BRIEFING - NOVEMBER 2025

# From Waste to Value: Driving Circularity in Europe

T&E response to public consultation on the Circular Economy Act

# Summary

The Circular Economy Act (CEA) will be key to scaling Europe's recycling industry across batteries, steel, aluminium and beyond, whilst also promoting greater materials recovery from other waste streams. Building up local recycling companies and getting recycling production going will be key to building a sustainable electric vehicle industry, whilst driving industrial opportunities in Europe and creating resilient supply chains, by alleviating resource dependencies.

There is a unique opportunity to get the CEA right, scale effective recycling across the EU and drive greater material recovery in Europe. In order to do so, T&E calls on the European Commission to:

- **Introduce recycled content targets coupled with Made in EU requirements**: The CEA should make greater use of recycled content targets, e.g. for recycled steel and aluminium in new EVs, and importantly, couple these targets - including recycled content targets for batteries - with EU local sourcing requirements to benefit local industries.
- **Simplify intra-EU waste shipment rules to cut costs and administrative burden:** The CEA should further simplify the Waste Shipment Regulation, harmonise waste criteria and create recycling partnerships where multiple actors in the same waste stream are treated as a single entity for administrative purposes.
- **Ban or significantly limit waste material shipments outside of the EU:** The CEA must prevent material leakage from end-of-life products and all waste products, including scrap, relating to batteries, steel and aluminium. This should preferably be achieved via export bans, more harmonised waste criteria, or levied export fees, which would make exporting to third countries more expensive and burdensome.
- **Establish more standardisation for recycled products:** In order to incentivise the use of recycled materials across European industries and facilitate partnerships between recyclers and offtakers, the CEA should establish clearer classification systems. As different sectors require varying levels of material purity e.g. as in the steel sector, the CEA could help by setting two or three grades of recycled steel based on levels of copper contamination.
- **Commit to a revision of the Extractive Waste Directive and drive greater reprocessing of mining waste:** In order to bring Europe's out of date mining waste rules in line with best practice, the CEA should commit to turn the directive into a new European Circular Extractive Waste Regulation, to ensure harmonised implementation across Member States and integrate rules on re-mining. As part of this, clear objective harmonised principles should be introduced and best available technologies mandated.

# Introduction

The CEA provides a  key opportunity to scale effective recycling in Europe, reducing reliance on virgin raw materials and alleviating environmental burdens associated with mining and extraction, whilst boosting Europe's material sufficiency and limiting dependencies. In parallel, there is a unique opportunity to tackle mining waste in Europe. By updating mining waste rules, we can capitalize on the economic value, whilst ensuring best practice environmental management.

T&E analysis shows that with the right regulatory framework, Europe can unlock the full recycling of EVs and batteries, turning them into strategic assets for industrial competitiveness, innovation, and strategic autonomy. For instance, according to T&E analysis, end-of-Life batteries and scrap from battery gigafactories in Europe have potential to provide 14% of all lithium, 16% of nickel, 17% of manganese, and a quarter of cobalt demand by 2030 already. These materials will be enough to build between 1.3 and 2.4 million EVs locally in 2030, up to 10 mln in 2035, and up to 15 mln EVs by 2040.

Nevertheless, the EU is currently not ready to fully capitalise on this opportunity. The existing recycling capacity across Europe is 10 times below where it needs to be in 2030, with almost half of Europe's battery recycling plans at risk. Europe will need to significantly scale up its recycling capabilities and the CEA provides a key lever to create the regulatory space to help.

