



IRTC25: From Raw Material Policies to Practice

February 19-21, 2025, Ljubljana, Slovenia

<https://irtc.info/irtc-2025/>

*Join us at IRTC25 in Ljubljana at the forefront
of the international critical raw materials debate.*

Explore how policies translate into real-world practices at IRTC25 in Ljubljana, where researchers, industry players, policymakers, and thought leaders convene to delve into the latest innovations and strategies shaping the future of critical raw materials. Over three dynamic days, this event will gather participants from around the globe to explore the most pressing issues and new advancements in critical raw materials.

Conference Highlights:

- **Diverse Formats and Sessions:** Our program features engaging keynote speeches, scientific sessions, thought-provoking panel discussions and keynote conversations, and interactive courses and workshops. With two parallel tracks, attendees can customize their experience to focus on specific interests and sectors, including mining, recycling, geopolitics, and technological innovations.
- **Broad Participation:** Expect a global gathering with 300 participants, including 30% from outside Europe. Enjoy meaningful interactions with experts from academia, industry, and policy-making, fostering cross-disciplinary collaborations.
- **Industry Engagement:** An entire day (February 20) centered on industry contributions, featuring best practice examples, company showcases, short courses, and discussions on recent regulatory developments and their impacts.
- **Special Focus for Emerging Talents:** Opportunities for early-stage researchers to showcase their work through poster pitches and flash presentations.
- **Interactive Workshops and Courses:** Participate in hands-on workshops, seminars and courses, providing insights into the latest technologies, policy development, and research.
- **Project Presentations:** Learn about the latest European projects on critical raw materials in the session “CRM Europe: Spotlight on Critical Raw Materials Initiatives”



Why Attend?

- **Network with Global Experts:** Engage with top researchers, policymakers, and industry representatives in the field.
- **Stay Informed:** Gain insights into the latest methodologies, policies, and technological advancements.
- **Collaborate and Innovate:** Foster connections for collaboration and innovation.
- **Co-shape Policy and Industry Practices:** Participate in discussions that bridge the gap between science, policy, industry, and civil society.

Program

December 2024-February 2025, online

4 free preliminary online webinars with invited experts, organized and chaired by the IRTC Junior Board; dates and times to be announced:

1. [Critical Raw Materials: why should we care?](#) – December 5, 14.00 CET / 9.00 EST
2. [The paradox of Net Zero Transition: The role of Critical Metals](#)
3. [Navigating the Evolving Landscape of Critical Mineral Policy](#)
4. [Mining Future: Social and Cultural Ties of Mining Communities and Cooperations](#)

Monday & Tuesday, February 17-18

IRTC-Training course: A 1.5-day introductory program covering the fundamentals of criticality and the evaluation of critical raw materials, providing essential background to profit the most from the conference. Successful participation, assessed via an exam, will provide participants with a certificate “Raw materials risk manager (basic)”, in accordance with ISO/IEH 17024.

February 18, evening: Special invited Dinner for Chairs, keynote speakers, and workshop organizers

Wednesday, February 19

9.30	Welcome Coffee				
10.30	<u>Morning Track 1</u> RIS Adria Hub workshop <i>Meta Dobnikar, Urša Šolc (GeoZS), Mateja Košir (ZAG)</i>	<u>Morning Track 2</u> Junior Board workshop “UNFC meets CRMA – A forward-thinking perspective” <i>Marina von Vietinghoff-Scheel (BGR), Jair Santillán Saldivar (BRGM)</i>	<u>Morning Track 3</u> Seminar “Integrating Primary Data Collection Using Multi-Party Workflows to Enhance LCA and Criticality Assessments for Companies” <i>Robert Pell (Minviro)</i>	<u>Morning Track 4</u> Site visit to Magneti production facilities <i>(max. 25, first come - first serve)</i>	
12.30	Lunch buffet				
14.00	<u>Afternoon Track 1</u> Workshop on Circular Battery Chains <i>Nora Bartolomé, Kirsten Remmen (Empa), Priscilla Caliandro (BFH)</i>	<u>Afternoon Track 2</u> Technical course “Addressing challenges in the REE value chain” <i>David Bengio (Carester), Gareth Hatch (REIA)</i>	<u>Afternoon Track 3</u> Round Table: Skills, Training and Education in Critical Raw Materials <i>David Peck (TU Delft, Estonian Business School), Eleanora Brighenti (DANA) Jan Eggert (EIT RawMaterials)</i>	<u>Afternoon Track 4</u> Seminar: Creating value in North-South collaboration <i>Harikrishnan Tulsidas (UNECE), Magnus Ericsson (RMG), tbc</i>	<u>Afternoon Track 5</u> Site visit to facilities of the Geological Survey of Slovenia (GeoZS) & Slovenian National Building and Civil Engineering Institute (ZAG)
16.00	Coffee break				
16.30	<u>Opening panel discussion</u> Industry, policy and civil society – is there common ground on resource policies? <i>Moderated by Alessa Hool (ESM Foundation, IRTC Coordinator)</i>				
17.30	Welcome Apéro-Dinner				

