



“Responsible Mining”: a new paradigm to counter climate change

Peter Tom Jones, Director KU Leuven Institute for Sustainable Metals and Minerals (SIM²)

Business & Human Rights Peer learning meeting
25/10/2024, Egmont Palace, Brussels



KU LEUVEN

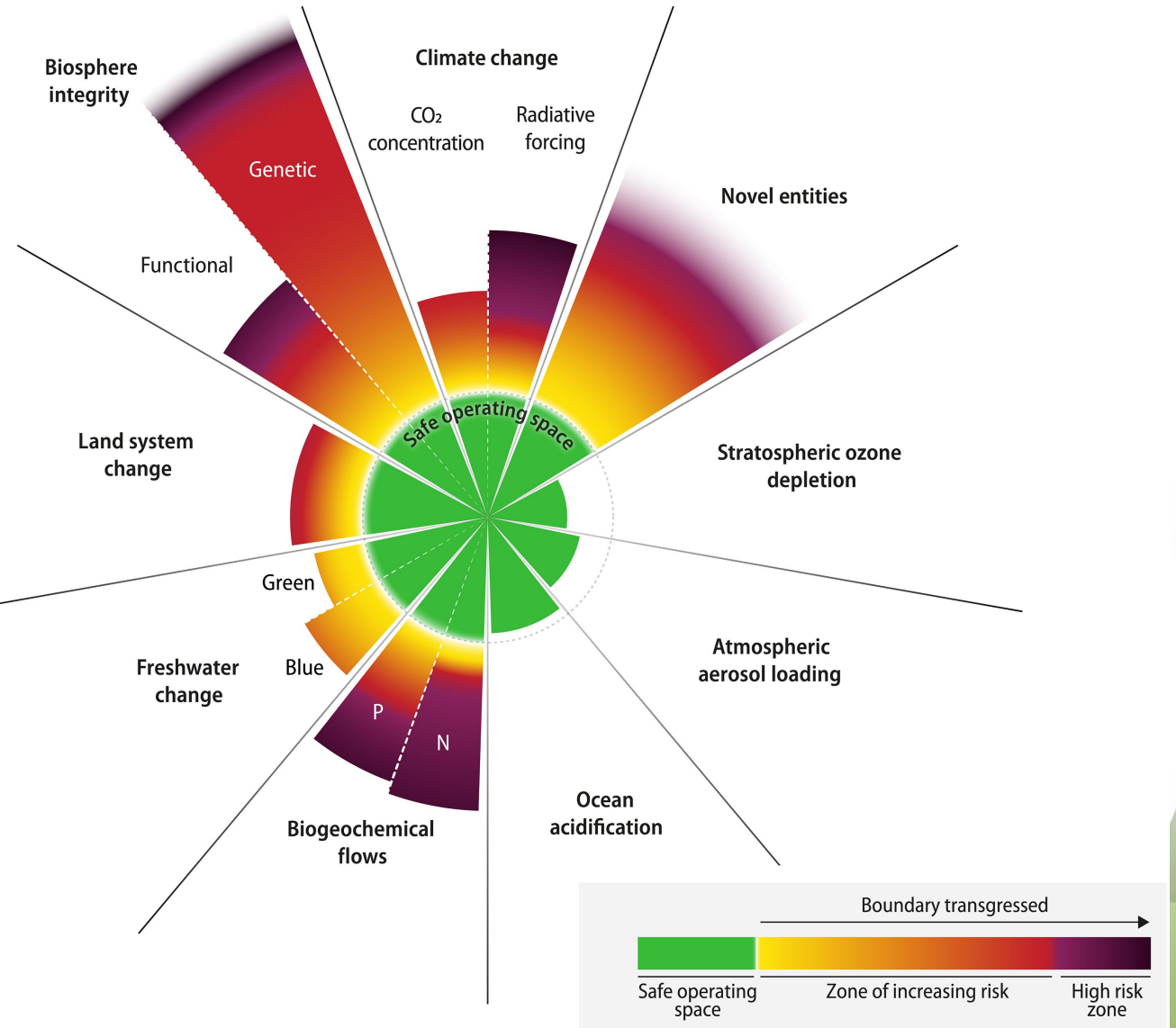
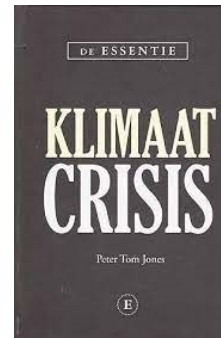
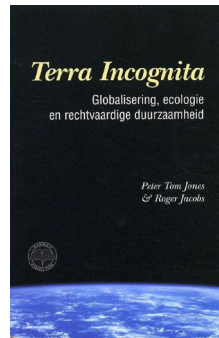
Earth is well outside of the *safe operating space* for humanity

