

Action Plan on Critical Raw Materials



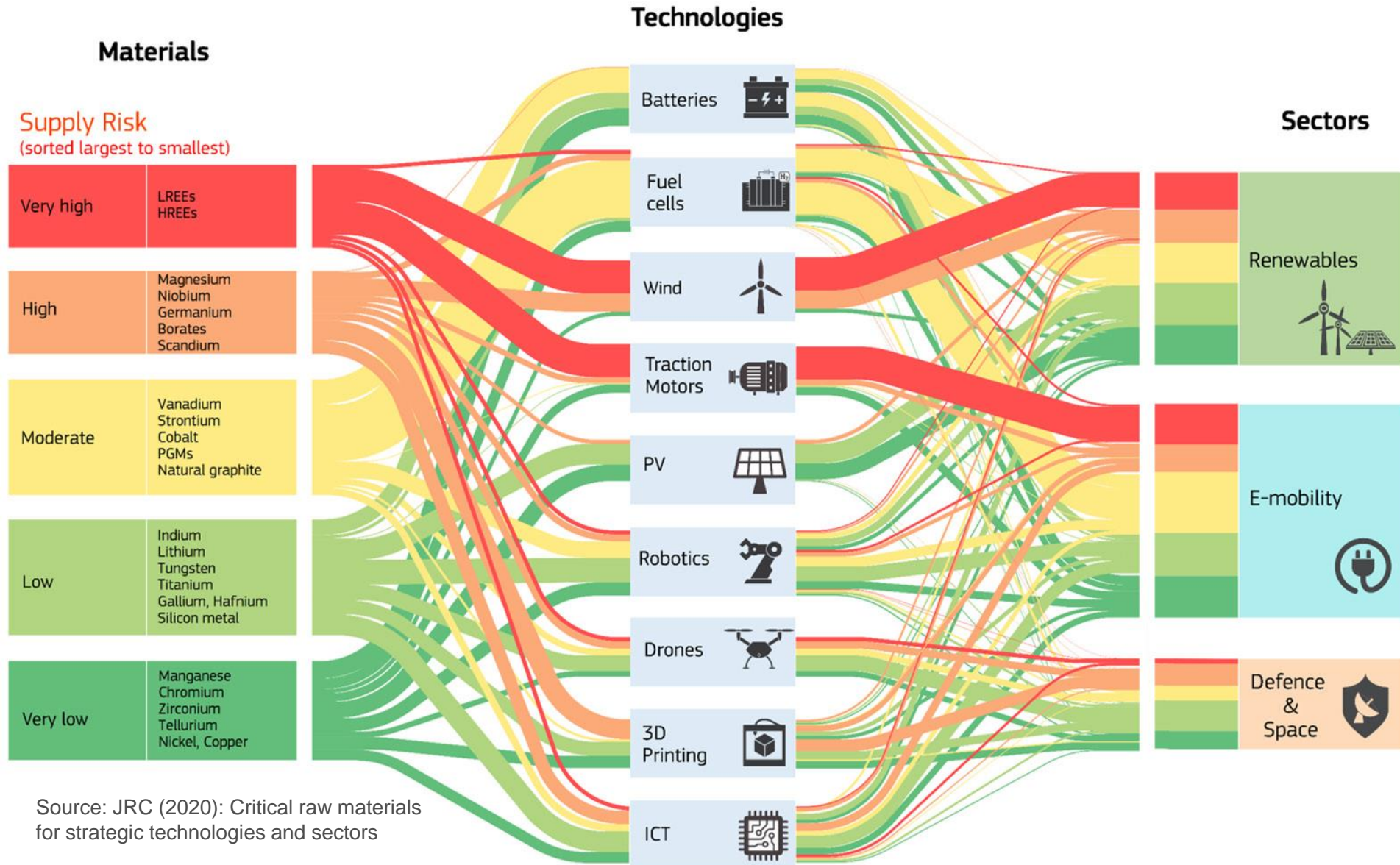
The 2020 criticality assessment identifies 30 raw materials as critical

2020 Critical Raw Materials (new as compared to 2017 in bold)		
Antimony	Hafnium	Phosphorus
Baryte	Heavy Rare Earth Elements	Scandium
Beryllium	Light Rare Earth Elements	Silicon metal
Bismuth	Indium	Tantalum
Borate	Magnesium	Tungsten
Cobalt	Natural Graphite	Vanadium
Coking Coal	Natural Rubber	Bauxite
Fluorspar	Niobium	Lithium
Gallium	Platinum Group Metals	Titanium
Germanium	Phosphate rock	Strontium

Critical raw materials are used throughout Europe's ecosystems ...

