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Public consultation on sustainability requirements for batteries

Fields marked with * are mandatory.

Introduction

Battery technologies play a key role in decarbonising the road transport sector and strongly contribute to energy storage solutions, both for domestic and grid applications. Their large-scale deployment has the potential to make a substantial contribution to the Energy Union and sustainable mobility policies. At the same time, the production and use of batteries can induce negative environmental impacts, notably in terms of energy and resource use.

The Strategic Action Plan on Batteries announced an action for the Commission to put forward requirements for sustainable battery design and use for all batteries placed on the EU market. The initiative “sustainability requirements for batteries” is the implementation of this action and may result, if justified, in regulatory intervention setting out minimum sustainability requirements.

The main objective of this initiative is to foster the production and placing on the EU market of high performing, safe, sustainable and durable (i.e. long-lasting) battery cells and battery packs/modules, produced with the lowest environmental footprint possible in a way that is cost-effective. At the same time, this initiative ensures a level playing field for economic operators.

About this public consultation

Given the above policy context, this public consultation aims at offering general public and relevant stakeholders (in particular those active in the sector of batteries) the opportunity to contribute to the exercise and at providing relevant and robust information in a structured way. The responses will contribute to the analysis, together with evidence from different sources, including desk research and other consultations.

The questionnaire is divided into the following parts:

- part 1: information about the respondent

- part 2: market trends and existing policies

- part 3: specific questions

- ○ **Anonymous**
  Only your type, country of origin and contribution will be published. All other personal details (name, organisation name and size, transparency register number) will not be published.
- ◉ **Public**
  Your personal details (name, organisation name and size, transparency register number, country of origin) will be published with your contribution.

☑ I agree with the personal data protection provisions

Which of the following activities are performed by your company/business association? (more than one choice is possible)

- ☑ Battery cell manufacturing
- ☑ Cell components manufacturing (cathode materials, anode materials, electrolytes, separators, etc.)
- ☑ Raw materials and/or processing materials (cobalt, natural graphite, lithium, etc.)
- ☑ Battery pack manufacturing for mobility applications
- ☑ Battery pack manufacturing for stationary applications
- ☑ Electric vehicle manufacturing
- ☐ Second life applications / repurposing of battery packs
- ☑ Recycling
- ☐ My company is not involved in any of the activities listed above

How would you qualify your knowledge on batteries?

- ○ a) I have a very limited knowledge
- ○ b) I know the general aspects allowing me to have an informed opinion
- ◉ c) I am familiar with the specific technical details/aspects of these products

Market trends and existing policies

According to some forecasts, Europe could capture a share of a global battery market of up to €250billion per year from 2025 onwards. How do you see the future development of the European market for batteries manufacturing?

- ◉ a) I think that Europe will be an important player in the global market
- ○ b) Europe will not play a big role in the global market
- ○ c) I have no opinion

What will be the main driver for Europe being an important player?

- ☑ a) Having a strong battery value chain in the EU is of strategic importance to our industry
- ☐ b) Batteries are key to sustainable mobility and to the integration of renewable electricity generation in the grid
- ☐ c) The market will develop without the need for regulatory intervention

What type of policy and regulatory measures would be most appropriate for the promotion of batteries manufacturing in Europe?

- [ ] a) No regulatory intervention is necessary
- [x] b) R&D funding
- [x] c) Financial instruments (preferential loans, grants)
- [ ] d) Training
- [x] e) Requirements on ethical sourcing of raw materials and social protection of workers
- [ ] f) Limiting unfair competition from third countries
- [x] g) Strict sustainability requirements (durability, low carbon footprint, reusability, recyclability, etc…)
- [ ] h) Encourage industry self-regulatory efforts
- [x] i) Other (please explain)

Other, please explain

Experience has demonstrated that the self-regulatory efforts have not been enough to enable the competitive growth of an EU battery industry. Many reasons are playing into the lack of competitiveness of EU cells manufacturing. For example, the development of batteries for cell phones and laptops – strong, existing markets - has shown to be directly linked to the OEM manufacturing chain. Hence, batteries for these products are manufactured in Asia where most OEMs have their production facilities too. It has been nearly impossible to overcome this significant cost and logistics factor.

