



UTILITALIA

FEDERAZIONE UTILITIES

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Critical raw materials

18th IAEE European Conference
Milan, 24-27 July, 2023





WHO IS UTILITALIA?

Utilitalia is the Federation which brings together 450 utilities operating in the Water, Environment, Electricity and Gas sectors.

It represents them within national and European institutions.

Total staff

96,946

Environmental sector

45,104

Water and gas sector

39,077

Energy sector

12,765

Share of the population served by the companies affiliated to Utilitalia

Water sector

80%

Environmental sector

55%

Gas sector

30%

Energy sector

15%

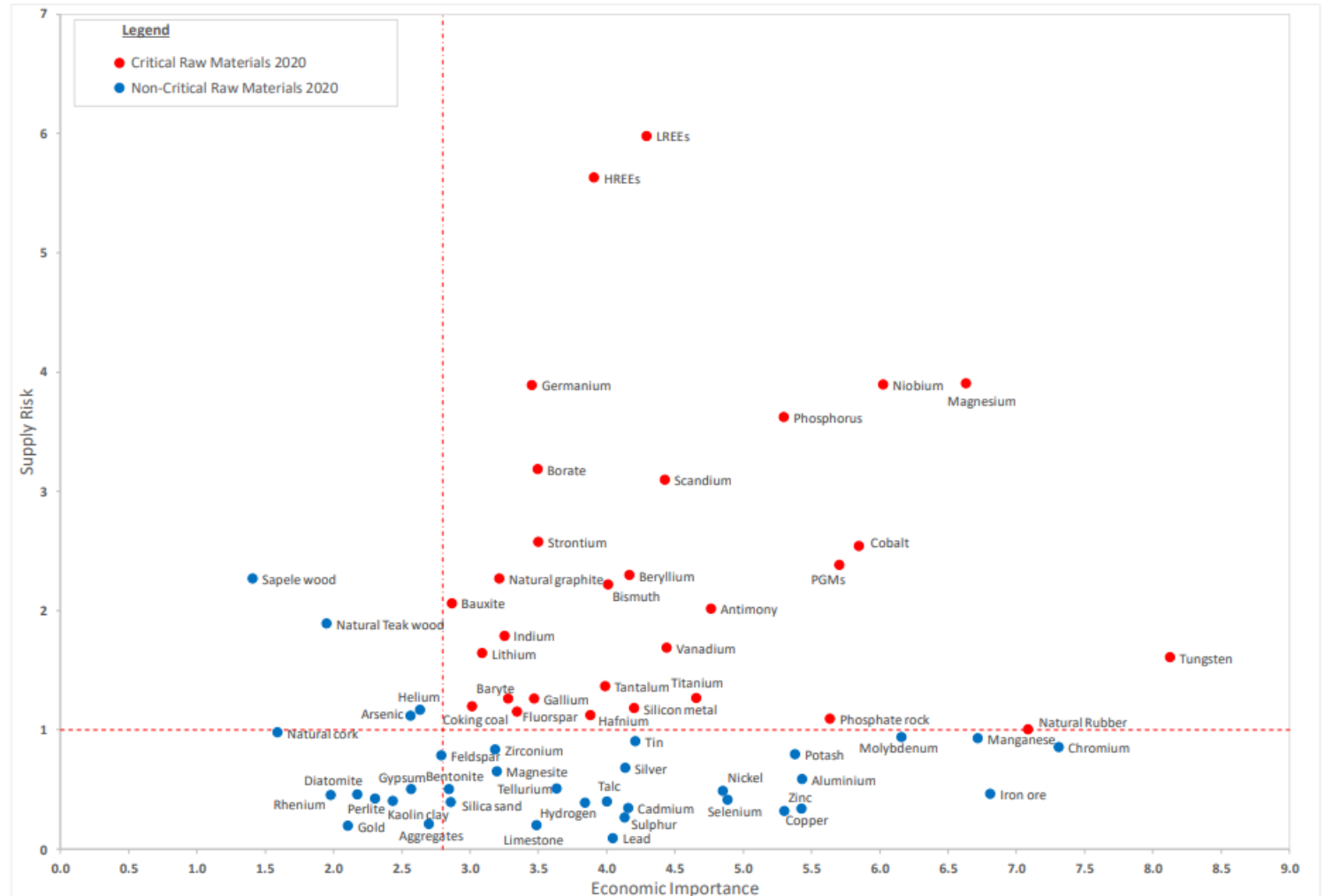
Critical Raw Materials.