	Aerospace/ defence	Textiles	Electronics	Mobility/ Automotive	Energy-intensive industries	Renewable energy	Agri-food	Health	Digital	Construction
Antimony	✓	✓		✓						✓
Baryte				✓	✓			✓		✓
Bauxite NEW	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Beryllium	✓		✓	✓		✓			✓	
Bismuth	✓		✓		✓			✓	✓	✓
Borate	✓		✓	✓	✓	✓	✓		✓	✓
Cobalt	✓	✓	✓	✓	✓	✓			✓	
Coking coal				✓	✓	✓				
Fluorspar					✓		✓			
Gallium	✓		✓	✓		✓			✓	✓
Germanium	✓		✓		✓	✓				
Hafnium	✓		✓		✓	✓			✓	
Indium	✓		✓			✓			✓	
Lithium NEW	✓		✓	✓	✓	✓		✓	✓	
Magnesium	✓		✓	✓	✓				✓	✓
Natural graphite	✓		✓	✓	✓	✓			✓	✓
Natural Rubber	✓	✓		✓				✓		
Niobium	✓		✓	✓	✓			✓		✓
Phosphate rock					✓		✓			
Phosphorus	✓				✓		✓			
Scandium	✓			✓		✓				
Silicon metal	✓	✓	✓	✓	✓	✓		✓		✓
Strontium NEW	✓		✓		✓			✓		✓
Tantalum	✓		✓		✓	✓			✓	
Titanium NEW	✓		✓	✓	✓			✓		✓
Tungsten	✓		✓	✓	✓			✓		
Vanadium	✓			✓	✓	✓		✓		✓
PGM	✓		✓	✓	✓	✓		✓		
HREE	✓		✓	✓	✓	✓		✓		✓
LREE	✓		✓	✓	✓	✓		✓		✓

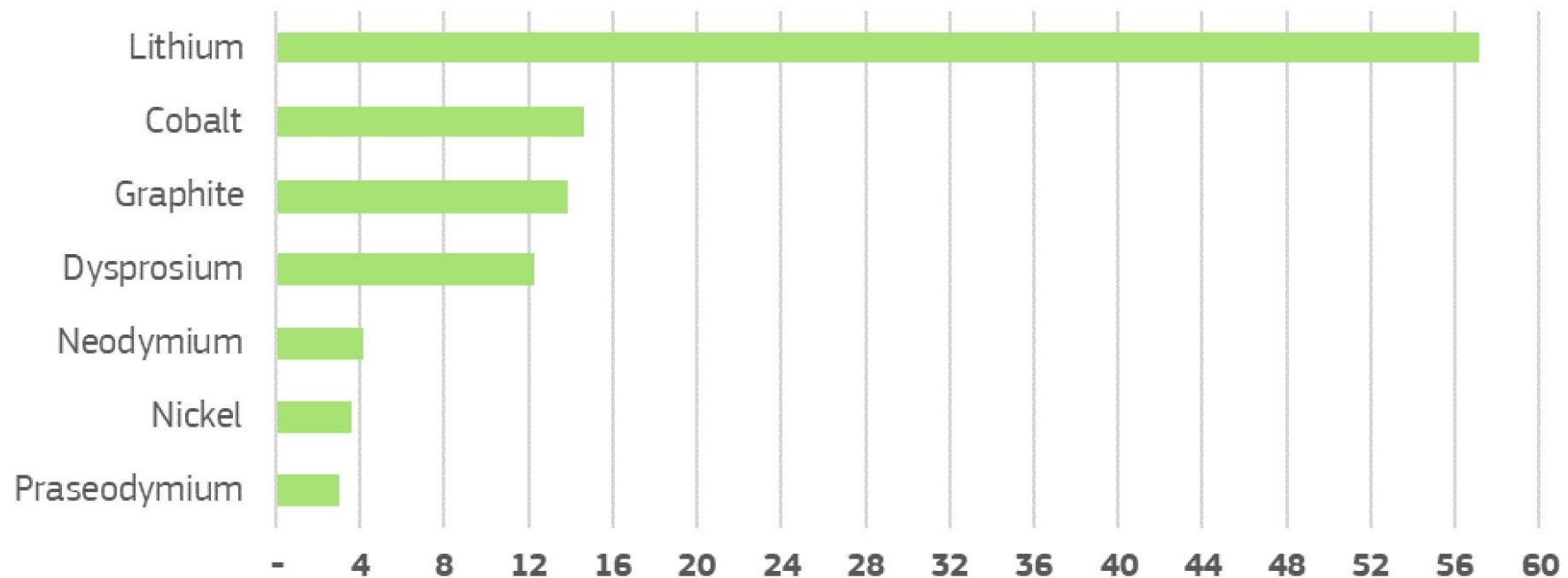
... and particularly in strategic sectors



