



Plan de Acción de la UE sobre Recursos Minerales Críticos y la Alianza Europea de Recursos Minerales



*Foro Chileno-Alemán de Minería y Recursos Minerales 2020;
El Green Deal de la Unión Europea y su impacto en la cooperación
chileno-alemana en minería y recursos minerales*

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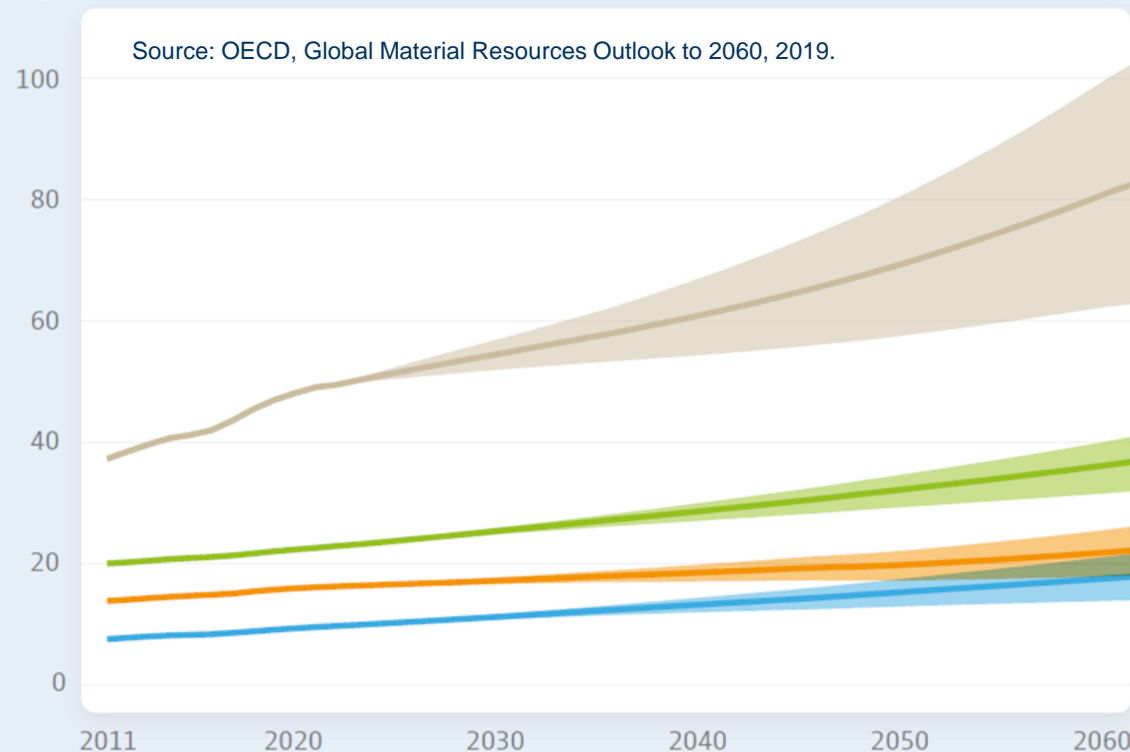
Unit C2 - «Energy intensive industries and Raw Materials»

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Resource needs Future Outlook



Gigatonnes



EU Green Deal (December 2019)

EU new Industrial Strategy for Europe (March 2020)

European recovery plan (May 2020)

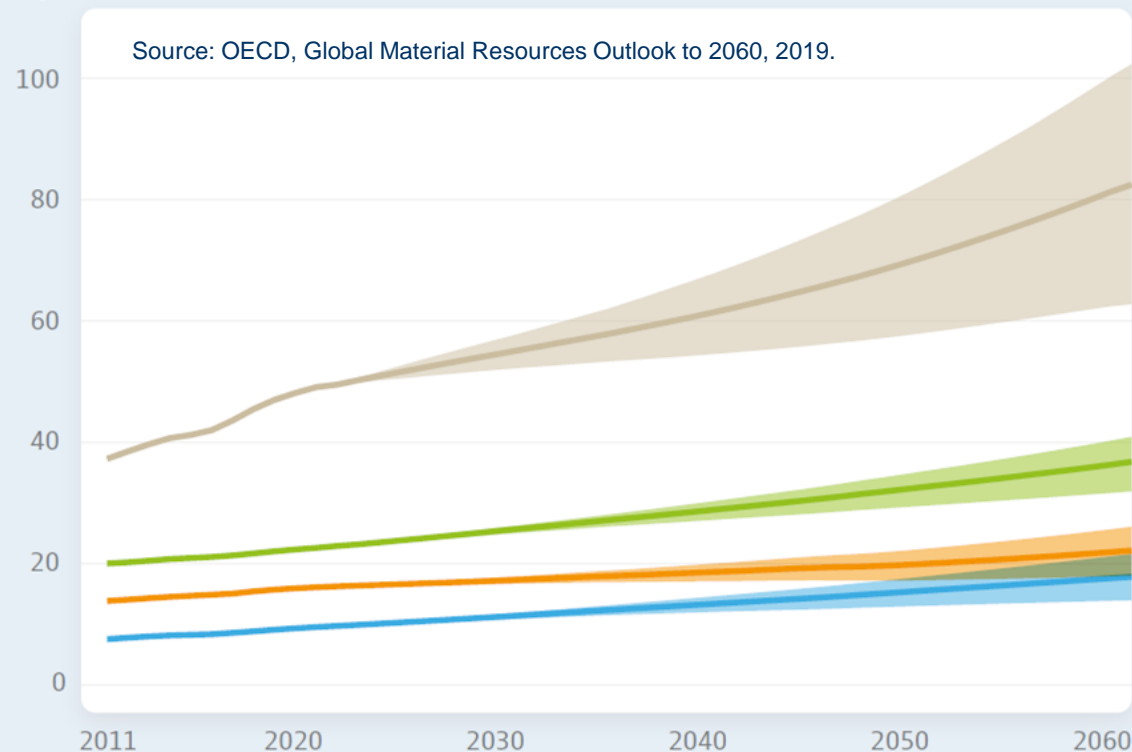
Critical Raw Materials communication (September 2020):

