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TRANSPORT & ENVIRONMENT

ENHANCING THE SUSTAINABILITY OF BATTERIES: A JOINT NGOS' POSITION PAPER ON THE EU BATTERY REGULATION PROPOSAL

(17.03.2021 – first round position paper)

Contents

Introduction

Despite their crucial role in increasing the integration of renewable energy sources in our economy and in decarbonising the transport sector, batteries do not come at no cost to the environment. These products impact on, in particular, biodiversity, water and air quality from mining and extraction of a number of critical raw materials, as well as from their disposal and recycling, not to mention a potentially significant carbon footprint if inefficient manufacturing processes and carbon-intensive energy sources are used.

Currently, the main legal framework on batteries in the European Union (EU) is the Battery Directive (Directive 2006/66/EC on batteries and accumulators). This piece of legislation is more than a decade old (it dates back to 2006) and as such it fails to address new technologies and the environmental challenges associated with these. Since it mostly covers waste batteries, it also lacks provisions on many other aspects of the value chain. It introduced requirements for placing batteries on the market, as well as their collection, treatment and recycling. However, since the definitions and categorisation of batteries applied in the Directive are outdated, there is currently no collection scheme for electric vehicle (EV) batteries. Moreover, the recycling targets are weight-based and therefore there is little incentive to improve the quality of recycling processes to recover critical raw materials such as lithium. Finally, the second use of batteries is not fully addressed, and the responsibilities in the supply chain are unclear.

Aiming to address all these shortcomings, in December 2020, the European Commission adopted a proposal for a Regulation on batteries and waste batteries (referred from hereon as 'Battery Regulation'). This was the first policy worldwide to cover the whole battery value chain. With its Strategic Action Plan for Batteries, the EU made clear in 2018 its ambition to be a global leader in sustainable battery production. The intention to apply new rules to the battery sector was listed as one of the main activities of the EU Circular Economy Action Plan, with the objective to solve most of the regulatory and standardisation obstacles for a truly sustainable European battery value chain.

Overall, the proposed regulation addresses several crucial elements which set the right way forward towards the sustainability of batteries. For instance, the proposals on the table set increased targets for the collection and recycling of batteries, aligned with the EU circular economy ambition. The proposed rules also include performance and durability requirements for industrial and portable batteries, and provisions facilitating repair, repurposing for second-life applications and recycling. To make batteries more sustainable, the EU proposes to introduce a battery passport, both for electric vehicles and industrial energy storage batteries, to clarify the responsibilities of producers across the value chain, and set information and maximum emission requirements for the carbon footprint of batteries.

Although the proposed measures will bring a significant improvement to the current situation, several aspects remain a matter of concern. For example, proposals foresee recovery targets of 70% for lithium by 2030, but this threshold is far too low to enable a competitive and circular EV value chain. It is now up to the European Parliament and Council's national governments to improve the proposals and make the EU sustainable battery policy a real success story.

Furthermore, the proposed switch from a 'Directive' to a 'Regulation' is *necessary* for consistent implementation across all Member States, improving harmonisation and legal certainty. Having in mind the single market rules, it is obvious that the design requirements aimed at improving circularity and detoxification must be set at a high level across all Member States. However, it should be possible for more progressive Member States to introduce more demanding national laws for collection and recycling rates, and therefore to exceed targets that are set in the regulation if they are able to.

In order to achieve an environmentally sustainable battery value chain through the EU Battery Regulation, the following measures need to be improved:

- A revision of the definition 'light means of transport' to ensure that all batteries from light means of transport are defined as portable batteries.
- Calculation and reporting requirements for a battery's carbon footprint that ensure use of renewable energy in production, as well as data that is verified by independent third party auditors that are accredited by a government.
- A swift development of the methodology for the calculation of recycled content in the production of batteries, to be extended also to portable and primary batteries.
- Levies on the use of disposable batteries and in preparation of their phase-out, with a view to promote those devices that can use a power cable or a rechargeable battery.
- Strong ecodesign requirements for portable batteries to ensure good performance and durability. These should be underpinned by appropriate technical standards.
- Strong ecodesign requirements that focus on replaceability, reparability and reusability, and that are supported by the appropriate technical standards.
- Obligations regarding the provision of information targeting the supplier/producer and consumers.
- Higher collection targets, in particular 85% for portable batteries from 2030 and 90% for light means of transport from 2025, and incentives for the collection of industrial, automotive and EV batteries.
- Mandatory tests to determine whether it is technically possible and economically reasonable (including if there is a market) for the battery to be repurposed for second life.
- More ambitious recycling targets for battery material recovery (95% for cobalt, nickel and copper in 2025 and 98% in 2030), in particular for lithium (70% in 2025 and 90% in 2030), and introduction of a review clause to maintain the highest possible level of recycling, taking into account any new battery chemistries that may develop in the future.
- Additional requirements on top of the Organisation for Economic Co-operation and Development (OECD)'s due diligence provisions to ensure environmental protection and better protection of vulnerable communities, and accountability for fulfilling such obligations, remains with the economic operator and not with an industry scheme.

In this position paper, environmental civil society organisations **(Environmental Coalition on Standards, Transport & Environment, Deutsche Umwelthilfe and the European Environmental Bureau)** go through the measures proposed by the European Commission and point out aspects that are either missing or should be improved.

1. Classification and Definition (Art. 2)

The main limitations of the current legislation on batteries come from the fact that it is outdated. It does not take into account new battery technologies and applications, and it lacks definitions on electric vehicles and light means of transport. The EC proposal sets new definitions and categories (Art. 2). Together with portable, automotive and industrial, the EC establishes a fourth category for electric vehicle batteries (Art. 2(12)). The proposal also revises the definition of portable batteries (Art. 1(7)) by introducing a weight threshold (below 5 kg) and establishes a subgroup of portable batteries: the batteries for 'light means of transport' in Art. 2(9) in combination with Art. 48(4) and Art. 55.