SCIENCE ADVANCES | RESEARCH ARTICLE

ENVIRONMENTAL STUDIES

Earth beyond six of nine planetary boundaries

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More than 300 new mines
required to meet battery demand
by 2035

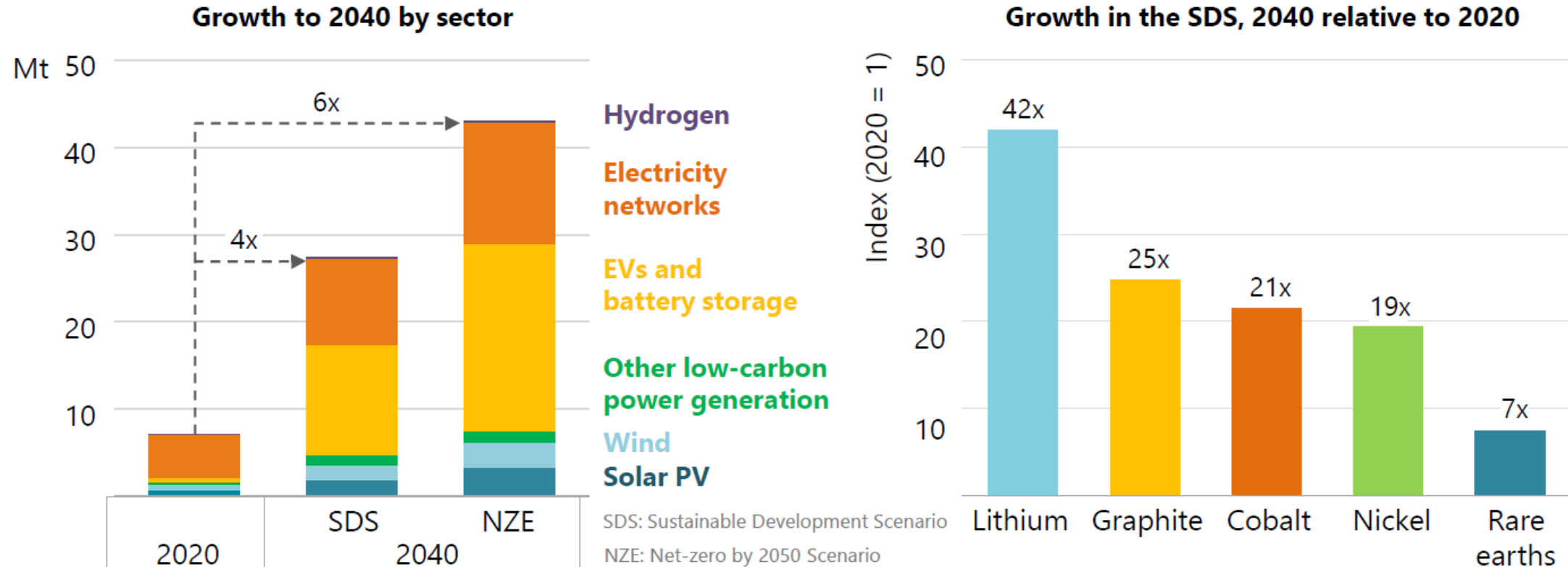
The background image shows a mining operation with two yellow dump trucks in the foreground. Behind them is a large, circular tunnel entrance. The scene is overlaid with a semi-transparent image of several large, cylindrical batteries, suggesting the connection between mining and battery production.

To mine or not to mine critical metals,
that is the question

The Rational Answer

Without energy-transition (critical/strategic) metals, there is no transition to climate neutrality

Mineral demand for clean energy technologies by scenario



Source: IEA, The Role of Critical Minerals in Clean Energy Transitions, 2021.

Without energy-transition (critical/strategic) metals, there is no transition to climate neutrality

Table 3: Market balances for energy transition metals under BNEF's Economic Transition Scenario and Net Zero Scenario – expected supply surplus and supply deficits

Metal	Scenario	2024-2030	2031-2040	2041-2050
Steel	ETS	2024		
	NZS	2024		
Aluminum	ETS	2024		
	NZS	2024		
Copper	ETS	2024		
	NZS	2024		
Lithium	ETS	2025		
	NZS	2025		
Graphite	ETS	2028		
	NZS	2026		
Nickel	ETS		2030	
	NZS	2028		
Cobalt	ETS			2050
	NZS		2034	
Manganese	ETS			
	NZS			

Source: BloombergNEF, Transition Metals Outlook 2024, October 2024.

Source: BloombergNEF. Note: Year is the first year in which a given metal is expected to enter a supply deficit. Only primary supply is considered in this table. All supply is mined nameplate capacity, apart from that for aluminum, graphite and steel.