- Action Plan on Critical Raw Materials
- 2020 List of Critical Raw Materials

Resource needs Future Outlook



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European Raw Materials Alliance

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	✓		✓	✓	✓	✓	✓	✓	✓	✓
Beryllium	✓		✓	✓		✓			✓	
Bismuth	✓		✓		✓			✓	✓	✓
Borate	✓		✓	✓	✓	✓	✓		✓	✓
Cobalt	✓	✓	✓	✓	✓	✓			✓	
Coking coal					✓	✓				
Fluorspar					✓		✓			
Gallium	✓		✓	✓		✓			✓	✓
Germanium	✓		✓		✓	✓				
Hafnium	✓		✓		✓	✓			✓	
Indium	✓		✓			✓			✓	
Lithium	✓		✓	✓	✓	✓		✓	✓	✓
Magnesium	✓		✓	✓	✓				✓	✓
Natural graphite	✓		✓	✓	✓	✓			✓	✓
Natural Rubber	✓	✓		✓				✓		
Niobium	✓		✓	✓	✓			✓		✓
Phosphate rock					✓		✓			
Phosphorus	✓				✓		✓			
Scandium	✓			✓		✓				
Silicon metal	✓	✓	✓	✓	✓	✓		✓		✓
Strontium	✓		✓		✓			✓		✓
Tantalum	✓		✓		✓	✓			✓	
Titanium	✓		✓	✓	✓			✓		✓
Tungsten	✓		✓	✓	✓			✓		
Vanadium	✓			✓	✓	✓		✓		✓
PGM	✓		✓	✓	✓	✓		✓		
HREE	✓		✓	✓	✓	✓		✓		✓
LREE	✓		✓	✓	✓	✓		✓		✓

Which materials we use for green technologies?