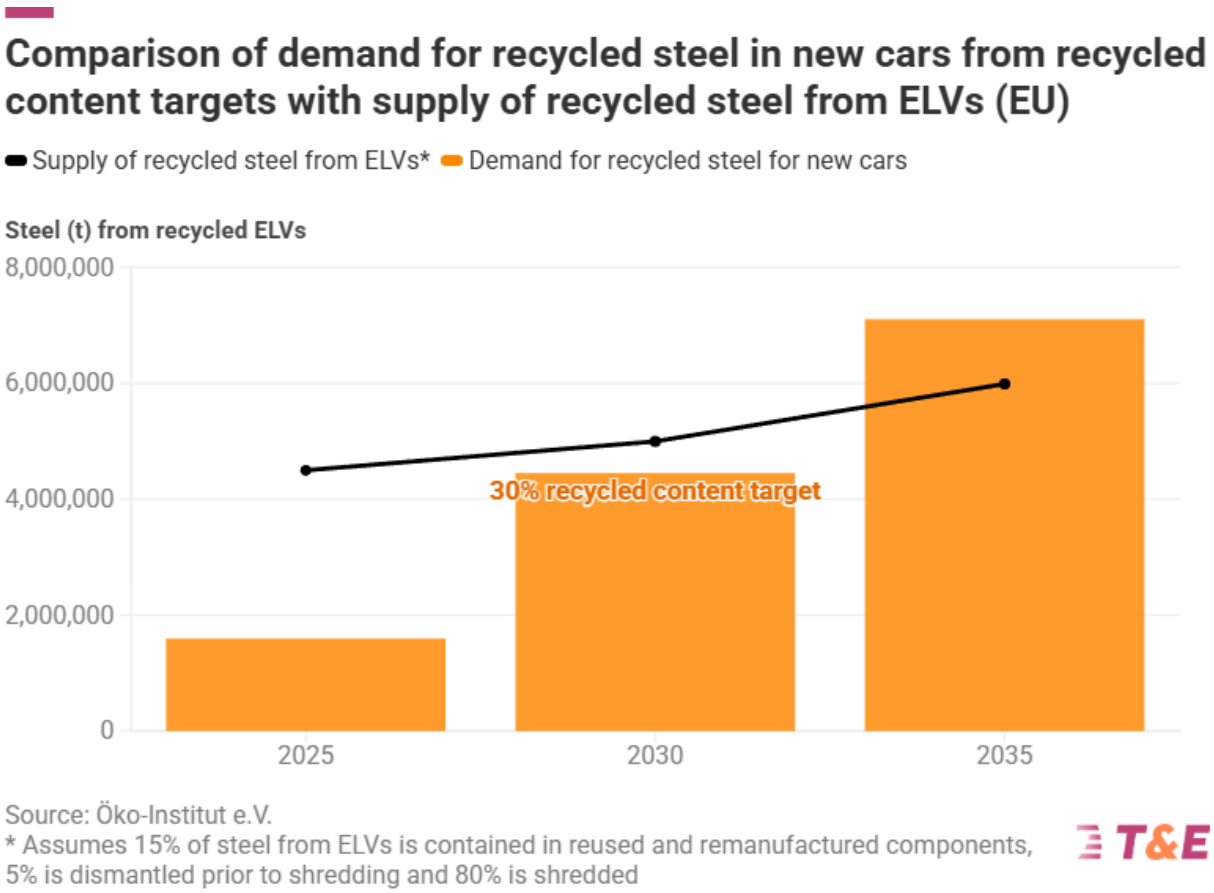
This submission outlines T&E's recommendations for the CEA, setting out key policy recommendations to boost battery, steel and aluminium recycling, as well as measures to drive circular management of mining waste.

# 1. Introducing recycled content targets coupled with made in EU requirements to scale Europe's recycling industry

## 1.1 Scaling high quality steel and aluminium recycling across Europe

Where the end-of-life vehicle Regulation (ELVR) has so far failed to introduce recycled content targets for steel and aluminum in new cars, the CEA should mandate delegated acts proposing said targets be adopted in the ELVR as a way to create a secure offtake market for secondary materials. T&E analysis shows that it is feasible and economically desirable to **set a 30% recycled steel content target (coming from closed-loop post-consumer scrap) in the automotive sector in 2030, increasing to 40% in 2035.**[1]

[1] Calculations show that quantities of recycled steel recovered from ELVs in the EU will be sufficient to achieve these targets.




Source: Öko-Institut e.V.
* Assumes 15% of steel from ELVs is contained in reused and remanufactured components, 5% is dismantled prior to shredding and 80% is shredded

While this would require additional dismantling of end-of-life cars in some cases, these operations would still generate revenues of €125m every year for recyclers due to the additional copper recovery and reselling generated by these additional operations. As the Commission is due to finalise its feasibility studies on recycled content targets for steel by Q4 of 2026, the CEA offers the right framework to do so.