Nevertheless, electric mobility is a unique opportunity to create a local “ecosystem” in the EU. With the EU driving its climate-neutral strategy, there is a clear political will to invest – both financially as well as structurally – in this transition. However, other industry sectors (e.g. renewable energy generation) have shown that a regulatory push is needed to establish the right framework for the development of a sustainable, local industry. For the battery industry to succeed, both in the EU as well as at international scale, clear criteria for the EU’s environmental and social expectations need to be set – linked to a strong regulation enforcing these criteria on any product placed onto the EU market.

The identification of these relevant criteria, their communication and control should be one of the major objectives of a world-leading environmental and social regulation set out by the EU. And while these criteria must apply to all actors (domestic or foreign) competing inside the EU, they should be strictly limited to areas where unfair competition is expected. The aim is not to hinder the free development and natural competition of a global economy but to create an international level playing field whilst promoting the highest environmental and social standards.

One example of the significant importance of strong yet viable environmental requirements is the ongoing discussion about the control of dust emissions from cobalt salts during the manufacturing process. For more information, please see RECHARGE position paper attached.

Cobalt and its compounds are critical to most lithium batteries - the reference technology for electric mobility and energy storage systems.

Cobalt is supplied through a long chain of transformation from Africa to China, to eventually be supplied to the EU market as active material or used in a battery (cell). Its treatment involves multiple value chain actors and hundreds of workers treating the material outside of the control of EU regulation.

The current restriction discussion, with the proposed “Reference Exposure Value”, truly jeopardizes EU-based cell or battery manufacturing since the demanded level of control for cobalt dust emissions represents a significant financial investment in the manufacturing facility – and could even exceed industrial capabilities. The same investment requirements do not apply to foreign companies currently supplying cobalt-based active materials and batteries to the EU. Control over the risks of overexposure to cobalt salts does not apply to these companies either.

Another example of excessive regulation is the potential authorization process for NMP, a key solvent for the manufacturing of advanced li-ion batteries, while all risks are already covered by the recent restriction.

--> Excessive, one-sided regulation can stop the development of the battery supply chain in the EU.

Are you aware of barriers (either between Member States or with third countries) for the manufacturing and/or trading of new or used batteries?

- (●) a) Yes
- ( ) b) No

- ○ c) I have no opinion

If yes, please explain

Concerning new batteries, when reviewing the import duties applicable to li-ion batteries in several jurisdictions, what is striking, is their variability. This is not conducive to the successful export of EU manufactured goods to a key Asian market (import duty for China to EU is 2.7%, import duty from EU to China is 12%).

Concerning used batteries, there is no clear rule for the determination of the batteries status as "used batteries" or as "waste". This increases the risk of unfair competition within and outside of the EU for used, re-used or repurposed batteries, and waste batteries.

The Basel convention is the reference for EU regulation about waste export. Nevertheless, there are various classifications for waste batteries across the Member States: hazardous/non-hazardous (see joint position of the battery industry).

This adds significant complexity – and financial as well as administrative burden – to the free circulation of used or waste batteries within the EU.

As regards the case of export, the Commission has never published the guidance concerning “equivalent conditions” for export outside of the EU. Therefore, various interpretations can be applied.

In relation with this section, please provide, if possible, evidence (e.g. by quoting an existing report/study) in support of your reply

Specific questions

If a regulatory proposal was made to make batteries more sustainable, do you think that batteries for electro-mobility applications and batteries designed for stationary use as energy storage should be regulated together?

- ○ a) Yes, they have enough aspects in common
- ○ b) No, these applications are too different
- ◉ c) I do not have an opinion

Amongst the most relevant social and environmental impacts in the production of batteries are the use of raw materials and climate change. Would you be in favour of setting reporting obligations and/or thresholds on these impacts?

