



# IRTC24: Raw materials in a changing world

February 21-23, Torino, Italy

Tuesday, February 20

[IRTC-Training course](#): A single-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.

Wednesday, February 21

9.00	<i>Registration and coffee at Politecnico di Torino</i>				
10.00	<u>Workshop A:</u> JRC Science for Policy Workshop  <b>fully booked</b>  <i>Organized by Fabrice Mathieux, Umberto Eynard, Thibaut Maury (Joint Research Center)</i>	<u>Workshop B:</u> Technical aspects of REE mining and processing  <i>Organized by Alain Rollat (Carester)</i>	<u>Workshop C:</u> What is responsible mining?  <i>Organized by Paul Ekins (UCL)</i>	<u>Workshop D:</u> Critical Youth in the Raw Materials Environment  <i>Organized by Bianca Neumann, Ghadi Sabra (RMYMG), Francisco Veiga Simão (EIT RawMaterials Alumni), Dhruv Warrior (CEEW India)</i>	<u>Site visit I:</u>  <i>PV recycling &amp; industrial raw materials company</i>  <i>Organized by Gian Andrea Blengini, Politecnico di Torino</i>
12.00	Lunch buffet at Politecnico di Torino				

13.00	<p><u>Workshop E:</u> Emerging sustainability standards</p> <p><i>Organized by Harikrishnan Tulsidas (UNECE), Luisa Moreno (Tahuti Global)</i></p>	<p><u>Workshop F:</u> Sustainable Finance and Raw Material Value Chains – Friends or Enemies?</p> <p><i>Organized by Antonella Amadei (independent consultant), Jana Plananksa (Norge Mining), Tom Dunlap (DIACSUS)</i></p>	<p><u>Workshop G:</u> Policies on strategic industries</p> <p><i>Organized by Min-Ha Lee (KITECH), Andrew Grotto (Stanford University), Alan Hurd (Los Alamos National Laboratory), Ryan Ott (Ames National Laboratory), Evangelia Moschopoulou (NCSR Demokritos)</i></p>	<p><u>Workshop H:</u> A new run on Africa and South America</p> <p><i>Organized by Claudia Baranzelli (OECD), Carlos Peiter (CETEM)</i></p>	<p><u>Site visit II:</u> <i>Politecnico di Torino Labs</i></p> <p><i>Organized by Gian Andrea Blengini, Politecnico di Torino</i></p>
15.00	<i>Coffee at the conference center</i>				
16.00	<p><b>“Mutually beneficial”? Creating value in cross-country cooperation</b> <i>Plenary discussion, co-organised by OECD</i></p> <p><i>Harmony Musiyarira (Namibia University of Science and Technology), Murtiani Hendriwardani (Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development ), Paul Ekins (International Resource Panel), Stéphane Bourg (OFREMI), Nobuyuki Kikuchi (Mission of Japan to International Organisations in Vienna), Isabelle Magne (European Commission, DG INTPA), Andrea Di Masi (SQM);</i> <i>moderated by Claudia Baranzelli, OECD</i></p>				
17:45	<p>Conference registration and welcome reception <i>Check-in, meet &amp; greet</i></p>				
18:30	<p>Apéro-dinner <i>Snacks, drinks &amp; networking</i></p>				