Overview

Critical Raw Materials (CRMs) are materials of strategic economic importance characterized by high supply risk.

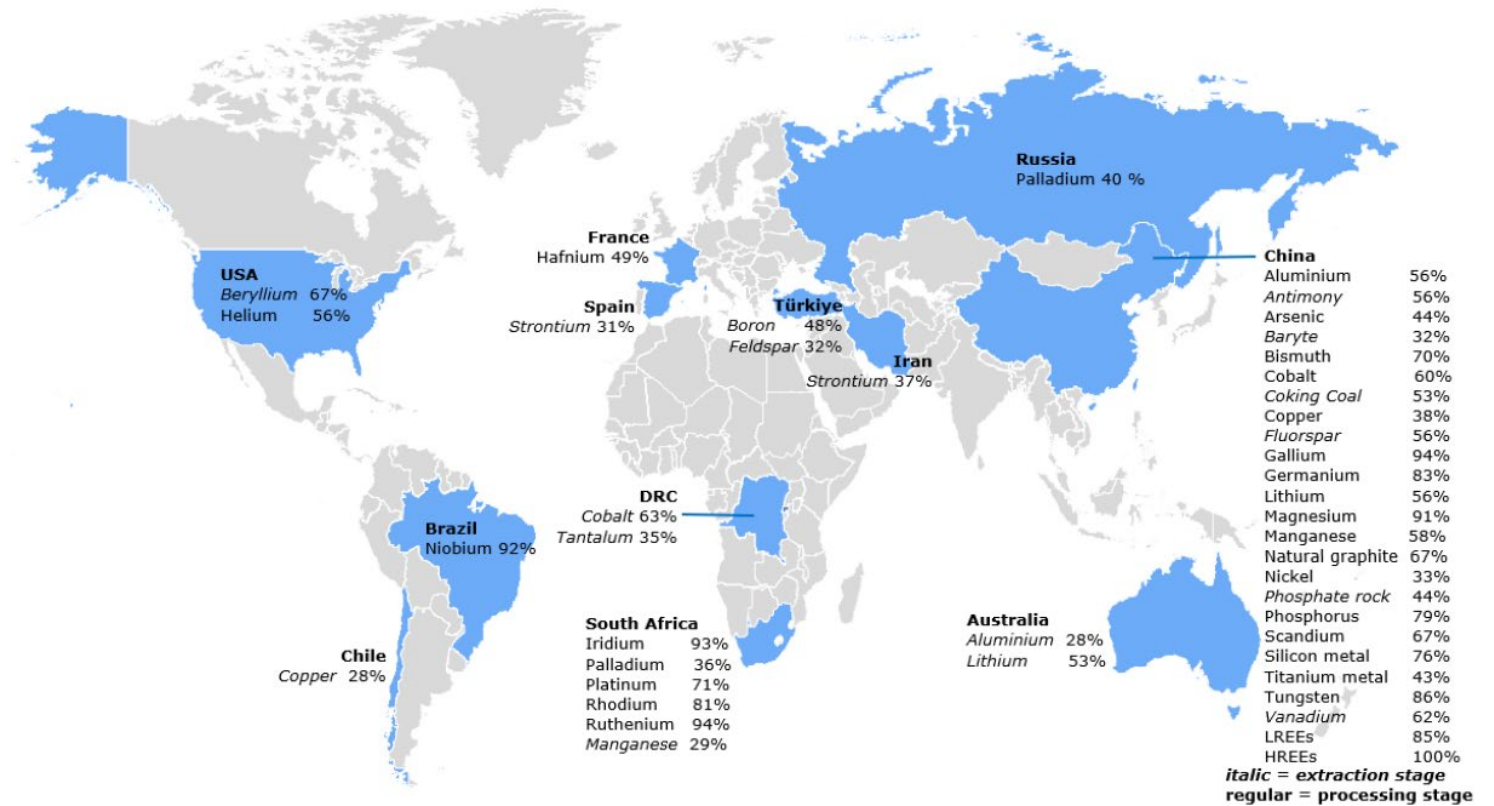
It is estimated, for example, that by 2030 Europe will need 18 times more lithium and 5 times more cobalt than current levels.

