REPORT

IMPACT OF THE
CRITICAL RAW MATERIALS ACT
ON THE ENERGY STORAGE
SECTOR

An analysis of: CIC energiGUNE
MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE

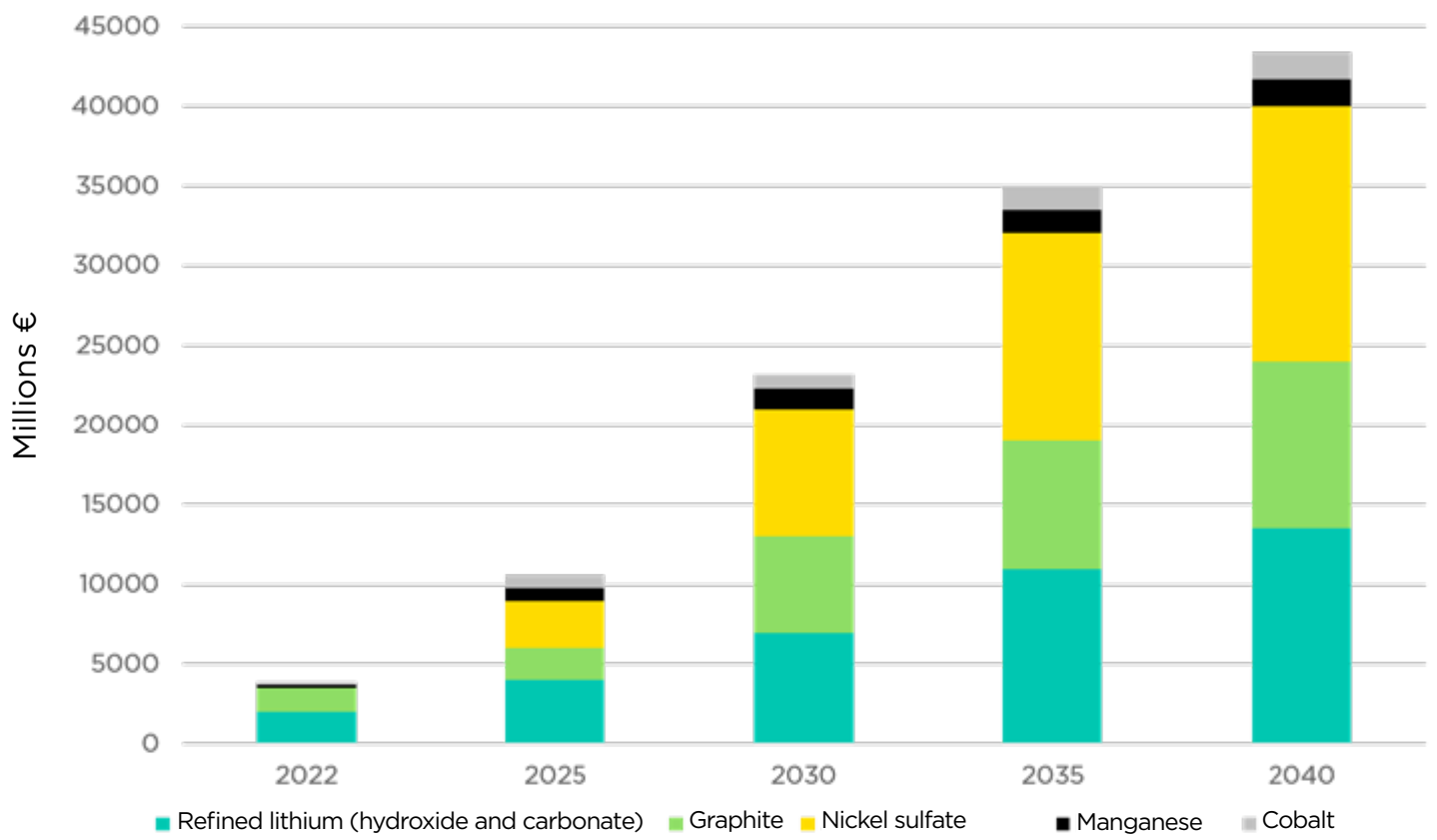
The energy storage sector is key to achieving Europe's climate objectives, and the Net Zero Industry Act and the Critical Raw Materials Act not only confirm this, but also define a regulatory framework aimed at promoting it in the most agile and sustainable way, accelerating Europe's positioning as a global benchmark in the energy transition.

CRITICAL RAW MATERIALS ACT

The **Critical Raw Materials (CRM) Act** is one of the most relevant regulations today, since its implementation depends, to a large extent, on **Europe's energy independence and the achievement of the objectives** set for the year 2030.