Thanks to the ongoing electrification of transport, lithium demand is set to expand the most over the coming two and a half decades, with a 17-fold jump between 2023 and 2050 in BNEF's Net Zero Scenario. Fellow battery metal manganese also sees exponential growth in this pathway, with demand surging 15-fold.

Compounded by dependency on Chinese supply chains



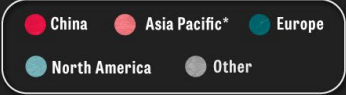
“The tsunami of Chinese EVs is coming, and Europe is sleepwalking into an abyss” (Jones, *Made in Europe: from mine to electric vehicle*)



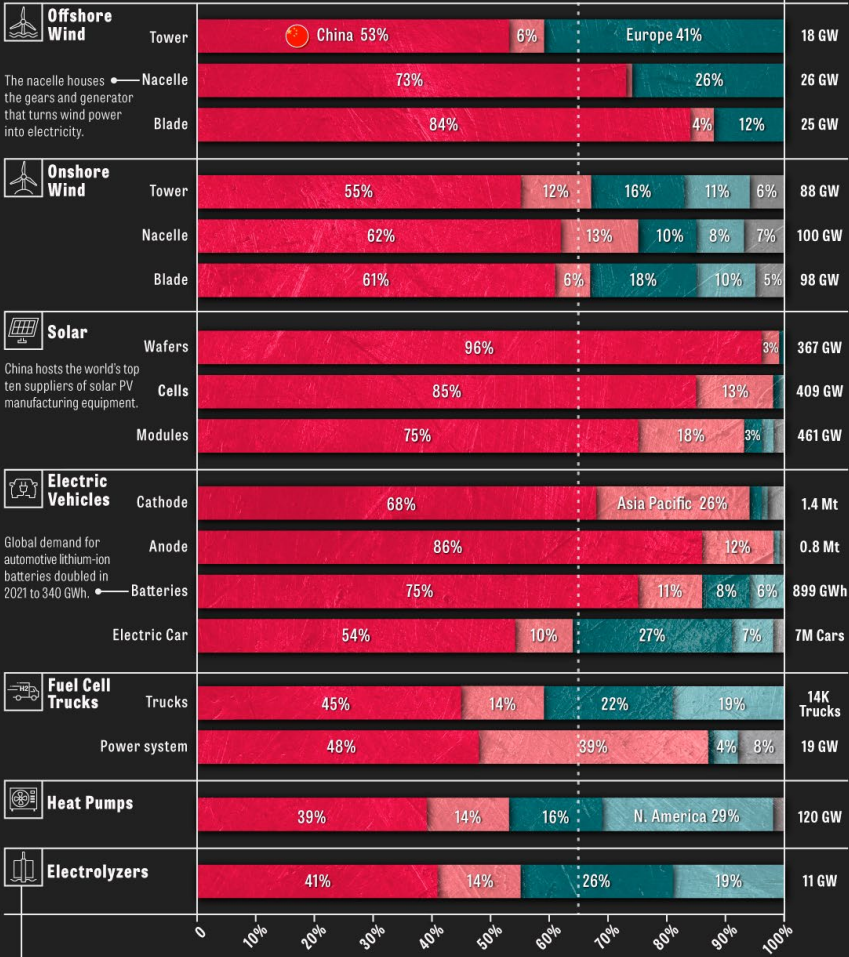
Source: Bloomberg NEF
& <https://elements.visualcapitalist.com/>

WHERE ARE CLEAN-ENERGY TECHNOLOGIES MANUFACTURED?

As the market for low-emission solutions expands, China dominates the production of clean-energy technologies and their components.



Shares of manufacturing capacity by region, 2021



Electrolyzers separate hydrogen gas from water molecules to be used for various industrial and commercial applications, including as energy for fuel cell cars and trucks.

Source: International Energy Agency Energy Technology Perspectives (2023)