OUR RECOMMENDATIONS

- The Regulation should define all batteries from light means of transport – including light means of transport without a seat – as portable batteries, as they often end up with private households for disposal.
- The exclusion of batteries 'designed for industrial purposes' from the portable batteries in Art. 1(7) is not necessary. This exclusion should be dropped or, alternatively, be made more concrete: 'designed for **exclusively** industrial purposes', so as to avoid any circumvention of the EPR-System for portable batteries.
- In Art. 49(1), we recommend the addition of the following bold section '...Where waste industrial batteries require prior dismantling at the premises of private, non-commercial users, the obligation of the producer ***or, where appointed in accordance with Article 47(2), producer responsibility organisations***, to take back those batteries shall include covering the costs of dismantling and collecting waste batteries at the premises of those users.'

Supporting technical assessment:

The term 'not designed for industrial purposes' in Art. 1(7) is not well defined and allows for different interpretations.

There might be a limited number of batteries that end up in households that weigh more than 5 kg and that fall under the industrial batteries definition. This, for example, would be the case with a 'stationary battery energy storage system' for a solar power installation at a private household. Art. 49(1) considers this special case accordingly: '... Where waste industrial batteries require prior dismantling at the premises of private, non-commercial users, the obligation of the producer to take back those batteries shall include covering the costs of dismantling and collecting waste batteries at the premises of those users'. The EC's proposal does not specify the procedure when a producer goes out of business and if a producer responsibility organisation (PRO) is obliged to take on the responsibility.

2. Carbon Footprint (Art. 7 & Annex II)

Limited robust, primary up-to-date data is currently available on the carbon footprint of lithium-ion batteries (LIB), with their current climate impact range estimated to be between 39 kg CO_2e/kWh and 196 kg CO_2e/kWh, equivalent to between 11,800 and 89,400 km driven by a diesel car[1]. The most energy- and carbon-intensive part of LIB manufacturing is the production chain of battery cells, responsible for as much as 75% of energy consumption. As cell production is mainly powered by electricity, these emissions can easily be reduced. The type of electricity used is therefore crucial to determining how green a battery actually is. The co-signatories of this report support the Commission's proposal to establish mandatory carbon footprint reporting, followed by maximum emission thresholds. However, the following improvements should be made.

OUR RECOMMENDATIONS

- Industry-provided data should be made publicly available in the electronic exchange system (as proposed in Art. 64), with procedures put in place to independently verify the data accuracy (this must be done by an independent third party auditor with government accreditation).
- Information should be provided both on CO_2 (kg CO_2 per kWh battery produced) and on energy use (kWh per kWh battery produced) to highlight the lowest carbon batteries and most efficient manufacturing processes.
- The current Product Environmental Footprint Category Rules (PEFCR) for batteries[2] should be updated to include upstream emissions (related to material extraction and refining) and must incentivise the use of renewable energy across the battery life cycle (extraction, production, use, and recycling). A balance of interests should also be ensured by including civil society in the update of the rules.
- The maximum carbon footprint emission thresholds (which will take effect from 2027) must require the use of green energy in battery production. Prior to this, incentives should be offered to promote the use of green electricity as much as possible.
- Where companies do not provide specific data, default carbon intensity values should be used based on the average carbon emissions data of the country where the electrodes, electrolytes and cells were produced. Companies should only be allowed to use lower emission factors where they can reliably prove that their individual processes or energy sources are cleaner.
- Manufacturers should only be able to claim the use of renewable energy if they can prove this via direct connection to the renewable energy plant or a contract demonstrating a temporal (in real time or at least every hour) and geographical link between energy supply and use. Contracts such as Guarantees of Origin alone should not be accepted as valid evidence.

1. Hans-Eric Melin, *Analysis of the climate impact of lithium-ion batteries and how to measure it*, 2019.
2. https://ec.europa.eu/environment/eussd/smgp/pdf/PEFCR_Batteries.pdf

Supporting technical assessment:

In addition to reporting the carbon footprint data in kg CO_2 per kWh battery produced (needed to be able to compare batteries before they are sold and used), it will be important for battery makers to report their energy input data in kWh per kWh battery. Improving the efficiency of the battery-making process is another important way to reduce the carbon footprint of batteries. For example, on the same carbon grid intensity, a battery maker that uses 5 kWh of energy to produce a battery will emit more CO_2 than a company that only uses 3 kWh.

The calculation methodology to determine a battery's carbon footprint (to be defined via a delegated Act) will be based on the PEFCR for batteries. However, these rules need urgently updating to account for upstream emissions associated with material extraction and refining. Furthermore, ahead of the adoption of the delegated act, Annex II of the Regulation should already specify rules for electricity sourcing. For battery makers to prove their individual processes or energy sources are cleaner than the average grid electricity, Guarantees of Origin (GO) alone should not be valid evidence for such a claim. As the sale price of GOs is not guaranteed, and there is no direct link between the market value of GOs and the revenue required to make new investments in renewable power attractive, requiring GO purchases as proof of renewability will do nothing to bring additional renewable electricity capacity to the system. It could, therefore, result in significant indirect emissions from fossil fuel power plants[3]. Furthermore, the current GO system does not account for real-time energy sourcing or actual energy feeds between consumption and production.

3. Chris Malins, 'What does it mean to be a renewable electron? Regulatory options to define the renewability of electricity used to produce renewable fuels of non-biological origin', 2019.

3. Recycled Content (Art. 8)

It is important that the new Regulation follows the objectives expressed in the Circular Economy Action Plan (CEAP) that promises policy support for recycled content as a driver for uptake of secondary materials, and to secure the market against volatility of price of primary materials. As Europe is facing a growing demand for batteries, it is crucial to design correct policies driving its circularity, not only for the benefit of the environment, but crucially for the sustainability of the European battery industry. That is why we welcome the provisions stipulated in Article 8.

