EEIOA methods**
B0.25 KOG
 Chaired by: Kuishuang Feng

09:00 **A Framework for Adding Novel Satellite Accounts to the EXIOBASE3 MRIO System**
 » [Konstantin Stadler](#)¹, Candy Deck¹, Richard Wood¹ (1. NTNU)

09:15 **The Legacy Environmental Footprints of Capital Stocks**
 » [Ranran Wang](#)¹, Edgar Hertwich², Tomer Fishman³, Sebastiaan Deetman⁴, Paul Behrens⁵, Wei-Qiang Chen⁶, Arjan de Koning¹, Ming Xu⁷, Kira Matus⁸, Julie Zimmerman⁹ (1. Institute of Environmental Sciences (CML) - Universiteit Leiden, 2. Norwegian Univ. of Science and Technology, 3. CML Leiden, 4. Deetman@cml.leidenuniv.nl, 5. Leiden University, CML, 6. Institute of urban environment, CAS, 7. Tsinghua University, 8. The Hong Kong University of Science and Technology, 9. Yale University)

09:30 **The trouble with energy accounts: a step towards a standardised procedure**
 » [Kajwan Rasul](#)¹, Richard Wood¹, Sarah Schmidt², Edgar Hertwich¹ (1. Norwegian Univ. of Science and Technology, 2. Norwegian Univ. of Science and Technology & SINTEF)

09:45 **A Dynamic Agent-based Environmentally Extended Input-Output Model and Its Application to Firm-level Environmental Risks**
 » [Shen Qu](#)¹ (1. Beijing Institute of Technology)

10:00 **Bridging the resolution gap - Linking MRIO environmental indicators to the HS6-level using economic complexity methods**
 » [Berend Minties](#)¹, Hauke Ward², Arjan de Koning¹, José Mogollón³ (1. Institute of Environmental Sciences (CML) - Universiteit Leiden, 2. Institute of Environmental Sciences (CML), Leiden University, P.O. Box 9518, 2300 RA Leiden, the Netherlands. Mercator Research Institute on Global Commons and Climate Change, Berlin 10829, Germany, 3. Leiden University, CML)

09:00 **Social Dimensions 3**
B0.16 KOG
 Chaired by: Heinz Schandl

09:00 **Regional Structure, Inequality, and emission scenarios of India's household consumption of food, electricity, transport, and clothing needs.**
 » [Shelly Bogra](#)¹, Felix Creutzig², Peter-Paul Pichler³ (1. Climate and Environmental Research Institute NILU, 2. Mercator Research Institute on Global Commons and Climate Change (MCC), Berlin, 3. Potsdam Institute for Climate Impact Research (PIK))

09:15 **Interdependencies of circular economy measures and societal inequality in the European residential building sector**
 » [Christian Hauenstein](#)¹, Stefan Pauliuk² (1. University of Freiburg, 2. Freiburg University)

09:30 **Inequality redistribution in eco-social policy narratives.**
 » [Sam Betts-Davies](#)¹, John Barrett¹, Paul Brockway¹ (1. Sustainability Research Institute, School of Earth and Environment, University of Leeds)

09:45 **Just and Sustainable Urban Systems - Urgent Research Priorities**
 » Melissa Bilec¹, Joe Bozeman III², Hua Cai³, [Shauhrat Chopra](#)⁴, Oliver Heidrich⁵, Kangkang Tong⁶ (1. University of Pittsburgh, 2. Georgia Institute of Technology, 3. Purdue University, 4. City University of Hong Kong, 5. School of Engineering, Newcastle University, Newcastle Upon Tyne, NE1 7RU, United Kingdom, 6. Shanghai Jiao Tong University)