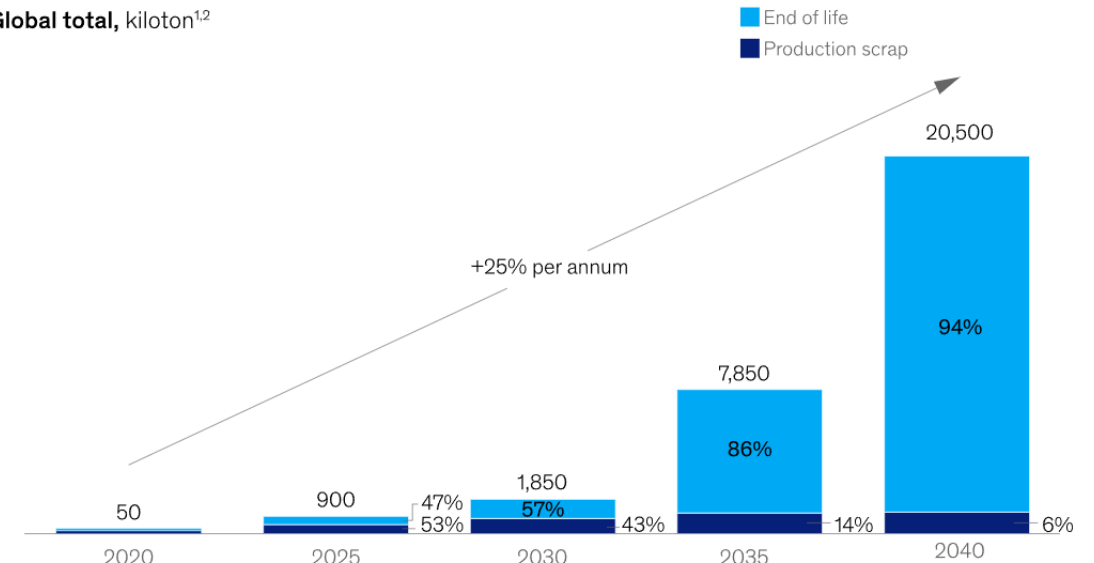
Where are the (energy-transition) metals going to come from?

1. **Demand-side management** is key as it can reduce primary demand
2. **Recycling** of CRMs is key but it cannot solve the problem today (cf. time delay)



The global supply of EV batteries for recycling is steadily increasing, driven primarily by production scrap before 2030 and end-of-life batteries after 2030.

Global total, kiloton^{1,2}



¹Numbers are rounded.

²2023 Q1.

Source: McKinsey Battery Insights

McKinsey & Company

Source: McKinsey, Battery recycling takes the driver's seat, 2023

Source: <https://www.euractiv.com/section/electric-cars/news/denmark-leads-eu-on-deployment-of-zero-emission-buses-report/>

Where are the metals going to come from?

1. Demand-side management is key as it can reduce primary demand
2. Recycling of CRMs is key but it cannot solve the problem today (cf. time delay)
3. **Primary extraction** will be needed:
 1. Extract metals in the EU(+) – **“Domestic mining”**
 2. Import concentrates/intermediates from outside the EU – **“Responsible sourcing”**

More than 300 new mines required to meet battery demand by 2035



Source: Benchmark Minerals

Europe needs to develop vertically-integrated responsible mine-to-cleantech value chains

The **Critical Raw Materials Act**

Enters Into Force **Today**

Targets for Strategic Raw Materials in the EU until 2030:



MINING

10% of the annual consumption sourced from domestic mining



PROCESSING

40% of the annual consumption covered by domestic processing



RECYCLING

25% of the annual consumption sourced from domestic recycling

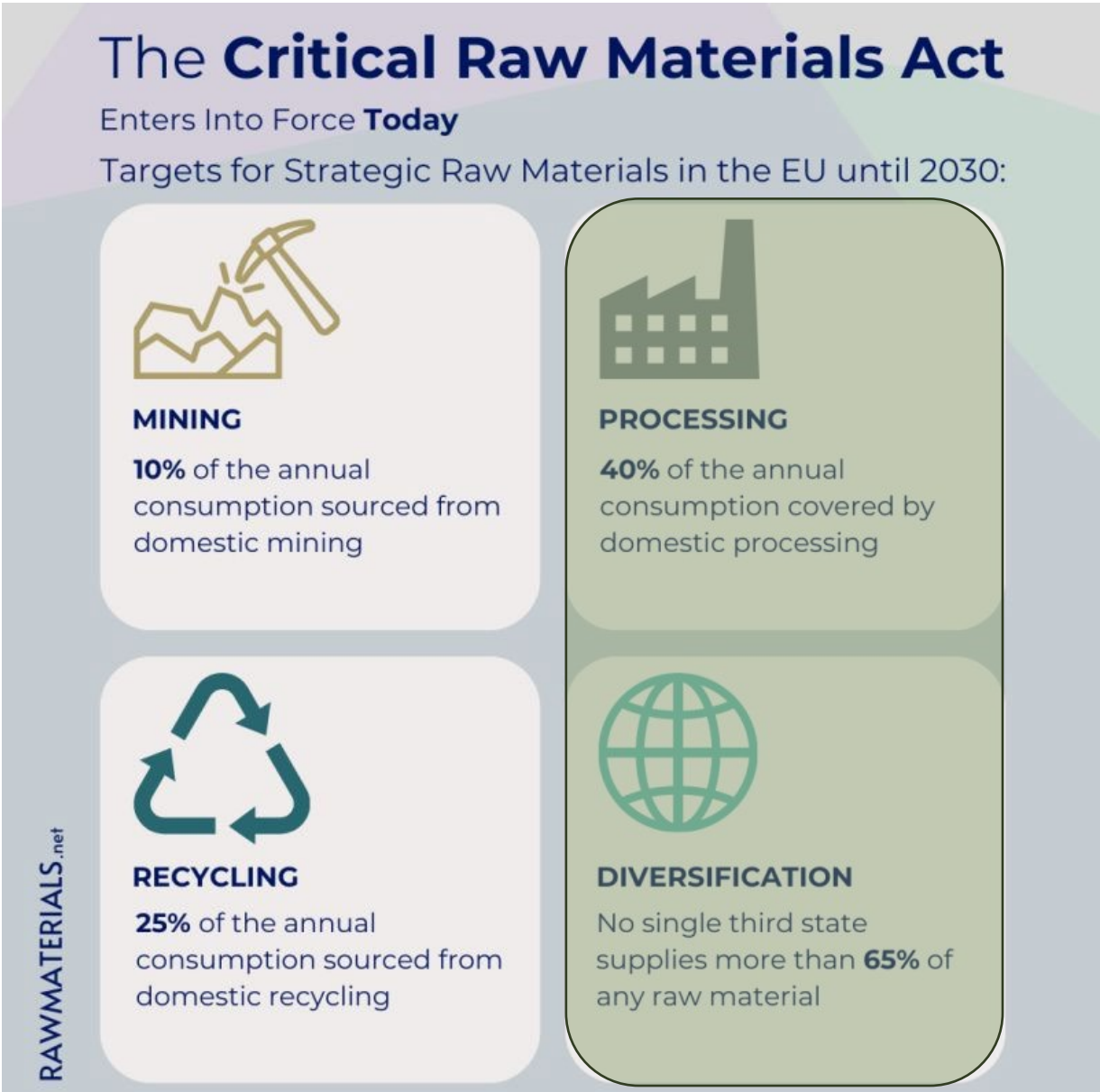


DIVERSIFICATION

No single third state supplies more than **65%** of any raw material



Europe needs to develop vertically-integrated responsible mine-to-cleantech value chains

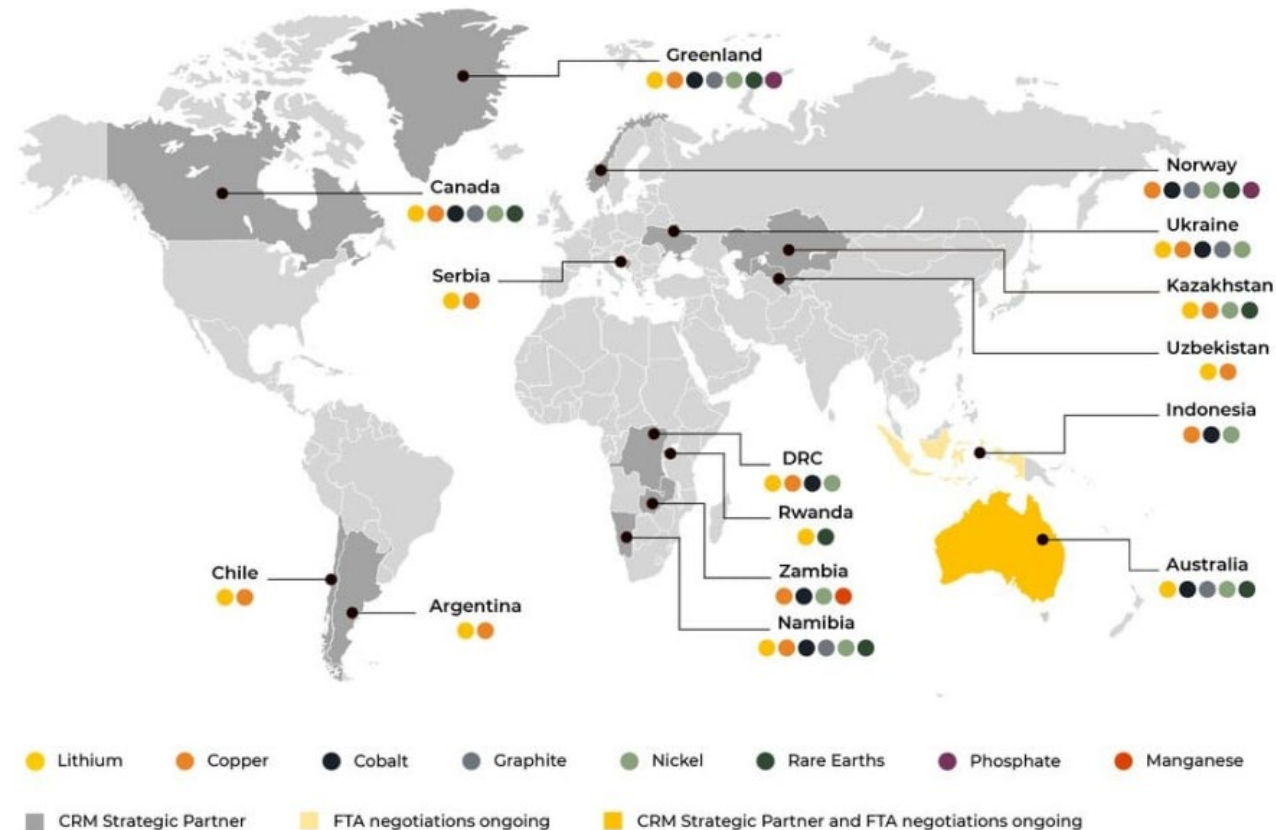


EU's MoU's with "resource-rich countries": "Responsible Sourcing"