Thursday, February 22

08.00	Conference registration & coffee	
09.00	Introductory remarks by the conference organizers	
09.15	Welcome by the Italian Ministry of Industry and Made in Italy and the Rector of Politecnico di Torino	
09.30	Opening speech by EIT RawMaterials	
09.45	Keynote speech: <b>Transition Minerals and New Extractive Frontiers: An Indigenous Perspective</b> Edson Krenak (Indigenous Activist and Researcher, Cultural Survival/Vienna University)	
10.15	Session presentations by the conference Chairs	
10.30	Coffee Break	
11.00	<p><b>Session 1:</b> Emerging raw materials policies and their impacts</p> <p><i>Chaired by Rod Eggert (Colorado School of Mines), Weiqiang Chen (Chinese Academy of Sciences), and Karen Hanghøj (BGS and UNECE Expert Group for Resource Management)</i></p>	<p><b>Session 2:</b> Forecasting CRM supply and demand</p> <p><i>Chaired by Constanze Veeh (DG GROW, European Commission), Paul Lusty (Fastmarkets), and Tae-Yoon Kim (IEA)</i></p>
11.00	<p>Global race to secure mineral supply chains: Collaboration, Competition, or Inequity?</p> <p><i>Kriti Shah (India ZEV Research Centre, ITS, UC Davis USA), Shivani (India ZEV Research Centre, ITS, UC Davis India)</i></p>	<p>Combined assessment of energy and material supply risks: a multi-objective energy system optimization</p> <p><i>Gianvito Colucci (MAHTEP Group, Department of Energy "Galileo Ferraris", Politecnico di Torino), Valentin Bertsch (Chair of Energy Systems and Energy Economics, Ruhr-Universität Bochum, Germany), Valeria di Cosmo (Department of Economics and Statistics "Cognetti de Martiis", Università degli Studi di Torino), Laura Savoldi (MAHTEP Group, Department of Energy "Galileo Ferraris", Politecnico di Torino)</i></p>
11.15	<p>Critical Minerals: Geopolitics, Security, and Balancing State-Market Dynamics</p> <p><i>Vlado Vivoda (Rabdan Academy, UAE), Simon Lacey (World Economic Forum)</i></p>	<p>Meeting an escalating Lithium-Ion Battery demand: Global Graphite Supply-Demand Scenarios</p> <p><i>Francis Isidore Barre (IMPACT, NILU, Industrial Ecology Programme, Department of Energy and Process Engineering, NTNU), Romain Guillaume Billy (Industrial Ecology Programme, Department of Energy and Process Engineering, NTNU), Fernando Lopez (Industrial Ecology Programme, Department of Energy and Process Engineering, NTNU), Daniel Beat Müller (Industrial Ecology Programme, Department of Energy and Process Engineering, NTNU)</i></p>

11.30	National strategies to secure critical raw materials for high-tech industries of Korea  <i>Min-Ha Lee (KITECH, CISAC, Stanford University)</i>	Unlocking the resources of end-of-life ICEVs: contributing platinum for green hydrogen production  <i>Yanan Liang (CML, Leiden University), Rene Kleijn (CML, Leiden University), Ester van der Voet (CML, Leiden University)</i>
11.45	Current landscape and future prospects of the lithium in Bolivia  <i>America Rocio Quinteros Condoretty (LUT University)</i>	Towards more reliable decision making via an enhanced composition model enabling recoverability assesment  <i>Kirsten Remmen (Empa), Manuele Capelli (Empa), Matthias Rösslein (Empa), Joana Francisco Morgado (Empa), Susanne Rotter (Technische Universität Berlin), Nathalie Korf (Technische Universität Berlin), Katharina Kippert (Technische Universität Berlin), Stewart Charles McDowall (Institute of Environmental Sciences (CML), Leiden University), Deepjyoti Das (Chalmers University of Technology), Maria Ljunggren (Chalmers University of Technology), Patrick Wäger (Empa)</i>
12:00	<i>Discussion, moderated by the session Chairs</i>	<i>Discussion, moderated by the session Chairs</i>
12.30	<i>Lunch and poster exhibition</i>	
14.00	Poster (incl. business ideas) speed-presentation	
14.30	<b>Keynote conversation i) Industry responses to supply chain risks</b> <i>Joseph Herzog (CM Aerospace, former GE), Hiroko Shinkai (Hitachi, Ltd.), Karol Bednarek (VDA); moderated by Luis Tercero, Fraunhofer ISI</i>	
15.15	<i>Coffee Break</i>	
15.45	<b>Session 3:</b> New forms of sustainable value creation  <i>Chaired by Anders Sand (Boliden), Samuel Carrara (JRC), and Patrick Wäger (Empa)</i>	<b>Session 4:</b> Emerging sectors and materials  <i>Chaired by Patrice Christmann (KRYSMINE), Min-Ha Lee (KITECH), and Magnus Ericsson (RMG Consulting)</i>
15.45	Circularity to reduce criticality from a primary supply perspective: micro to macro strategies  <i>Eva Marquis (University of Exeter), Karen Hudson-Edwards (University of Exeter), Frances Wall (University of Exeter), Carol Pettit (University of Exeter)</i>	Circular Economy Research and Innovation (R&I) on Strategic Technologies  <i>Brian Baldassarre (European Commission, Joint Research Centre), Alejandro Buesa (European Commission, Joint Research Centre), Paola Albizzati (European Commission, Joint Research Centre), Malgorzata Jakimów (European Commission, Joint Research Centre), Hans Saveyn (European Commission, Joint Research Centre), Samuel Carrara (European Commission, Joint Research Centre)</i>
16.00	Market strategies for scaling solar module recycling	Next Generation batteries adoption: a survey-based study on users and experts' perspectives.