Source: JRC (2020): Critical raw materials for strategic technologies and sectors

Demand for CRMs is set to increase substantially as Europe invests into green and digital technology

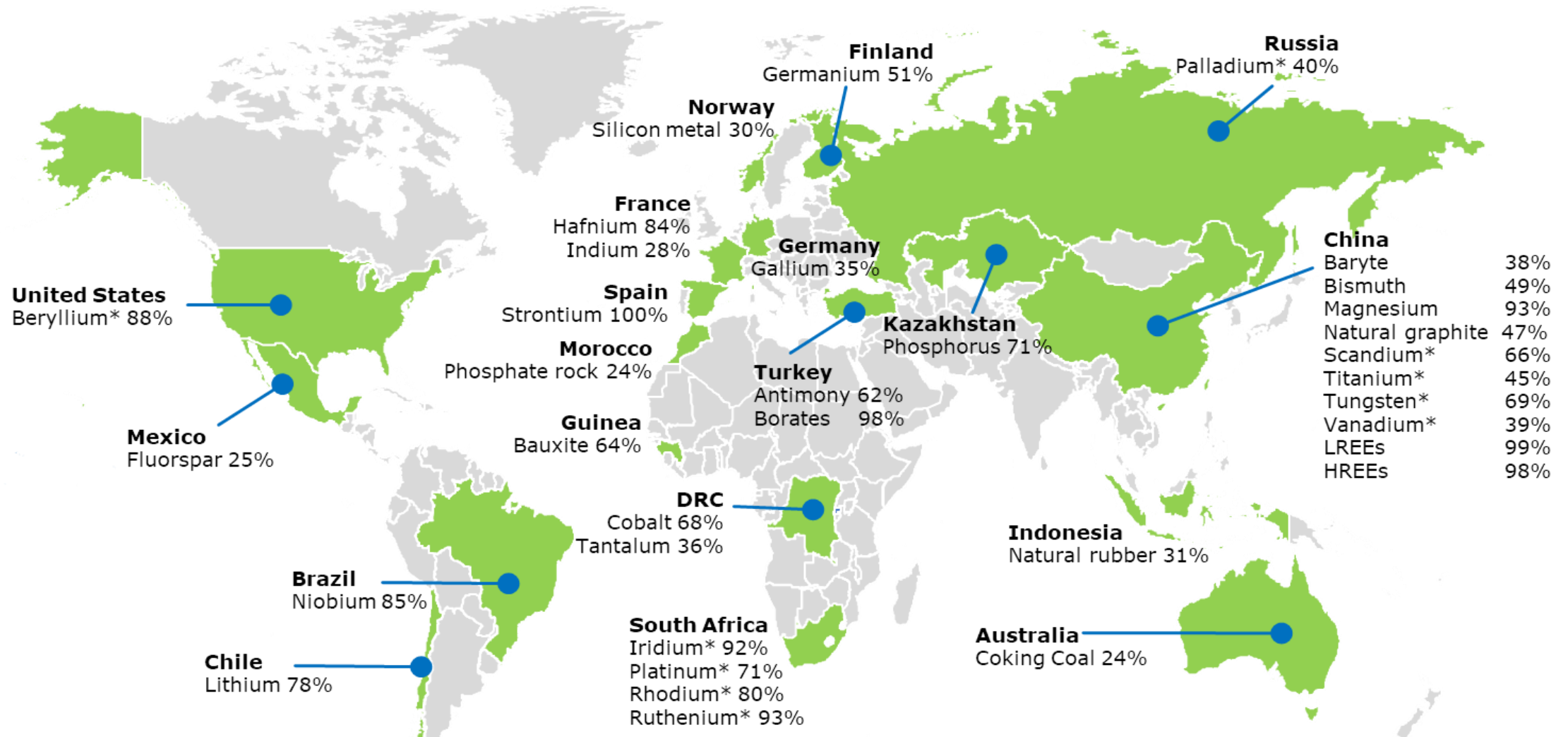
Additional material consumption for batteries, fuel cells, wind turbines and photovoltaics in **2050** compared to current EU consumption of the material in **all** applications