Source: Benchmark Minerals

The EU signed 14 strategic raw material partnerships with mineral-rich countries

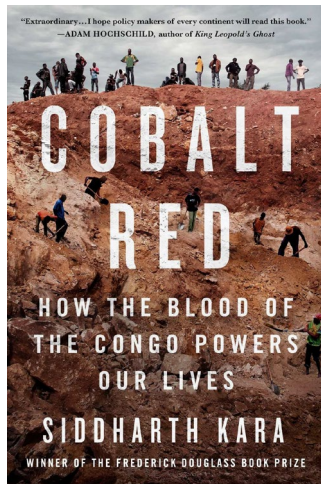
The EU will rely on these partners to meet its Critical Raw Material Act target of sourcing no more than 65% of its annual strategic raw material consumption from any single external country by 2030



EU's MoU's with "resource-rich countries": "Responsible Sourcing"

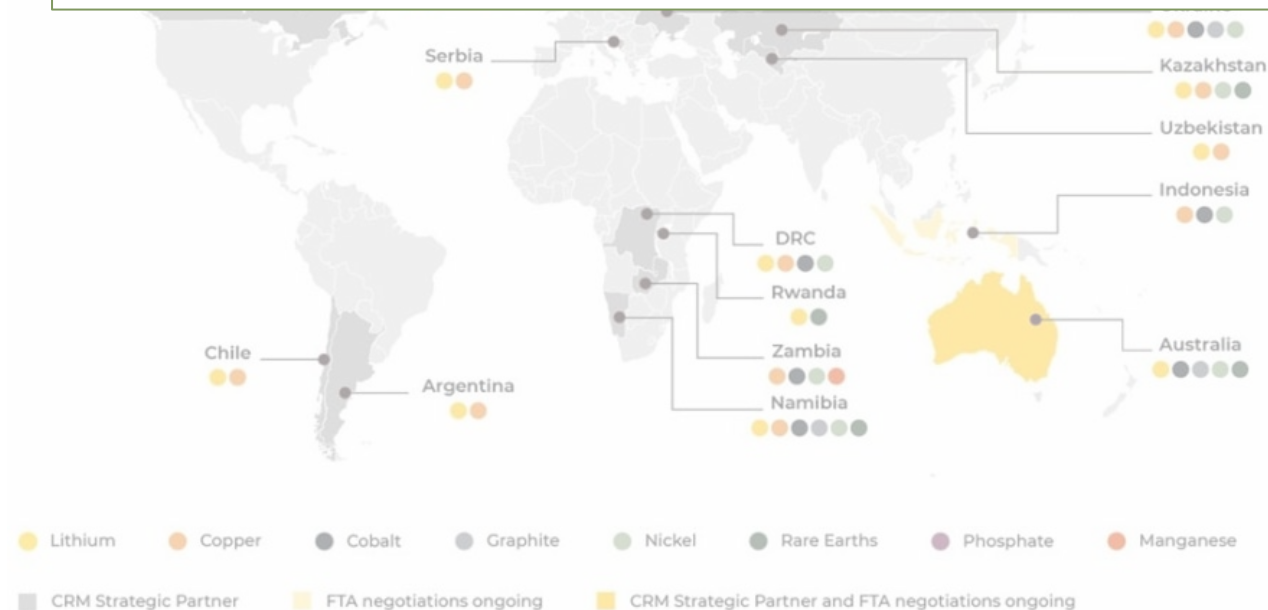
Source: Benchmark Minerals

The list includes countries where primary extraction has often led to human rights violations & environmental disasters → "trust deficit"



"We will support smart investments in quality infrastructure, respecting the highest social and environmental standards, in line with the EU's values and standards. The Global Gateway strategy is a template for how Europe can build more resilient connections with the world."

Ursula von der Leyen, President of the European Commission



To mine or not to mine critical metals, *that is the question*

The Not-so-Rational Answer

Opposition to mining in Europe: from NIMBY to NIMCO



Source: Full documentary - Responsible Mining in Europe: A new paradigm to counter climate change - <https://vimeo.com/762229908>

“Mining is needed but not wanted”
“Mining industry suffers from a trust deficit”
“Guilty until proven innocent”
(Why We Mine Podcast, 18/10/2024)



How to build up trust in mining (in Europe and beyond)? *“You can’t fight feelings with facts”*



Source: Slide Anders Sand (Boliden) during SLO Event in Mechelen, September 2024

Compounded by a complex (counter) force field



China's dominance in the mine-to-cleantech value chain (no level playing field...)