	<i>Akanksha Tyagi (Council on Energy, Environment and Water, New Delhi, India), Neeraj Kuldeep (Council on Energy, Environment and Water, New Delhi, India), and Arzoo Kumari (Indian Institute of Technology Bombay)</i>	<i>Alessandra Manzini A (Cleopa GmbH), Laura Martinez (Cleopa GmbH), Pauliina Harrivaara (Cleopa GmbH)</i>
16.15	The politics and sustainability of critical metals  <i>Sampri Mahanty (University College London), Frank Boons (University of Manchester, Maastricht University), Brian Baldassare (Joint Research Centre, European Commission), Riza Batista Navarro (University of Manchester)</i>	A descriptive study of innovativeness of Rare-Earth-Elements recycling sector based on patents  <i>Marinella Favot (Area Science Park, Trieste), Riccardo Priore (Patlib - Area Science Park), Marco Compagnoni (University of Trento)</i>
16.30	Reducing primary critical raw materials through battery reuse & recycling in mining electrification  <i>Maria Ljunggren (Division of Environmental Systems Analysis, Chalmers University of Technology), Harald Helander (Division of Environmental Systems Analysis, Chalmers University of Technology)</i>	Helium resource supply and demand shifts: Material flow analysis  <i>Ankesh Siddhantakar (School of Environment, Enterprise and Development, University of Waterloo), Komal Habib (School of Environment, Enterprise and Development, University of Waterloo), Steven B. Young (School of Environment, Enterprise and Development, University of Waterloo)</i>
16.45	<i>Discussion, moderated by the session Chairs</i>	<i>Discussion, moderated by the session Chairs</i>
17.15	<b>Poster session</b>	
18:30	<b>Conference dinner</b>	

## Friday, February 23

08.30	Coffee	
09.00	<b>Welcome and recap of day 1</b>	
09.15	<b>Update on the Critical Raw Materials Act</b> <i>Constanze Veeh, European Commission</i>	
09.30	<b>Industry intervention: The evolution of the materials in the vehicles of the future – raw materials and new challenges</b> <i>Nello Li Pira, Stellantis</i>	
10.00	<b>Keynote conversation ii) Can we make do with less?</b> <i>Diego Marin (European Environmental Bureau), Tae-Yoon Kim (IEA), Astrid Wynne (Techbuyer Europe); Jean-Denis Curt (Renault); moderated by Dieuwertje Schrijvers, WeLOOP</i>	
10.45	<b>Coffee break</b>	
11.15	<b>Session 5: New data and tools</b>  <i>Chaired by Peter Buchholz (DERA), Tatiana Vakhitova (Ansys), and Anthony Ku (Xiron Global)</i>	<b>Session 6: New ideas on critical raw materials</b>  <i>Chaired by Yulia Lapko (Politecnico di Milano), Akanksha Tyagi (CEEW India), and Patrick d'Hugues (BRGM)</i>