In order to maximise the benefits of these targets and support local industry, the targets for recycled steel and aluminium should be coupled with an EU preference. This means that **recycled content in new cars could only meet targets if it has been recycled in Europe**. At the very least, such rules should prioritise recycled materials coming from Europe at first and then only allow European materials later on. That way, the recycling industry will get the demand signals it needs in order to invest and scale up new technologies that allow for better sorting of materials, and therefore more high-quality recycling.

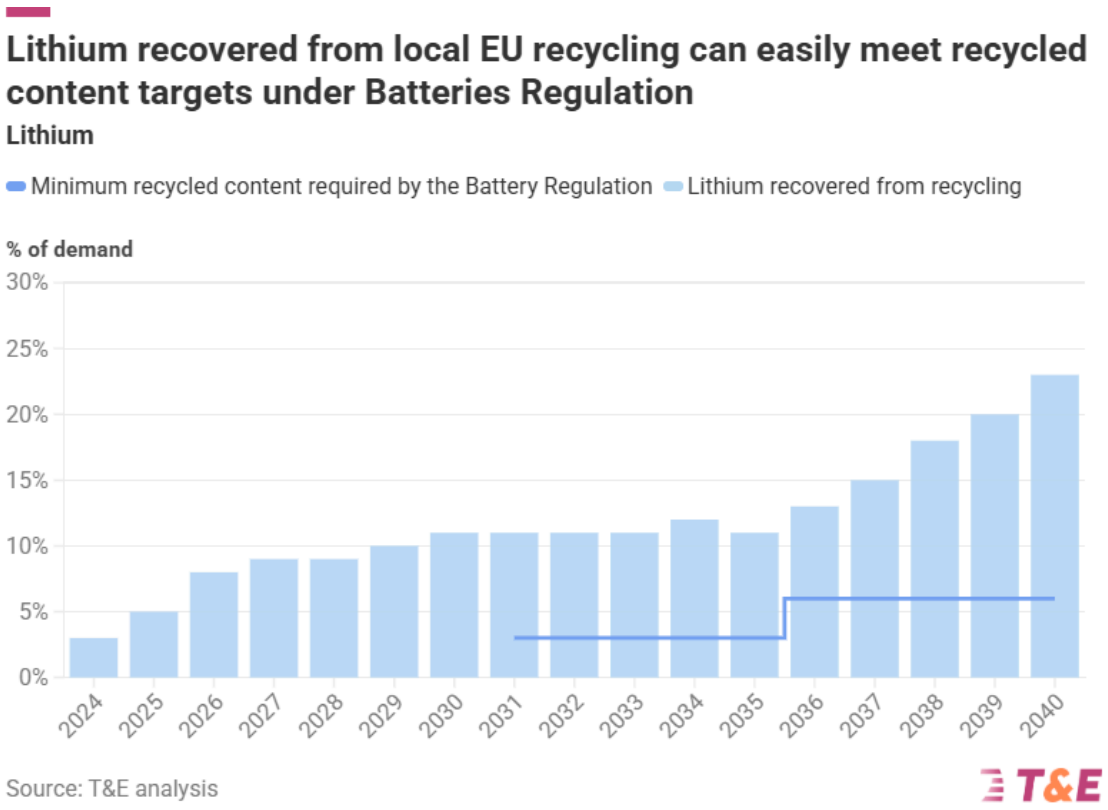
## 1.2. Ensuring locally recycled content in batteries

The EU Batteries Regulation recycled content targets are a key means to ensure the use of recycled secondary materials. However, to ensure that these recycled content targets benefit EU companies, the CEA needs to go further.

**The CEA should amend the EU Battery Regulation delegated act on recycled content in batteries to introduce a local preference** . Compliance with the battery recycled content targets