**EU CRMA &
Clean Industrial
Deal**



Compounded by a complex (counter) force field



Environmentally-driven
resistance to mining in
Europe (NIMBY & NIMCO /
BANANA)

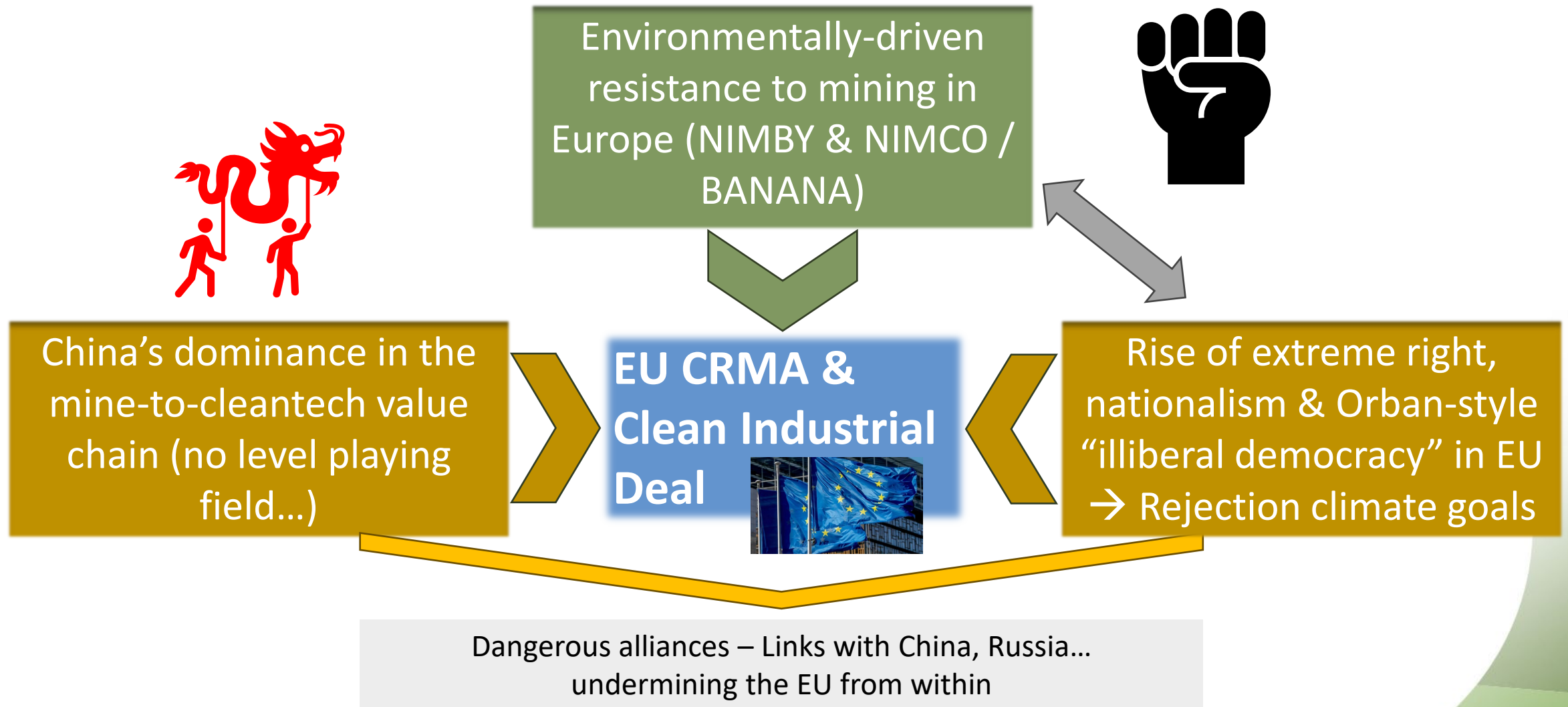


China's dominance in the
mine-to-cleantech value
chain (no level playing
field...)