However, the timeline proposed should be brought into effect sooner. The Commission should propose an ambitious and transparent methodology for the calculation and verification of recycled content as soon as possible, followed by mandatory producer reporting on the recycled content values, in order to aim to reach the first targets. The targets, however, should be re-evaluated according to the reporting gathered and developments in technology, notably new chemistry and recovery improvements. The scope of these obligations should not be limited to EV and industrial batteries only, but also cover portable and primary batteries.

Moreover, the objective for recycled content, which is one of the principles of a circular economy (CE), must also apply to other product categories beyond batteries. Recycled content in high-end applications is crucial to extend the value of resources and to keep their high quality and avoid leakage towards other applications through downcycling.

OUR RECOMMENDATIONS

- The Commission should adopt an implementing Act, laying down the methodology for calculation and verification of recycled content as soon as possible, and by 2022 at the latest. The EU Commission must ensure that no post-industrial recyclates (PIR) are included, so that only post-consumer recyclates (PCR) are in the targets[4].
- The scope of this measure should be extended to portable batteries and primary batteries if they are not phased out by then.
- Producers should start collecting data on recycled contents the first full year after the methodology for calculation and verification is adopted by the EC and report on the results six months after the reference year.
- Recycled content targets should be set at a minimum level to be achieved 1-2 years after the reporting obligation is put in place and then revised upwards based on the information that is obtained and proper studies done on the availability and feasibility.
- The EC must ensure that recyclates are exclusively from recycled batteries, to promote closed-loop recycling and to avoid recyclates that are available anyway being diverted to meet targets, without actually recycling more.

4. See also *joint position paper "Determining recycled content with the 'mass balance approach': 10 recommendations for development of methods and standards"*, February 2021.

Supporting technical assessment:

Recycled content can reduce the carbon footprint of batteries and will also reduce environmental and social impacts related to extraction. The increase in demand for secondary materials will stimulate collection and quality recycling, as well as influence the design of batteries. A chain of custody method to verify and trace recycled contents must be developed, but before it is operational, reporting should be managed through supply chain documentation. The standard EN 45557 on recycled materials can be used as a reference for energy-related products.

What should be explored further is a possibility to check recycled content based on the amount of recycled materials used for annual/semestrial production, not on a product base (not checking every battery), but batches of batteries (following a so-called 'batch level mass balance') and targeting an average integration of recycled content. In parallel, a method to calculate and declare the battery's carbon footprint should be developed, as well as details on how to integrate the recycled content (like PEF). The same standards should be applied to recycled materials as to virgin ones, with regards to performance and chemical contents, and the potential incentives and obligations should clearly refer to this.

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This is crucial to force the industry to finally improve its recycling technologies, so that less material gets lost and more material can be recovered during the recycling process. In fact, the industry is developing too slowly and the abovementioned short- and medium-term goals are very important to incentivise companies to invest in improved recycling techniques.

4. Performance and Durability Requirements (Arts. 9-10)

The proposal contains provisions on the performance and durability of batteries, both for portable batteries of general use (Art. 9) and for industrial and EV batteries (Art. 10).

Regarding portable batteries of general use (where the most common formats are AA and AAA), the EC has regretfully abandoned its attempts of progressively phasing out non-rechargeable single-use batteries (as stated in its Circular Economy Action Plan) and opted for minimum performance and durability requirements instead. These will be adopted with a delegated Act by 2025 and enter into force from 2027; the establishment of minimum requirements will build on international and European standards. By the end of 2030, the European Commission will assess the feasibility of measures that would phase-out single-use portable batteries.

Measures for industrial and EV batteries are covered by the same provision, but minimum performance requirements will only apply to the former through a Delegated Act. EV battery manufacturers will only have to provide technical documentation of the performance and durability values of their products, as well as the specifications and standards used for the calculation.

OUR RECOMMENDATIONS

- The provisions set out in Article 9 should apply to all portable batteries, not only the ones in general use, as well as batteries for light means of transport.
- Instead of the nominal capacity, the actual measured capacity should be defined as the starting point for the specifications, otherwise manufacturers can arbitrarily change the nominal capacity to falsely comply with the specifications.
- The proposed restrictions on the delegated Act as set out in Article 9 for portable batteries, regarding, for example, costs, competitiveness, functionality etc. must be deleted, as this will be reviewed in the legislative process anyway. Beyond this, we recommend that the criteria listed in Annex III should be viewed as minimum criteria and amendments to these should be possible over time, as technological and scientific possibilities advance.
- Single-use, disposable primary batteries should be a rare exception. The European Commission should give more concrete signals for a phase-out of single-use batteries and assess the feasibility of a phase-out by 2025 at the latest. The assessment should take into account the full picture when assessing cost-benefit, notably the reduction in costs and impacts on collection and treatment of single-use batteries. The study should objectively assess which limited number of devices must contain primary batteries and which could be modified. The burden of proof should be on producers of primary materials to demonstrate the absolute need and value of single-use batteries. However, in preparation for the ban on disposable batteries, a levy should be placed on them with the view to promote those devices that could clearly use a power cable or a rechargeable battery, such as toys, wireless computer equipment and lamps.

Supporting technical assessment:

Regarding portable batteries in general use, the EC scrapped the initial plan of a phase-out of non-rechargeable, single-use batteries. The initiative was strongly opposed by industry[5], which argued that the so-called 'low-drain' applications (such as remote controls, wall clocks and small medical devices) still needed non-rechargeable batteries. While this statement could be true for certain applications, this cannot be a reason to still allow single-use batteries on the market, even if they are better performing and only based on industry claims.

The EC also dropped the original idea of setting minimum performance requirements for both industrial and EV batteries. The impact assessment (IA) accompanying the EC proposal states that EV battery manufacturers are driven by competition to improve round-trip efficiency. This means that if performance requirements were set too low, they would be pointless, and if they were too complex, they could hamper innovation. However, the IA states that this is not true for all markets or applications, which justifies the establishment of a common set of rules for industrial batteries (i.e. stationary industrial batteries).