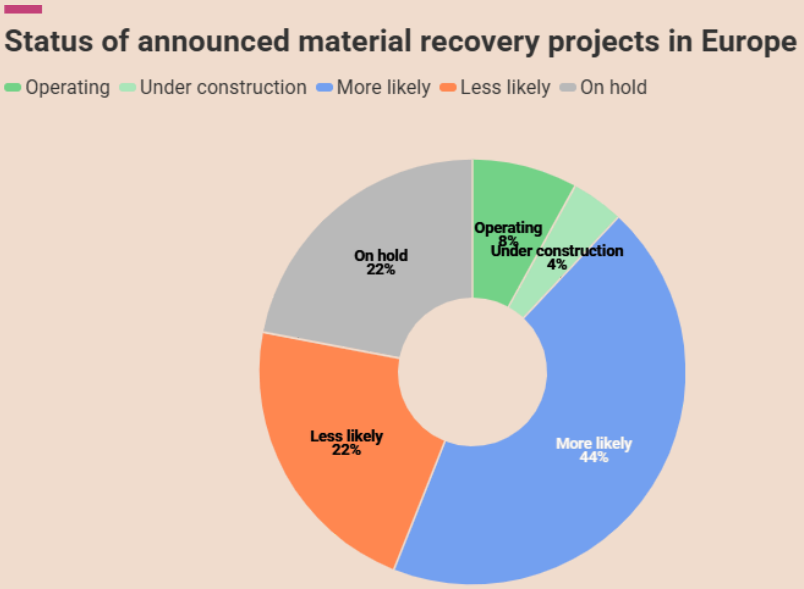
for lithium, nickel, cobalt and copper should prioritise - and later only allow - secondary material that has been recycled in Europe or from local battery factory production scraps. This requirement incentivises the scaling of recycling and refining capacity within Europe and avoids external reliance. In parallel, definitions of local content established in other legislation, such as the Industrial Accelerator Act (IAA), should ensure that materials from EU end-of-life vehicles, production scrap from EU-based cell manufacturing facilities, as well as battery materials from EU-based recycling facilities, qualify.

EU battery recyclers continue to struggle with clear offtake from midstream companies. Without sufficient midstream demand, even high recycled content targets may fail to incentivise investments into EU recycling. T&E analysis shows that we can meet the recycled content targets for lithium, nickel and cobalt in the EU Battery regulation with the expected volumes of locally recycled secondary materials . This should be used in Europe's favour.



## EU recycling projects remain at risk

In 2024, over 30 material recovery projects have been announced or are being built, but due to higher energy costs, lack of mature technical expertise or financial support almost half of the capacity announced is either on hold or not certain to go ahead.




Source: T&E analysis, Circular Energy Storage • Based on total capacity of 781 kt batteries equivalent by 2030 (November 2024 assessment). Analysis does not include the expansion of Umicore Belgium project, which is planned for 2032, according to its 2024 half-year report. Umicore information supplied on 9 Dec states it could come online by 2030.

European recyclers incur 60% higher electricity costs than their Chinese counterparts, 35% higher labour costs, while utility costs can be 5 times more expensive. Looking at **LFP battery recycling**, this translates into a **56% cost gap in OPEX between Europe vs China** (considering disassembly and hydrometallurgical recycling). The same comparison for **NMC with China reveals a 25% cost gap.** While the CRMA has selected strategic projects in recycling, more can be done to ensure recyclers can scale efficiently, faced with this significant competition. **The EU Innovation Fund, InvestEU, the European Investment Bank (EIB), the future European Competitiveness Fund and national state aid should provide similar Capex and Opex support to recycling and circularity projects** as cleantech, focusing on commercialisation and technology gaps (e.g. hydrometallurgical recovery of lithium, graphite and other elements).

Importantly, to efficiently scale its recycling industry, Europe will need to onshore the entire battery value chain. This includes in particular midstream industry - pre-cathode active material (pCAM), cathode active material (CAM), and precursor manufacturers - and then cell and battery makers. **The midstream part is key as they will be the offtakers for EU recyclers.** It's this holistic approach that secures future demand for recyclers.

## 2. Transportation of waste: simplify intra-EU waste shipment rules

Transportation costs are one of the main obstacles to making recycling in Europe more profitable. The shipment of end-of-life batteries, battery production scrap, and black mass generates high costs and burdensome paperwork. Some studies indicate that transport-related compliance can add up to 70% of total recycling costs, depending on the waste classification. This administrative complexity, coupled with national fragmentation, slows the development of an EU-wide recycling market. It also shows that waste is not yet handled as a resource.

For the shipment of hazardous waste, such as end-of-life batteries, production scrap or black mass, the updated Waste Shipment Regulation (WSR) has led to real improvements, including fast-track procedures for 'pre-consented' recovery facilities and the introduction of tacit consent to facilitate shipments. However, these measures do not go far enough to tackle high costs and delayed shipments.