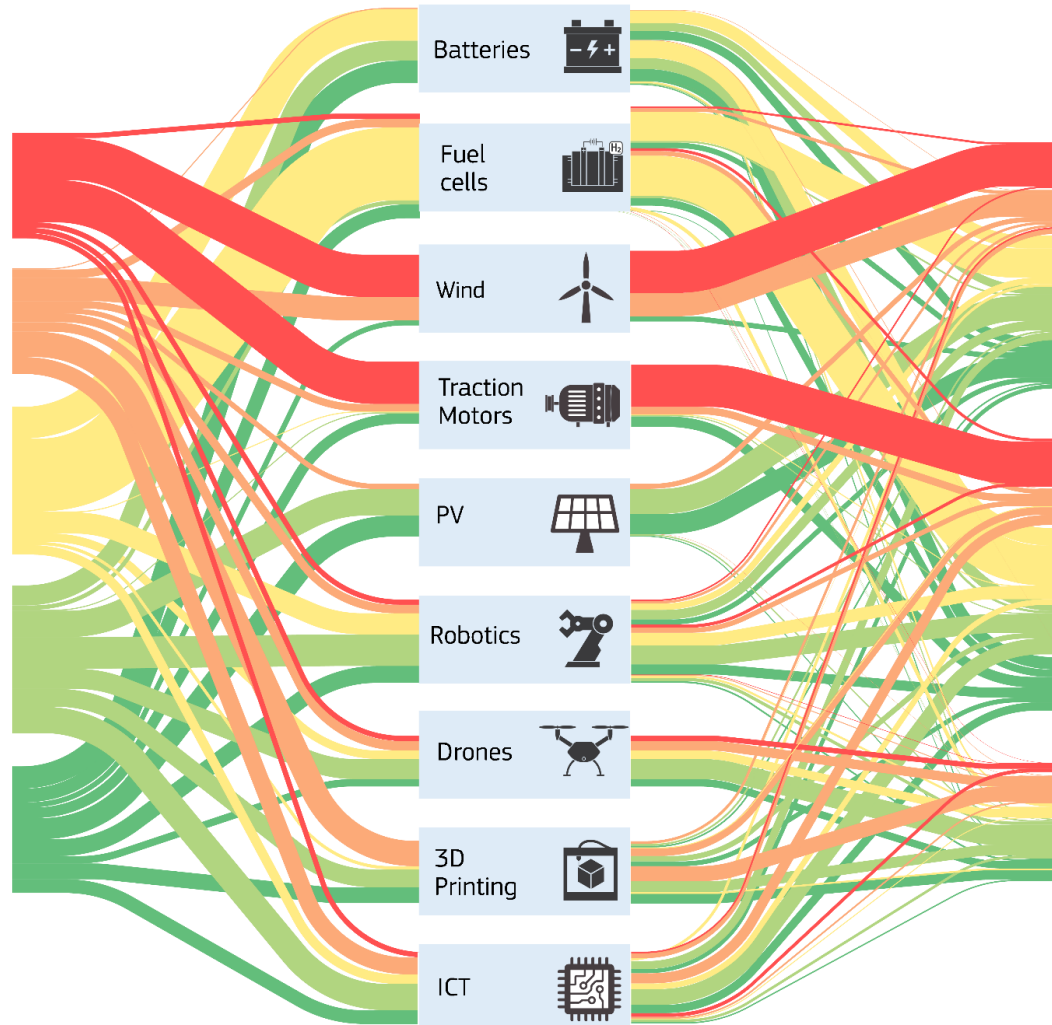


Technologies

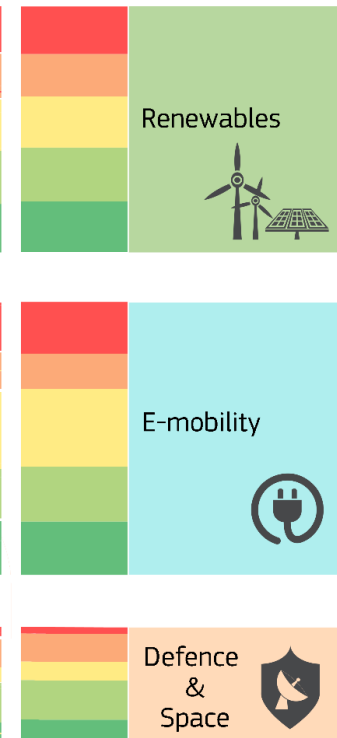
Materials

Supply Risk
(sorted largest to smallest)