Raw materials are essential for any production process and are the **beginning of the industrial value chain**, so the CRM Act defines those that "are important for the EU economy and whose **supply is exposed to a high level of risk**". These critical raw materials are often indispensable inputs for strategic sectors, such as **renewable energies, energy storage, digital industry,** among others, and it is important not to forget that their extraction has significant social, environmental and economic impacts.

NEED FOR INVESTMENT IN RAW MATERIALS FOR BATTERIES TO MEET EU DEMAND

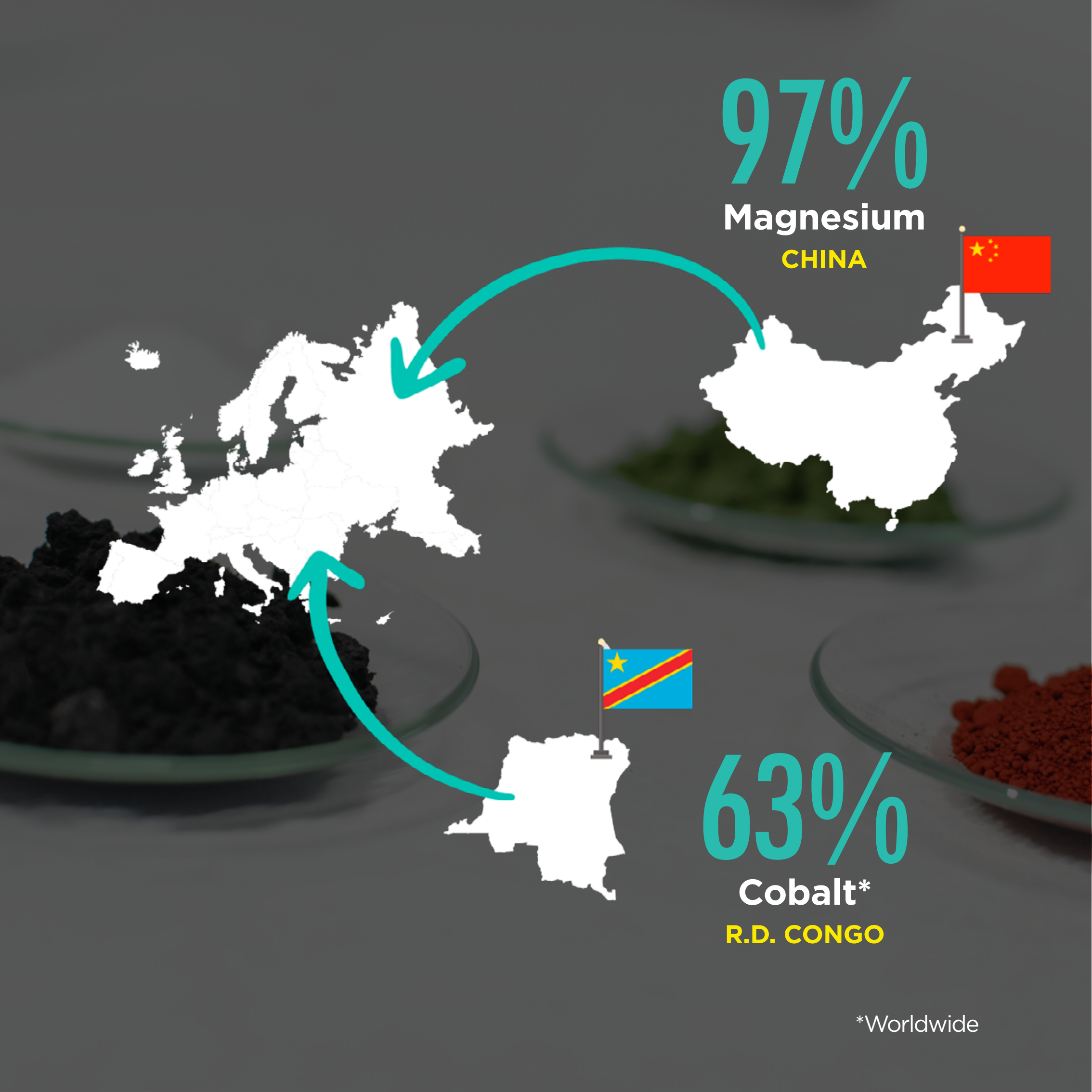


One of the major problems with critical materials, as defined by this regulation, is "that the **EU is almost exclusively dependent on imports for many critical raw materials**" and in addition, "**the suppliers of these imports are often highly concentrated in a small number of third countries**, both at the extraction and processing stages".