To ship hazardous waste, such as battery waste, in Europe, a 'notification procedure' is necessary. This means that the notifier (e.g. exporter, recycling company, or a collector) must seek approval not only from the destination country but also from any country that the shipment transits, adding costs and delays. While new fast-track procedures can shorten timelines for some shipments, approval still requires multiple national authorities to review and confirm each shipment. 'Tacit consent' is also not applied consistently across Member States.

**In order to further simplify the WSR, the CEA must ensure:**

- The automatic recognition of pre-consented facilities across all EU Member States, reducing the fast-track notification process to a maximum of 10 days and allowing collectors, brokers, or traders that are part of the final pre-consented facility to act as notifier and receive automatic consent.
- Tacit consent of transit countries should be given by EU competent authorities to harmonise applications across EU Member States. This is currently not the case due to fragmented definitions.
- Mineral-rich waste streams, such as batteries and black mass, should be subject to a simplified information procedure, replacing the notification procedure while maintaining safety and oversight requirements. This would mean that notifiers only inform authorities in the country of dispatch while being able to ship directly to an authorised facility, avoiding the need for prior written consents, multi-country notifications and extensive transit documentation.

**Beyond simplifying the WSR, T&E recommends the creation of recycling partnerships or 'recycling clusters'.** Such a partnership would allow multiple actors in the same waste stream - such as an OEM, a recycler, and a collector - to be treated as a single entity for administrative purposes across borders. These partnerships would submit one set of documents or operate under a reduced procedure, eliminating duplicative notifications and reducing bureaucracy while maintaining oversight and safety.

Finally, **the CEA should establish harmonised EU definitions of waste, by-products, and shipment classifications.** Clear and consistent definitions of when a product is no longer fit for use would provide legal certainty, ensuring that authorities and recyclers apply the rules consistently.

# 3. Ban or significantly limit waste material shipments outside of the EU

Recovering materials from end-of-life products like cars, batteries or wind turbines is a key means to secure critical minerals resiliently and sustainably. Similarly, as Europe scales battery- and other cleantech gigafactories, the manufacturing scrap represents an additional valuable stream of minerals.

## 3.1 Preventing the export of waste batteries

As Europe's recyclers scale their operations, it remains key to ensure the availability of feedstock. Some studies show that dedicated facilities for EV battery recycling operate currently at up to only 10% of their capacity. Classifying black mass as hazardous waste, banning its export to non-OECD countries, has been a great first step, however more needs to be done.

The leakage of black mass to Asian countries such as South Korea remains a problem. These exports take place easily because Asian recyclers can pay a higher price for black mass, including shipment fees, thanks to their large-scale recycling systems which operate at competitive costs. This tendency is also reflected in EU battery recycling investments as only 1% of the total capacity is planned by Asian players, whereas their presence is more prevalent in the pre-processing stage of recycling (16% of the planned capacities in 2030). This suggests that Asian companies overseas may prefer to process batteries into black mass and export it back home for further material recovery, rather than investing in capital- and opex-intensive material recovery plants in Europe.[2]

Therefore, **the CEA must ban or significantly reduce the export of battery black mass.** We understand that there are several possible approaches:

- **Ban the export of CRM-containing waste** - including end-of-life batteries, intermediary waste streams like black mass and production scrap - outside the EU, eg via an amendment to the EU List of Waste.
- **Introduce export fees,** for example in the form of a tax levied on non-EU buyers, which could then be reinvested in EU recycling capacity.

[2] The operational expenses for recycling NMC811 cell packs at integrated plants in Europe average around 14 $/kWh, compared to 11 $/kWh China - a 25 % cost disparity. See T&E study.

- Introduce reciprocal limits on the export of certain waste streams to third countries that have put in place export restriction measures themselves.
- Establish a clear and **harmonised classification of black mass,** clarifying when black mass reaches end-of-waste status. Currently, diverging national interpretations allow some operators to prematurely label black mass as a "product" after minimal processing, bypassing waste shipment controls and safety standards. A uniform EU approach should clarify that black mass and its derivatives remain waste until refined into recoverable metals. This would make exports outside the EU more administratively burdensome and expensive.

In parallel, proper enforcement at EU level and by OLAF (the European Anti-Fraud Office) is required to ensure compliance and collect the necessary data on waste stream flows.