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Setting specific targets at this early stage could introduce threshold effects for manufacturers, who at a certain point might be content to limit their performance to a threshold that is already surpassed by their technical capacity. For example, performance requirements, as stated in the Impact Assessment, are already quite low and are easily attainable by the industry even today. In addition, as the Impact Assessment text correctly acknowledges, measurement of performance indicators serving to establish performance criteria is notoriously complex, although by no means impossible. Differentiating requirements between applications could thus save some additional costs to some market operators for whom this would not be necessary.

The proposal of building a publicly accessible database of real-life performance data is more than welcome and is certain to create considerable impact by enabling research, strengthening market confidence, and driving competition. However, we would like to insist that such a platform should be made publicly available.

Concerning administrative burden, we are glad to see that the Impact Assessment correctly acknowledges the role of certifying authorities.

5. Joint industry statement on the impact of restricting primary batteries in Europe, October 2020.

5. Replaceability, Repairability and Reusability requirements (i.a. Art. 11)

Extending the lifetime of batteries and the devices they power can help to reduce our overall environmental footprint. Ensuring that batteries are removable and replaceable in devices is a necessary requirement to:

- Enable devices to have a functional lifetime longer than the expected life of their batteries;
- Allow key components to be easily reused, refurbished, repaired or recycled;
- Allow batteries themselves to be reused in alternative applications once they reach a reduced state of health.

Addressing these aspects requires far-reaching ecodesign criteria for batteries that go beyond the durability requirements (part 4) and those for the second life of batteries (part 8). The proposal of the EU Batteries Regulation aims to address these aspects in Article 11 but has a number of limitations.

OUR RECOMMENDATIONS

- The scope of battery removability and replaceability should be extended – in particular to light means of transport. A minimum set of standards for basic components should also be established for EV and industrial batteries.
- Exemptions should be reserved for niche applications only, and where applicable accompanied by an information requirement on the impact on the product lifetime.
- Battery removability and replaceability should be more precisely defined and based on reversible non-destructive disassembly using commonly available tools.
- Battery replaceability for portable batteries should be possible for professional repairers and end-users.
- All types of batteries must be easily replaceable by professional repairers, and portable ones by end-users and community repair initiatives.
- Batteries containing several cells must be modular in design so that the case, control electronics or individual cells can be replaced by professionals .
- In all cases, professional repairers should encompass both affiliated and independent repairers.
- Batteries, as well as their main components (cells, packs, casing and mainboard), should be available for the expected lifetime of the application as spare parts with a reasonable and non-discriminatory price for independent qualified personnel.
- Repair instructions should be available for all types of batteries and all devices with batteries, at least for professional repairers. Portable batteries should have repair instructions suitable for end-users and community repair initiatives.
- For batteries with a control software, the manufacturer should provide software updates for the expected lifetime of the product that ensure the safe use of the battery without limiting its functionality, or otherwise publish the source code.
- Software must not be used to impinge battery replacement – for example using updates or serialisation.
- Battery management systems in all types of batteries should be readable by end-users, and independent qualified personnel should be able to modify them for the purposes of reuse.

Supporting technical assessment:

The scope of the removability and replaceability requirement should be clarified. It should not be restricted to portable batteries, but instead apply to all products containing batteries – including both battery packs or cells. At a minimum, battery removability and replaceability should also be possible for light means of transport such as e-bikes. In these cases, this is to avoid the situation where the bicycle itself must be replaced after the battery fails – which is, on average, just 2-4 years. Battery removability for industrial products and EVs must also be a requirement but, where necessary, may only be possible for professionals.

A limited number of exemptions may be possible for niche applications only, where battery integration is impossible to overcome – the Commission proposal on this aspect outlined in Article 11 is reasonably defined. For these limited exemptions, clear product information should illustrate to consumers that the device contains a non-replaceable battery and therefore has a limited lifetime.

Battery removability and replaceability should also be more carefully defined. It should be understood as non-destructive disassembly, or reversible extraction of the battery pack or cell(s) from the device or constituent components without functional damage that would preclude reassembly or reuse. Battery removability and replaceability should be possible for portable electronics and light means of transport with commonly available tools (in line with EN 45554:2020). Adhesives should also not be accepted as appropriate fasteners for batteries. For EVs, since complete design

harmonisation at module and pack level may not be possible, a trade-off would be to prevent the use of proprietary tools, and establish a minimum set of standards for basic components, such as lifting parts[6].

Access to the removability and replaceability requirement should also be clarified. In the case of portable batteries and light means of transport, battery removability and replaceability should be possible for both professional repairers and end-users (including citizens and community repair initiatives). The term professional repairer should be understood to encompass both repairers affiliated to the manufacturer and independent professionals. For other vehicles and industrial products, battery removability must apply, but may only be possible for professionals (both affiliated and independent).

Batteries should also be made available as spare parts. Where battery packs or cells are a non-standard format, spare batteries should be available for a period matching the expected lifetime of the product (for example, as defined in the ecodesign requirement). Where the product lifetime is not defined in legislation, spare batteries should be made available for a minimum of 20 years. Battery spares should have a non-discriminating and reasonable price for both independent professionals and end-users, with respect to the overall price of the product. The battery should be available for order and should be delivered in a reasonable period of time (e.g. 10 working days). Besides, if several cells are installed in a battery, professionals must be able to replace these fairly easily (modular design). Nevertheless, in the case of portable electronics and light means of transport, complete battery packs should be available as spares to end-users and professionals.

In some cases, effective battery removal or replacement may require software in addition to hardware. Where batteries or the device is controlled by software, this software should not hinder battery replacement and product functionality.