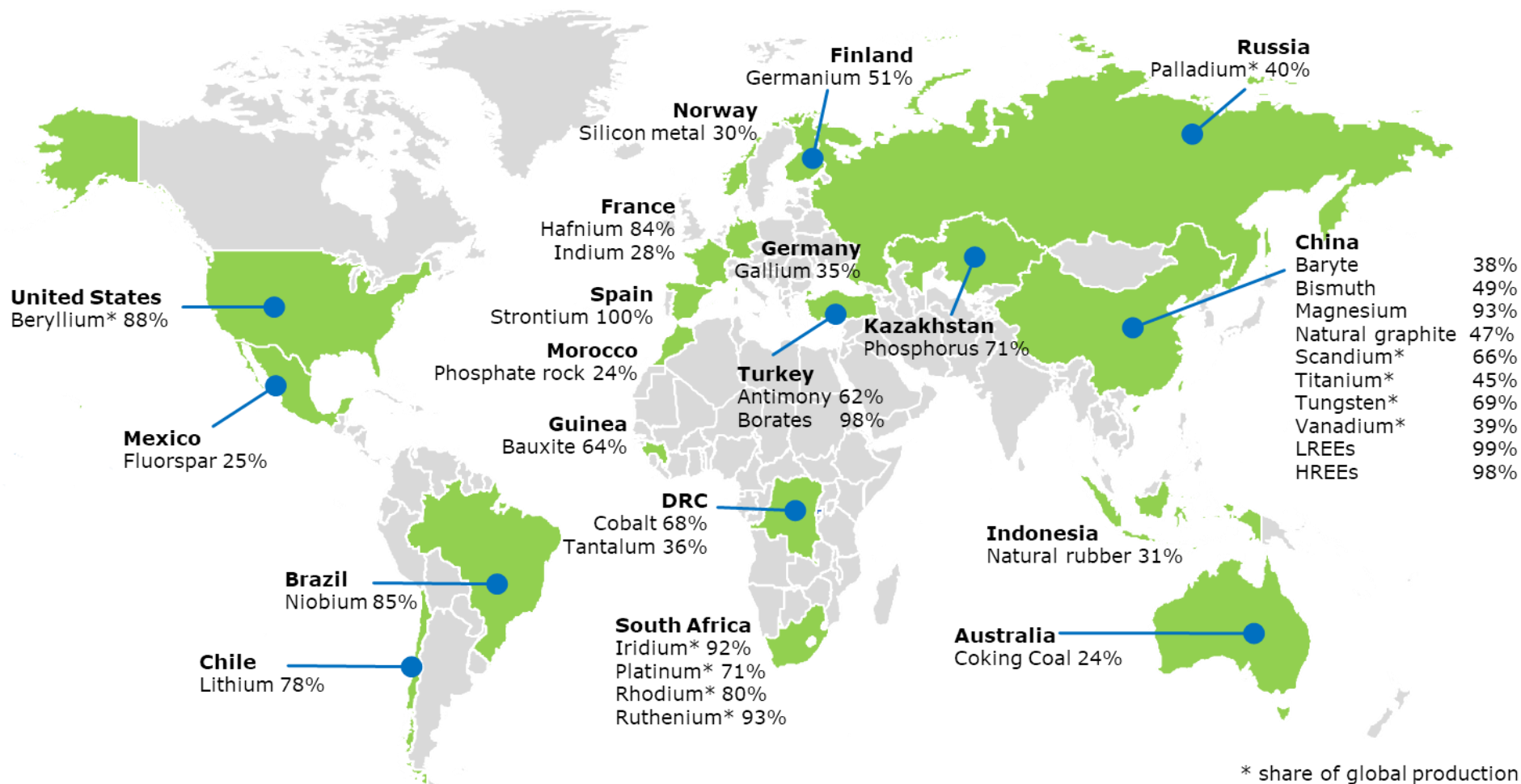
Very high	LREEs HREEs
High	Magnesium Niobium Germanium Borates Scandium
Moderate	Vanadium Strontium Cobalt PGMs Natural graphite
Low	Indium Lithium Tungsten Titanium Gallium, Hafnium Silicon metal
Very low	Manganese Chromium Zirconium Tellurium Nickel, Copper



Sectors



Where EU sources from?



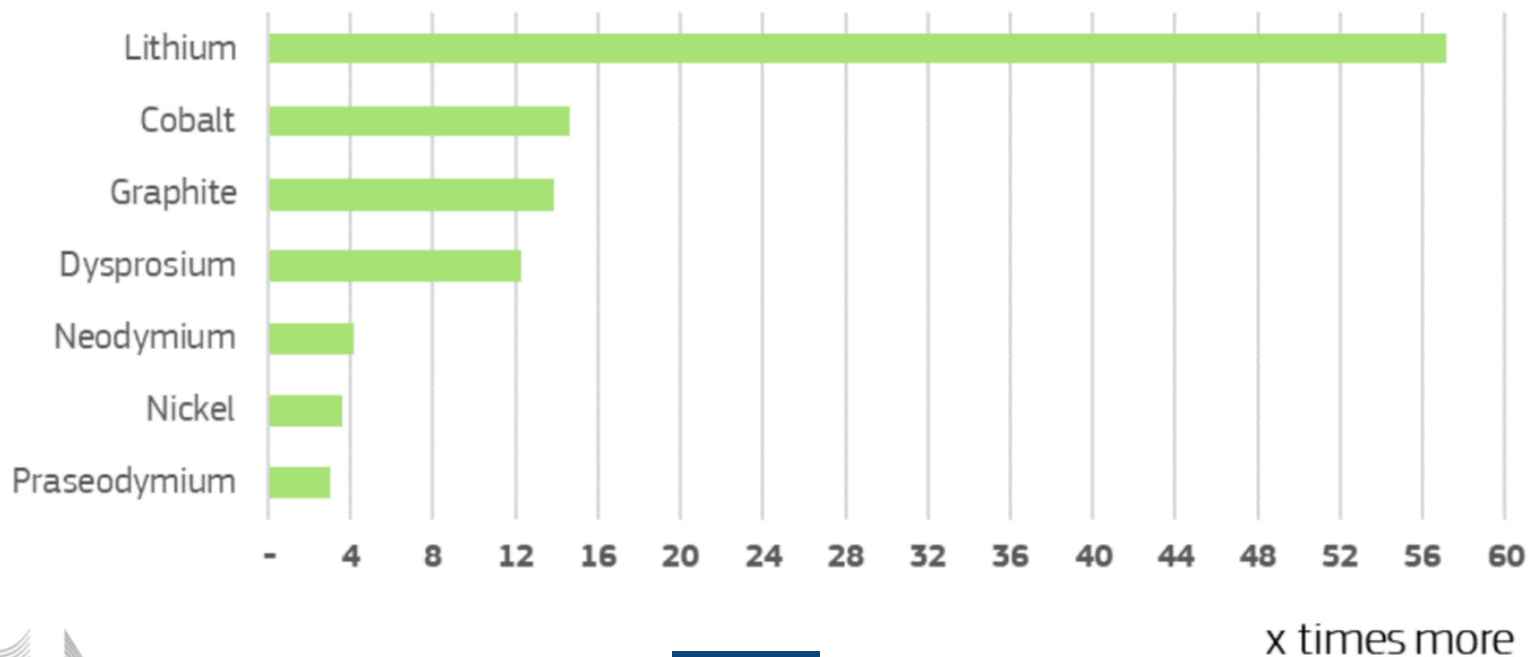
Shown here is the share of supply to the EU
Source: JRC (2020): Study on the EU's list of critical raw materials