By 2050, this demand will grow to 60 times more lithium and 15 times more cobalt than current levels. For neodymium, 120 times the current EU demand could be needed as early as 2025.



The global supply

An analysis of global supply confirms that China is the largest supplier of several Critical Raw Materials (CCMs). Other countries are also important global suppliers of specific materials. For example, Russia and South Africa are the largest global suppliers of platinum group metals, Australia of lithium, the United States of beryllium, and Brazil of niobium.

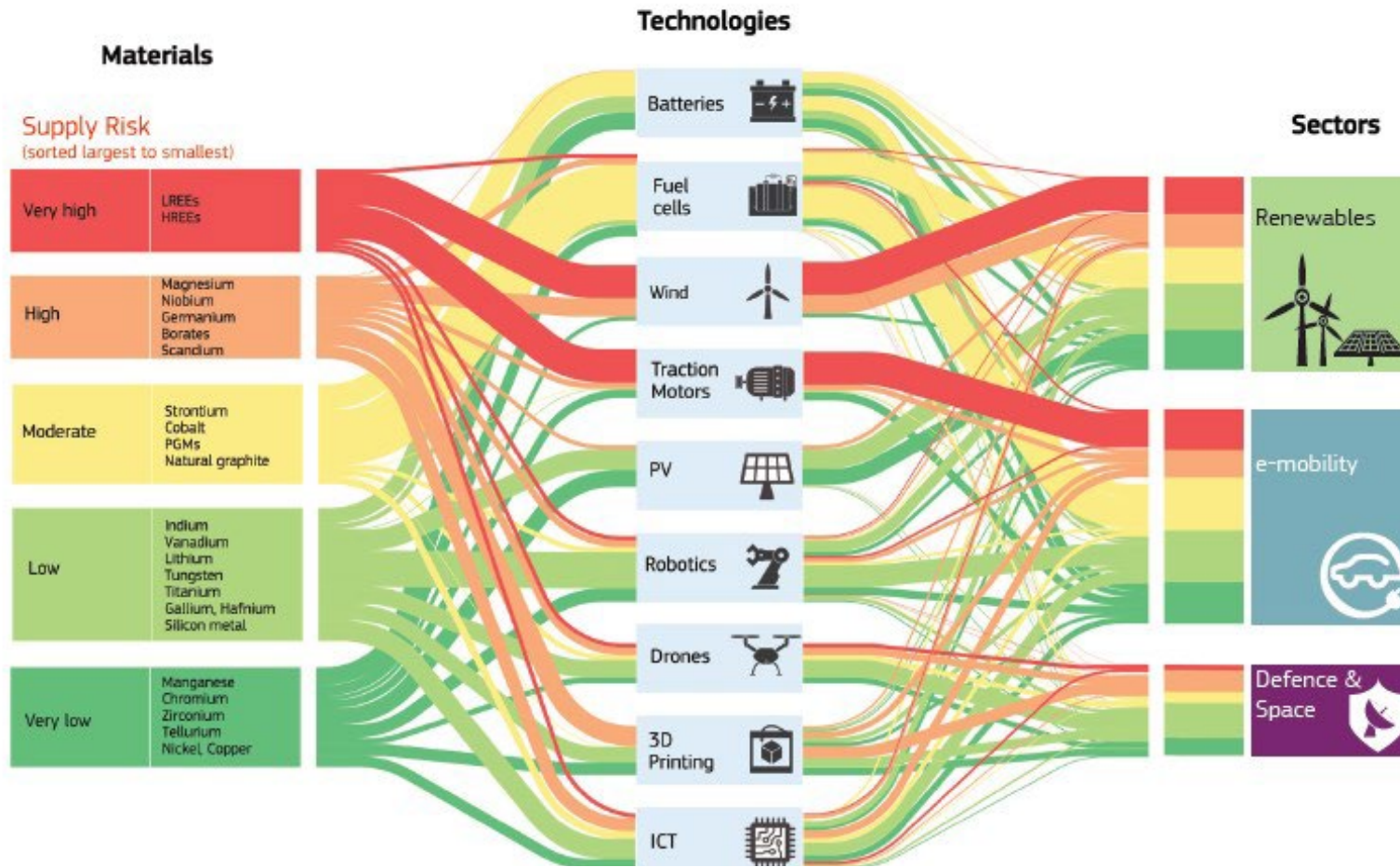


Recently PRC decides to impose export restrictions on gallium and germanium, two key metals needed to manufacture semiconductors and other electronics that the EU considers of 'strategic' importance and which are primarily sourced from China. The move, due to EU restriction on the exports of advanced electronic components, has raised concern over an intensifying global battle on the supply of key chipmaking technologies

Source: European Commission, Study on the Critical materials for the EU, 2023

Supply risk and technology

The ecological and digital transition



MPCs are critical to the ecological and digital transition of our economies. However, supply difficulties classify them into different risk classes. Indeed, pandemic and geopolitical crises in recent years have emphasized the weakness and poor sustainability of global commodity supply chains and necessitated urgent initiatives in Europe.