Thursday, February 20

8.00	Welcome coffee & registration		
9.00	Welcome by local host and organizers		
9.15	Welcome Keynote: From raw material policies to practice <i>Bernd Schäfer, CEO EIT Raw Materials</i>		
9.45	Strategies to mitigate supply risks: company testimonials <i>Andrea Di Masi (SQM), Matej Zapotnik (Magneti), and tbc</i> Chaired by Peter Buchholz (DERA)		
10.45	Coffee break		
11.15	Session 1: Risk awareness: Monitoring and forecasting <i>Chaired by Braeton Smith (Argonne National Laboratory), Robert Pell (Minviro, UK), Yanan Liang (Leiden University)</i>	Session 2: Managing environmental and social risks <i>Chaired by Peng Wang (Chinese Academy of Sciences), Valeria Superti (ecoinvent, Switzerland), Jessica Buendía Sanchez (EITI, Norway)</i>	
12.45	Lunch		
14.15	Industry Briefings		
	1. Strategic projects under the CRMA, and financing opportunities <i>Constanze Veeh (DG GROW, European Commission), Tae-Yoon Kim (IEA)</i>	2. Standards in the CRM Field – an Overview <i>Neda Bahremandi (REIA), Kotaro Shimizu (MUFGE)</i>	3. Real-time raw material risk monitoring <i>Peter Buchholz (DERA)</i> <i>(max. 40, first come - first serve)</i>
15.00	Talent meets industry: Innovative solutions for current CRM challenges Presenters showcase how their research is applicable in an industry context and contributes to mitigating CRM supply risks to three industry representatives <i>Chaired by Patricia Bingoto (McKinsey), Irina Oswald (Apple), and tbc</i>		
16.15	Coffee Break		
16.45-18:15	Session 3: Risk mitigation through mining and recycling <i>Chaired by David Bengio (Carester), Tabatha Chavez Mathus (ICMM, Chile), Karen Hanghøj (BGS, UK)</i>	Session 4: Shifting Perspectives: tackling the demand side of CRMs <i>Chaired by Akanksha Tyagi (CEEW, India), Rajarshi Sahai (MobilityFund, Netherlands), Saurav Roy (University of Cambridge, UK)</i>	

From 18.45	Gala dinner
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Friday, February 21

08:00	Welcome Coffee	
08.45	Welcome and recap of day 1	
09.00	Poster speed presentations	
09.30	<p>Regulatory shifts and their influence on CRM security and sustainability – Balancing impacts and interests</p> <p style="text-align: center;"><i>Moderated by Luis Tercero (Fraunhofer ISI)</i></p>	
10.30	Coffee break	
11.00	<p><u>Session 5: The Economic Landscape: regulation, trade, and finance in the CRM Sector</u></p> <p><i>Chaired by Kotaro Shimizu (Mitsubishi Research, Japan), Rod Eggert (Colorado School of Mines, USA), Lucas Mialhes (Global Trade Alert)</i></p>	<p><u>Session 6: Breaking Boundaries: Exploring Novel Frontiers in the CRM Sector and beyond</u></p> <p><i>Chaired by Min-Ha Lee (Stanford & KITECH, USA/Korea), Anthony Ku (Xiron Global), Thibaut Maury (JRC, EC)</i></p>
12:30	<i>Lunch & poster prize</i>	
14:00	<p>Spotlight: European Critical Raw Materials projects</p> <p style="text-align: center;"><i>Organized by Vitor Correia and Marko Komac (INTRAW)</i></p>	
15.30	Session Recaps by the Chairs	
15.45	Conference Closing	
16.00	Farewell coffee	