Continued from **Wednesday, 5 July**

- 10:00 **Burden of the global energy price crisis on households**
 » [Jin Yan](#)¹, Yuru Guan¹, Yuli Shan², Klaus Hubacek³ (1. University of Groningen, 2. University of Birmingham, 3. University of Groningen)
- 10:15 **"The Great Stagnation": Reflection on historical growth in a WISE view**
 » [Kedi Liu](#)¹, Ranran Wang¹, Rutger Hoekstra¹ (1. Institute of Environmental Sciences (CML) - Universiteit Leiden)
- 09:00 **Creative abstracts exhibition and competition**
B0.30 KOG
- 10:30 **Coffee break**
KOG (Kamerlingh Onnes Building)
- 11:00 **Parallel sessions**
KOG (Kamerlingh Onnes Building)
- 11:00 **Mobility**
C1.31 KOG
 Chaired by: (Anthony) Shun Fung Chiu
- 11:00 **Influence of Urban Form on Car Ownership, Mode Choice, and Travel Distance in European Cities**
 » [Peter Berrill](#)¹, Felix Wagner², Nikola Milojevic-Dupont², Florian Nachtigall², Aneeque Javaid³, Felix Creutzig² (1. Technical University Berlin, 2. Mercator Research Institute on Global Commons and Climate Change (MCC), Berlin, 3. IIASA)

- 11:15 **Air quality benefits from decarbonization scenarios for the U.S. light-duty passenger vehicle fleet from 2022-2050.**
 » [Jean Schmitt](#)¹, Marianne Hatzopoulou¹, I. Daniel Posen¹, Heather L. MacLean¹ (1. Civil and Mineral Engineering, University of Toronto, 35 St. George Street, Toronto, Ontario, M5S 1A4)
- 11:30 **Meeting U.S. light-duty vehicle fleet climate targets with electric vehicles and electrofuels**
 » Dijuan Liang¹, Alexandre Milovanoff¹, I. Daniel Posen¹, Heather L. MacLean¹, [Jean Schmitt](#)² (1. Civil and Mineral Engineering, University of Toronto, 35 St. George Street, Toronto, Ontario, M5S 1A4, 2. Civil and Mineral Engineering, University of Toronto, 35 St. George Street, Toronto, Ontario, M5S 1A4 Canada)
- 11:45 **How to plan shared mobility for a sustainable transportation system?**
 » Hao Luo¹, [Hua Cai](#)¹ (1. Purdue University)
- 12:00 **Sustainable Resource Assessments of Residential Building and Transportation Infrastructures in Vietnam: From Stock-Flow-Service nexus Perspective**
 » [Thi Cuc Nguyen](#)¹, Junbeum Kim¹ (1. CREIDD Research Center on Environmental Studies & Sustainability, Interdisciplinary research on Society-Technology-Environment Interactions, University of Technology of Troyes, Troyes, France)
- 11:00 **Special Session: Socio-Economic Transitions and Life-Cycle Governance**
A1.44 KOG
 Chaired by: Junming Zhu and Xiao Li
- 11:00 **Socio-Economic Drivers of Material Efficiency: Evidence from a Panel of Countries**
 » [Xiao Li](#)¹, Xuezhao Chen¹, Haijia Shi², Ruichang Mao³, Junming Zhu³ (1. Xi'an Jiaotong University, 2. Research Center of Circular Economy and Cleaner Production, South China Institute of Environmental Sciences, Ministry of Ecology and Environment, 3. Tsinghua University)