Source: JRC (2020): Critical raw materials for strategic technologies and sectors

x times more

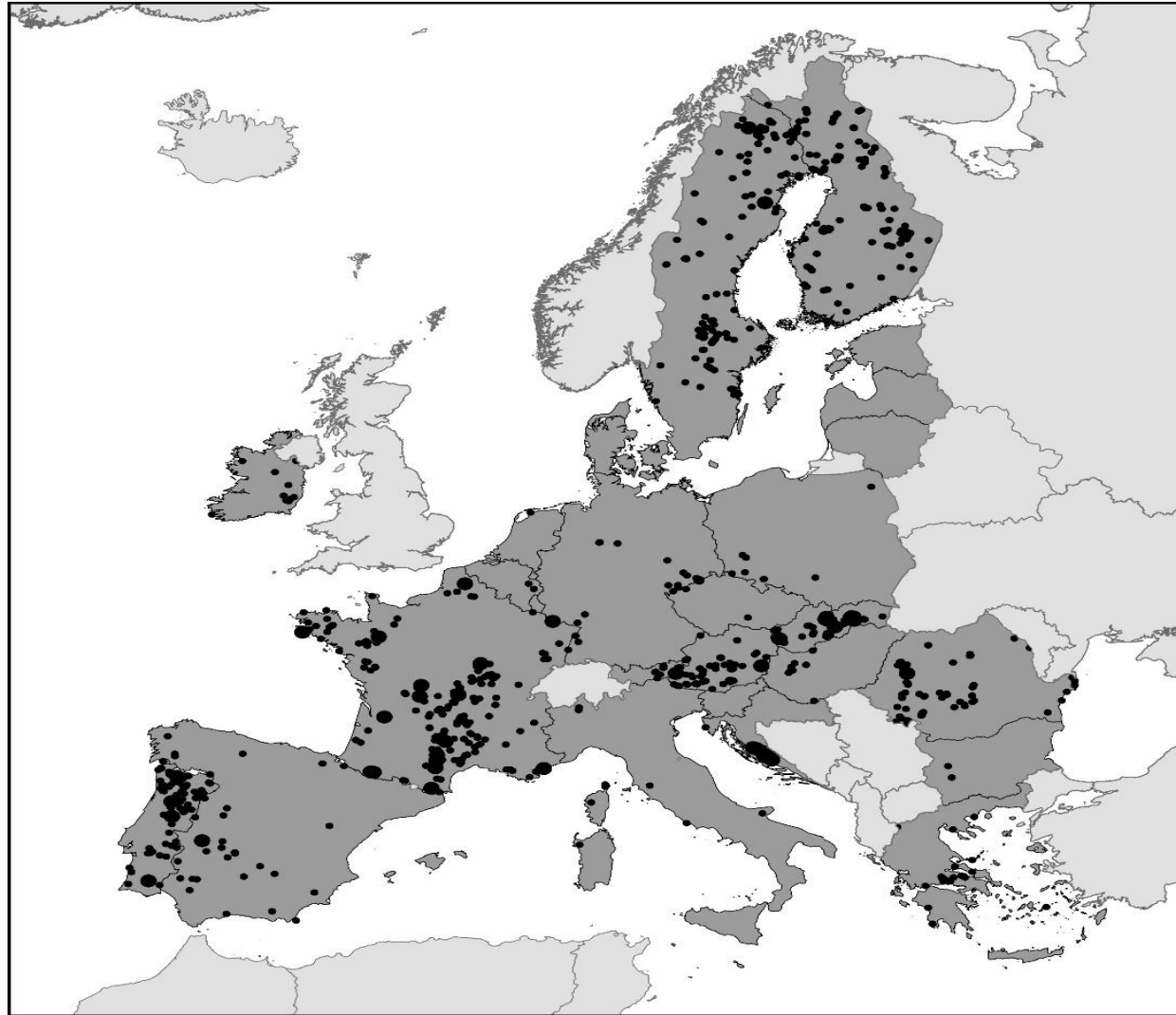
The supply of critical raw materials is heavily concentrated in a few countries