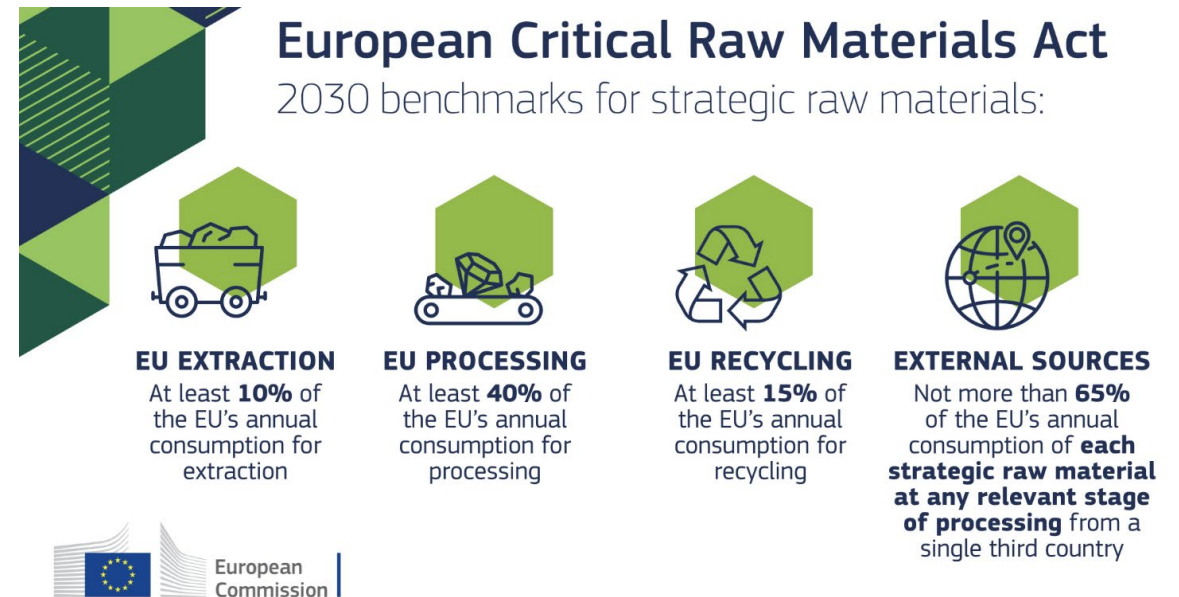
European-level initiatives

The Road to the European Critical Raw Materials Act.

The European Commission has identified the strategic nature of the issue of CRMs and their safe and sustainable supply for more than 10 years, devoting major innovation initiatives to it, such as the European Innovation Partnership on Raw Materials (2011) and the Knowledge Innovation Community for Raw Materials (2015).

Beginning in 2011, every three years, the list of CRMs at EU level is drawn up and updated, defined on the basis of economic importance in specific economic sectors and supply risk for European industry, dependent on the political and economic stability conditions of producing countries, potential for substitutability and degree of recycling. The 4th list was drawn up in 2020 and identifies 30 CRMs. The 5th list will be drawn up in 2023. Today, the proposal for a Regulation of the European Parliament and of the Council

establishing a framework for ensuring a safe and sustainable supply of critical raw materials and amending Regulations (EU) 168/2013, (EU) 2018/858, 2018/1724, and (EU) 2019/102 is the so-called "European Critical Raw Materials Act" that sets specific targets to 2030. On 30 June, European Council adopted its position to raise the level of ambition for recycled and processed raw materials and reinforce sustainability criteria.



