

KU LEUVEN

Metals for Clean Energy

EU POTENTIAL TO MEET 2030 GOALS

Presentation by

Chris
Heron



Eurometaux

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A presentation in three parts

- 1 Defining Europe's raw materials challenge
 - 2 The Critical Raw Materials Act and 2030 resilience
 - 3 Where we are today in meeting the Critical Raw Materials Act goals
-



The energy transition is a commodities transition

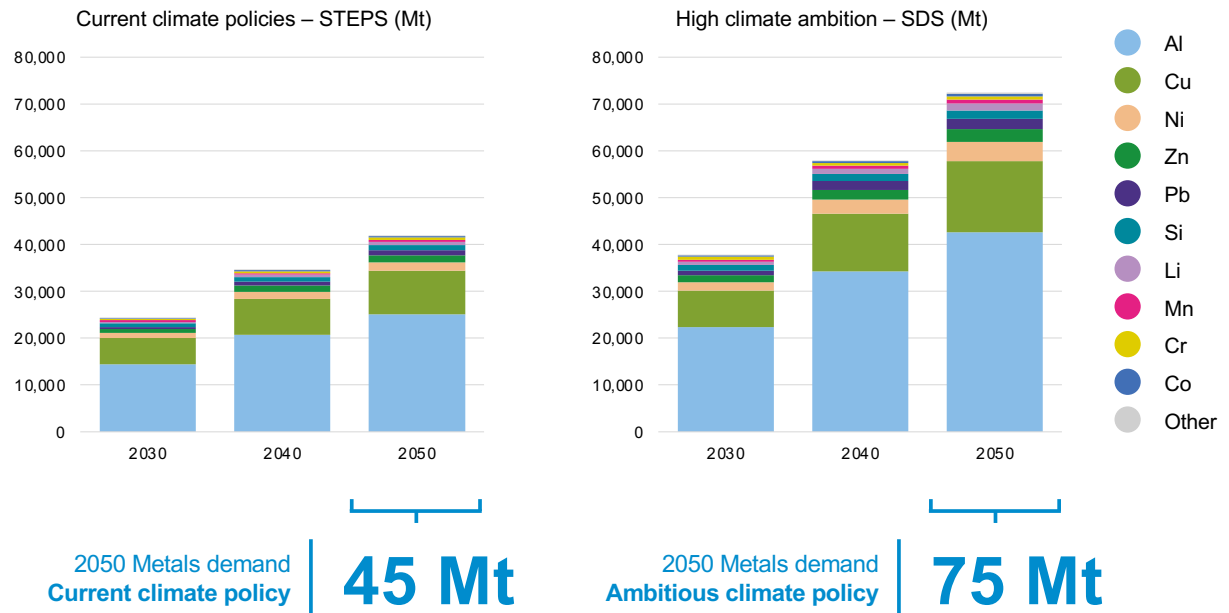
Fact

The faster the world decarbonises, the higher its metals requirements


Question

By how much?

Total metal demand by commodity in a STEPS and SDS scenario respectively (Mt)



Europe's energy transition = Massive increase in metals demand by 2050



Base metals


Top transition uses

- EVs
- Solar
- Electricity networks

Al	+33%
Aluminium	

Cu	+35%
Copper	

Si	+50%
Silicon	



Battery materials

Top transition uses


- EVs
- Battery storage

Ni	+103%
Nickel	

Co	+331%
Cobalt	

Li	+3,500%
Lithium	

+ Manganese & Graphite



Rare earths

Top transition uses

- EVs
- Wind

Pr	+587%
Praseodymium	

Dy	+827%
Dysprosium	

Nd	+2,666%
Neodymium	

📋 Challenge 1

How can we overcome the ever-growing gap between metals demand and supply in the next 15 years?

Li

Lithium

+ 3 Mt global demand in 2030

A

Today's global supply

+

B

All projects announced in the world
(even unlikely projects)