Continued from **Wednesday, 5 July**

- 11:15 **Evaluating the Supply Risk of Bulk Commodities: Based on the Perspective of Physical Trade**
 » [Jianlimin Wei](#)¹, Wei-Qiang Chen¹ (1. Institute of urban environment, CAS)
- 11:30 **Does a reduction in working time matter for the environment? The case of Japan**
 » [Yosuke Shigetomi](#)¹, Andrew Chapman² (1. Nagasaki University, 2. Kyushu University)
- 11:45 **Restoring the Incentives for Eco-design in Extended Producer Responsibility: The Challenges for Eco-modulation**
 » [Reid Lifset](#)¹, Harri Kalimo², Antti Jukka³, Petrus Kautto⁴, Mirella Miettinen³ (1. Center for Industrial Ecology, Yale School of the Environment, Yale University, 2. VUB Brussels School of Governance, 3. University of Eastern Finland Law School, 4. Finnish Environmental Institute (SYKE))
- 12:00 **Nudging Household Sustainable Behavior: The Role of Life Cycle Impact and Social Norms**
 » [Zhen Du](#)¹, Junming Zhu² (1. School of Environment, Tsinghua University, 2. Tsinghua University)
- 12:15 **Beyond market failure: a rationale for life cycle policymaking**
 » [Stijn van Ewijk](#)¹, Reid Lifset² (1. University College London, 2. Center for Industrial Ecology, Yale School of the Environment, Yale University)
- 11:00 **Special Session: Low-Carbon Lifestyles to Meet the 1.5°C Target**
A0.51 KOG
 Chaired by: L. Scherer and Mariësse Van Sluisveld
- 11:00 **PROJECTING HOUSEHOLD CARBON FOOTPRINTS IN 2030 AND 2050 BY ADAPTING SUPPLY AND USE TABLES FOLLOWING SHARED SOCIO-ECONOMIC PATHWAYS**
 » [S. Cap](#)¹, Arjan de Koning², L. Scherer¹ (1. Leiden University, CML, 2. Institute of Environmental Sciences (CML) - Universiteit Leiden)

- 11:15 **Assessing the Potential of Lifestyle Changes for a Low-Carbon Society: A Cross-Country Survey and Input-Output Analysis Approach**
 » [Roberto Vaccaro](#)¹, Abigail Alexander-Haw², Aurore Flipo³ (1. Institute for Renewable Energy, Eurac Research, 2. Fraunhofer Institute for System and Innovation Research ISI, 3. Association Negawatt)
- 11:30 **THE CLIMATE PUZZLE – A TOOL FOR PLANNING 1.5-DEGREE LIFESTYLES**
 » [Jari Kolehmainen](#)¹, Michael Lettenmeier² (1. d-mat ltd, 2. Aalto University)
- 11:45 **(PATH)WAYS TO SUSTAINABLE LIVING: THE INTENT AND IMPACT OF THE SLIM SCENARIOS ON LONG-TERM EMISSIONS**
 » [Nicole van den Berg](#)¹, Andries Hof¹, Detlef van Vuuren¹, lewis akenji², Vanessa Timmer³, Nicole-anne Boyer⁴ (1. Utrecht University, 2. Hot or Cool Institute, 3. OneEarthLiving, 4. NOW Partners)
- 12:00 **BEHAVIOURAL CHANGE FOR THE CIRCULAR ECONOMY AND IT IMPACTS AT THE REGIONAL AND CITY LEVELS**
 » [Olga Ivanova](#)¹ (1. PBL Netherlands Environmental Assessment Agency,)
- 11:00 **IE and decision-making**
B0.13 KOG
 Chaired by: Andrea Ramirez
- 11:00 **Empirically grounded agent-based simulation of circular economy strategies: product circularity, consumer behavior, and environmental consequences**
 » [Ryu Koide](#)¹, Haruhisa Yamamoto², Keisuke Nansai², Shinsuke Murakami³ (1. Material Cycles Division, National Institute for Environmental Studies, 2. National Institute for Environmental Studies, 3. The University of Tokyo)
- 11:15 **Integrated System Analysis of Urban Vegetation and Agriculture (URBAG): an interdisciplinary and participatory decision approach to evaluate the design and implementation of green infrastructures in urban environments.**
 » [gara villalba](#)¹, David Camacho², Johannes Langemeyer² (1. Universitat Autònoma de Barcelona (UAB), 2. Universitat Autònoma de Barcelona)