Italian level initiatives

From 2017 to the present

Law Dec. 27, 2017 No. 205, Art.1
paragraph 122
State budget for the financial year
2018 and multi-year budget for
2018-2020

Platform, managed by ENEA, in collaboration with Environment Ministry, consisting of stakeholders active on the phosphorus cycle, operates since 2019 on regulatory, technological and market aspects with the participation of research organizations, public and private institutions, companies and the third sector.

Dm (MITE) 257 of June 24, 2022
Adoption of National Waste
Management Program (NRP).

- Implementation a plant network, possibly with complex technology, for high-efficiency treatment of WEEE for CRMs;
- Developing of phosphorus recovery technologies contained in sludge.

Dm (MITE) 259 of June 24, 2022
Adoption of National Strategy for
Circular Economy (SEC)

- Promotion of material recovery plants from sludge in order to optimize the recovery of substances/nutrients such as phosphorus;
- Focus on Critical Raw Materials.

Interinstitutional Decree (MIMIT -
MASE) dated 9/15/2022

Establishment of National Technical Table on Critical Raw Materials.

The National Technical Committee

Objective and structure



The Environment Ministry launched a Critical Raw Materials Technical Committee in January 2021, with the aim of:

- Strengthening coordination on the issue;
- Enhancing its design in terms of sustainable procurement and circularity;
- Contributing to the creation of the regulatory, economic and market conditions to ensure a secure and sustainable supply of critical raw materials.

Actors from the world of universities and research, as well as GSE (the Italian public company promoting and supporting renewable energy sources), recycling and trading associations participate in the Committee with the aim of strengthening coordination and formulating useful proposals for the creation of regulatory, economic and market conditions aimed at ensuring a safe and sustainable supply. The Committee operates with 4 thematic Working Groups (WGs), overseen by Italian Government

- ***GdL 1 Needs Analysis*** - estimating future needs for critical raw materials both direct and indirect, also analyzes the gap between supply and demand;
- ***GdL 2 Mining*** - identifying the potential for primary and secondary mining (recovery from mining waste);
- ***GdL 3 Ecodesign and Ecodesign*** -, analyzing the potential of ecodesign to reduce demand for critical raw materials;
- ***GdL 4 Urban mining*** - estimating the potential of Urban Mining activities, with a focus on WEEE, development of regulatory proposals for simplification.