"The EU is almost exclusively dependent on imports for many key raw materials"

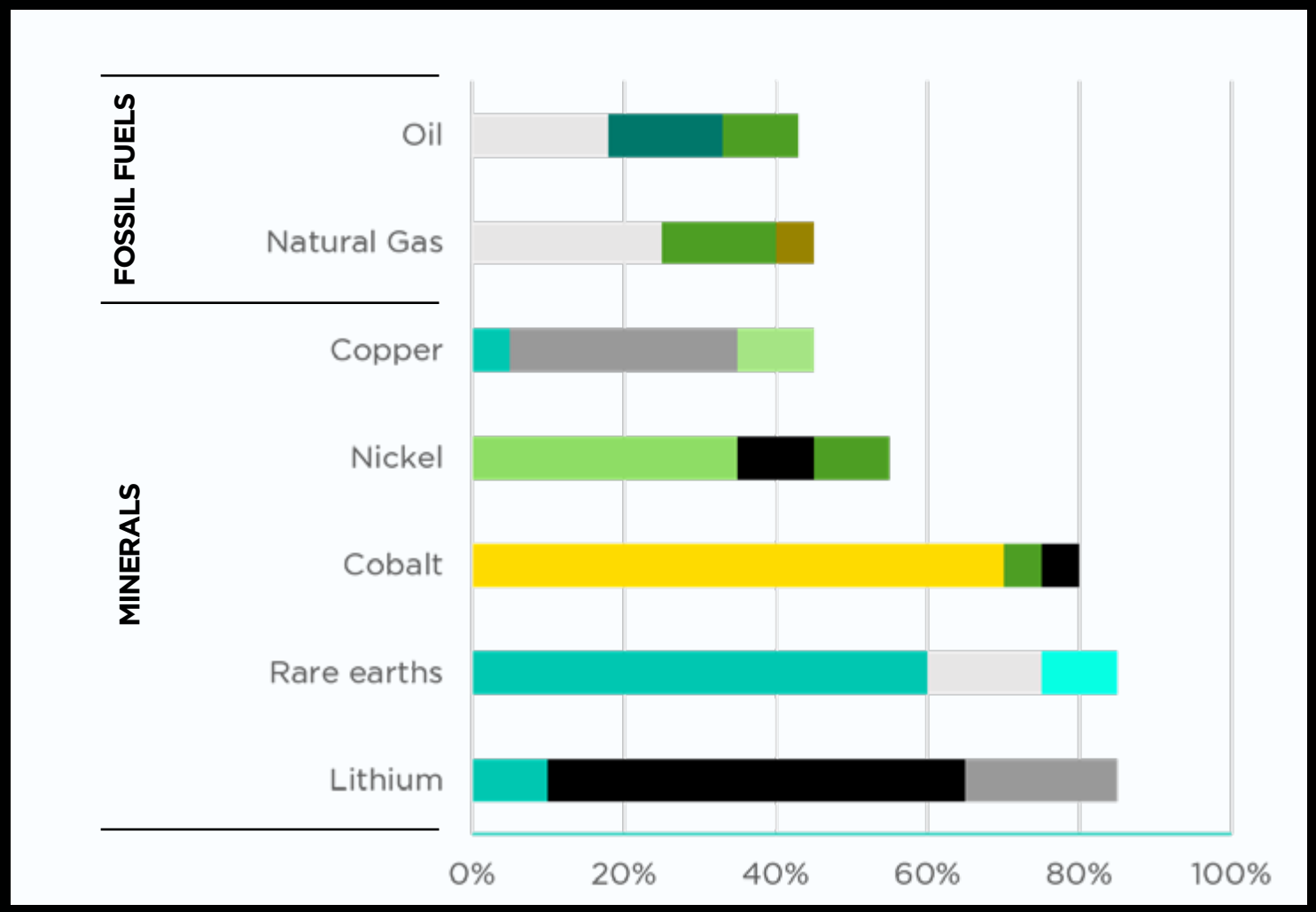
As clear examples of this dependence, we can find that: the EU obtains **97% of its magnesium from China**; the **rare earths** used in permanent magnets are refined exclusively in **China**; or that **63% of the world's cobalt**, used in batteries, is extracted in the **Democratic Republic of Congo**, while **60%** is refined in **China**.

Clearly, this dominance both in obtaining raw materials and in their initial processing generates a high risk of supply, price volatility and technological dependence, not to mention the political instability of some of these countries.

