

Circularity and E-Mobility: Supporting a win-win relationship with the Circular Economy Act



We welcome the announcement of the Circular Economy Act (CEA), a key tool to develop a European Single Recycling market and scale effective recycling across the EU. Transport industries, especially the forward-looking sectors of electric mobility, must be considered as a central part of the CEA and the broader policy discussions surrounding Europe's transition to a circular economy. Compared to fossil-fueled transport, electromobility practices and industries have the potential to significantly boost resource efficiency, reduce waste, and foster sustainable practices across the continent.

Notably, the CEA represents a timely opportunity to build a truly circular market for electric vehicles (EV) and their batteries in Europe.

With the right regulatory framework, Europe can unlock the full recycling and reuse potential of EVs and batteries, turning them into strategic assets for industrial competitiveness, innovation, and strategic autonomy. Ensuring that end-of-life vehicles and batteries are processed and recycled within Europe will foster high-value circular value chains, create future-oriented jobs, and support the EU's environmental leadership. This paper first revisits the essentials of a truly circular economy; then outlines the inherent circular nature of electric mobility; and finally proposes concrete recommendations to enable a circular electric transport system and industry via the CEA

HOW TO ENABLE A RECYCLING SYSTEM FOR ELECTRIC TRANSPORT.

1. Scale up Europe's recycling capacity:

The CEA should prioritise the rapid development of industrial-scale pre-processing and high-quality recycling facilities in Europe, particularly for EV batteries, to close the gap between expected waste volumes and current limited capacity.

2. Increasing the use of recycled materials, with recycled and local content targets:

Prioritise incentive-based measures to boost the use of recycled and locally sourced battery materials, going hand in hand with gradually binding local content targets, while allowing exemptions for materials where the recycling market is already functioning well.

3. Create a true Single Recycling Market:

Harmonise and simplify intra-EU waste shipment rules, while fostering conditions that favour the processing of strategic waste streams within Europe, to ensure that valuable materials are recovered and reinvested into European clean tech industries.

I. Applying circular thinking to transport and mobility sectors

Firstly, we remind policymakers that a circular economy is one that produces only what is needed, reduces resource consumption, maximises product use through repair, reuse, and refurbishment, and ensures effective recovery notably during the pre-processing stage, which prepares the fractions to be recycled in high-quality recycling processes. This will ensure the successful reintegration of materials into the economy.

RECYCLING EV BATTERIES: OPPORTUNITIES TO SOURCE MATERIALS LOCALLY AND SUSTAINABLY

Whilst also ensuring Europe's strategic autonomy in clean tech manufacturing. 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 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. Therefore, Europe will need to significantly scale up its recycling capabilities, and the CEA provides a key lever to create the regulatory space to help scale Europe's recycling industry.

This attitude must be embedded in transport industries and mobility practices if Europe is to reach its climate and sustainability goals. To this end, entire systems must be designed with circularity in mind, aiming at building products - such as vehicles and their components - for long lifetimes, and making them repairable, upgradeable, and recyclable, without overburdening manufacturers.

Implementing circular practices like reuse, remanufacturing, and recycling also results in reduced energy consumption and raw material usage in comparison to manufacturing new products, ultimately decreasing the carbon footprint of a product.

Essential parts should be replaceable, and end-of-life processing should be considered from the design stage. The European Union must put in place the enabling conditions and incentives allowing its industry to achieve this objective competitively.

In this context, we welcome the techn Circular Economy Act. The CEA will be key to scaling effective recycling across the EU and building up local recycling companies, and must complement and enable implementation of the already adopted Ecodesign for Sustainable Products Regulation (ESPR), which remains a key tool. In parallel, there are opportunities to make up for missed opportunities in the End-of-Life Vehicles Regulation (ELVR), for example by introducing recycled content targets for aluminium and steel from 2030 onwards.

II. Electromobility is an asset for circularity

Before presenting recommendations for the CEA, it is important to highlight the high circularity potential of electric mobility.

a. Superior energy efficiency of electromobility

Unlike internal combustion engine (ICE) vehicles, which burn fossil fuels and lose energy through heat, battery electric vehicles (BEVs) do not involve irreversible consumption of fossil energy but can rather rely on 100% clean energy. The energy they use can be generated locally from renewable and zero-emission sources. BEVs are also inherently more energy efficient than ICE vehicles¹. Promoting electric mobility is therefore in itself a resource-saving policy².