Shown here is the share of supply to the EU
 Source: JRC (2020): Study on the EU's list of critical raw materials

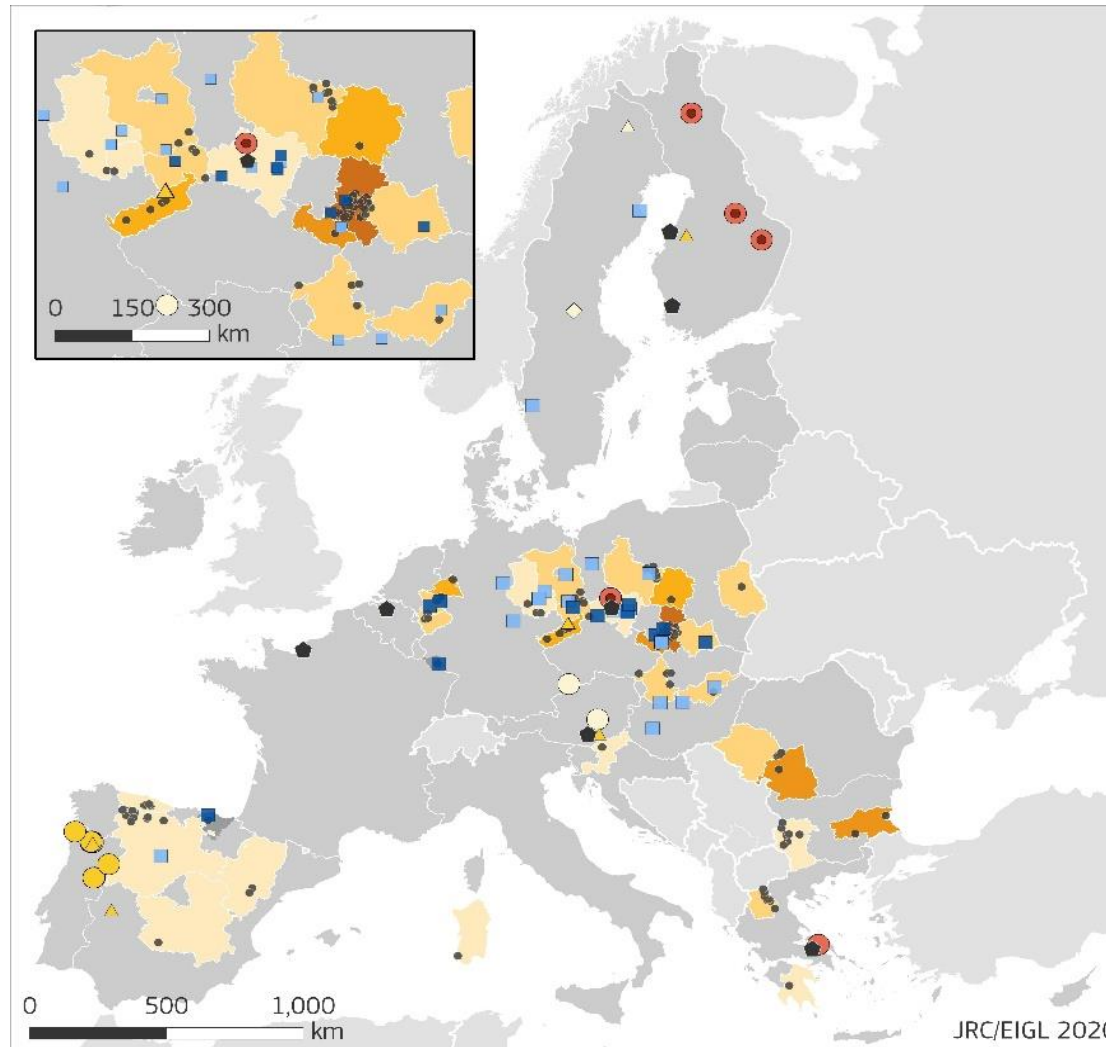
* share of global production

The EU has substantial unused potential for domestic mining of CRMs



Data provided by EuroGeoSurveys combined with other EU data sources

Raw materials may offer new opportunities for regions in transition



BATTERY RAW MATERIALS (2017/2018)

Mines

- Graphite
- Lithium
- Nickel
- Cobalt (by-product of Ni/Cu)

Status

- Production
- ◇ Preproduction
- △ Feasibility

Smelters/refineries

- ◆ Smelter/refinery

BATTERY FACTORIES (2019)

- Existing (in coal region)
- Future

COAL MINES (2015)

- Operating mine

Direct jobs in coal mines

- 80 000
- 10 001 - 15 000
- 6 001 - 10 000
- 1 500 - 6 000
- ≤ 1 500
- N.A.