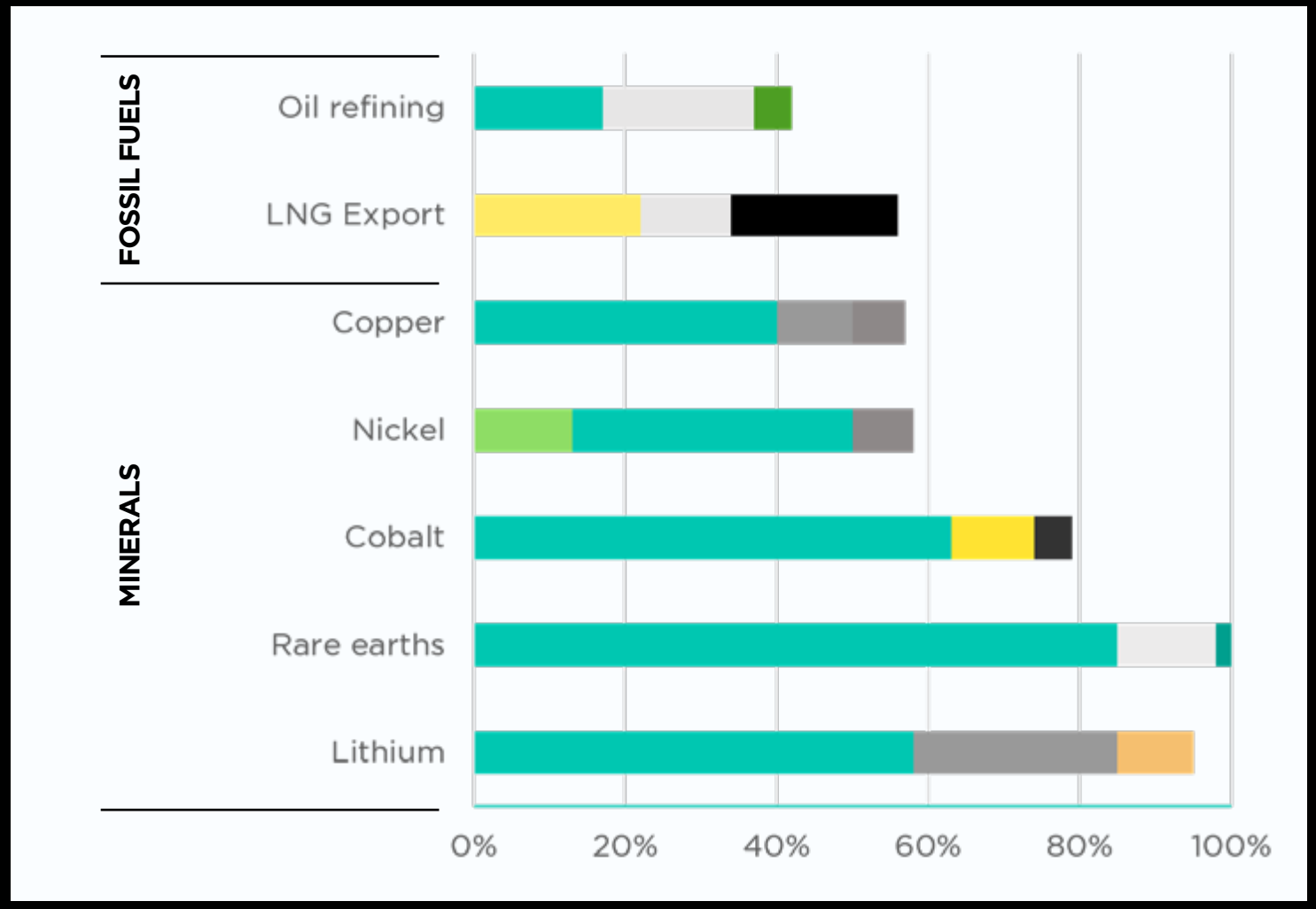


*Worldwide

EXTRACTION



PROCESSING



- Qatar
- Indonesia
- DRC
- Philippines
- China
- US
- Saudi Arabia
- Russia
- Iran
- Australia
- Chile
- Japan
- Myanmar
- Peru
- Finland

“Global demand for lithium to make batteries for mobility and energy storage is expected to increase 89-fold by 2050”

All this becomes even more relevant if we take into account that “the **global demand for lithium** to manufacture batteries for mobility and energy storage is **expected to increase 89-fold by 2050** and the demand for rare earths used to manufacture permanent **magnets** used in wind turbines or electric vehicles is expected to **increase six to seven times** by 2050”.

Over the last few years, Europe has developed a series of initiatives focused precisely on **strengthening and guaranteeing the supply of these critical materials**, but because it was not enough to guarantee a regulatory framework that would achieve the objectives, it was decided to generate the Critical Raw Materials Act, the objectives of which are as follows:

- **Strengthen the different stages of the European value chain** of critical raw materials.

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- Improve the EU's ability to **monitor and mitigate current and future risks** of disruption to the supply of critical raw materials.