11.15	<p>Capabilities and limitations of AI Large Language Models (LLM) for materials criticality research</p> <p><i>Anthony Ku (Xiron Global Ltd)</i></p>	<p>How are critical raw materials different from a producer country's perspective?</p> <p><i>Marianna Ottoni (SEED, Faculty of Environment, University of Waterloo), Komal Habib (SEED, Faculty of Environment, University of Waterloo), Steven B. Young (SEED, Faculty of Environment, University of Waterloo)</i></p>
11.30	<p>Deconstructing nickel trade: a high-resolution material flow analysis of a critical supply chain</p> <p><i>Marceau Cormery (Norwegian University of Science and Technology), Romain Guillaume Billy (Norwegian University of Science and Technology), Fernando Aguilar Lopez (Norwegian University of Science and Technology), Barbara Reck (Center for Industrial Ecology, Yale School of the Environment), Daniel Beat Müller (Norwegian University of Science and Technology)</i></p>	<p>The Dark Sides of Sustainability: extractivism, global asymmetries and perspectives on transitions</p> <p><i>Luíza Cerioli (University of Kassel)</i></p>
11.45	<p>The Economic Value Dissipation Potential method applied to a lithium-ion battery recycling process</p> <p><i>Jair Santillán-Saldivar (BRGM), Emmanuelle Cor (Univ. Grenoble Alpes, CEA), Antoine Beylot (BRGM), Elise Monnier (Univ. Grenoble Alpes, CEA), Stéphanie Muller (BRGM)</i></p>	<p>Technology-level supply disruption probabilities of RES and energy storage technologies</p> <p><i>Steffen Schlosser (German Aerospace Center, Institute of Networked Energy Systems), Tobias Naegler (German Aerospace Center, Institute of Networked Energy Systems)</i></p>
12.00	<p>Leveraging supplier material data to inform metal scarcity assessments in the automotive industry</p> <p><i>Felipe Bitencourt de Oliveira (Chalmers University of Technology, Volvo Car Corporation), Anders Nordelöf (Chalmers University of Technology), Maria Bernander (Volvo Car Corporation), Björn Sandén (Chalmers University of Technology)</i></p>	<p>From catch-up to forging ahead through (green) windows of opportunity: China and the REEs</p> <p><i>Mihaela Gaglioti Roibu (Copenhagen Business School, Department of Organization), Stine Haakonsson (Sino-Danish Center)</i></p>
12.15	<i>Discussion, moderated by the session Chairs</i>	<i>Discussion, moderated by the session Chairs</i>
12:45	<i>Lunch &amp; poster prize</i>	
14:00	Session recap by the session Chairs	
14.30	Skills required for the future: learnings from the conference	
14:45	Conference closing	
15.00	Farewell coffee	
15.30	Rooms available for individual meetings ( <a href="#">on demand</a> )	



## Locations

### February 20

IRTC Training, starting at 10 am: Sala Riunioni DIATI 3, Politecnico di Torino, Corso Castelfidardo, 39  
Meeting point 9.15-9.30 am: Main entrance, Corso Duca degli Abruzzi, 24, 10129 Torino TO

### February 21

	Politecnico di Torino					Centro Congressi Unione Industriale			
	Welcome area	Room 1	Room 3	Room 5	Room 7	Welcome area	Rooms Piramide and Torino	Room Giovanni Agnelli	Historic rooms
9.00	Registration and coffee								
10.00		Workshop A	Workshop B	Workshop C	Workshop D				
12.00	Lunch Buffet								
13.00		Workshop E	Workshop F	Workshop G	Workshop H				
15.00						Conference registration	Coffee break		
16.00								Plenary discussion	
17.45									
18.30									Apéro-dinner

### February 22

	Centro Congressi Unione Industriale			
	Welcome area	Rooms Piramide and Torino	Room Giovanni Agnelli	Room Piemonte
8.00	Registration	Coffee		
9.00			Introductory remarks by the conference organizers	
9.15			Welcome	
9.30			Opening speech by EIT RawMaterials	
9.45			Keynote speech by Edson Krenak	
10.15			Session presentations by the conference Chairs	
10.30			Coffee break	

11.00			Session 1: Emerging raw materials policies and their impacts	Session 2: Forecasting CRM supply and demand
12.30		Lunch and poster exhibition		
14.00			Poster speed-presentation	
14.30			Keynote conversation i) Industry responses to supply chain risks	
15.15		Coffee break		
15.45			Session 3: New forms of sustainable value creation	Session 4: Emerging sectors and materials
17.15		Poster Session		

18.30: Bus service from Centro Congresso Unione Industriale to Conference Dinner  
Esperia Restaurant, Corso Moncalieri 2

### February 23

Centro Congressi Unione Industriale					
	Welcome area	Rooms Piramide & Torino	Room Giovanni Agnelli	Room Piemonte	
8.30	Registration	Coffee			
9.00			Welcome and recap of day 1		
9.15			CRMA update		
9.30			Industry intervention		
10.00			Keynote conversation ii) Can we make do with less?		
10.45			Coffee break		
11.15				Session 5: New data and tools	Session 6: New ideas on critical raw materials
12.45			Lunch & poster prize		
14.00				Session recap by the session Chairs	
14.30				Skills required for the future: learnings from the conference	
14.45				Conference closing	
15.00			Farewell coffee		



## Scientific sessions

Each session will consist of four 15-minute presentations, followed by a 30-minute discussion session with the presenters, which will be moderated by the session Chairs. The submission period for abstracts to be considered for inclusion in the scientific sessions commences on September 11, 2023, and will remain open until October 24. During the review process, the three co-chairs for each session will conduct a selection, choosing four submissions for oral presentations and further submissions for inclusion in the poster exhibition.