How much will we need for green transition?



The green and digital transitions will lead to a drastic increase in European demand for certain critical raw materials by 2050

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



Action Plan on Critical Raw Materials





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



Resilient value chains for EU industrial ecosystems

1. Launch a **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 erma.eu
 - Actors: EIT RawMaterials, EIP on Raw Materials, Industry, Commission, investors, European Investment Bank, civil society, unions, Member States, regions
 - Launched on 29 September 2020
 - Do other Member States want to join?
 - First investments/partnerships?





Resilient value chains for EU industrial ecosystems

2. Develop **sustainable financing criteria** for the mining extractive and processing sectors in Delegated Acts

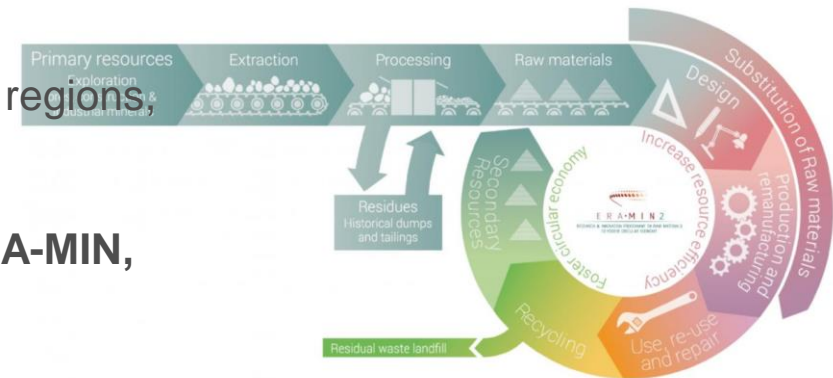
- The EU sustainable finance taxonomy is an EU classification to guide public and private investments towards sustainable activities.
- Action plan on financing sustainable growth in March 2018.
- Technical Expert Group (TEG) on sustainable finance in July 2018.
- Taxonomy Regulation was published in May 2020
- Platform on sustainable finance was created in October 2020
- By June 2021 the Delegated Act will establish the actual list of environmentally sustainable activities by defining technical screening criteria for each environmental objective.
- This should help **to mobilize investments for exploration, mining and processing projects** for critical raw materials in a sustainable and responsible way.

https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en

Circular use of resources, sustainable products and innovation

3. Launch critical raw materials **research and innovation** on **waste processing, advanced materials and substitution**

- To decouple growth from resource use through sustainable product design and mobilizing the potential of secondary raw materials
- Circularity and recycling of raw materials will help to cover a growing share of the EU's raw materials demand.
- Actors: EU, Member States, EIT RawMaterials, regions, R&I Community
- How: **Horizon Europe, Member States via ERA-MIN, EITRM**