- To guarantee the **free circulation** of critical raw materials in the single market, while ensuring a **high level of environmental protection** by improving their **circularity and sustainability.**

It was therefore decided that the CRM list should include not only strategic raw materials, but any that are of **great importance to the overall economy of the Union** and for which there is a high risk of supply disruption.

The review of the list of critical materials is carried out through an assessment based on **production, trade, applications, recycling and substitution data**, including those that meet or exceed the thresholds for both economic importance and supply risk, without ranking the relevant raw materials in terms of criticality. This list is therefore "live" and varies according to the needs of the Union in each review period.

SUPPLY RISK OF RAW MATERIALS BY SOME KEY TECHNOLOGIES

CRITICAL RAW MATERIAL	BATTERIES	FUEL CELLS	WIND	PV
LREEs		●	●	
HREEs		●	●	
MAGNESIUM		●		
NIOBIUM			●	
GERMANIUM				●
PHOSPHORUS	●			
BORATES		●	●	●
STRONTIUM		●		
COBALT	●	●		
PGMs		●		
NATURAL GRAPHITE	●	●		
INDIUM				●
VANADIUM	●	●		
LITHIUM	●	●		
FLUORSPAR	●			
TITANIUM	●	●		
GALLIUM				●
ARSENIC		●		

CRITICAL RAW MATERIAL	BATTERIES	FUEL CELLS	WIND	PV
SILICON METAL	●	●		●
MOLYBDENUM		●	●	●
MANGANESE	●	●	●	
TIN	●			●
CHROMIUM		●	●	
ZIRCONIUM		●		
SILVER		●		●
ALUMINUM	●	●	●	●
TELLURIUM				●
NICKEL	●	●		●
IRON ORE	●	●	●	●
SELENIUM		●		
ZINC				●
CADMIUM				●
COPPER	●	●	●	●
GOLD		●		
LEAD	●		●	●

SUPLLY RISK (from high to low)

Source: European Commission

As the regulation clearly explains, in order to strengthen capacities in Europe along the value chain of strategic raw materials, the Union:

- It must increase the use of its own geological resources and generate capacity to **produce at least 10% of the Union's consumption of strategic raw materials**.

- It must increase its processing capacity along the supply chain to **produce at least 40% of its annual consumption of strategic raw materials** and increase the use of **secondary raw materials** to cover the consumption of strategic raw materials, thereby improving safety and sustainability.

- To achieve this, recycling capacity in Europe is expected to **produce at least 15% of the annual consumption of strategic raw materials** by 2030.

- In addition, another objective of this regulation is to ensure that by 2030, **Europe is not dependent on a single third country for more than 65% of its supply** of any strategic raw material, unprocessed and at any stage of processing, paying particular

1

EXTRACTION

At least 10% of the EU's annual consumption for extraction

2

PROCESSING

At least 40% of the EU's annual consumption for processing

3

RECYCLING

At least 15% of the EU's annual consumption for recycling

4

EXTERNAL SOURCES

No more than 65% of key raw material consumption in EU may come from a 3rd country.

attention to those countries with which the Union has established a **Strategic Partnership** on raw materials that offers greater guarantees in terms of supply risk.

To contribute to this goal, the European Commission is making great efforts to generate **agreements with countries such as Canada or Chile** to diversify in the procurement of materials such as nickel or lithium.

Another relevant point in this regulation is **sustainability**. Clearly, raw material sourcing has a very significant impact on the environmental footprint of a product. Therefore, strategic projects should be evaluated taking into account international instruments that cover all aspects of **sustainability, ensuring environmental protection, socially responsible practices, including respect for human rights,** such as women's rights, and transparent business practices.

One of the highlights of the CRM Act is that the Commission will develop a system for **calculating the environmental footprint of critical raw materials,** including a verification process, to ensure that critical raw materials placed on the Union market publicly display information on that footprint.

This system "shall be based on scientifically sound assessment methods and relevant international standards in the field of **life cycle assessment**". Once the calculation methods have been determined, performance classes will be defined for CRMs thus allowing purchasers to easily compare the relative environmental footprint of available materials and driving the market towards more sustainable materials.

Each of the chapters of this document elaborates in detail on the different points discussed above. In the following, we will discuss those points that, in our view, have an impact on key sectors such as energy storage.

General Provisions

In Chapter I, in addition to the key definitions, which will make it possible to standardize terms in the different member countries, the main objectives of this regulation are set out:

(i) Extraction capacity in Europe should **generate at least 10% of the Union's annual consumption** of strategic raw materials, insofar as the Union's reserves allow.