Beyond individual mobility, trains are by far the most energy-efficient for long distances. Europe is already a global leader in rail transport, and a concerted push to increase modal shift from road to rail could unlock substantial efficiency gains.

b. Second life of EV batteries

EV batteries, after around 15 years of use, retain sufficient capacity for less demanding applications. Their repurposing in stationary storage systems (for example in fast-charging hubs, residential buildings, or industrial facilities) represents a major opportunity to support renewable energy integration. However, while the concept of second-life batteries holds long-term potential, its large-scale deployment remains challenging in the short term, as current priority is - rightfully - given to the recycling and recoverability of critical materials. In the longer run, second-life batteries could become a valuable asset for energy storage, grid management, and flexibility services, complementing renewable energy deployment.

To unlock this potential at scale, batteries should be designed for easy removal, disassembly, repair and repurposing, while reliable data on their state of health must be fully accessible to authorised operators, with implementation best left to industry under existing regulatory frameworks. OEMs and battery manufacturers should ensure that these processes run smoothly, and costs are kept to a minimum, in line with existing regulatory obligations rather than through new legislative measures.

In addition, we call for the swift implementation of the Battery Regulation, especially regarding implementation of the battery passport and availability of standards regarding data on the state of health (SoH) of batteries, key for facilitating reuse and repurposing.

¹ Negri, M., & Bieker, G. (2025). [Life-cycle greenhouse gas emissions from passenger cars in the European Union](#): A 2025 update and key factors to consider (ICCT Report). International Council on Clean Transportation.

² Platform for Electromobility. (2024, November 27). [Prioritising energy efficiency in EU's transport ecosystem](#).

c. High recyclability and material recovery potential

EVs and their batteries are already subject to EU battery regulation requirements on recycling efficiency and recovery targets. Advanced recycling technologies now allow recovery rates of around 90–95% for key battery metals such as cobalt, nickel, and copper³.

For these reasons, a successful and impactful CEA should support and actively enable the development of electric mobility, by scaling Europe's recycling capabilities. Doing so will also reinforce Europe's strategic autonomy in clean transport and green technologies.

III. A circular economy that boosts electric mobility

A well-designed CEA is an act that leverages the potential of electric mobility modes and industries for boosting a competitive and circular European economy. This would be notably possible through the following recommendations:

a. Boosting circularity in the supply chain

The CEA should boost investment in end-of-life vehicle and battery recycling facilities, support repair and repurposing businesses, and promote cooperation along the value chain, within the limits of EU competition rules. Upskilling support and financial incentives (e.g. tax credits or bonuses) should be offered to companies engaged in repair, refurbishment, and remanufacturing of EV components. While the CRMA has selected strategic projects in recycling, more can be done to ensure recyclers can scale efficiently, faced with 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). Ensuring the ramp up of competitive black mass refinement capacities at scale in Europe is especially key. The CEA should also explicitly support second-life applications through clear regulatory pathways and economic incentives.

Furthermore, the development, economic viability, and global competitiveness of European end-of-life and recycling industrial stakeholders relies on the development of a vigorous electromobility industry in Europe, sustained demand for EVs and particularly midstream battery components, and a stable, supporting legislative framework.

³ Agoro, H. (2025, March). [Comparative Study of EV and Internal Combustion Engine \(ICE\) Vehicles](#). University of Ibadan

b. Increasing the use of recycled materials

We support the objective of increasing the use of locally recycled materials in batteries. This ambition must be pursued in coherence with the current state of the European recycling value chain, the availability of secondary raw materials, and the need to scale capacity. While we support the introduction of local content requirements, these should be approached with caution, ensuring that targets are aligned with actual supply and processing capabilities. Establishing a solid and competitive European recycling and refining value chain must be prioritised, going hand in hand with incentivising the use of local recycled content supporting the development of the value-chain in the EU.

The CEA could therefore explore mechanisms such as incentive-based approaches to encourage the use of secondary material recycled in Europe. This, in turn, has the potential to incentivise the development of recycling and refining capacity within Europe, rather than increasing reliance on external sourcing..

Where the ELV has so far failed to introduce recycled content targets for steel and aluminium in new cars, the CEA should see these targets being introduced as the Commission is due to finalise its feasibility studies on the aforementioned targets by Q4 2026. This should not, however, be the case for all materials, as for some the market is already very mature.

In conclusion, we call for prioritising or incentive schemes, ensuring they are implemented in line with the development of a resilient European recycling and refining ecosystem.

A FOCUS ON COPPER

On recycled content target, copper's intrinsic value drives market demand for secondary copper, and there is no need for additional regulatory measures to increase demand.