37%

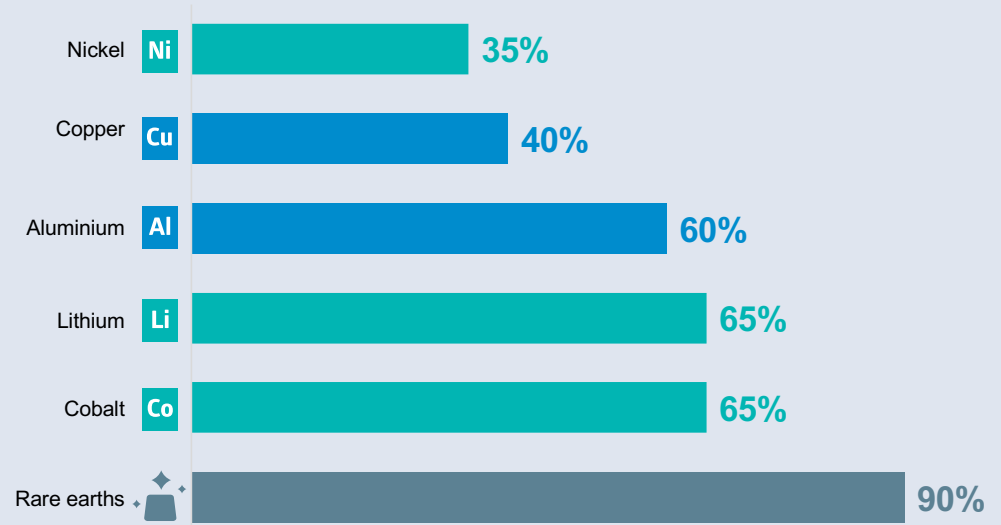
Shortfall

(2.3 Mt of max. supply)

📋 Challenge 2

How can we avoid filling Europe's demand gap only with imports from unsustainable single suppliers?

China's share of global processing



+ Control of:

- 15 out of 17 DRC cobalt mines
- Majority of Indonesian nickel
- Growing South American lithium assets

Five necessary pillars for Europe's metals & clean energy bridge

STARTING POINT

NOW

- Acceleration of clean energy transition
- Aim to improve strategic autonomy for energy