### Session 1: Emerging raw materials policies and their impacts

*Chaired by Rod Eggert (Colorado School of Mines), Weiqiang Chen (Chinese Academy of Sciences), and Karen Hanghøj (BGS and UNECE Expert Group for Resource Management)*

The global landscape of raw material strategies is evolving rapidly as nations seek to master the green transition, secure their supply chains, maintain economic stability, and address sustainability challenges. This session aims to explore the diverse approaches, their associated challenges and opportunities, and how they impact stakeholders and market dynamics. Topics of interest include categories of critical and strategic raw materials and the effects of these classifications, ambitions to strengthen economic security, undertakings to increase transparency and sustainability and their effects, and how new policies influence resource security, innovation, sustainability, and global collaboration. We welcome contributions from a broad range of stakeholders, including researchers on policies from academia, think tanks and private institutes, international organizations, government representatives, and affected stakeholders.

### Session 2: Forecasting critical raw materials supply and demand

*Chaired by Constanze Veeh (DG GROW, European Commission), Paul Lusty (Fastmarkets), and Tae-Yoon Kim (IEA)*

This session seeks to delve into forecasts on critical raw material supply and demand, shedding light on the equilibrium between the availability and necessity of essential raw materials. We aim at presentations of study results, time frames, perspectives on scenario modelling, as well as insights on pivotal parameters and their consequential impacts on predictive analyses. Another topic of interest includes ways to enhance the availability of reliable data and harness the potential of digital tools to enable better market projections. We look forward to submissions from international organizations conducting forecasting, academics in the field, commercial providers, consulting companies, and others.



### Session 3: New forms of sustainable value creation from CRMs

*Chaired by Anders Sand (Boliden), Samuel Carrara (JRC), and Patrick Wäger (Empa)*

This session aims to provide insights into novel and/or unconventional forms of value creation from extraction and production related to critical raw materials. These may include new and early-stage ideas, as well as established processes. Focus is placed on a wide range of topics, including but not limited to: innovative business models, technical innovations in the mining and recycling sector, sustainability and circularity aspects, alternative forms of value creation through material by-production and valorization from wastes, and substitution. We invite contributions from academic and research institutions, as well as innovative industry players, start-ups, and collaborative projects.

### Session 4: Emerging sectors and technologies

*Chaired by Patrice Christmann (KRYSMINE), Min-Ha Lee (KITECH), and Magnus Ericsson (RMG Consulting)*

This session delves into emerging sectors and technologies within along the critical raw materials field. It encompasses a wide array of topics, ranging from newly evolving products to their associated processes – for example, in sodium-ion batteries, superconductors or green steel. Beyond these, the exploration extends to the application of CRMs in less visible sectors in the debate on CRMs, like pharmaceuticals, cyber security or agriculture. Moreover, our focus extends to integrating CRMs in rapidly evolving domains, exemplified by the fusion energy, hydrogen economy, quantum computing, space technology, and water electrolysis. We invite contributions from diverse participants, including pioneering companies in emerging sectors, technology start-ups, researchers working in the intersection of CRMs and perspective technologies for the future sustainable economy, and all other stakeholders working in this advancing field.

### Session 5: New data and tools

*Chaired by Peter Buchholz (DERA), Tatiana Vakhitova (Ansys), and Anthony Ku (Xiron Global)*

In the session "New Data and Tools for Critical Raw Materials," diverse contributions are sought to explore the forefronts of this field. This session seeks abstracts encompassing a range of topics, including tools for market monitoring, carbon footprint assessment via digital platforms, the integration of artificial intelligence and blockchain for CRM management, digital technologies for supply chain modeling, the significance of product passports, novel data processing tools, and the role of AI-powered resources like ChatGPT in advancing the understanding of critical raw material dynamics. We extend this invitation to data providers, field researchers, and entities showcasing practical instances of digital tool implementation within the CRM landscape.