To ensure safety, removability and repair information should be made available. For portable electronics and light means of transport, this should be made publicly available at the point of sale or on a public website. Repair information should include a disassembly map or "exploded view", a list of required tools, information to identify the product and its components, wiring and connection diagrams. For EVs, the same information should be available to professional repairers in a non-discriminatory manner.

In some cases, effective battery removal or replacement may require software in addition to hardware. Where batteries or the device is controlled by software, this software should not hinder battery replacement and product functionality. Serialisation or pairing of batteries to devices should not be permitted. If serialisation is necessary to the functioning of the device, diagnostic tools to install new batteries should be made publicly available. As for spare batteries, software updates should be available for the expected lifetime of the device. These updates should ensure the continued safety of the battery without compromising its functionality or application. If the manufacturer no longer issues updates for the software, the source code of the software must be disclosed so that independent programmers can set up the updates needed for continued safe use of the battery.

Whenever batteries contain a battery management system (BMS), i.e. in EV and industrial batteries, it must be accessible and readable by the battery owner, for example to determine the current capacity and past charging cycles. For the purpose of reuse, it must be legally and technically possible for professionals to change the BMS functionality and the control software. This would, for example, allow the reprogramming of an EV battery as stationary electricity storage.

6. ECOS, *The positive side of batteries: the role of standards in supporting sustainability requirements for batteries*, May 2020.

6. Information Requirements (Arts. 13, 14 and 65)

Another gap in the current battery legislation and in the whole value-chain is the lack of battery labelling and data provision that can be useful both to consumers and to facilitate repair, reuse and recycling of batteries.

The Commission has therefore proposed a full chapter on labelling and information requirements, as well as the set-up of the so-called "battery passport", which will allow for an easier encoded data transfer on batteries. We appreciate the measure of battery labelling, especially in regard to recycled content and carbon footprint, which will be useful consumer information.

We also welcome the provision on the state of health and expected lifetime of batteries. Access to the Battery Management System (BMS) is indeed crucial for battery reuse and use in Vehicle-to-Grid and smart charging applications[7]. This measure unlocks a tremendous potential, since it enables:

1. Reuse of the entire battery pack without needing to dismantle. This increases cost-efficiency for second-life batteries, since establishing communication with the existing BMS allows the repurpose and remanufacturing operator to avoid dismantling, testing, and sorting, as well as discarding battery pack and control system materials.
2. Integration of the BMS within a complete Vehicle-to-Grid control chain that can be enabled by independent market parties, who may use the battery to provide grid stabilisation services.

Historic data allow for significant breakthroughs and activate an important innovation potential. We also welcome the measure on the battery passport, which will certainly increase market confidence and will allow the battery and EV markets to flourish, while increasing material efficiency.

OUR RECOMMENDATIONS

- The links between the technical documentation on performance and durability parameters (see chapter 4) and the data on the state of health and remaining lifetime (chapter 8) should be more clearly defined.
- There should be a provision on online sales where information on collection requirements is richer and more detailed.
- There is a need for overarching educational campaigns and information at the point of sale, financed by the EPR fees from manufacturers, to better inform end-users.
- Information on single-use batteries should indicate the appliances where it would be more appropriate to use a rechargeable battery instead.
- The new Regulation for Batteries should be clearer on who will develop the data formats and parameters listed in Annex VII.

7. ECOS, *Moving up a gear: ECOS vision on clean and smart mobility*, December 2020.

7. Collection Rates (Arts. 48, 49 and 55)

The collection of batteries is fundamental to preparing them for reuse or recycling so that resources are recovered and pollutants are not released. In other words, the strictest recycling or second-life requirements will not help if the batteries have not been collected properly beforehand. Even though the proposal of the EU Batteries Regulation provides for a significant improvement in the collection of portable batteries, essential targets are still missing, especially with regard to the collection of batteries from light means of transport and industrial and EV batteries.

We welcome the proposed increase in mandatory collection targets for portable batteries, but do not consider them high enough. The collection target for portable batteries should be raised from 70% to 85% from 2030. An ambitious collection target for batteries from light means of transport must also be set. The calculation of this collection target should take into account the lifetime of those batteries. In addition to a comprehensive network of free collection points, ambitious collection targets for batteries from light means of transport need to be imposed on manufacturers or PROs because they often end up in private households and in waste bins. Otherwise, batteries from light means of transport will be collected together with portable batteries and included wrongly in the quota fulfilment of the collection target for portable batteries.

In particular, lithium-ion batteries in appliances and light means of transport pose high risks of fire if not collected correctly. Therefore, a deposit-return system should be established for them, as already in place by some manufacturers. The amount of the deposit should be higher than the material price and lower than the production price of the Li-ion battery. Deposited batteries should also be permanently labelled as such, whereby the labelling must also enable vending machine-supported take-back.

In particular, lithium-ion batteries in appliances and light means of transport pose high risks of fire if not collected correctly. Therefore, a deposit-return system should be established for them, as already in place by some manufacturers.

The collection of industrial, automotive and EV batteries is not ensured through the proposed measures and there is a risk of illegal disposal or illegal export of such batteries. There is a lack of concretisation of the area coverage of free collection points and a lack of incentives or binding targets for collection. First, it should be clarified that producers have to ensure a network of comprehensive free collection points for industrial, automotive and EV batteries, so a private or commercial end-user does not have to travel more than 10 km in urban regions and 30 km in rural regions to a collection point. In addition, there should be a sufficient incentive for returns or high collection targets for these batteries, taking into account their lifetime.

OUR RECOMMENDATIONS

- There should be a comprehensive network of free collection points in place for all types of batteries.
- The collection target for portable batteries must be raised from 70% to 85% from 2030 onwards.
- For batteries of light means of transport, a collection target of 90% from 2025 should be implemented; here the calculation methodology should take into account the lifespan of these batteries.
- A deposit-return system should be introduced for portable batteries, both primary and rechargeable Li-ion batteries and batteries of light means of transport.
- There should be an ambitious collection target or at least an incentive for returning industrial, automotive and EV batteries.

