



IE day 2024

Nov 21st

Ideas for Improving Mineral and Metal Supply Chain Datasets and Analysis

Session Information Sheet

General information

Session organizer(s): Dr Stephen Northey, UTS Institute for Sustainable Futures

Contact email: stephen.northey@uts.edu.au

Local Time: 2pm-3pm AEDT

UTC Time: 3am-4am UTC

Link to virtual room: <https://zoom.uts.edu.au/j/89181359044>

Link to registration (for attendees): <https://forms.gle/t9kviqNrhyMgUhXE8> (optional)

Type of session:

- Academic


Session Description:

Modelling approaches used in industrial ecology such as life cycle assessment, material flow analysis and input-output assessment often require detailed data for industries and supply chains. For the minerals and metals sectors, this data is not always readily available for all commodity groups and is often aggregated at levels of geographic, temporal and supply chain resolution that constrain the types of models, analysis and understanding that can be developed and used to support decision making. Improvements to industrial ecology models and the datasets supporting them will enable policy makers and industry to make more informed decisions as we collectively pursue sustainable development.

In this session, each panelist will be allowed only a single slide to present an idea for how to improve either the datasets or models available for assessing mineral and metal supply chains within industrial ecology studies. Following this, we will have an open panel discussion and Q&A to further unpack these ideas. Audience participation in this discussion session will be welcomed and encouraged.

Chair and panelist information:

Chair:

	<p>Dr Stephen Northey Institute for Sustainable Futures, University of Technology Sydney</p> <p>Stephen is a Research Director at the University of Technology Sydney's Institute for Sustainable Futures. His research focuses on quantifying the current and long-term trade-offs between raw material supply, sustainable development and the environment using methods such as life cycle assessment and dynamic material flow analysis. Through this he aims to understand supply-chain trajectories and identify practical ways for industry and society to improve long-term outcomes.</p>
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Confirmed Panelists:

	<p>Dr Juliana Segura-Salazar Sustainable Minerals Institute, University of Queensland</p> <p>Juliana is a Research Fellow at The University of Queensland's Sustainable Minerals Institute, whose interdisciplinary research is dedicated to enhancing the sustainability and circularity of mineral resources supply through innovation. Juliana's current work focuses on developing sustainable, circular solutions, such as ore-sand co-production, to address the global sustainability challenges associated with sand supply and conventional mineral waste management.</p> <p>Her work experience includes co-leading applied research projects in collaboration with the mining industry in Brazil, Europe, and Australia. During her graduate studies, Juliana worked as a part-time Research Assistant in Brazil and later as a full-time Research Assistant at Imperial College London on the Horizon 2020 IMPaCT project from 2019 to 2020. She remains affiliated with the institution as an Honorary Research Associate.</p> <p>Juliana has established herself as an expert in her field, with a growing track record of academic publications and contributions towards advancing sustainable mining practices. She has contributed as a peer reviewer for ten international journals, is an Editorial Board Member of <i>Geoenergy</i> (a co-owned journal of the Geological Society and the European Association of Geoscientists and Engineers (EAGE)), and a Topical Advisory Panel member of MDPI's Minerals</p>
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	<p>journal. Also, as part of her volunteering roles, she has been appointed as a member of the World Economic Forum’s Global Future Council on Responsible Resource Use (2023-2024).</p>
	<p>Prof. Peng Wang Institute of Urban Environment, Chinese Academy of Sciences</p> <p>Dr. Peng Wang is a professor at the Institute of Urban Environment, Chinese Academy of Sciences with Ph.D. from UNSW Sydney.</p> <p>Dr. Wang's pioneering research focuses on leveraging AI for critical mineral sustainability. His work is dedicated to integrating cutting-edge data-driven methodologies into the global monitor and governance of material cycles to facilitate a just transition to a low-carbon economy, like digital twin Material Flow Analysis (MFA) and comprehensive modelling frameworks like the Metal-Energy-Climate (MEC) Nexus.</p> <p>Dr. Wang also published various works in prestigious journals, including Nature Geoscience, Nature Computational Science, One Earth, and Nature Communications, etc. Beyond academia, he has been actively involved in key initiatives such as the Wilton Park Conference on critical minerals, the International Round Table of Material Criticality (IRTC), the Intergovernmental Negotiating Committee (INC-2/3/4) of UNEP, etc.</p>
	<p>Phoebe Whattoff, MSc Director, Minviro</p> <p>Phoebe Whattoff is the Director of Minviro’s Australian operations with a strong focus on advancing sustainability within the mining sector. Her expertise lies in providing ISO-compliant 14040/14044 life cycle assessments in critical materials essential to modern industries, including lithium, base metals, rare earth elements (REE), and graphite. Phoebe has also explored Li-ion battery cell and pack manufacturing and recycling processes, aligning with stringent EU battery regulations. Phoebe is to cultivating a culture of innovation and environmental stewardship, collaborating with industry stakeholders to develop and implement best practices that support a greener future</p>
	<p>Prof. Damien Giurco Institute for Sustainable Futures, University of Technology Sydney</p> <p>Damien Giurco is Professor of Resources and Associate Director Research at the UTS Institute for Sustainable Futures. He leads a diverse team of staff and students working to create change towards sustainable future by partnering with government, industry and the community to address complex sustainability challenges. His own work focuses on bringing together stakeholders and ideas to co-develop better policy and practice in the areas of circular economy, resource stewardship and sustainable production and consumption.</p>



Prof. Mohan Yellishetty
Resources Engineering, Monash University

Prof Mohan Yellishetty brings nearly three decades of distinguished research and academic experience from leading institutions such as Monash University, CSIRO, Yale University, and IIT Bombay. As a globally recognized authority in Sustainable Mineral Resources, Prof Yellishetty's expertise spans Critical Minerals, Mine Rehabilitation and Closure, and Mine Tailings and Waste.