### Session 6: New ideas on critical raw materials

*Chaired by Yulia Lapko (Politecnico di Milano), Akanksha Tyagi (CEEW India), and Patrick d'Hugues (BRGM)*

This session serves as a platform for the exploration and dissemination of pioneering concepts and research in the critical raw materials field. We invite contributions that push the boundaries of innovation, presenting fresh perspectives and novel approaches that defy conventional



categorizations. This session is the perfect avenue for topics that don't neatly align with the predefined themes of other sessions, giving voice to ideas that might otherwise go unheard. We encourage the submission of abstracts from less represented disciplines, as well as cross-disciplinary research endeavors that bridge the gaps between traditionally distinct fields. We encourage the presentation of innovative ideas and research that challenge existing paradigms.

## Workshops

The workshops are 2-hour events independently organized by various teams and have different formats such as panel debates, presentation series, and open discussions.

Workshop A: Research needs to support policies on critical and strategic raw materials: a workshop organized by the Joint Research Centre **(fully booked, no more registrations possible)**

*Organized by Fabrice Mathieux, Umberto Eynard, and Thibaut Maury (Joint Research Center)*

Resources and Materials criticality had grown up in importance across the globe in recent years and various regions and countries have developed their own list of Critical Raw Materials. Recently, Critical Raw Materials have also been addressed by an increasing number of policies. In the EU for example, the European Commission launched a Critical Raw Materials Act proposal in March 2023 and this contains various provisions and targets in various domains, including strategic projects, enabling conditions, risk monitoring and mitigation, but also on circularity and environmental footprint. Similarly, circularity of key critical raw materials is being addressed by other pieces of legislation such as the battery regulation (e.g. lithium, cobalt) and the vehicle circularity proposal (e.g. permanent magnets). Many other ambitious initiatives on Critical Raw Materials exist in other regions of the world. In the upcoming years, these dynamic global policy developments based on innovative provisions will require substantial technical backing and science-for-policy support. This workshop aims at identifying and discussing with the community knowledge gaps and requirements for scientific advancements related to these policy developments, with a specific focus on circularity and sustainability. Contributions from policy makers, industry (including recyclers) and academia are welcome to address knowledge gaps, for example concerning data, metrics, tools, harmonization schemes. The workshop will be made up of 6 short pitch-style presentations (by Jørgen Hanson, Hydro; Gyslain Ngadi Sakatadi, Politecnico Di Torino; Rikarnto Bountis, EuRIC; Fiorenzo Fumanti, Istituto Superiore per la Protezione e la Ricerca Ambientale; Daniel Beat Müller, NTNU; Akanksha Tyagi, CEEW), followed by a structured discussion. Ideally, the discussion will lead to an initial draft of a research agenda on science-for-policy for the years to come, agreed by various global participants.

[Full workshop A description](#)

Workshop B: Technical aspects of REE mining and processing

*Organized by Alain Rollat (Carester)*

This workshop gathers leading experts at every stage of the magnetic value chain, from REE mining, radioactivity management, separation, metal making, and magnet manufacturing. Each expert will have a presentation of 15 minutes about the current situation in the respective step, discussing challenges and proposing ways to improve the existing processes. Expert speakers include Frances



Wall, University of Exeter; Dato H' K Sia, Malaco Mining; Albert Slot, Less Common Metals; and Oliver Gutfleisch, University of Darmstadt. The presentations will be followed by a 30-minute discussion with the audience. The workshop results will inform a factsheet about current challenges and possible solutions in the magnet value chain.

[Full workshop B description](#)

#### Workshop C: What is responsible mining?

*Organized by Paul Ekins (UCL)*

Everyone these days is calling for 'responsible', and sometimes 'sustainable' mining. But what do these terms mean in real terms? How would mining change if they were to become a reality? And who is going to lead and implement that change? The industry, governments, civil society – all clearly have a role, but who is going to lead the change? This workshop five speakers to explore these critical questions: Helene Piaget, who led the Responsible Mining Index; Lee Mudenda, from the Copperbelt University in Zambia; Murtiana Hendriwardani from the Intergovernmental Forum on Mining, Metals and Sustainable Development; Fabiana Di Lorenzo from the Responsible Minerals Initiative; and Agathe Bukasa from Anglo American. The workshop will be moderated by Professor Paul Ekins of University College London.