STRONGEST IMPACT: NOW → 2040

2035 ONWARDS

END POINT

2050

PILLAR 1

Fulfil domestic mining potential

PILLAR 2

Maintain and increase domestic refining output

PILLAR 3

Secure sustainable imports from reliable partners

PILLAR 4

Maximise recycling, including new streams

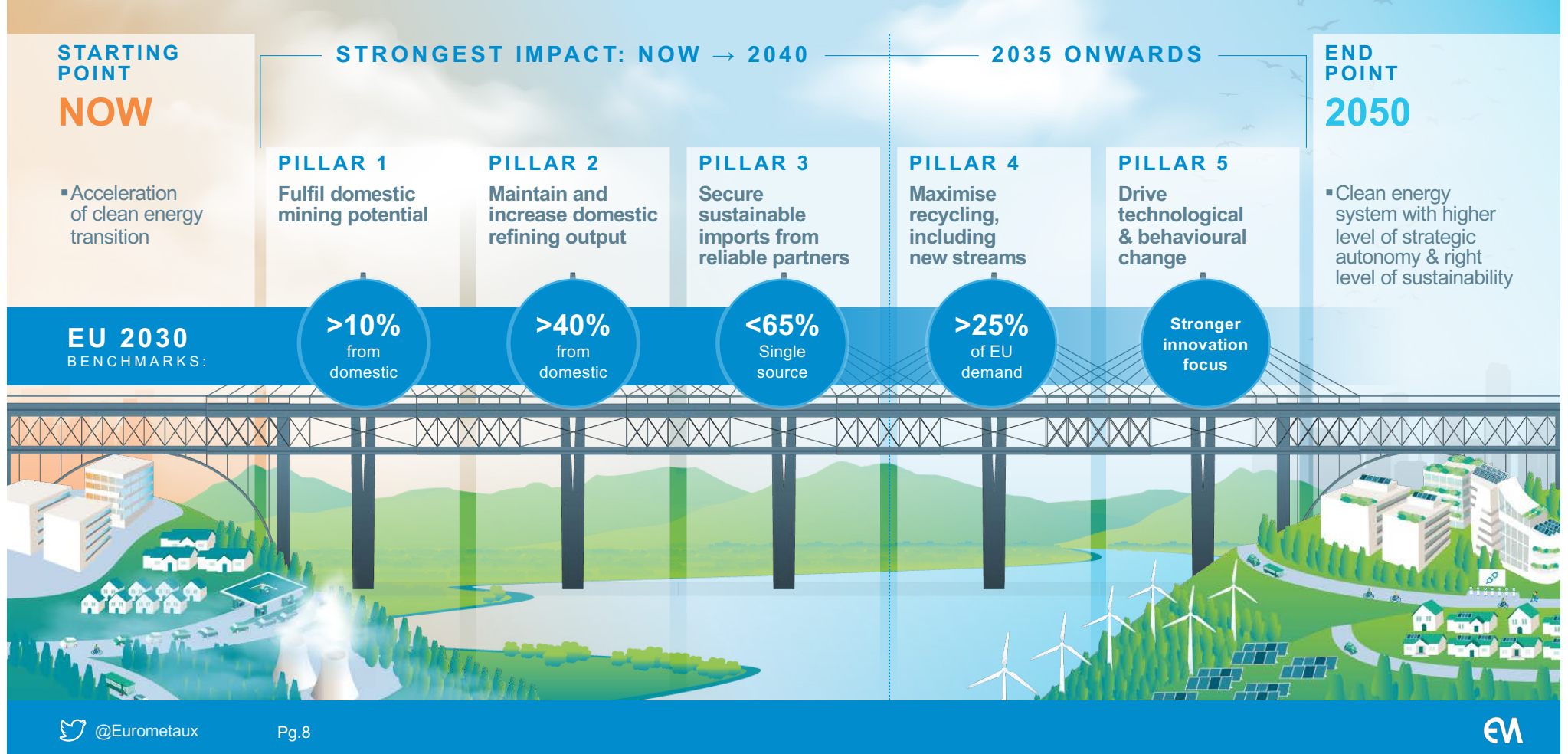
PILLAR 5

Drive technological & behavioural change

- Clean energy system with higher level of strategic autonomy & right level of sustainability



EU Critical Raw Materials Act: 2030 targets for building this bridge



The burning question for our work ahead

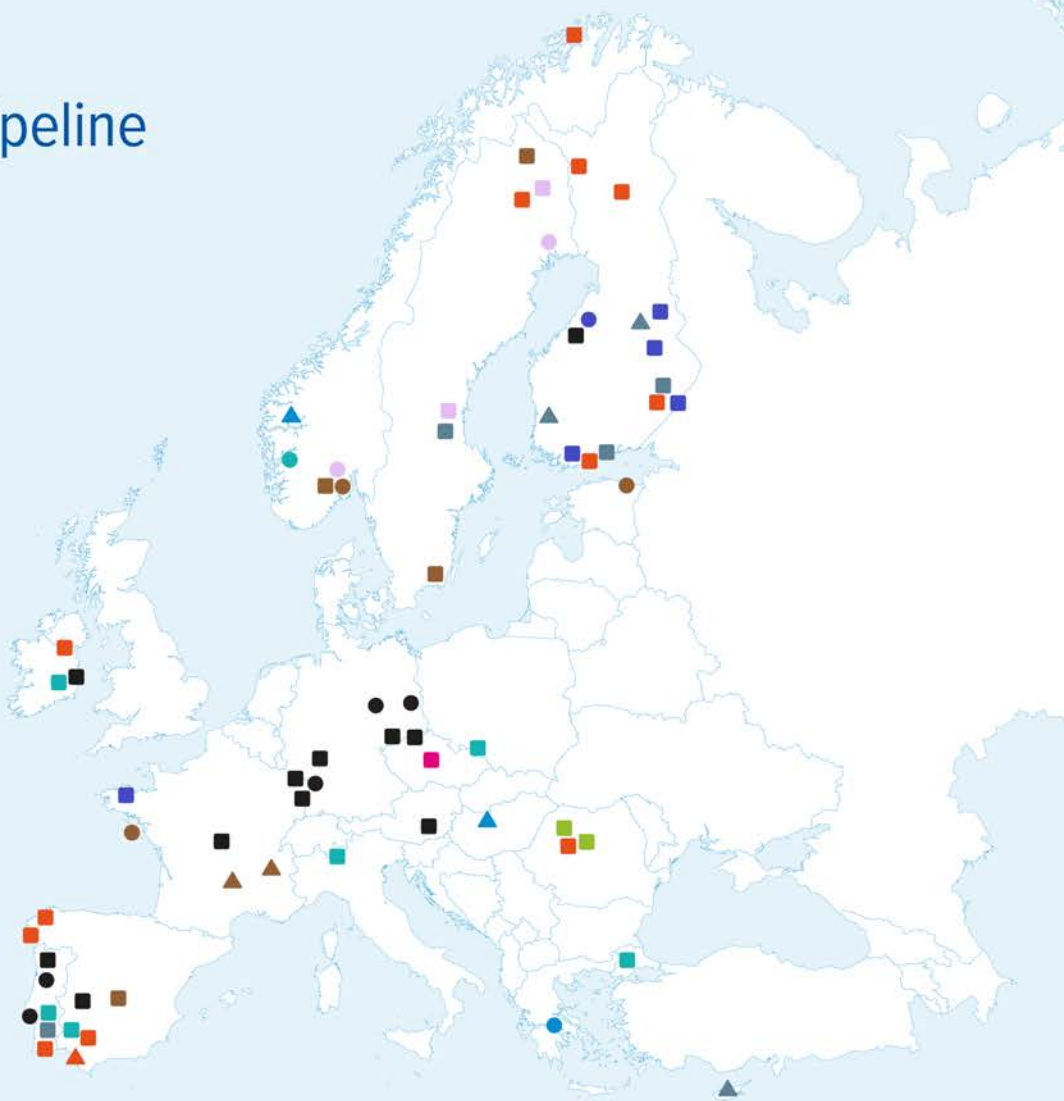
**To what extent is Europe on track
in meeting its four 2030 benchmarks?**