8. Second-life batteries (Art. 59)

A specific new provision of the proposal clarifies the framework for the repurposing of EV and industrial batteries that reach the end of their (first) life. Using second-life (repurposed) batteries as stationary electricity storage units is likely to offer the greatest potential of environmental benefits in this area. Second-life batteries can extend the lifespan of the battery with the twofold effect of significantly improving the life cycle footprint of the battery and avoiding the production of new storage batteries. Accordingly, prevention and reuse is classified at level 1, preparation for reuse at level 2 and recycling at level 3 of the *European waste hierarchy*. While the proposal sets far-reaching targets for recycling, there are none in place for repurposing and remanufacturing, which should be prioritised.

The proposal also clarifies the criteria for waste batteries to be subject to repurposing or remanufacturing and to stop being waste. The roles of the main actors involved in the production and repurposing/remanufacturing are also better defined: the repurposing/remanufacturing operator is considered as the manufacturer of the second-life battery and as such they will need to comply with the relevant requirements and run the characterisation tests for their batteries.

Provided that it is possible, the battery should be reused, and thermal recovery or disposal should be prohibited. Before an industrial, automotive or EV battery is recycled, it should be checked for the possibility of reuse. Recycling should only be possible insofar as reuse is technically and economically not feasible. This testing should be documented and passed on to the authorities for control and statistical presentation.

OUR RECOMMENDATIONS

- Before an industrial, automotive or EV battery is recycled, it must be tested for the possibility of reuse. In those cases where reuse is technically possible, economically feasible and where there is a market for the reused battery, the battery must be reused.
- Information needed to allow for repurposing or remanufacturing should go beyond the state of health parameter and also include data necessary to evaluate the remaining lifetime, such as energy or power throughput, errors or temperature history.
- Safety certificates should figure among relevant information, and Art. 59(3) should propose some more specific requirements or stress the need to have technical specifications on quality controls.
- In order to enhance the reuse of EVs and an extension of the vehicle's lifetime, the Battery Regulation should acknowledge the role of certifying entities who run technical controls and sales in the second-hand market.

Supporting technical assessment:

The proposal takes two systemic approaches in data provision, one being the provision of "spot" data on parameters related to the state of health and the other being parameters related to remaining data. These values give a picture of the situation of the batteries in a fixed moment, but they are not sufficient to describe remaining battery lifetime; these values can even be deceptive to the end consumer, as parameters such as capacity fade or round-trip efficiency do not evolve linearly over time. Hence, it is important to ensure customers and second-life operators are also informed about the remaining lifetime and not only on the state of health.

In the Annex accompanying this measure, these values are clearly mentioned, which is positive, although other parameters should also be made available, such as errors, or cell temperature history. For example, it is already well established that batteries in warm climates have a lower cycle lifetime and shelf-life than in colder climates; EV batteries used in colder climates may even outlive the vehicle itself.

Moreover, this information obligation does not include other potential defects that might lead to batteries being discarded. For example, batteries may be discarded because of a defective BMS, which could lead to short-circuits and fires. Although original equipment manufacturers (OEMs) or car dealers may have this information from experience, second-life operators cannot safely deduce this, which may put their process at risk.

9. Recycling Targets (Art. 57)

The demand for suitable automotive batteries and for battery raw materials, in particular cobalt and lithium, will continue to increase as the EV market expands, making battery recycling paramount. The ultimate goal should be to fully recover all the valuable materials in a battery at the end of its life – notably lithium, nickel and cobalt – so, for example, from 10 kg of cobalt, at least 9 kg is available to make new battery cells instead of mining virgin raw materials.

Although recycling and recovery rates remain low (in Europe), many of these materials have a high technical recycling potential, with high rates already being achieved commercially in other regions. Ensuring investment in and increasing the cost competitiveness and efficiency of sorting and recycling technologies – both through R&D funding and ambitious regulatory targets – is thus a priority. With this is mind, the Commission's proposed targets in Annex XII Part C for minimum rates of lithium-ion battery (LIB) material recovery (90% for cobalt, nickel and copper in 2025, then 95% in 2030; and 35% for lithium in 2035 and 70% in 2030), in particular for lithium, can and should be revised upwards.

OUR RECOMMENDATIONS

- Set ambitious recovery targets of 95% for cobalt, nickel and copper in 2025, then 98% in 2030.
- The current proposed lithium recovery targets are particularly low and ignore current best practice recycling technologies. Lithium recovery targets should be set for at least 70% recovery in 2025 and 90% in 2030.
- Additional requirements should apply on recycling quality to ensure part of it is battery grade (no downcycling).

Supporting technical assessment:
Extracting a ton of lithium requires 1,900 tons of water (consumed by evaporation), whereas, according to the Commission's Impact Assessment, secondary production from recycling would require only 28 tons of used LIBs (or around 256 used electric-vehicle LIBs)[8]. In Chile's Salar de Atacama, a major centre of lithium production and where over 60% of the region's water is used for mining, there is *evidence* of shrinking pasturelands, failing crops, and disappearing flora and fauna.

8. European Commission Impact Assessment report, *SWD (2020) 335 final, PART 1/3*

A 2019 study looking into LIB recycling for mobile phones showed a range of recovery rates for lithium, from 76% to 95%, with most recovery rates reaching at least 90%. Automated disassembly methods and direct recycling (compared to pyrometallurgy and hydrometallurgy) can improve rates further. For cobalt, the same paper states that extraction yields were in the range of 97–99%. In China, official government guidance sets recovery rates at 98% for cobalt and nickel and 85% for lithium. Although not (yet) binding, companies who do not fulfil the requirements will not receive the government support they otherwise would, neither at state level nor at a provincial level. Finally, LIB recyclers in North America (Li-Cycle) and Singapore (TES) are already achieving 90%+ recovery rates on lithium through a mixture of physical and chemical refinement.