Session and event descriptions

Scientific sessions

Session 1: Risk Awareness: Monitoring and Forecasting

Chaired by Braeton Smith (Argonne National Laboratory, USA), Robert Pell (Minviro, UK), and Yanan Liang (University of Leiden, Netherlands)

This session will explore methods to monitor CRM risks, with an emphasis on the critical importance of risk awareness in the management of CRMs. Topics include the determination of criticality, the presentation and evaluation of CRM assessment tools, Material Flow Analysis (MFA), and Life Cycle Assessment (LCA). We are interested in presentations that address considerations on data availability and its impacts, as well as newly developed data, available methodologies and tracking tools, their integration, insights provided, and inherent limitations. Contributions should also consider the intended users of methodologies and tools and routines for their effective application.

Keywords: CRM assessment, MFA, LCA, monitoring tools, tracking transparency, risk management

Session 2: Managing Environmental and Social Risks

Chaired by Peng Wang (Chinese Academy of Sciences, China), Valeria Superti (ecoinvent Association, Switzerland), and Jessica Buendía Sanchez (Extractive Industries Transparency Initiative, Norway)

The extraction and processing of Critical Raw Materials (CRMs) are essential for transitioning to a low-carbon economy, but they also pose significant environmental and social risks. This session will concentrate on the actual measures and strategies to manage and mitigate these risks effectively. We encourage participants to submit actionable insights and practical examples on, amongst others:

- Effective utilization of environmental data for risk management
- Actions and implementation strategies for social data
- Stakeholder engagement techniques
- Adoption and adaptation of industry best practices, guidelines, and standards

We are particularly interested in contributions that highlight real-world applications of tools and strategies for due diligence, regulatory compliance, and initiatives aimed at reducing environmental and social impacts. Submissions should demonstrate how these actions lead to effective mitigation of risks in both planning and operational phases.

Keywords: environmental management, environmental and social data, LCA application, SLCA, industry standards, stakeholder perspectives, regulatory compliance



Session 3: Risk Mitigation through Mining and Recycling

Chaired by Karen Hanghøj (BGS, UK), David Bengio (Carester, France), and Tabatha Chavez Mathus (ICMM)

This session invites research on the multifaceted aspects of CRM extraction and recycling and strategies on how primary and secondary sourcing can effectively mitigate supply risks. We welcome studies on exploration, mining practices, community benefits, responsible sourcing, and the technical, financial, and policy challenges inherent in these processes. The session also welcomes work on the utilization of the urban mine. Moreover, contributions discussing advancements in recycling technologies, waste utilization, and the logistics of recycling chains will be highly valued.

Keywords: exploration, mining, community benefits, recycling technologies, urban mining, responsible sourcing, environmental impacts

Session 4: Shifting Perspectives: Tackling the Demand Side of CRMs

Chaired by Rajarshi Sahai (Mobility Fund, Netherlands), Akanksha Tyagi (CEEW India), and Saurav Roy (University of Cambridge, UK)

Considerations on CRM risk mitigation usually focus on strategies for increasing supply. This session delves into the demand side, seeking contributions on approaches for effective reduction of CRM consumption and creating more certainty of demand through transparency and policy/fiscal measures that can transform the reliance on critical raw materials and the underlying market forces. Topics of interest include circular strategies on all levels, sufficiency approach to consumption i.e. optimum use and right-sizing of solutions based on needs rather than wants of conspicuous consumption, efficiency improvements, demand forecasting & nudging, technological innovations, policy & fiscal measures, market-making innovations, supply chain management, material and technological substitution, and sustainable design. We also encourage submissions on innovative business models promoting B2B relations, leasing, sharing, and other strategies aiming at CRM demand assessment, projection and reduction.