For copper, purity standards are not needed, as high-quality recycling facilities, such as smelters and refiners, can recycle copper scrap to a purity of 99.9935% (copper grade A cathode), regardless of the purity of the scrap they receive, ensuring material quality equivalent to that of primary production.

c. Harmonising and facilitating intra-EU waste shipment

Classifying battery black mass as hazardous waste has been a welcome step, banning its export to non-OECD countries. However, further steps are needed as one of the main challenges for recyclers remains access to waste. The CEA should ban or significantly limit waste material shipments of black mass, and other materials, outside of the EU. Progress so far has been a one-off; we need a systematic EU waste code structure to avoid exports of aluminium, steel, etc. as well as their final end-of-life products.

Additional measures should be taken to facilitate intra-EU shipments of black mass with harmonised criteria, allowing smooth transportation between pre-processing facilities and material recovery plants. Importantly, this waste criteria harmonisation should not encourage

the export of black mass outside the EU. Finally, the forthcoming Green Listing Initiative should explicitly include waste batteries among its priority materials, ensuring that the recycling of strategic resources remains within the EU value chain.

At present, the complex and fragmented rules under the Waste Shipment Regulation act as a barrier to the circular economy. A harmonised set of rules for the transport of end-of-life batteries and related waste across Member States is urgently needed. Companies co-operating across the EU should be able to collaborate more easily: for example, when one company is handling collection, another refining, and another repurposing, they are facing administrative hurdles. Consideration should be given to treating such cross-border collaborations as a single entity for regulatory purposes. While the introduction of pre-consented statuses and fast-track notification for intra-EU waste shipments is a good start, more needs to be done to overcome national fragmentation. To this end, ensuring the automatic recognition of such pre-consented statuses among all EU Member States is key, as is the efficient use of 'tacit consent' to enable capable facilities to quickly receive and send battery waste.

The current classification and nomenclature for various waste streams is overly complex and inconsistent across Member States. It comes on top of the current restrictions and administrative burden, including lots of paperwork, associated with their shipment between EU member states under the Waste Shipment Directive. A revision of these provisions would improve coordination, simplify compliance, and encourage more businesses to engage in recycling and repurposing operations. Waste transportation rules should be modernised to reflect the collaborative, cross-border nature of the emerging circular battery economy creating a true European single recycling market.

d. Creating standardised recycled products

Different industries need varying quality standards for use of recycled products, e.g. lower grades of scrap steel are required in the construction industry often compared to the higher purity grades needed in many automotive applications. 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 creates uncertainty as to the quality of the scrap. Creating such a nomenclature with clear thresholds on copper content for instance could allow recyclers to specialise and create better partnerships with the downstream industry, e.g. carmakers, to design recycled products based on specifications while achieving the necessary scale.

Therefore, the CEA should put in place quality standards for secondary materials to ease scaling and investment. Simpler recycling quality standards, as well as a more harmonised end of waste criteria, is needed to drive scale and cost-effectiveness for a few materials, such as steel and aluminium. By creating 2-3 categories (largely based on the levels of copper contamination), with the most pure being for automotive, recyclers can specialise and create standardised products, simplifying the process.

Conclusion: A win-win relationship between circularity and e-mobility

Just as renewable energy development and electrification go hand in hand⁴, electric mobility and circular economy objectives are mutually reinforcing. The high recyclability and reusability of EV components can support the growth of circular value chains in Europe, while circular policies can strengthen Europe's industrial leadership in clean transport.

However, we are faced with a key moment to ensure the scaling of effective recycling across the EU, building up local recycling companies and getting volumes and actual recycling production going, in the face of significant competition.

A strong Circular Economy Act must therefore focus on creating a single European recycling market, whilst acknowledging and supporting the electrification of transport as both a driver and a beneficiary of circularity.

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More about the Platform for Electromobility

The Platform, a European alliance of over 40 EU-based producers, infrastructure managers, operators, users, cities and civil society organizations from across industries and transport modes. Driven by strong member engagement, the Platform advocates the acceleration of electrification of all modes of transport, focusing on its numerous benefits, such as emission reduction, efficiency gains, support for technological innovation, jobs and growth through value creation in Europe as well as reducing Europe's energy dependence from fossil fuel imports. The vision of the Platform for Electromobility is a sustainable, multimodal transport system in which people and goods are predominantly moved across land in Europe using sustainable electricity.

For more information about the platform and its members, please visit:
<https://www.platformelectromobility.eu/>

⁴ Platform for Electromobility. (2022, April 5). [PV – EV: A powerful duo to make Europe drive clean](#).