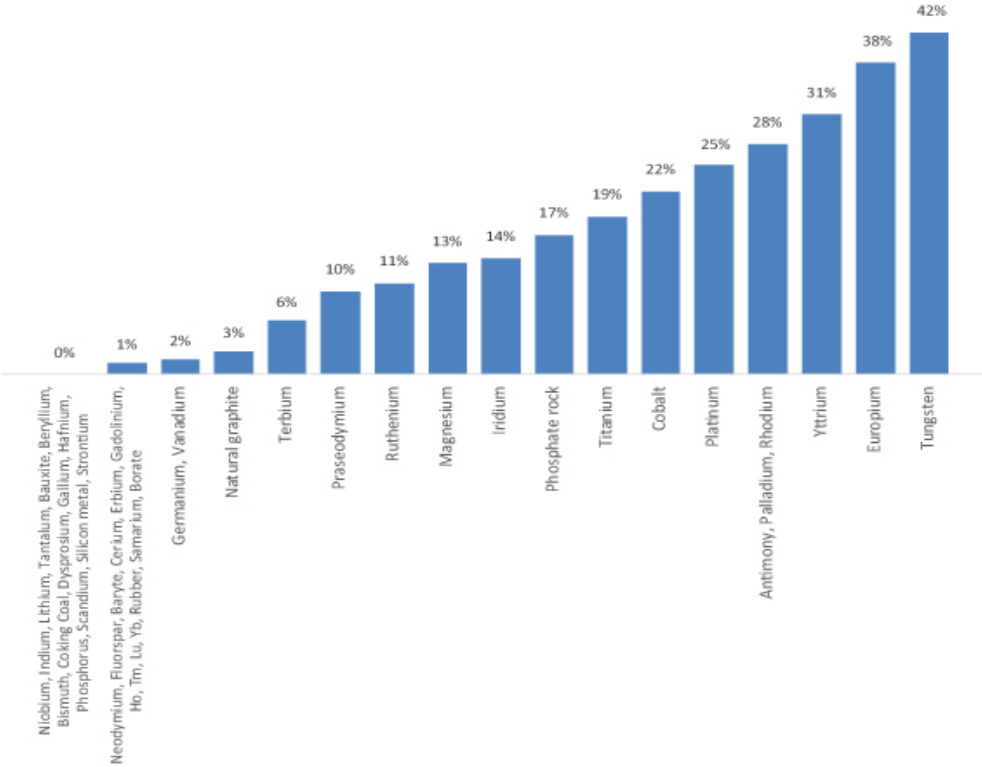




Circular use of resources, sustainable products and innovation

4. Map the potential supply of **secondary critical raw materials** from **EU stocks and waste** and identify **viable recovery projects**

- 50% of some metals such as iron, zinc, or platinum are recycled and they cover more than 25% of the EU's consumption
- **Secondary production of most of the CRMs** (rare earths, gallium, or indium) makes only a **marginal contribution**.
- EU and MS collaboration to build **secondary raw materials intelligence**



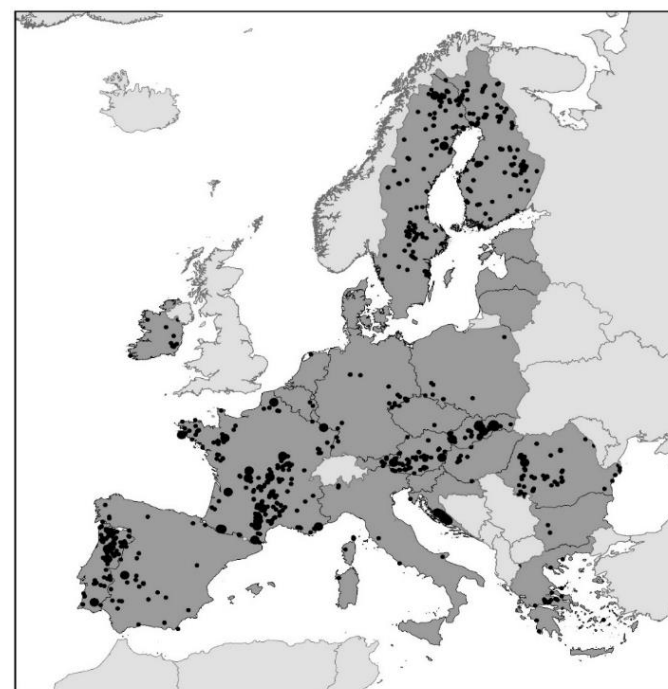
Sourcing from the European Union

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

Roadmap:

- To harmonize data using UNFC to identify relevant CRM deposits
- To identify MS and regions where sustainable mining projects could be developed, possibly connected to the just transition mechanism.
- To map bottlenecks in CRM value chains

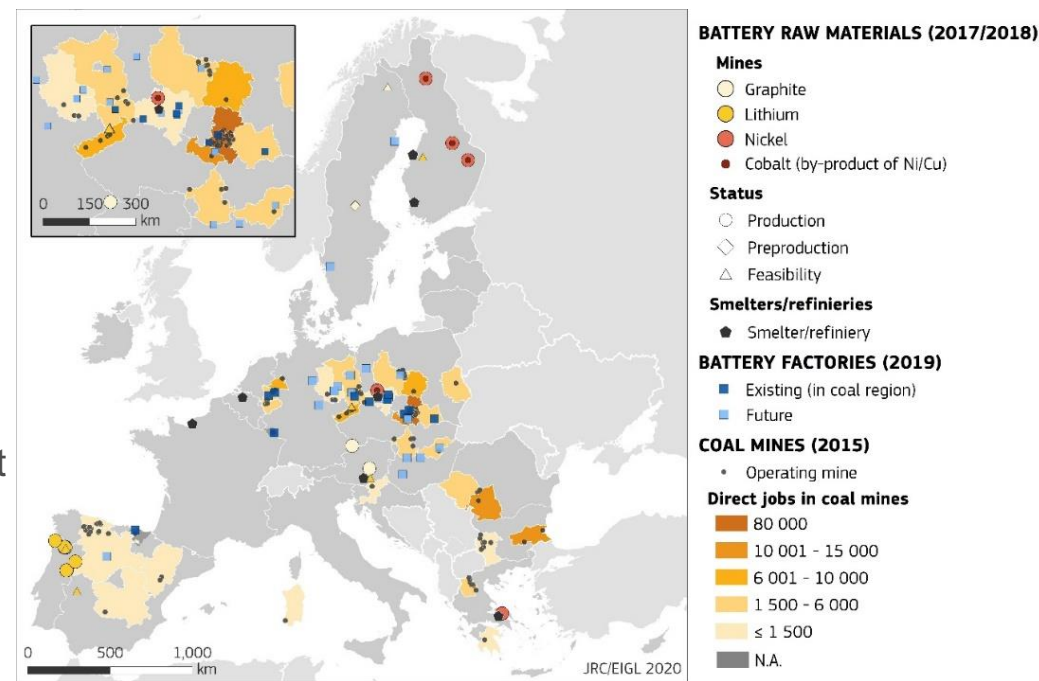
Actors: EU, Member States, EuroGeoSurveys, regions, industry and other stakeholders