He has co-founded the [Critical Minerals Consortium](#) at Monash University; Founded the [Australia-India Critical Minerals Research Hub](#); and Convenor at [Critical Minerals National Industry Group](#) within the Australia-India Chamber of Commerce. He has extensive links with the Australian and Indian minerals sectors, government bodies, and academic and research organisations.

Prof Yellishetty's efforts have significantly advanced robust relationships and knowledge exchange through numerous bilateral and multilateral workshops and symposiums across the Indo-Pacific region, including [Australia-India](#); [Australia-Japan](#); [Australia-Korea](#); [Australia-Vietnam](#); [Australia-Indonesia](#) and [Australia-India-Japan-Korea-UK](#). Currently, Prof Yellishetty is spearheading the creation and launch of the Indo-Pacific Critical Minerals Consortium, engaging with multilateral partners including Australia, India, Japan, Korea, Singapore, New Zealand, Vietnam, Sri Lanka, Bangladesh, the UK, the USA, Indonesia, and Malaysia



Prof. Vladimir Strezov
School of Natural Sciences, Macquarie University

Vladimir Strezov is professor in environmental sciences at the School of Natural Sciences, Faculty of Science and Engineering at Macquarie University in Sydney, Australia. He holds degrees in Mechanical and Chemical Engineering with expertise in renewable energy, environmental assessment, air and water quality, and sustainable development. He has strong interests in developing sustainability metrics and application of national emission inventories in impact assessment of industrial operations. He has published 6 scholarly books and over 300 publications. Prof Strezov is a Fellow of the Institution of Engineers Australia, and Fellow of the Australian Institute of Energy.



Bernardo Mendonca Severiano
Institute for Sustainable Futures, University of Technology Sydney

Bernardo Mendonca is a PhD student at the Institute for Sustainable Futures (ISF). He has an interdisciplinary background in engineering, urban sustainability, and resources' futures. He has extensive experience in data analysis and business analytics, working across diverse industry sectors. Bernardo leverages statistical and data science models to generate actionable insights for industry-focused research. His recent projects include an exploration of prospective life-cycle assessment of battery minerals and the potential for impact mitigation from voluntary sustainability initiatives



Dr Tim Werner
University of Melbourne

Tim Werner is a Senior Lecturer in Energy Transition at the University of Melbourne. His research focusses on the collection and analysis of large datasets on mining activity to understand patterns of resources, production and human/environmental impacts from local to global scales. He is particularly interested in the use of satellite data and GIS mapping to understand land use changes of mining for the energy transition.



Dr Parvez Mahmud
Faculty of Science, University of Technology Sydney

Dr Parvez Mahmud currently serves as a Senior Lecturer and the Director of the Master of Sustainable Energy program at the University of Technology Sydney (UTS), Sydney, Australia. He has made significant research contributions in the area of renewable energy, storage, nanogenerators, and sustainability, and has published two authored books and more than 180 scholarly articles in peer-reviewed high-impact journals, book chapters, and conference proceedings. He is named among the Top 2% Scientists in the world in 2024 and has been awarded the Best Presentation Awards at 7 renowned international conferences. His main research areas include sustainable design, energy generation, conversion and storage, life cycle assessment, and industrial ecology.



A/Prof. Wen Li
Department of Mechanical Engineering, The University of Melbourne

Wen Li is Associated Professor in the Department of Mechanical Engineering, at the University of Melbourne. He is the funding academic member and course coordinator of the Master of Industrial Engineering. He leads a growing research team focusing on sustainable manufacturing and life cycle engineering, collaborating closely with world-leading experts and a wide range of industrial partners. His research strength include energy efficiency of manufacturing, manufacturing system.



Dr Jim West
Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Dr Jim West is a team leader at CSIRO. Through his work he has taken on a prominent role in the creation and maintenance of key enabling research infrastructure in industrial ecology. Coordinating the creation of the UNEP sponsored Global Material Flows Database is the most significant example. Initiating substantial redesign of materials classification systems, and capacity building programs to better meet the policy needs of resource-based economies, being major recent (2020-2022) contributions.

Jim's background in geology and the mining industry has enabled him to make valuable contributions to Industrial Ecology community's understanding of the realities (versus common misconceptions) around the depletion of mineral resources. The combination of a Socioeconomic Metabolic perspective, and knowledge of the mining industry, has lead to a strong research interest in the

	<p>materials requirements of the energy transition. This included designing and implementing a sophisticated stocks and flows framework to model the impact of electric vehicles on metals demand, and as potential electricity storage for grid stabilisation. Related contributions here include co-authorship of papers, reports, and roadmaps on the topic of metals critical to the energy transition. This area has become one of his main research interests.</p>
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