[Full workshop C description](#)

#### Workshop D: Critical Youth in the Raw Materials Environment

*Organized by Bianca Neumann (RMYMG), Ghadi Sabra (RMYMG), Francisco Veiga Simão (EIT RawMaterials Alumni), and Dhruv Warrior (CEEW India)*

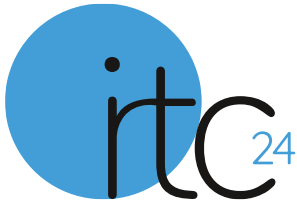
In today's rapidly evolving world, innovation plays a pivotal role in shaping the future of various industries and societies. The conference session, "Critical Youth in the Raw Materials Environment" focuses on the indispensable contribution of youth in fostering innovation and addressing the challenges associated with supply and demand of critical raw materials. By involving young individuals from academia, industry, and governance, this session aims to explore the unique perspectives and fresh ideas that the youth bring to the table and, consequently, to their future. This session will provide a platform for dynamic discussions, knowledge sharing, and the exchange of ideas between academia, industry, civil society and governance, with a specific focus on engaging the youth through young leaders. The workshop will consist of a selection of four young representatives that bring their unique perspective from academia, industry, civil society and governance and give them the opportunity to showcase their innovative and entrepreneurial journeys in front of an expert audience, including Ali Hassan (FreeMountain Consultancy/EIT RawMaterials Alumni), Eva Marquis (University of Exeter), and Léane Verhulst (BRGM).

[Full workshop D description](#)

#### Workshop E: Emerging sustainability standards

*Organized by Luisa Moreno (Tahuti Global) and Harikrishnan Tulsidas (UNECE)*

The world is changing rapidly, as are the expectations and demands for sustainability in the raw materials sector. Emerging sustainability standards, such as UNRMS, GRI, SASB, ICMM principles, TSM, ISO, IRMA, ASI, Copper Mark, and others, are creating new challenges and opportunities for resource



management. How can we adapt and thrive in this changing environment? How can we ensure our raw materials are sourced, processed and used responsibly and efficiently? How can we align and harmonize the different standards and initiatives in the sustainability field? This workshop will explore these questions by providing an overview of the emerging sustainability standards and their implications for the raw materials sector. It will also showcase best practices and examples of how these standards are implemented and applied in different contexts and regions. The workshop will also facilitate a dialogue among the participants, including representatives from governments, industry, academia, civil society and international organizations. The workshop will identify the key challenges and opportunities for achieving sustainability excellence in the raw materials sector and the potential synergies and collaborations among stakeholders.

[Full workshop E description](#)

#### Workshop F: Sustainable Finance and Raw Material Value Chains – Friends or Enemies?

*Organized by Antonella Amadei (independent consultant), Jana Plananska (Norge Mining), and Tom Dunlap (DIACSUS)*

To fulfil the goals of green and digital transition, the demand for critical raw materials (CRMs) is expected to massively grow upwards of 500% by 2050, according to the World Bank. Being constitutive elements of clean technologies from solar panels and electric motors to batteries and electronic devices, their supply will have to massively scale up, first from primary resources. However, there are real challenges to make this happen. New mining operations are very capital intensive with long lead times and with potentially adverse environmental and social impacts. A next generation of companies along the entire CRM value chain, from exploration and mining to processing and recycling, is emerging both in Europe and globally, aiming to make contributions to global goals and clean energy transition while adhering to the highest ESG standards in their operations. How should the investment community approach these new actors and developments? What would it take in terms of ESG assessment, data quality, regulations, and societal perceptions to turn these plans into reality and in turn help achieve the goals of green and digital transition? Join this focused workshop to learn experts' thoughts and views on these questions and others.

[Full workshop F description](#)

#### Workshop G: Policies on strategic industries

*Organized by Min-Ha Lee (KITECH), Andrew Grotto (Stanford University), Alan Hurd (Los Alamos National Laboratory), Ryan Ott (Ames National Laboratory), and Evangelia Moschopoulou (NCSR Demokritos)*

This workshop is focused on the geopolitical approaches of industrial and regulatory policies for critical raw materials and supply chains to support the strategic industries. Through interactive panels and talks, we will explore goals and deliverables for strategic perspectives on digital technologies, such as A.I, and we will handle the geopolitics of sustainable technologies with applied industrial policy for critical raw materials and supply chains, including lesson from current worldwide regulations. Expert speakers include Thomas Lograsso, Ames Laboratory; Soctt McCall, Lawrence Livermore National Laboratory; and Allison Bennett-Irion, Argonne National Laboratory.