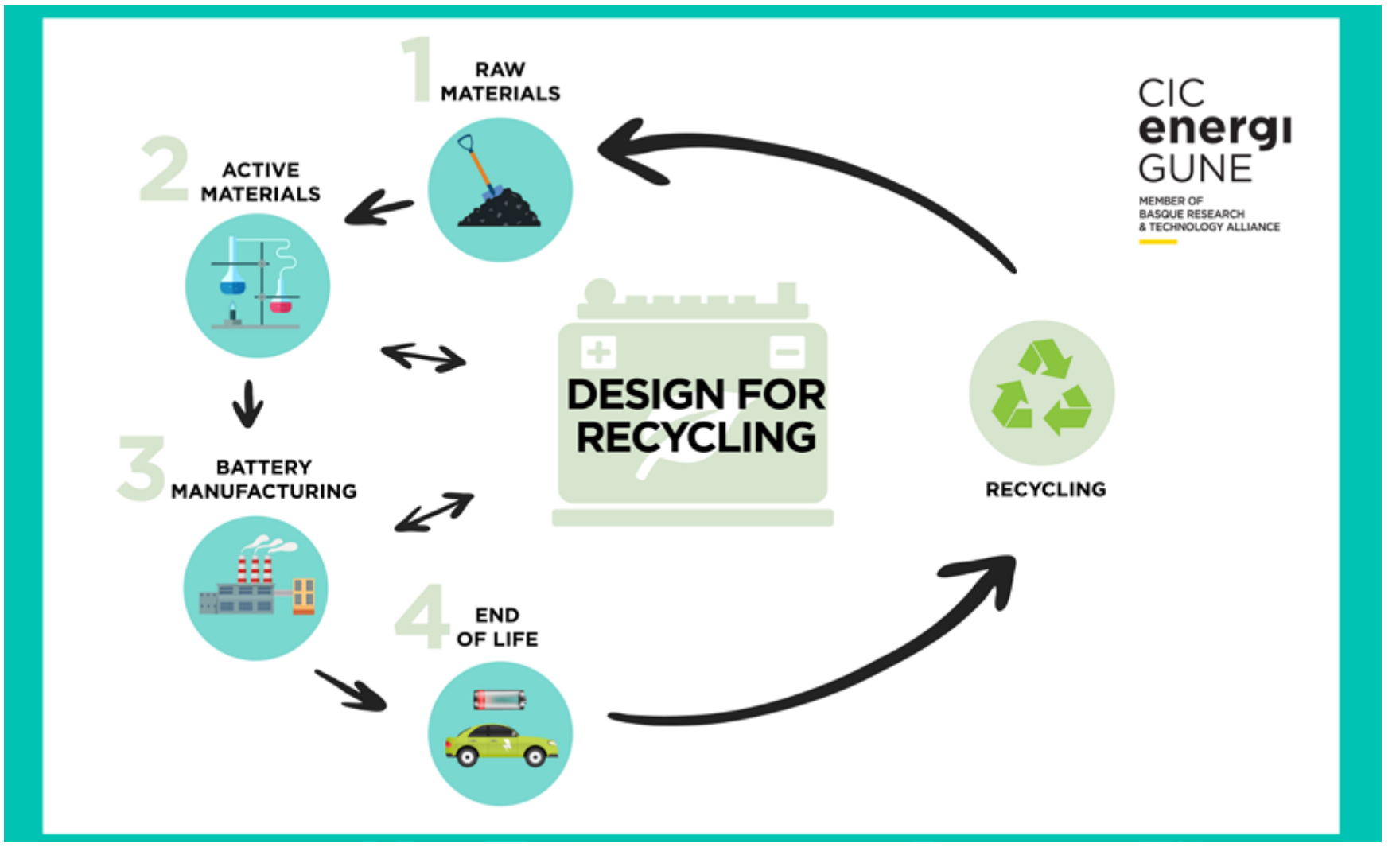
(ii) The processing capacity of these critical raw materials should be **at least 40% of the Union's annual consumption** of strategic raw materials.

(iii) Recycling capacity in Europe, including all intermediate recycling stages, should be **at least 15% of the annual consumption** of strategic raw materials required in the Union.

Another of the most important points in this chapter is related to the need to integrate the concept of **"eco-design"** in products manufactured in Europe.

Although all the measures presented above are absolutely necessary, the reduction in the consumption of raw materials, the increase in the rate

and efficiency of CRM recycling processes and the guarantee of product circularity will only be effective when key concepts such as **durability, reusability, reparability, resource use or efficiency, remanufacturability, second life, recycling, recycled content and the possibility of material recovery** are integrated from the design stage. It is important to bear in mind that around **80% of the impacts of a product are generated at the design stage.**



Critical and strategy raw materials

On the other hand, Chapter II provides the guidelines that will define a raw material as critical and strategic, thus establishing a clear basis for study and analysis.