**EU CRMA &
Clean Industrial
Deal**



Compounded by a complex (counter) force field and strange bedfellows



The rise of deliberate disinformation campaigns: e.g. Rio Tinto's Jadar lithium project in Serbia



Lukáš Onderčanin

Vedúci zahraničného spravodajstva

+ ODOBERAĤ AUTORA



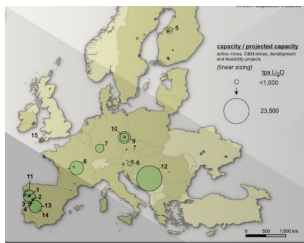
CENTER FOR DEFENSE REFORMS



REPORT

**RUSSIAN INFLUENCE ON
ENVIRONMENTAL PROTESTS
IN SERBIA, AUGUST 2024**

**TRUST THE LIES
NOT THE 'TRUTH'**



New documentary:
Europe's Lithium Paradox

HELP US TO CROWDFUND

SIM2 KU LEUVEN

https://democracybelgium.cloud/crowdfunding/kuleuven/project/documentary_lithium?utm_source=sim2

(Credit: lithium Map, Heiljen, 2024)

So what to do?

Responsible mining: from myth to reality...

Co-develop common understanding of “Responsible Mining” model in Europe and beyond

Build up trust – pro-actively develop and nurture relationships with local communities (from day 1)

We won't let history define our future. Our actions will do the talking. Our determination will turn doubters into believers.

Andrew McCutchen

quotefancy



Co-develop common understanding of “Responsible Mining” model in Europe and beyond

Keep raising the ESG-bar → community-centric, benefit-sharing model:

- **Environment:**
 - Work towards climate-neutral operations, dry stacking of tailings, re-use tailings in building materials, closed water cycles, reagent recovery, benign reagents...
 - Go underground when possible (“invisible mine”, “mine of the future”)
 - Incorporate biodiversity-compensating and progressive nature-reclaiming measures during mining lifetime + closure plan that restores environment as closely as possible to its original ecosystem
- **Social:** hire and train local people; involve local businesses, suppliers and farmers; pay fair/salaries; provide safe working conditions (PlayStation controllers)
- **Governance:** transparency, local communities as active stakeholders, benefiting directly from the mine’s activities
- **Human rights and indigenous people:** UN Declaration on Free, Prior and Informed Consent

Integrate independent third-party audits and transparent disclosure (e.g. IRMA – **Initiative for Responsible Mining Assurance**)

Panel debate

Round 1: General feedback from point of view of your organisation

- ✓ The Trade unions' perspective : IndustriALL Global Union _ **Peter Froven & Sophie Grenade**
- ✓ NGO's perspective: IPIS_independent research institute_ **Filip Reyniers**
- ✓ Extraction/mining companies' perspective: Rio Tinto _ **Jonathan Vanherberghen**
- ✓ Companies producing goods with CRMs' perspective: The Initiative for Responsible Mining Assurance (IRMA) _ **Cecilia Mattea**

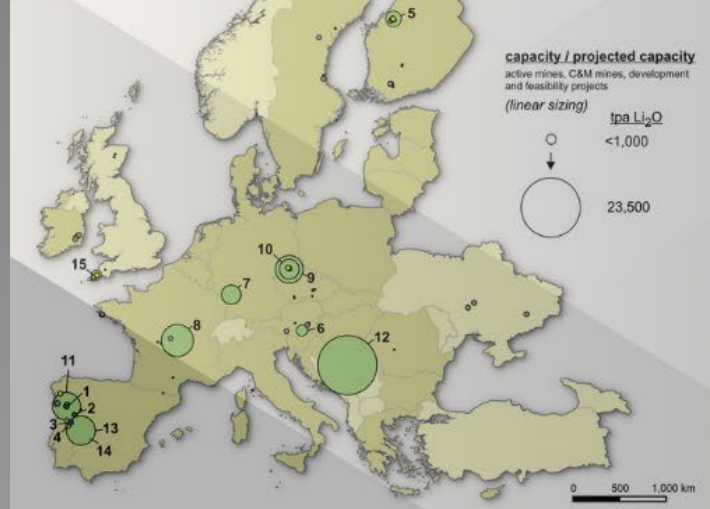
Round 2: Hypotheses & Questions

THE ANALYSIS

- HYPOTHESIS “The EU’s Critical Raw Materials Act focuses too much on the CRM supply side and not enough on the CRM demand side”
- HYPOTHESIS “Even in a post-growth, post-consumerist society, there will be a need for primary extraction of metals if we want to become a climate-neutral continent/world”
- HYPOTHESIS “Responsible sourcing of metal from third countries is hypocritical if the EU Member States do not initiate their own domestic mining projects”

MOVING FORWARD

- Mining is an intrinsically “risky” activity with undeniable impacts on human rights. What criteria/conditions are necessary to define “Responsible Mining”?
- How can the EU mining industry build up trust (again)? How to ensure that ESG-criteria are met, also in third countries?



New documentary:

Europe's Lithium Paradox

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https://donate.kuleuven.cloud/crowdfunding/kuleuven/project/documentary_lithium?&lang=en_EN
(Credits Lithium Map: Heijlen, 2024)



<https://solvomet.eu> &
<https://kuleuven.sim2.be/>

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(LinkedIn profile)