Continued from **Wednesday, 5 July**

- 11:30 **Implementation of carbon pricing in an aging world calls for targeted protection schemes**
 » [Peipei Tian](#)¹, [Kuishuang Feng](#)², [Heran Zheng](#)³, [Klaus Hubacek](#)⁴, [Jiashuo Li](#)¹, [Honglin Zhong](#)¹, [Xiangjie Chen](#)², [Laixiang Sun](#)² (1. Shandong University, 2. University of Maryland, 3. University College London, 4. University of Groningen)
- 11:45 **Measuring the impact of environmental policy on the sustainable supply of critical materials**
 » [Karan Bhuwarka](#)¹, [John Ryter](#)², [Elsa Olivetti](#)¹, [Richard Roth](#)¹ (1. Massachusetts Institute of Technology, 2. United States Geological Survey)
- 12:00 **Data driven decision-making for circular economy implementation in agro-food systems**
 » [Bart van Hoof](#)¹, [Andres Medaglia](#)¹, [Alfaima L. Solano-Blanco](#)¹, [Carolina Mendez](#)¹, [Juan Riaño](#)¹ (1. Universidad de los Andes)
- 12:15 **Analysis and Optimization of Energy Coproduct Opportunities within an Industrial Park: A case study of the Bécancour Industrial Park**
 » [Leo Lamy-Laliberte](#)¹, [Simon Barnabé](#)², [Normand Mousseau](#)³, [Jean-Marc Frayret](#)⁴ (1. École Polytechnique Montréal, 2. Université du Québec à Trois-Rivières, 3. Université de Montréal, 4. CIRODD, École Polytechnique Montréal)
- 11:00 **Special Session: Securing raw materials supply for electric vehicles Part 2: Sourcing the battery raw materials of tomorrow - Impact on mineral supply chains**
B0.17 KOG
 Chaired by: [Romain Guillaume Billy](#)
- 11:00 **The battery demand for nickel creates supply bottlenecks and problem shifts, and increasing emissions**
 » [Eric Young](#)¹, [Romain Guillaume Billy](#)², [Fernando Aguilar Lopez](#)², [Daniel B. Müller](#)³ (1. SINTEF Oceans, 2. Norwegian Univ. of Science and Technology, 3. Norwegian University of Science and Technology)

- 11:15 **Integrating trade-linked material flow analysis and shock propagation model for assessing global cobalt supply chain risks**
 » [Xin Ouyang](#)¹, [Qiance Liu](#)², [Litao Liu](#)¹, [Wu Chen](#)², [Gang Liu](#)³ (1. Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences, 2. University of Southern Denmark, 3. College of Urban and Environmental Sciences, Peking University)
- 11:30 **Limited lithium supply is likely to slow down the electrification of the transport sector**
 » [Brent McNeil](#)¹, [Romain Guillaume Billy](#)¹, [Fernando Aguilar Lopez](#)¹, [Daniel B. Müller](#)² (1. Norwegian Univ. of Science and Technology, 2. Norwegian University of Science and Technology)
- 11:45 **Is lithium from geothermal brines the sustainable solution for Europe?**
 » [Vanessa Schenker](#)¹, [Christopher Oberschelp](#)¹, [Peter Bayer](#)², [Stephan Pfister](#)¹, [Stefanie Hellweg](#)¹ (1. Institute of Environmental Engineering, ETH Zurich, 2. Martin-Luther-Universität Halle-Wittenberg)
- 12:00 **Participatory life cycle assessment of direct lithium extraction from geothermal brines**
 » [Margaret Slattery](#)¹, [Alissa Kendall](#)¹, [William Evans](#)², [Nadiyah Helal](#)¹, [Kristi Dayemo](#)² (1. University of California Davis, 2. University of California, Davis)
- 11:00 **EEIOA cases 3**
B0.31 KOG
 Chaired by: [Sónia Cunha](#)
- 11:00 **Research on the impact of border carbon adjustments on climate justice in international trade**
 » [Yanan Ren](#)¹, [Jinping Tian](#)¹, [Lvjun Chen](#)¹ (1. School of environment, Tsinghua University)
- 11:15 **Opportunities and limitations of increasing the geographical resolutions in input-output models**
 » [Anniek Kortleve](#)¹, [José Mogollón](#)¹, [Paul Behrens](#)¹ (1. Leiden University, CML)