[Full workshop G description](#)



## Workshop H: A new run on Africa and South America: sharing raw materials value chains

*Organized by Claudia Baranzelli (OECD) and Carlos Peiter (CETEM)*

Critical raw materials are at the centre of the political agenda of the vast majority of countries worldwide and at the core of the on-going energy and digital transitions. On the one side, minerals-user countries are increasing their efforts to promote secure and robust critical minerals supply chains, as they acknowledge their external dependence for both raw materials supply and their industrial processing. On the other side, there is a huge international pressure to multiply the output of the mining sector for a number of minerals, so mining countries are formulating strategies to leverage their critical minerals resources and expand their role in the global value chains for critical minerals. This workshop focuses on the experience of countries from Africa and South America, and explores questions related to national mineral policies targeting critical and strategic raw materials, trade objectives, and international agreements.

[Full workshop H description](#)

### **IRTC Training course**

This course, organized by the IRTC Training team, and taught by Luis Tercero, Dieuwertje Schrijvers and Alessa Hool. This single-day introductory program covers the fundamentals of criticality and the evaluation of critical raw materials, providing essential background to profit the most from the conference. We take a deep-dive into the EU assessment methodology and participants learn about its composition, factors, indicators, and common data sources. After the course, you will have an insight into the considerations behind criticality assessments, and be able to reproduce a standard procedure of a EU criticality assessment for a given material. We also analyze and discuss evolving CRM policies such as the EU Critical Raw Materials Act and their impact on critical raw materials and their management.

### **Plenary discussion: “Mutually beneficial”? Creating value in cross-country cooperation**

*Harmony Musiyarira (Namibia University of Science and Technology), Murtiani Hendriwardani (Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development ), Paul Ekins (International Resource Panel), Stéphane Bourg (OFREMI), Nobuyuki Kikuchi (Mission of Japan to International Organisations in Vienna), Isabelle Magne (European Commission, DG INTPA), Andrea Di Masi (SQM); moderated by Claudia Baranzelli, OECD*

In the opening plenary discussion, stakeholders from different nations, organizations, and backgrounds will discuss their views on what they consider mutually beneficial agreements on critical raw materials supply, and potential new forms of collaboration.



## Keynote conversations

These 45-minute events are moderated discussions between experts from different backgrounds.

- **Industry responses to supply chain risks**

*Joseph Herzog (CM Aerospace, former GE), Hiroko Shinkai (Hitachi, Ltd.), Karol Bednarek (VDA); moderated by Luis Tercero, Fraunhofer ISI*

The conversation will cover questions such as: How do industries react to current supply risks? How does the current international competition for resources influence them? What are examples of industry responses and why were they taken? What are outlooks for the future?

- **Can we make do with less?**

*Diego Marin (European Environmental Bureau), Tae-Yoon Kim (IEA), Astrid Wynne (Techbuyer Europe); Jean-Denis Curt (Renault); moderated by Dieuwertje Schrijvers, WeLOOP*

Criticality mitigation strategies focus almost exclusively on the supply side – but what about the demand side? How can we reduce demand by circular economy, material efficiency, sufficiency, and/or new economic approaches?

## Cross-sectional topic: Skills needed for the future

*Led by Jan Eggert (EIT RawMaterials), David Peck (TU Delft/UCL) and Eleonora Brighenti (Dana Motion Systems) in collaboration with the session Chairs*

One of the topics we will explore during the conference is the impact of new policies and increased domestic sourcing on required skills and competencies. This will encompass not only the technical skills required for advancing mining and recycling technologies but also the workforce needed to effectively implement these innovations and ensure compliance with new regulations. We will delve into questions surrounding the adaptation of these new skills into existing educational frameworks and identify areas where up-skilling and re-skilling may be necessary to meet evolving demand. During the conference, we aim to consolidate insights on such required skills from the various workshops and sessions, creating a comprehensive overview of the findings.