This chapter defines that the lists of critical and strategic raw materials will be **reviewed at least every four years**. To this end, more than 80 materials used in the EU economy will be assessed in terms of their **supply risk and economic importance**. Supply risk will be determined by the concentration of global and EU supply, dependence on EU imports, entry of secondary materials and technical substitutability. Economic importance will be determined by the share of use, taking into account economic substitutability. A raw material that exceeds these thresholds will be considered a critical and strategic raw material.

Supply risk will be determined by the concentration of world and EU supply, dependence on EU imports, entry of secondary materials and technical substitutability.

Strengthening the Union raw materials value chain

Chapter III establishes the framework for **strengthening the EU strategic raw materials value chain** through the selection and implementation of Strategic Projects.

Strategic projects will be eligible for streamlined permitting processes and easier access to funding opportunities.

A project will be considered strategic when:

1) Make a significant contribution to the security of supply of the Union's strategic raw materials.

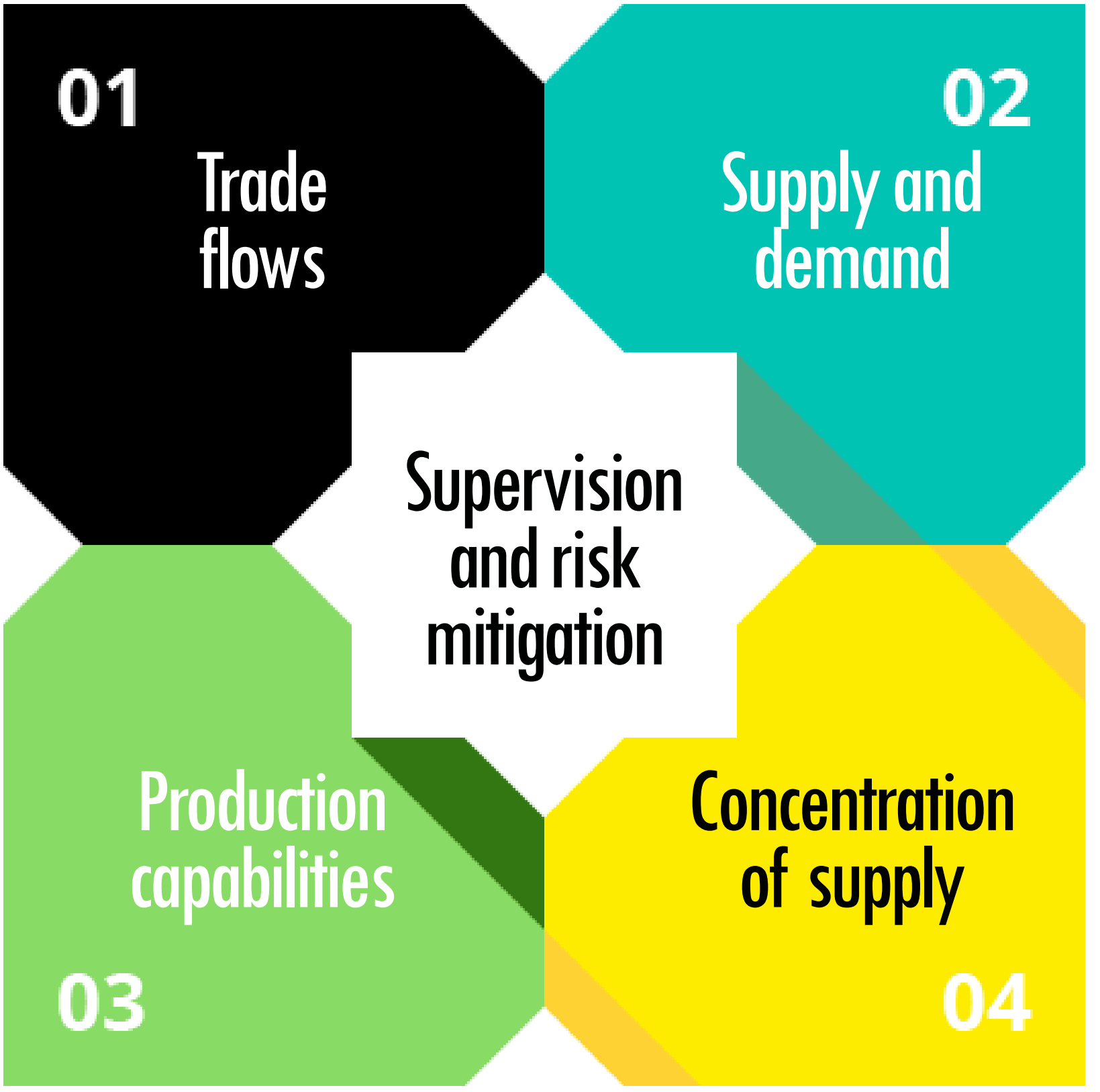
2) Is technically feasible within a reasonable time frame and the expected production volume can be estimated with a sufficient level of confidence

3) Is executed in a sustainable manner, particularly with regard to monitoring, prevention and minimization of environmental impacts, the use of socially responsible practices, including respect for human and labor rights, the potential for quality employment, and the use of transparent business practices with adequate compliance policies to prevent and minimize the risks of adverse impacts on the proper functioning of public administration, including corruption and bribery.