Data provided by EuroGeoSurveys combined with other EU data sources

Sourcing from the European Union

6. Develop expertise and skills in mining, extraction and processing technologies, as part of a balanced transition strategy in **regions in transition**
- Some EU BRMs lie in regions heavily dependent on coal or carbon-intensive industries, where battery factories are planned.
 - The Just Transition Mechanism will support the economic transformation of these regions towards the supply of CRMs and the associated value chain
 - Actors: EU, industry, trade unions, EIT RawMaterials, Member States and regions



Sourcing from the European Union

7. Deploy **Earth-observation** programmes and remote sensing for resource exploration, operations and post-closure environmental management

Challenges:

- mapping secondary RM: mining and urban wastes
- discovery of new primary RM deposits combining EO & in situ data

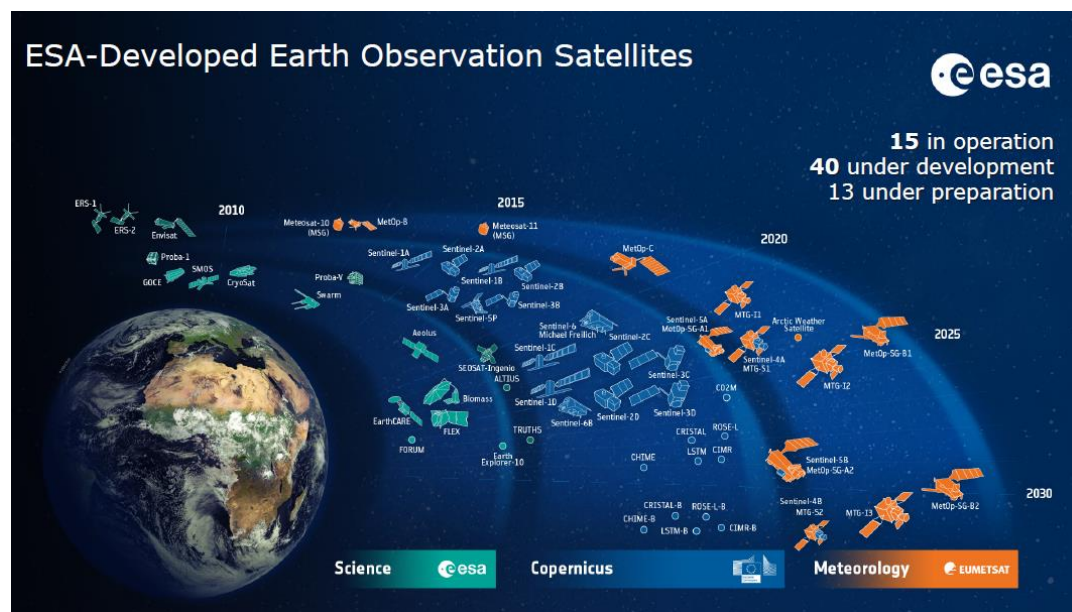
Tools:

- Horizon Europe Research and Innovation program
- Copernicus: Land monitoring program > the European Ground monitoring service (2022)
- European Space Agency: EO Projects and thematic Exploitation Platforms (e.g. Geohazards exploitation platform)

Actors:

- EU, ESA, industry

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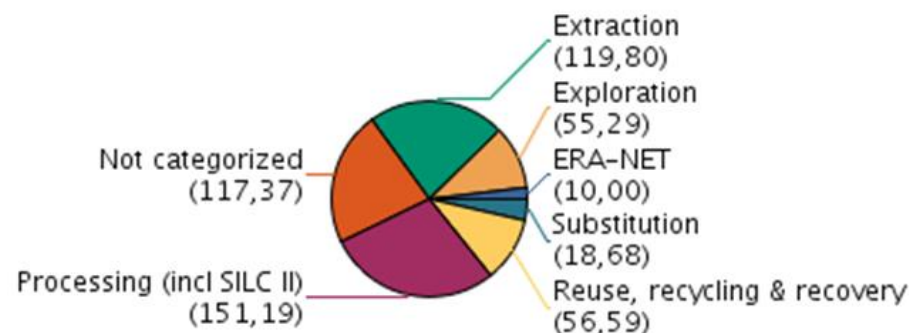




8. Develop Horizon Europe R&I projects on processes for **exploitation and processing of critical raw materials** to reduce environmental impacts

- The EU and its Member States already have the best legislative framework in place to ensure that mining takes place under environmentally and socially sound conditions.
- Innovative technological solutions are transforming the mining and processing of critical raw materials, which is evolving towards automation and digitalization
- **How?** EU via HE, Member States via ERA-MIN, EIT RawMaterials
- **Actors:** EU, Member States, EIT RawMaterials, regions, R&I Community

H2020-EU.3.5. - SOCIETAL CHALLENGES - Climate action, Environment, Resource Efficiency and Raw Materials. H2020 3.5.3 Ensuring the sustainable supply of non-energy and non-agricultural raw materials





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

- Due to the geological limitations of the EU, future demand of primary critical raw materials will continue to be largely met by imports also in the medium to long term.
- The EU's open strategic autonomy needs to be anchored in well-diversified and undistorted access to global markets for raw materials.
- How: develop strategic partnerships with resource rich countries: from countries close to the EU like **Norway, Ukraine** and the **Western Balkans**, highly developed mining countries like **Canada and Australia**, countries in **Latin America**.
- Such strategic partnerships can help Africa countries' to develop **responsible mining** by improving local governance and contributing to their economic and social development.
- Actors: EU, Member States, industry and third country counterparts



Diversified sourcing from third countries

10. Promote **responsible mining practices** for critical raw materials through the EU regulatory framework and relevant international cooperation

- Increased engagement with **strategic partners** to secure critical raw materials will need to go hand in hand with **responsible sourcing**.
- Responsible sourcing and due diligence are **growing in importance** throughout the raw materials value chain.

Tools:

- EU Regulation on Conflict Minerals applies to EU importers as of 1 January 2021
- The European Partnership on Responsible Minerals helps mines to comply with the EU Regulation and OECD due diligence guidance
- The new Batteries Regulation will address the responsible sourcing of BRMs
- RMSG is developing the **EU sustainable principles for raw materials**
- **Actors:** EU, Member States, industry, civil society organisations





Resilient value chains for EU industrial ecosystems

1. **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 erma.eu
 - Launched on 29 September 2020
 - Operationally managed by EIT RawMaterials, a Knowledge and Innovation Community of the European Institute for Innovation and Technology
 - Governance by European Commission and European Innovation Partnership of Raw Materials
 - Actors: The alliance will involve all relevant stakeholders, including industrial actors along the value chain, Member States and regions, trade unions, civil society, research and technology organizations, investors and NGOs.
 - Stakeholders can join the Alliance by signing its declaration under erma.eu

1. Value chain-specific consultation processes:

1. Identify and respond to raw material challenges along industrial ecosystems and within the wider society
2. Provide tailored solutions to industry needs
3. Unlock regulatory bottlenecks
4. Promote stakeholders' strong engagement and commitment through an open process

2. Investment channel for raw materials projects:

1. Select and prioritize cases to secure primary and secondary raw materials supply for European industrial ecosystems
2. Install Raw Materials Investment Platform (RMIP) to bring investors and investees together
3. Define case-specific financing strategies and mechanisms:
 - EU Recovery funds
 - Important Projects of Common European Interest
 - European Investment Bank
 - European Bank for Reconstruction and Development
4. Assess EU funding opportunities and financing sources for investment opportunities inside and outside Europe

Resilient value chains for EU industrial ecosystems

1. ERMA's activities will be carried out across 'clusters' defined around specific value chains.
2. The first cluster deals with the most critical value chain for many EU industrial ecosystems – rare earth element (REE) magnets and motors.
3. The second cluster will consider raw and advanced materials for energy storage and conversion in stationary and non-stationary applications.
4. The underlying conditions for all the clusters are sustainability (social, economic and environmental, in line with UN Sustainability Development Goals), digitalization (in line with EU's Digital Strategy) and circularity (following the EU Circular Economy Action Plan).
5. The clusters' work will contribute to capacity building and to the goals of the EU Just Transition fund through education, training, research and innovation across the wider society.



Thank you!

*Foro Chileno-Alemán de Minería y Recursos Minerales
2020*

*El Green Deal de la Unión Europea y su impacto en la
cooperación chileno-alemana en minería y recursos
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