Continued from **Wednesday, 5 July**

- 11:30 **Why carbon emissions mismatch with economic gains? An explanation from value chain perspective**
 » [Ailin Kang](#)¹, Yiling Xiong¹, Xin Tian¹, Ludi Liu¹ (1. Beijing Normal University)
- 11:45 **Global Carbon and Material Footprints of Machinery Capital**
 » [Meng Jiang](#)¹, Ranran Wang², Richard Wood³, Edgar Hertwich¹ (1. Norwegian Univ. of Science and Technology, 2. Institute of Environmental Sciences (CML) - Universiteit Leiden, 3. NTNU)
- 12:00 **Opportunities for Multi-Tier Global Supply Chain Emissions Mitigation**
 » [Xilin Yang](#)¹, Timothy Smith¹ (1. University of Minnesota, Department of Bioproducts and Biosystems Engineering)
- 12:15 **Assessing the environmental and economic impacts of deposit-return schemes for beverage packaging with EEIO**
 » [António Lorena](#)¹, Paulo Ferrão², Sofia Carvalho¹ (1. 3drivers – Engineering, Innovation and Environment, 2. IN+ Center for Innovation, Technology and Policy Research, Instituto Superior Técnico, Lisbon, Portugal)
- 11:00 **New indicators and measures**
B0.41 KOG
 Chaired by: Ming Xu
- 11:00 **Developping green supply chains in islands through circular desalination. The case study of Chios Island, in Greece**
 » [Dimitrios Xevgenos](#)¹, Riccardo Longo², Nagues Ollier², Marina Montero², Niels van Linden³, Petros Kalogerakis⁴ (1. Delft University of Technology, 2. Clean Energy for EU Islands Secretariat, 3. LENNTECH BV, 4. Municipal Company for Water and Sewage of Chios Island)
- 11:15 **Evaluating the impact of different CE strategies on future bulk and scarce material demand in Austria**
 » [André Baumgart](#)¹ (1. Institute of Social Ecology (SEC), University of Natural Resources and Life Sciences, Vienna)

- 11:30 **The power of networks: A field data analysis of geographic network effects in the circular economy**
 » [Christoph Ratay](#)¹ (1. Technical University of Munich)
- 11:45 **Municipal Circular Economy Indicators: Do They Measure the Cities' Environmental Ambitions?**
 » [Mira Kopp](#)¹, Anna Petit Boix², Sina Leipold³ (1. Friedrich Schiller University Jena, 2. Universitat Autònoma de Barcelona, 3. Helmholtz Centre for Environmental Research)
- 12:00 **In Search of Lost Time - Measuring Material Services and Ultimate End at the Macro Level**
 » Piroska Harazin¹, [Mihály Dombi](#)¹, Andrea Karcagi-Kováts¹, Faisal Aldebei¹ (1. University of Debrecen)
- 12:15 **Outline of a material stock-oriented policy mix towards sustainability**
 » [Mihály Dombi](#)¹, Piroska Harazin¹, Andrea Karcagi-Kováts¹, Faisal Aldebei¹, Zhi Cao² (1. University of Debrecen, 2. University of Antwerp)
- 11:00 **Special Session: Industrial Ecologists in a world in Turmoil**
C0.06 KOG
 Chaired by: Anastasia Papangelou
- 11:00 **LCA methods 3**
B0.25 KOG
 Chaired by: Shelie Miller
- 11:00 **Development of an effect factor for marine plastics' impact on cultural ecosystem service**
 » [Fei Song](#)¹, Francesca Verones¹, Martin Dorber¹, Johan Pettersen¹ (1. Norwegian Univ. of Science and Technology)
- 11:15 **Using Consumer Archetypes to Model the Use Phase of LCA with a Case Study on Urban vs. Rural E-Commerce**
 » [Shelie Miller](#)¹, Luyi Huang¹ (1. University of Michigan)