Raising the ambition of the material recovery targets in line with the above recommendations reduces by two-thirds the quantity of lithium, nickel and cobalt lost compared to the Commission's proposed targets. This means that, in the long-run – when internal combustion engine cars are fully phased out and high volumes of EV batteries are going to recycling – the proposed recycling targets would reduce by a factor of three the amount of primary lithium, and by 2.5 the amount of nickel and cobalt, required to make new batteries compared to the current Commission targets. In a context where, for EV batteries alone, the *EU will need 18 times more lithium and 5 times more cobalt in 2030* (and almost 60 times more lithium and 15 times more cobalt in 2050), these improvements will go a long way towards strengthening the security of the supply of these materials in Europe. Finally, while recycling is a way to reduce the use of primary raw materials, it is also important to acknowledge, as a priority, the need to drastically reduce Europe's overall private vehicle fleet and create a supportive legislative framework to this end.

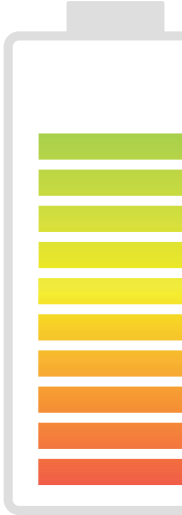
10. Incentives for Sustainable Batteries (Arts. 13 and 70)

In addition to the minimum requirements mentioned in our position paper to remove environmentally-harmful batteries from the market, incentives are needed to promote the distribution of particularly environmentally friendly batteries. This includes better labelling of batteries (e.g. with regard to their carbon footprint, rechargeability, repairability or recyclability), so that consumers can choose to buy the best batteries. In addition, the EU Ecolabel should also be available for batteries or the application that powers the battery. Public procurement should be obliged to give preference to batteries with EU Ecolabel or equivalent characteristics. To make it easier for procurement offices to choose, the creation of a product database should show which batteries (applications) are particularly environmentally friendly.

OUR RECOMMENDATIONS

- Consumers should be able to better identify more environmentally friendly portable batteries through mandatory labelling.
- The EU Ecolabel should also apply to batteries or the applications that power the batteries.
- Public procurement should give mandatory preference to the best available environmentally friendly batteries through a product database.

In addition to the minimum requirements mentioned in our position paper to remove environmentally-harmful batteries from the market, incentives are needed to promote the distribution of particularly environmentally friendly batteries.



11. Stop Illegal Imports of Batteries

Online marketplaces sell huge amounts of batteries in the EU that do not comply with the legal environmental and consumer protection requirements. At the same time, it is not possible to take effective action against suppliers operating illegally from outside Europe, as the platform operators are not legally responsible for the products they offer. This legal loophole threatens the existence of legally operating traders and endangers the environment, as well as consumers.

Counterfeits sold via online marketplaces, as well as products that do not conform to the law, such as electronic goods, children's toys or car parts, pose a major safety risk and are potentially life-threatening. In addition, batteries regularly fail to comply with legal regulations on take-back, registration or environmentally sound disposal. Such suppliers avoid paying disposal fees, jeopardise the financing of functioning disposal structures and increase the costs for companies that comply with the legal regulations. The Organisation for Economic Co-operation and Development (OECD) estimates that between 500,000 and 1,000,000 tonnes of electrical appliances alone are illegally placed on the market in the EU each year by so-called free riders. In addition, it is difficult for consumers to enforce their rights in the event of damage, such as a fire caused by a short circuit, especially when dealing with sellers from non-European countries. A particular problem here is that online marketplaces often sell products of low quality, with safety flaws or high levels of pollution.

OUR RECOMMENDATIONS

- If there is no actor available to the consumers, online marketplaces and fulfilment service providers must take full responsibility for the products they offer. Hence, they must be legally defined as actors in the supply chain – for example as distributors.
- Online marketplaces and fulfilment service providers must be subject to comprehensive due diligence obligations for the products they offer. This includes, for example, checking that the manufacturer and distributor's obligations are complied with.
- Online marketplaces must provide the supplier's full contact information and, in the case of electrical equipment, batteries and packaging, the manufacturer's registration number on the relevant product website.

12. Due Diligence (Arts. 39 and 72)

As demand for batteries (in particular EV batteries) grows, it is crucial that the transition to a zero carbon economy does not come at the expense of environmental, social and human rights abuses in countries where battery materials are sourced. Policy makers need to ensure that mining companies clean up their supply chains and put in place robust governance structures to ensure ethical sourcing of battery materials and prevent human rights and environmental abuses. Strong due diligence requirements for batteries should become the blueprint for future horizontal due diligence legislation. The Commission's proposal to make the *OECD due diligence guidelines* for responsible supply chains binding on companies placing batteries on the EU market is welcome, but certain loopholes remain.

Whilst the forthcoming EU horizontal supply chain due diligence legislation is welcome and needed, the Batteries Regulation, which will come first, should set the bar high on scope with broad sectoral coverage by expanding to more raw materials. Thus, the list of raw materials covered under due diligence requirements in Annex X (1) should be expanded to include copper, iron and aluminium (bauxite). Copper and cobalt (the latter is included on the list) are often mined together, where cobalt is a byproduct of copper (and nickel) mining, e.g. in *the Copper-Cobalt* belt in the Democratic Republic of the Congo (DRC). Since they are mined together/close to each other, the environmental impact is often similar. Without the inclusion of copper, the risk is that the new rules will create a two-tier system with 'clean' cobalt mined alongside 'dirty' copper, with no oversight or controls on the latter. The demand for iron and aluminium (bauxite) for vehicles with electric engines is projected to increase by 13 to 14 times between 2019 and 2030[9]. Future technologies could massively increase the demand for aluminium. Regarding the extraction of those metals, human rights violations and environmental destruction have been documented in-depth.[10]

The proposed Regulation lists a number of international instruments covering numerous mining-related environmental and social risks, which the Commission will use to develop guidance for companies applying due diligence requirements. Whilst the list is a good start, it should be expanded to include better protection of those most vulnerable in the supply chain. For example, the inclusion of *ILO Convention 169* on the right of Indigenous Peoples to Free, Prior, and Informed consent – although already included in other instruments listed in Annex X including the Tripartite Declaration of Principles concerning MNEs and Social Policy – should be clearly stated, given its importance to the rights of mining-affected communities.