Keywords: demand reduction, demand certainty, market signaling, raw materials consumption, sufficiency, circular economy, efficiency, technology innovation, public policy, market making, substitution, sustainable design, supply chains, right-sizing



Session 5: The Economic Landscape: Regulation, Trade, and Finance in the CRM Sector

Chaired by Roderick Eggert (Colorado School of Mines, USA), Kotaro Shimizu (Mitsubishi UFJ Financial Group, Japan), and Lucas Miaillhes (Institut Catholique de Lille, France)

This session will delve into the economic aspects of the CRM industry, covering regulatory challenges and opportunities, trade dynamics, and financial risk management. We encourage submissions that discuss CRM price developments, financial risk hedging, trade under geopolitical changes, policies addressing material dependence on a bi- or multilateral level, and the broader economic impacts of CRM regulation and trade. We also welcome submissions on investment and innovations in trade finance, as well as required data for decision-making. Contributions that explore regulatory challenges, trade agreements, and new economic models that address the financial sustainability of CRM supply chains are highly encouraged.

Keywords: regulation, prices, trade dynamics, financial risk management, policy implications, trade finance, investment

Session 6: Breaking Boundaries: Exploring Novel Frontiers in the CRM Sector and Beyond

Chaired by Anthony Ku (Xiron Global, USA), Min-Ha Lee (Stanford University and KITECH, USA/Korea), and Thibaut Maury (JRC, Italy)

This forward-looking session seeks to explore groundbreaking technologies and approaches impacting the CRM sector. We invite abstracts on novel technologies that might drive future CRM demand, like quantum computing, and discussion of ideas for unconventional resource supply, such as deep sea and space mining, including broader impact and regulatory framework of these areas. We also invite contributions on new monitoring tools and other novel methodologies or areas that extend beyond traditional frameworks, such as those based on artificial intelligence. Furthermore, submissions that investigate usually less regarded materials, such as non-mineral resources, are highly encouraged.

Keywords: new methodologies, emerging technologies, global dynamics, unconventional resources, innovative approaches



Other sessions and events

Pre-conference webinar 1: Critical Raw Materials: why should we care?

Featuring Barbara Reck (Yale School of the Environment), organized by Martin Hillenbrand (University of Bayreuth)

[Register here for free](#)

The first webinar in the IRTC2025 preparatory webinar series introduces the fundamentals of critical raw material (CRM) assessments and examines the role of CRMs in global resource management. Featuring Barbara Reck from the Yale School of the Environment, this session provides an in-depth look at foundational principles of CRM evaluation, focusing particularly on the original Yale methodology for assessing material criticality. Participants will explore the evolution of criticality research, including its historical development, global CRM supply challenges, and industry strategies to mitigate criticality (e.g., through circularity). Attendees will gain a nuanced understanding of why criticality frameworks were developed and their impact on resource management and industry decision-making. This session will lay the groundwork for further discussions at the upcoming IRTC conference and the other IRTC25 webinars.

Pre-conference webinar 2: The paradox of Net Zero Transition: The role of Critical Metals

Organized by Daniele Perossa (Politecnico di Milano) and Malsha Piyumangi (Greener Tech Consulting)

Pre-conference webinar 3: Navigating the Evolving Landscape of Critical Mineral Policy

Organized by Jessica Buendía Sanchez (Extractive Industries Transparency Initiative)

Pre-conference webinar 4: Mining Future: Social and Cultural Ties of Mining Communities and Cooperations

Organized by Saurav Roy (University of Cambridge) and Prosper Pelo (Global Alert)

Junior Board workshop “UNFC meets CRMA – A forward-thinking perspective”

Organized by Marina von Vietinghoff-Scheel (BGR; IRTC Junior Board)

This workshop explores the intersection between the United Nations Framework Classification for Resources (UNFC) and the European Critical Raw Materials Act (CRMA), focusing on strategic projects and future applications. The goal is to foster a peer-group discussion to understand how UNFC can enhance resource classification, especially in the context of critical raw materials, while addressing gaps and challenges in the EU and beyond.



Workshop on Circular Battery Chains

Nora Bartolomé, Kirsten Remmen (Empa), Priscilla Caliandro (BFH)

This workshop on sustainable battery value chains will explore how to enhance the circular economy for lithium-ion batteries, with a focus on end-of-life stages. Participants will discuss strategies to reduce environmental impact and mitigate supply chain risks while expanding their knowledge of battery technology. The workshop will specifically use and discuss results from the [CircuBAT](#) project.