1. European Raw Materials Alliance
2. Develop sustainable financing criteria for mining
3. Research and innovation on waste processing, advanced materials and substitution
4. Map the potential supply of secondary CRM from EU stocks and wastes
5. Investment needs for mining projects that can be operational in 2025
6. Develop expertise and skills in mining
- 7. Deploy Earth observation programmes for exploration, operation and post-closure environmental management**
8. Develop research and innovation projects on exploitation and processing of CRMs
9. Develop strategic international partnerships to secure CRMs supply
10. Promote responsible mining practices for CRMs

The European Raw Materials Alliance

- Launched on 29 September 2020
- Operationally managed by EIT RawMaterials, a Knowledge and Innovation Community of the European Institute for Innovation and Technology
- Stakeholders can join the Alliance by signing its declaration under erma.eu

EUROPEAN
RAW MATERIALS
ALLIANCE | ERMA



Declaration of the European Raw Materials Alliance (ERMA)

Context

Access to resources is a strategic security question for Europe's ambition to deliver the European Green Deal. The new Industrial Strategy for Europe identifies raw materials as key enablers for a globally competitive, green, and digital Europe, while the EU Recovery Plan recognizes raw materials as one of the areas that must contribute to strengthening crucial markets in a sustainable way.

The European Commission's Action Plan of 3 September 2020, 'Critical Raw Materials Resilience: charting a Path towards greater Security and Sustainability' identifies raw materials as critical to Europe's future. Industrial ecosystems such as construction, automotive, low-carbon energy-intensive industries and aerospace are highly dependent on secure access to raw materials. By 2030, these industrial ecosystems will have a combined added value of EUR 2,000 billion and provide employment for more than 30 million Europeans.



Annexes

10 actions to ensure Europe's access to raw materials (1/4)

Resilient value chains for EU industrial ecosystems

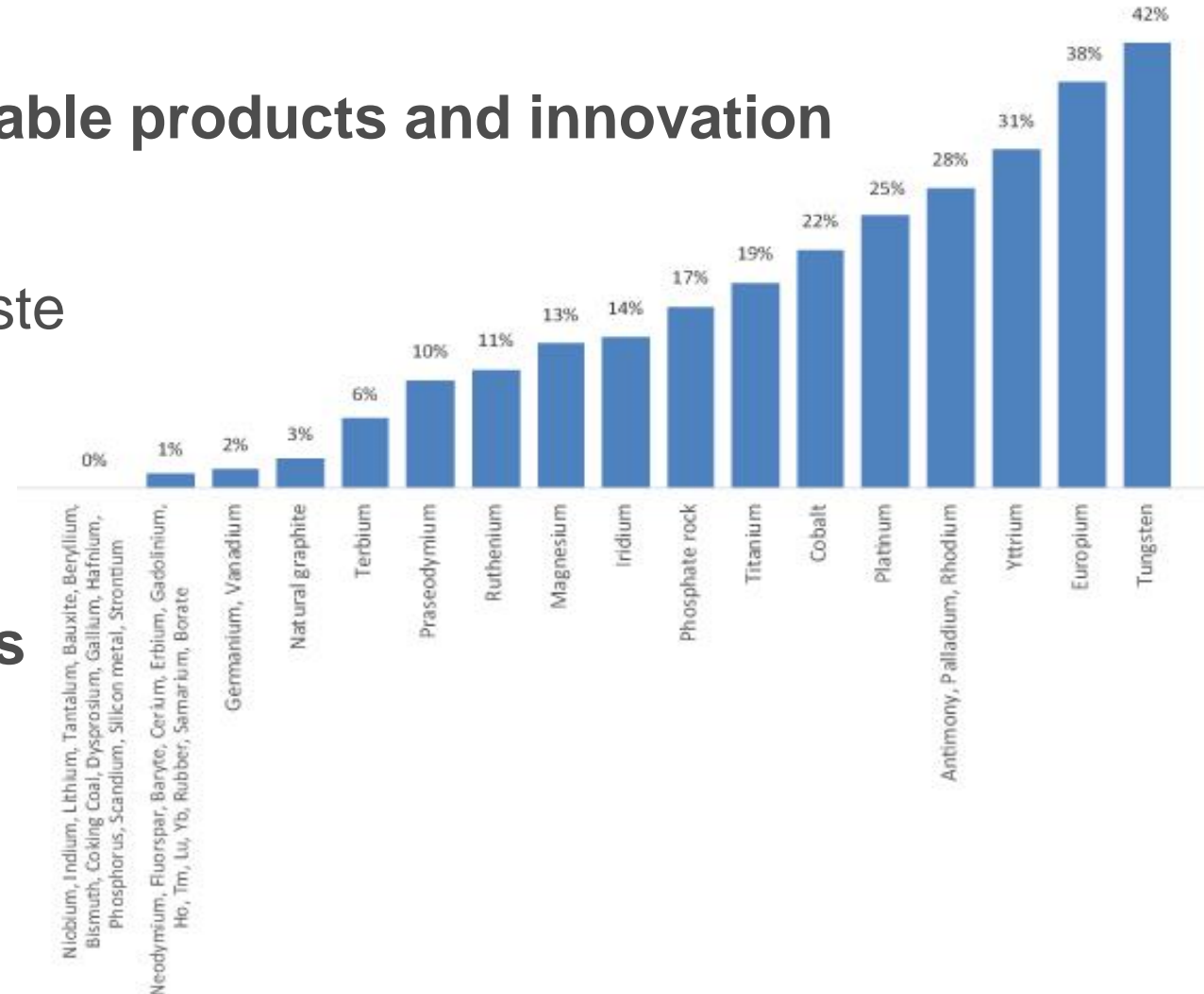
1. Launch an industry-driven **European Raw Materials Alliance**, initially to build resilience and open strategic autonomy for the rare earths and magnets value chain, before extending to other raw material areas
 - Bring together industrial actors along the value chain, Member States, regions and civil society
 - To be launched on 29 September 2020
2. Develop **sustainable financing criteria** for the mining extractive and processing sectors in Delegated Acts