Europe's 2030 potential projects pipeline for strategic metals and minerals

- Aluminium
- Copper
- Nickel
- Zinc
- Cobalt
- Lithium
- Rare Earths
- Manganese
- Graphite
- Magnesium

- Mines
- Processing
- Recycling

Note: Electric Vehicle battery recycling projects not included on map, but the main recycling source for lithium, cobalt, nickel, manganese etc.



Europe's 2030 potential is there, but what's the current forecast?



Base metals

Copper, Aluminium,
Zinc, Silicon



Overcast



Key battery materials

Nickel, Lithium,
Cobalt



Rain with a little
sunshine



Other key materials

Graphite, Rare earths,
Manganese, Magnesium
Germanium, Gallium



Heavy rain
ahead



And we all know the energy crisis has brought major **thunderstorms for everyone**

1 Base Metals: Existing EU capacity mostly already exceeds 2030 benchmarks



2030 EU SUPPLY PROJECTIONS		Production Goals			Diversification goals	
		MINING	PROCESSING	RECYCLING	MINING (TOP IMPORTER)	PROCESSING (TOP IMPORTER)
Cu	Copper	35-40%	85%	55%	20%	20%
Zn	Zinc	30-50%	100%	40%	20%	-
Al	Aluminium	3%	43%	45%	65% (Guinea)	20%
Si	Silicon		73%	4%		40%

1 But the energy crisis has brought existential storms



↓ 50%
EU aluminium
& zinc capacity
offline in 2023

+

↓ 30%
EU silicon
capacity offline
in 2023







Priority question

Can Europe
afford to deindustrialise further?






2 Key battery metals: 2030 benchmarks are mostly achievable *if* uncertain projects are taken forward by latest 2025



 2030 EU SUPPLY POTENTIAL	MINING	PROCESSING	RECYCLING	1 ST SUPPLIER MINING	1 ST SUPPLIER PROCESSING
 Nickel	Up to 22%	Up to 50%	15%	50%	30%
 Lithium	0-39%	Up to 54%	10%	-	55%
 Cobalt	Up to 7%	Up to 40%	15%	75% (DRC)	20%

3 Other key raw materials: Europe off track today for meeting 2030 benchmarks



 2030 EU SUPPLY PROJECTIONS	MINING	PROCESSING	RECYCLING	1 ST SUPPLIER MINING	1 ST SUPPLIER PROCESSING
 Manganese (battery grade)	0-20%	0-20%	10%	-	-
 Graphite (battery grade)	0-20%	0-20%	<5%		100% (China)
 Rare earths	0-20%	0-20%	0%		99% (China)
 Magnesium	0-20?%	0-20?%	15%		93% (China)

Whatever the forecast, Europe's raw materials bridge must be built

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We need to build the strong foundation for a lasting raw materials bridge

! Building a battery materials refinery in Europe today is **2-3x** more expensive than America and Asia, with **20-50%** higher operations costs

ADEQUATE EU FINANCE

EU funding to bridge the competitiveness gap for EU-owned projects

—
Taking inspiration from Inflation Reduction Act's clarity, simplicity, and OPEX focus

OPERATIONAL COMPETITIVENESS

Meaningful action to bring down still-high EU energy prices

—
Ensuring green electricity is available at competitive prices for raw materials supply chains

MARKET INCENTIVES

Measures to encourage downstream users to buy sustainable (+ local)

—
Tackle the risk of unfair competition from more polluting regions (i.e. nickel)

Change is on the horizon: Will it deliver what we need?



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Read more!



www.eurometaux.eu/metalscleanenergy



Metals for Clean Energy:

Pathways to solving Europe's raw materials challenge

POLICYMAKER SUMMARY