Risk monitoring and mitigation

Chapter IV defines both the mechanism by which the supply of CRMs will be **monitored and the measures to mitigate supply risk**. This will take into account the evolution of the following parameters: trade flows; demand and supply; concentration of European and world supply and production; and production capacities in the different stages of the value chain.

At this point, one of the measures proposed is based on the possibility of carrying out **joint purchases**. This would generate a competitive advantage especially for SMEs and would minimize impacts such as price fluctuation or supply flow.


01
Trade flows
02
Supply and demand
Supervision and risk mitigation
Production capabilities
03
Concentration of supply
04

Sustainability

Chapter V covers everything related to the **sustainability and circularity** of these materials. This section defines the national measures on circularity that the different Member States must adopt and apply within a maximum of 3 years from the publication of this regulation. These measures are summarized in 5 points:

(a) **Increase the rate of collection of waste** with critical raw material recovery potential and ensure its introduction into the appropriate recycling system, maximizing the availability and quality of recyclable material as input for critical raw material recycling facilities.

(b) **Increasing the reuse of products** and components with high potential for recovery of critical raw materials

(c) **Increasing the use of critical secondary** raw materials in manufacturing

(d) **Increase the technological maturity of critical feedstock recycling technologies** and promote material efficiency and critical feedstock substitution in applications by supporting research and innovation.

(e) Ensure that the **workforce is equipped with the necessary skills** to support the circularity of the critical raw materials value chain.

Criteria for environmental footprint certification are also defined. To this end, the Commission will define the rules for the calculation and verification of the environmental footprint of different critical raw materials. The calculation and verification rules will identify the most important impact category. The footprint declaration will be limited to that impact category.

As can be seen, this regulation covers all the factors involved in critical raw materials, and from our point of view, it is the most ambitious of those proposed so far, but without any doubt, its correct implementation will not only allow progress towards climate objectives and energy transition, but will also establish clear bases that will not only guarantee the supply of these materials, but will also provide the necessary impulse to put in place all the mechanisms to advance technologically in areas such as recycling and eco-design.

It will also generate key guidelines that will guarantee the competitive advantage of manufacturing key products in Europe.

Additional key information

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Some additional important data can be found in the **CRM Impact Assessment report**.

It is indisputable, as we have seen above, that critical raw materials are essential for European industry to meet the objectives. For this reason, the EU has a wide network of bilateral agreements covering trade and investment in raw materials through general rules covering all goods and services or provisions specifically dedicated to raw materials. In addition, initiatives such as the proposed **Regulation on batteries and accumulators,** which includes the **battery Passport, or the Directive on Corporate Sustainability,** contain measures that, when adopted, will oblige companies to adopt many of the measures contemplated in this plan, both in terms of sustainability and human rights.

However, it is necessary to be clear that deploying this plan will require significant investments to ensure the effectiveness of the measures taken. This document highlights that according to Commission estimates, the investment needs to guarantee the supply of **25% of European demand** for the five main raw materials for batteries (lithium, cobalt, nickel, manganese and natural graphite) from European sources amount to 7**,000 million euros by 2030 and 13,200 million euros by 2040**. Assuming a share of

public spending to realize these projects comparable to the US IRA, public support of **€2.7 billion by 2030 and €4.7 billion by 2040** would be needed.

7

billion €

Investment by 2030

2,7

billion €

Public funding for 2030

estimated to reach IRA level

13,2

billion €

Investment by 2040

4,7

billion €

Public funding for 2040

estimated to reach IRA level

Other strategic raw materials are also likely to require large investments in light of the ecological transition. For example, **copper for electrifying infrastructure, silicon for solar panels or platinum group metals for hydrogen electrolysis.**

The European Raw Materials Alliance has identified potential investments of **€1.7 billion for the extraction, refining and recycling of rare earths,** as well as for the production of magnets, which would guarantee a **supply of 20% of European demand along the value chain by 2030.** For other CRMs, its potential investment cases amount to **EUR 3.1 billion**.

On the other hand, as for the **Environmental Footprint Declaration,** it should be noted that it would generate an additional cost of between **EUR 3.75 and 10 million** for the supplying companies and the one-off administrative cost could amount to **EUR 14.55 million**.

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