10 actions to ensure Europe's access to raw materials (2/4)

Circular use of resources, sustainable products and innovation

3. Launch critical raw materials **research and innovation** on waste processing, advanced materials and substitution
4. Map the potential supply of **secondary critical raw materials** from EU stocks and waste and identify viable recovery projects



10 actions to ensure Europe's access to raw materials (3/4)

Sourcing from the European Union

5. Identify **mining and processing projects that can be operational by 2025**, as well as investment needs and related financing opportunities for critical raw materials in the EU, with priority for coal-mining regions
6. Develop expertise and skills in mining, extraction and processing technologies, as part of a balanced transition strategy in **regions in transition**
7. Deploy **Earth-observation** programmes and remote sensing for resource exploration, operations and post-closure environmental management
8. Develop **Horizon Europe** R&I projects on processes for exploitation and processing of critical raw materials to reduce environmental impacts

10 actions to ensure Europe's access to raw materials (4/4)

Diversified sourcing from third countries

9. Develop strategic **international partnerships** and associated funding to secure a diversified supply of sustainable critical raw materials, including through undistorted trade and investment conditions
 - Pilot partnerships with **Canada**, interested countries in **Africa** and the EU's **neighbourhood** planned for 2021
10. Promote **responsible mining practices** for critical raw materials through the EU regulatory framework and relevant international cooperation

The European Raw Materials Alliance

- A dedicated alliance to strengthen Europe's **resilience** and **open strategic autonomy** in the field of raw materials
- **Inclusive** and open to industrial and non-industrial stakeholders, including NGOs, trade unions, national governments, regions
- First priority area: Strengthening capacity in the **rare earths and magnets** value chain

Two main workstreams:

1. **Consultation** processes with all stakeholders, to identify and respond to the main raw materials challenges, including regulatory bottlenecks
2. **Investment** channel, identifying priority investment cases and bringing investors and investees together through the Raw Materials Investment Platform

The European Raw Materials Alliance

- **Vision:** ERMA will secure a sustainable supply of raw materials, advanced materials and processing know how for the EU's industrial ecosystems.
- **ERMA has four interconnected goals:**
 - Bolster the creation of environmentally sustainable and socially equitable innovations and infrastructure
 - Implement a Circular Economy of complex products
 - Support Europe's raw materials industry capability, to extract, design, manufacture and recycle materials
 - Promote innovation, strategic investment, and industrial production across specific value chains