9. https://www.bloomberg.com/news/articles/2020-12-31/billionaire-friedland-s-spac-readies-funds-for-clean-power-push?srnd=green
10. ECCHR et al. (2019): https://www.ecchr.eu/fileadmin/Fallbeschreibungen/Case_Report_Brumadinho_ECCHR_MISEREOR_20191014_EN.pdf; Business & Human Rights Resource Centre (2019): https://www.business-humanrights.org/en/blog/brumadinho-dam-collapse-lessons-in-corporate-due-diligence-and-remedy-for-harm-done/; Human Rights Watch (2018): https://www.hrw.org/report/2018/10/04/what-do-we-get-out-it/human-rights-impact-bauxite-mining-guinea; Inclusive Development (2019): https://www.inclusivedevelopment.net/wp-content/uploads/2020/12/CBG_CAO-Request-for-Mediation_FINAL-EN.pdf

Stronger environmental protections on global mining practices are also needed and mining companies should comply with requirements as set out in the Initiative for Responsible Mining Assurance (IRMA)'s standard on environmental responsibility (Principle 4), which is today's best practice for responsible sourcing and beyond. Furthermore, with one in every three allegations[11] related to raw material extraction linked to water (pollution or access to), Annex X should address this issue by including adequate steps such as IRMA's Water Management requirements, listed under the standard's environmental responsibility practices[12].

The inclusion of the article on penalties (Art. 76) is welcome. However, considering the experience with the Conflict Minerals and Vehicle Type Approval Regulations, we recommend a harmonised framework is introduced.

Companies participating in voluntary supply chain certification schemes that have been recognised by the European Commission (Art. 72) should not be assumed to be automatically complying with the legislation and must continuously meet the requirements as set out in Art.39 of the regulation, including ensuring supply chain assessment, transparency, third party audits, grievance mechanisms, and consultation with affected communities. In the case of the biofuels industry, for instance, it was found that the standards presented by voluntary schemes as a basis for their recognition were not always applied in practice and that they were not ultimately verified by the authorities[13].

The inclusion of the article on penalties (Art. 76) is welcome. However, considering the experience with the Conflict Minerals and Vehicle Type Approval Regulations, we recommend a harmonised framework is introduced. This should include a substantiated penalty mechanism for missing, incomplete or fraudulent assessments and reports on human rights due diligence. Penalties should include short-term possibilities for economic operators to incentivise the elimination of causes for human right violations and illegal environmental impacts, mandatory recompense, legal remedies and suspension from the supply chains. Policy makers should also set a framework on access to remedy for communities affected by mining activities in line with the UN Guiding Principles.

The deep sea is the new frontier targeted by mining and some 1.3 million km² of international waters are currently under deep sea mining exploration contract with the International Seabed Authority (ISA). Several EU Member States and companies are holders or sponsors of such contracts, including, for example, Portugal and Spain – see *Blue Economy 2020 report*. The deep sea contains some of the most biodiverse and scientifically important ecosystems on Earth, and sustains all life on Earth, and scientists have pointed to serious potential risks of deep sea mining[14]. The *EU's Biodiversity Strategy 2030* echoes the *2018 Resolution by the EP* and states that: *'In international negotiations, the EU should advocate that marine minerals in the international seabed area cannot be exploited before the effects of deep-sea mining on the marine environment, biodiversity and human activities have been sufficiently researched, the risks are understood and the technologies and operational practices are able to demonstrate no serious harm to the environment, in line with the precautionary principle and taking into account the call of the European Parliament.'*

11. Business & Human Rights Resource Centre (2021), Transition Minerals Tracker. *Link here.*
12. https://responsiblemining.net/wp-content/uploads/2018/08/Chapter_4.2_Water_Management.pdf
13. Transport & Environment (September 2, 2016), Sustainable biofuels certification challenged by EU auditors. *Link here.*
14. Deep-sea mining: the science and potential impacts, *link* & C. L. Van Dover et al., Biodiversity loss from deep-sea mining, June 2017.

- Expand the list of raw materials covered under due diligence requirements in Annex X (1) to include copper, bauxite and iron.
- Expand the list of international instruments in Annex X (3) to better protect vulnerable communities.
- Put in place stronger environmental protections on global mining practices, including requirements as set out in the Initiative for Responsible Mining Assurance (IRMA)'s standard on environmental responsibility (Principle 4).
- Only allow voluntary industry schemes to be recognised if they can prove they meet all the requirements established under Art. 39, including third-party verification.
- Extend due diligence requirements to cover economic operators that place portable batteries on the EU market.
- To prevent battery production from migrating to states with low environmental and occupational health and safety standards, batteries may only be imported if it can be proven that equivalent EU environmental and occupational health and safety standards have been met. The auditors issuing these certificates should not be selected or financed by the actor that is audited.
- End of life batteries should only be exported to non-EU countries if it can be proven that the same environmental and occupational health and safety standards apply to waste treatment in the destination facilities as in the EU. For this purpose, a list of certified treatment facilities should be drawn up at the EU Commission.
- Ensure a specific framework for penalties is set out, guaranteeing a harmonised approach across Europe (as part of Art. 76).
- Establish an EU moratorium on deep seabed mining until the effects on the marine environment, biodiversity and human activities have been sufficiently researched, the risks are understood and it can be demonstrated that deep seabed mining can be managed in a way that ensures the effective protection of the marine environment and without net loss of biodiversity.

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