Continued from **Wednesday, 5 July**

11:30 **Towards a biodiversity-inclusive strategy for the extraction of raw materials**

» [Valerio Barbarossa](#)¹, Alexandra Marques², Aafke Schipper², Mélanie Douziech³ (1. Leiden University, 2. PBL Netherlands Environmental Assessment Agency,, 3. MINES Paris)

11:45 **Dynamic Life Cycle Analysis for Innovative Wood Products and Marginal Land Afforestation and Reforestation**

» Bingquan Zhang¹, Kai Lan¹, Thomas B. Harris², Mark S. Ashton², [Yuan Yao](#)¹ (1. Center for Industrial Ecology, Yale School of the Environment, Yale University, 2. The Forest School, Yale School of the Environment, Yale University)

12:00 **Life Cycle Assessment for Nature-positive and Circularity Outcomes**

» [Delwyn Jones](#)¹, Mathilde Vlieg², Shloka Ashar¹ (1. The Evah Institute, Tamborine Mountain QLD, 2. MalaikaLCT)

12:15 **Assessing the greenhouse gas tradeoffs of alternative agrivoltaics technologies in the U.S. Midwest: connecting biophysical input-output and prospective life-cycle assessment**

» [Nathaniel Springer](#)¹, Rylie Pelton¹ (1. University of Minnesota, Institute on the Environment)

11:00 **Water 2**

B0.16 KOG

Chaired by: Carlos López-Morales

11:00 **Enhancing household water consumption prediction by the water-energy nexus concept: a case of Beijing, China**

» [Zonghan Li](#)¹, Yi Liu¹, Chunyan Wang¹ (1. Tsinghua University)

11:15 **Towards a circular economy of water- Integrated process modeling, technoeconomic analysis, and life cycle assessment for anaerobic membrane bioreactor platform for wastewater management**

» [Madison Kratzer](#)¹, Prathap Parameswaran², Vikas Khanna¹ (1. University of Pittsburgh, 2. Kansas State University)

11:30 **Exploring the Economics of Urban Water: Valuation, Recycling, and Sustainability**

» [Carlos López-Morales](#)¹ (1. El Colegio de México)

11:45 **Towards Water Resource Recovery Facilities: An Integrated System Assessment of Emerging Sewage Sludge Management Technologies in Sweden**

» [Harry Tibbetts](#)¹, Lara Carvalho², Jiechen Wu¹, Sebastian Schwede², Ali Ahmad Shahnawazi² (1. KTH Royal Institute of Technology, 2. Mälardalen University)

12:00 **Enabling implementation of novel circular water solutions in the coal mine sector**

» Dimitrios Xevgenos¹, Kallirroi Panteleaki², Maria Mortou², Krzysztof Mitko³, Marian Turek³, [Danai Stroutza](#)⁴, Mark van Loosdrecht⁴ (1. Delft University of Technology, 2. SEALEAU BV, 3. Silesian University of Technology, 4. Technical University Delft)

12:15 **Can we design urban agriculture without contradicting the water framework directive?**

» [Cristina Madrid-López](#)¹, Susana Toboso², Sergi Ventura¹, Joan Gilibert³, gara villalba¹ (1. Universitat Autònoma de Barcelona (UAB), 2. Universitat Autònoma de Barcelona, 3. , Institute Cartographic and Geological of Catalonia (ICGC))

12:45 **Lunch**

SGZ (Stadsgehoorzaal)

14:00 **Keynote: Aromar Revi**

SGZ (Stadsgehoorzaal)

Chaired by: Jaco Quist

» Aromar Revi (Director, Indian Institute for Human Settlements)

14:45 **Closing Session**

SGZ (Stadsgehoorzaal)



<https://isie2023netherlands.nl/>