Technical course “Addressing challenges in the REE value chain”

Organized by David Bengio (Carester) and Gareth Hatch (REIA)

This workshop will focus on the key stages involved in the processing of Rare Earth Elements (REE). It will be divided into four sections: mining and physical processing, hydrometallurgy, metal making and alloying, and permanent magnet production including a brief introduction to recycling. Participants will gain practical insights into the entire REE production chain, from extraction to final material production.

Round Table: Skills, Training and Education in Critical Raw Materials

Organized by David Peck (TU Delft & Estonian Business School), Eleanora Brighenti (DANA) Jan Eggert (EIT Raw Materials)

This round table will focus on the most ‘critical’ of resources, people. Previous IRTC events have highlighted the gaps in policy and actions needed from all stakeholders to address the numbers of people needed, across the entire materials value chain, up to 2030 and beyond. This track will not only focus on full time students, but also professional, lifelong learning of employees. The panellists on the round table will represent key stakeholder perspectives, including Universities, Research & Technology Organisations, Companies, funders, and policy makers. Participants will be encouraged to participate and will gain insights into the scope and scale of the challenges and possible pathways to address the worrying shortage of people with CRM skills and knowledge.

Seminar “Integrating Primary Data Collection Using Multi-Party Workflows to Enhance LCA and Criticality Assessments for Companies”

Organized by Robert Pell (Minviro)

This seminar aims to equip participants with the knowledge and practical skills needed to integrate primary data collection through multi-party workflows to improve the quality of Life Cycle Assessment (LCA) and criticality assessments within their organizations. The session will include a mix of theoretical knowledge, case studies, and hands-on activities with the Minviro software.

Strategies to mitigate supply risks: company testimonials

Andrea Di Masi (SQM), Matej Zapotnik (Magnet), and tbc

Chaired by Peter Buchholz (DERA)



Raw materials are at the very beginning of the industrial value chain, and therefore have a major influence on downstream economic sectors, especially in light of major challenges created by the energy transition, digitalisation and increasing global competition. To remain innovative in the future, a reliable and sustainable supply of raw materials – metals and industrial minerals in particular – is essential. The situation in the global raw materials markets has changed significantly in recent years, and concerns about supply chain resilience are rising. The most visible sign of this uncertainty is the increase in price and price volatility of many raw materials. The supply shortfalls in the wake of the Covid-19 pandemic, the Russian war in Ukraine, of new trade restrictions or production losses and logistical problems within the global transport infrastructure are also showing just how important a reliable supply of raw materials is for producers and manufacturers. The session examines strategies of companies on how to secure supplies of raw materials, and hence enable more reliable planning. Out of a large number of individual risk mitigation measures, companies present their approaches and discuss, how procurement strategies and collaboration along the supply chain can be improved. The session may also include a discussion on how effective new government measures and support mechanisms are to improve global supply chains.

Briefing “Standards in the RM field – an overview”

Organized by Neda Bahremandi (REIA) and Kotaro Shimizu (MUFG)

A keynote talk will provide an overview of current standards in Critical Raw Materials (REEs and other CRMs, including traceability, circularity, and sustainability). It will be followed by an expert Panel Discussion on the implementation of the standards for specific critical raw materials.

Briefing “Real-time raw material risk monitoring”

Peter Buchholz (DERA), Industry partners to be confirmed

This session will explore methods to monitor CRM risks in near real-time with the aim of identifying price and supply risks at an early stage.

Resilient supply chains have become a key issue for manufacturing companies to ensure a stable supply for their manufacturing processes and for governments to ensure the stable supply of essential goods to society. Building diversified supply chains and monitoring the performance of suppliers are major mitigation strategies to counteract disruptions at an early stage. Supply chain risk management and monitoring of supply chains using big data analytics are getting increasing attention. The growing number of data sources has huge implications for the reporting of incidents that may disrupt supply chains. The sooner relevant information is disclosed to stakeholders and analysed the better the preventive strategies generally are. Timely information prolongs the reaction time and may help to reduce the severity of an incident. This session highlights a science-based real-time tracking analysis of risks in the mineral raw material markets using big data analytics provided by a commercial system.

Keywords: Big Data, AI, real-time monitoring, CRM risk management, monitoring tools, supply chain analysis