WEEE: urban mining

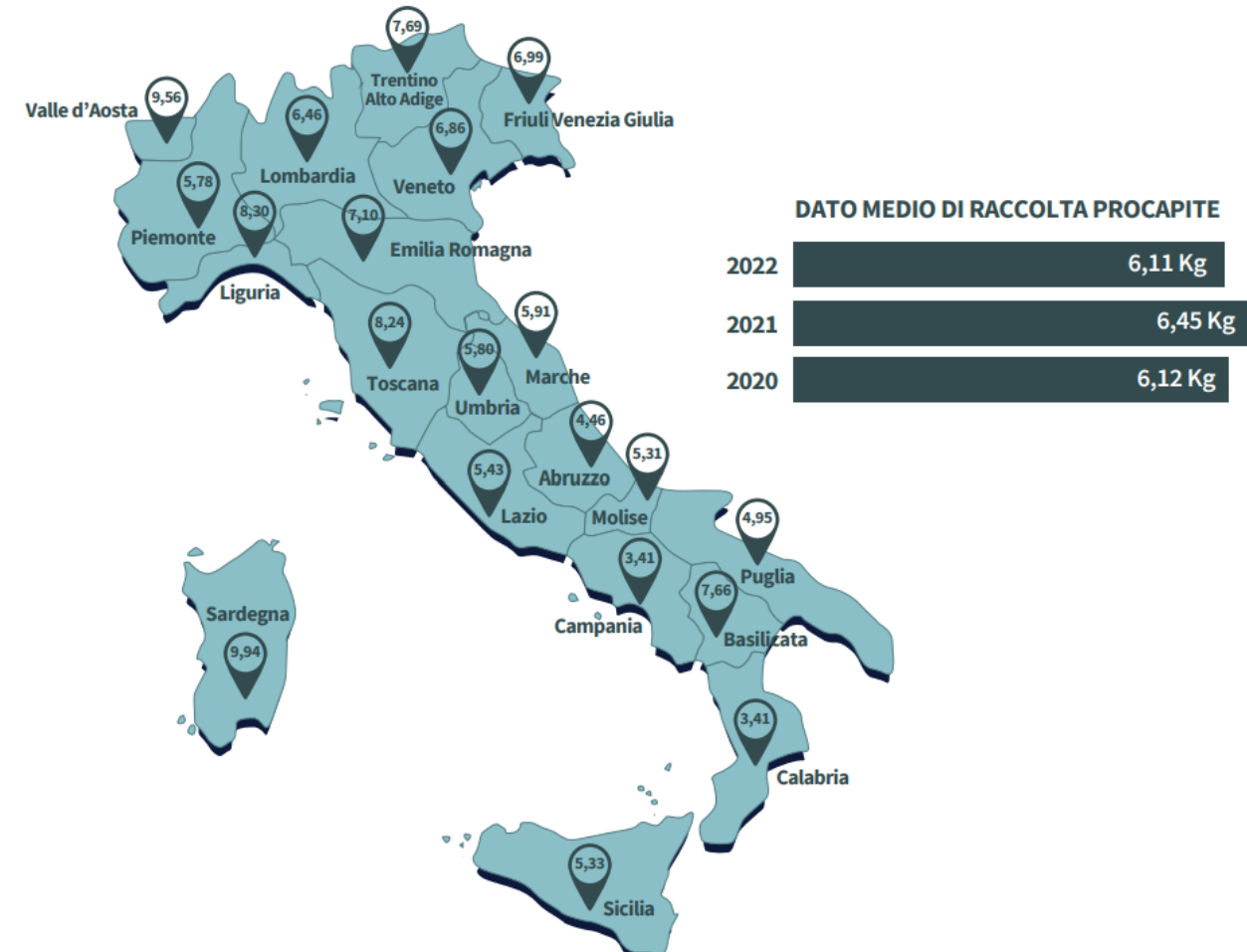
The importance of proper waste management

WEEE contains significant amounts of CRMs cell phone, for example, contains on average 250 mg of silver, 24 mg of gold, 9 mg of palladium, 9 g of copper; the lithium-ion battery then encloses about 3.5 g cobalt, 1 g rare-earth metals (Nd, Eu, Ce and Tb), quantities that when multiplied by the number of products in circulation return tons of avoided CRMs imports from third countries. The distribution of cell phones in Italy is about 1 phone per inhabitant, but in our drawers we estimate at least 120 million unused cell phones.

In Italy, the average per capita collection figure in recent years has remained constant around a value of 6 kg of WEEE per inhabitant, still far from the European community's targets (more than 10 kg per inhabitant).

Therefore, to improve the security of supply of critical raw materials, a solution must necessarily come from **improving the WEEE management chain.**

VOLUMI IN kg/ab



WEEE: urban mining

CO₂ net-saving

On average, the recycling of one ton of WEEE avoids the emission of about 2.4 t CO₂-eq and thus altogether about 1,000,000 t CO₂-eq could be avoided by intercepting and recycling further quantities. More in detail, compared to the extraction of virgin material, recycling allows considerable savings in terms of climate-altering emissions: for example, for aluminum the CO₂-eq emission is 96% lower, for copper 85% lower, for dysprosium 79% lower, for zinc 71% lower, for lithium, nickel and cobalt 38% lower.

Source CdC RAEE - Italian WEEE Producer Responsibility Organisation

Over two thirds of the 30 designated Critical Raw Materials are found in e-waste*

When you responsibly dispose of your e-waste these materials are properly recycled and can contribute to the production of new devices and limit the costly and environmentally harmful extraction of new materials.



E-waste is the fastest growing waste stream in the world



Source: Wee-forum.org

Thanks for the attention.



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Clean energy technologies and critical raw materials

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