### 3.2 Preventing steel and aluminium material leakage

Every year, around 3.5 million vehicles go missing: they are either deregistered, dismantled or exported illegally.[3] On top of the environmental and safety implications, this also means that a tremendous quantity of high quality and valuable materials are lost. When it comes to aluminium, the EU exported over two billion euros of scrap aluminium in 2024, with over 80% sent to Asia. As a result, **the CEA should ensure that scrap and end-of-life steel and aluminium products, including EoL-vehicles, are kept in Europe**. T&E proposes that a **Euro 4 limit on vehicles exported to third (i.e. non-EU) countries be introduced from 2028 onwards, moving to a 5 year vehicle age limit from 2035 onwards.** This will further reduce the flow of old, polluting vehicles to third countries while ensuring enough supply of scrap to the European recycling industry.

Finally, it is important to note that **measures to prevent material leakage go hand in hand with measures on local content requirements for recycled content compliance** (as outlined in point 1). Securing industry offtake within Europe is crucial and such measures would provide a strong incentive to achieve this.

## 4. Creation of standardised recycled products

Today, the use of recycled materials across European industries remains limited, partly because of the absence of common quality standards and clear classification systems. Different sectors require varying levels of material purity, for instance, lower-grade scrap steel is suitable for construction, while automotive often demand higher-purity grades. However, no differentiation of recycling grades based on quality standards, or 'nomenclature' (e.g. in terms of contamination thresholds, etc) exist currently as it is assumed that all grades should be free of significant contamination. In practice, contamination levels vary, including copper contamination which has been steadily increasing over the last few decades due to the

[3] European Commission. (2023). *End-of-life vehicles Regulation. Protect the environment, reduce raw materials use, boost EU industry.* Link.

increasing use of electronic equipment, which creates uncertainty as to the quality of the scrap. This also means that high-quality recycling requires either additional dismantling and separation of materials and components, or additional sorting technologies, which can be expensive.

Developing such a nomenclature or taxonomy could help recyclers optimise their production processes and build efficient partnerships with downstream users. For example, carmakers could procure recycled steel according to pre-defined quality classes rather than negotiating specifications for every order. Standardised products tailored to specific industry needs would simplify operations and strengthen the business case for recycling in Europe.

A simplified set of categories could already make a significant difference. **T&E suggests introducing for instance two or three grades of steel waste based on copper-contamination levels** in the EU's end-of-waste framework, with the most pure being for automotive. Quality requirements for **recycled steel should have a copper contamination level of no more than 0.1%.**

To accelerate progress, the European Commission could also consider developing a recycling taxonomy for a few key materials, in close cooperation with industry, to provide clarity, comparability, and investment certainty for the recycling sector.

## 5. Commit to a revision of the Extractive Waste Directive and drive greater circularity in mining waste management

As new mines open in Europe to secure local and resilient supply chains, we must ensure our environmental legislation is aligned with best practice. This is not just about safety and environmental stewardship, but also about creating the regulatory space and market for innovative technologies, such as the reprocessing of tailings, to scale in Europe and to drive greater circularity.

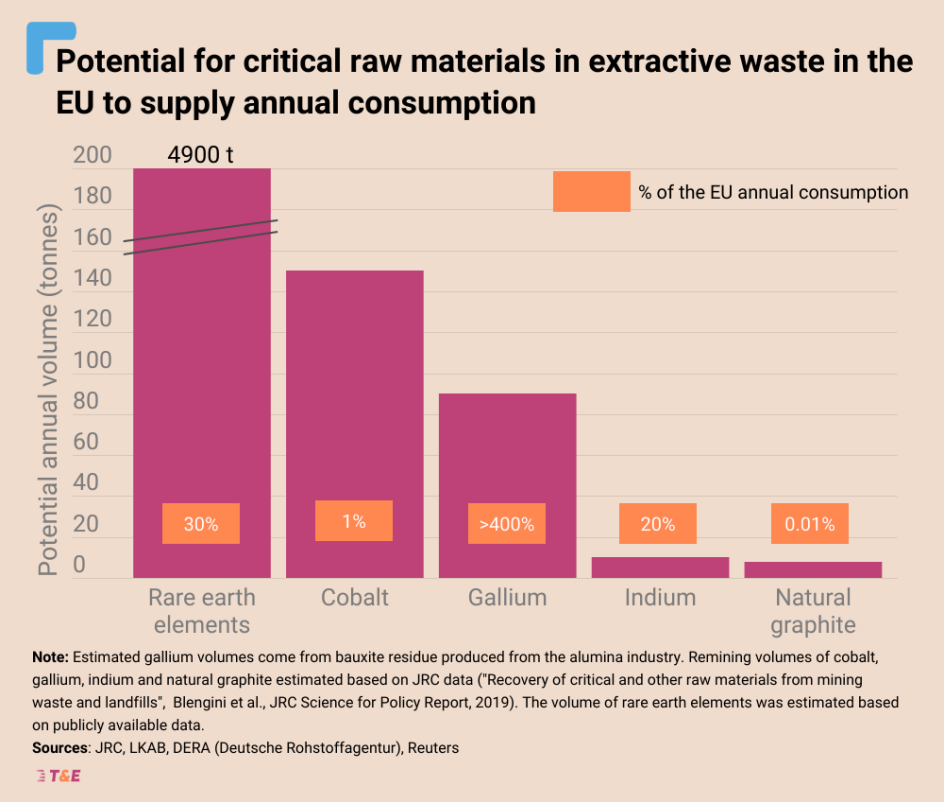
According to T&E analysis, the 2006 Extractive Waste Directive is out of date, as well as being below global best practice and, in some areas, below those of other countries such as Brazil and China. As a result, as part of the CEA, the European Commission must commit to update the Extractive Waste Directive by:

- Turning the directive into **a new European Circular Extractive Waste Regulation** - to ensure harmonised implementation across Member States and integrate rules on re-mining. As part of this, **clear objective harmonised principles** should be introduced, for example regarding the location of a tailings site.
- **Mandating the best available techniques**, including the safest tailings storage and monitoring techniques, such as filtered tailings and backfilling, as well as banning

upstream dams and implementing self rescue zones, limiting how close to a population a facility can be built.

- **Aligning the revised law as much as possible to the '[Safety First Guidelines]**', including strengthening rules on safe closure and independent monitoring.

In parallel, the CEA must set out clear steps to drive more re-mining, or reprocessing of tailings sites. There is significant potential to leverage re-mining to meet some of the demand for metals and minerals. According to T&E analysis, in Europe remined cobalt could power more than 185,000 EVs.




Capitalising on technological advancements, there is an opportunity to transform the mining waste problem into a resource recovery opportunity, while reducing its environmental impact. In order to do so, the CEA must:

- **Unlock economic support** to incentivise the re-processing and re-mining of legacy tailings. Existing EU financing instruments such as the EU Innovation Fund and InvestEU should be mobilised to drive innovation in tailing re-processing technologies, and to finance CapEx and scaling of such projects.
- **Amend the EU Batteries Regulation delegated act on recycled content targets** to classify raw materials coming from waste streams, located in Europe, as recycled materials to allow their inclusion in the calculation of recycled content in new batteries placed on the EU market.

- **Ensure in depth and accurate mapping of tailings, which are kept up to date and easily accessible.** Provisions set out in the Critical Raw Materials Act on the mapping of closed extractive waste facilities, which build on the EWD, must be fully implemented at Member State level. It is vital to ensure that these databases meet the requirements set out, in particular when it comes to the quantities and concentrations of all raw materials and the chemical and mineralogical characterisation. Additional support and resources should be provided to Member State competent authorities if needed to ensure full respect of provisions.
- Governments to take on **shared liability for legacy tailing sites** as last resort. In situations where a legacy waste site has no clear owner, companies are dissuaded from working to reprocess the site because they would then become legally liable for its environmental costs. As set out in the CRMA, the Member State should clarify the operator, former operator or legal successor of a closed extractive waste, keeping this information up to date in the Member State database of the closed extractive waste facilities. The liability of the extractive waste facility should be determined in line with the national legal system. In situations where the operator or legal successor, and therefore liable party, cannot be established, the Member State government should take on the liability for the legacy tailing site as a last resort.

## 6. Conclusion

The CEA will be key to scaling an effective recycling industry in Europe, building a sustainable electric vehicle industry, whilst driving industrial opportunities in Europe and creating resilient supply chains. If used strategically, it can efficiently increase recycling capacities and boost the use of recycled and re-mined materials in batteries and vehicles. Europe has no time to waste if it wants to catch up with global competition.

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## Further information

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