- ☑ a) Yes, reporting obligation on the climate change impact only
- ☐ b) Yes, reporting obligation on all environmental impact categories (including climate change)
- ☑ c) Yes, reporting obligation on responsible sourcing of raw materials
- ☐ d) Yes, maximum allowable thresholds on the climate change impact only

- [ ] e) Yes, maximum allowable thresholds on all environmental impact categories (including climate change)
- [ ] f) No reporting obligations or thresholds
- [x] g) Other (please specify)

Other (please specify)

In the field of batteries, there is no significant, real-world experience with carbon footprint, or other impacts. It is, therefore, premature to set maximum thresholds.
Based on our experience in the batteries PEF (see RECHARGE position on PEF), we believe that it is premature to implement other environmental impacts in a regulation: this would not only increase the complexity of the regulation but also reduce the clarity of its scope and purpose. However, we see a great need for the setup of a calculation method for the carbon footprint, based on a simplified PEF, which can lead to a robust and transparent regulation. It is of high importance that the selected criteria can be calculated in an understandable, standardized, accurate, discriminating and auditable manner to ensure a successful implementation of the new regulation, and to enable the implementation of maximum thresholds in a second step.

In addition, there are already clear legal requirements for the management of resources used in batteries. Additional regulation would merely increase complexity and provide for variations in interpretations.

As part of a circular economy, the Battery Directive sets out all obligations for waste batteries, including the recycling efficiency, and hence recovery of materials.

Concerning social impacts, RECHARGE promotes the implementation of criteria relating to the eight fundamental conventions of the International Labor Organization – and their deployment across the entire supply chain. The calculation of criteria reflecting compliance with these conventions along the value chain should be developed and their disclosure should be required for any battery placed onto the European market.
As an industry, we, additionally, actively support the deployment of existing, general EU trade policies such as the EU Generalized System of Preference and the EU Conflict Minerals Regulation, as far as they concern battery-related materials.

Concerning communication requirements, manufacturers using batteries as a component should not be asked to publicly report separately on the supply chain aspects or environmental performance of one of their components in isolation, but a B2B information exchange during procurement would be supported.

There is an emerging market for second life applications of batteries after their first use in electric vehicles. Do you consider that the generalization of second-life batteries would have positive economic and environmental impacts?

- [ ] a) Yes, the generalization of second life applications of batteries should have a positive economic and environmental impact
- [ ] b) No, recycling batteries after their first use would be more efficient in economic and environmental terms
- [x] d) I don’t know, it is too early to say

If it were compulsory that only batteries with minimum performance requirements could be placed on the EU market, which would be in your opinion the most relevant parameters to be used for this purpose? Please rate the parameters listed in the table below from not relevant to very relevant.

	Not relevant	somewhat relevant	neither relevant nor irrelevant	rather relevant	very relevant
a. Energy density	◉	○	○	○	○
b. Energy efficiency (e.g., round-trip efficiency)	◉	○	○	○	○
c. Durability (e.g., minimum number of charging cycles)	◉	○	○	○	○
d. Capacity (e.g., total number of ampere hours or C-rate)	◉	○	○	○	○
f. Storage or charge retention	◉	○	○	○	○
g. Access to relevant usage data history (e.g., cell impedance, conductance, self-discharge) to facilitate State of Charge and State of Health determination	○	○	○	◉	○

Please explain your reply further

a. Energy density: not relevant, already driven by competition

b. Energy efficiency (e.g., round-trip efficiency): not relevant. It does represent the losses due to the battery during usage but it mainly depends on the OEM design specifications (high power vs high energy batteries), and therefore it is market driven.

c. Durability (e.g., minimum number of charging cycles): not relevant, the durability should be expressed as a total service of the battery in the application. The test standards describing cycling methods require extensive testing time and may not be correctly related to the real use in application. This should be part of the technical qualification, not of Ecodesign legislation. It could be proposed for Ecodesign to refer to the warranty, which can state the total energy required to serve the equipment/vehicle during the warranty period. But since this criterion is also driven by competition, there is no need to add a regulatory requirement. Application is the key driver here.

d. Capacity (e.g., total number of ampere hours or C-rate): not relevant, the capacity is directly related to the size, and cannot be used as performance criteria as it is designed according to OEM requirements.

f. Storage or charge retention: not relevant. It is technically relevant as it does represent the losses due to the battery during storage. But, the good performance of all batteries available on the market today is reducing these criteria to a non-significant effect on the total energy used. Therefore, it is not relevant to require a criterion on this performance as it would not differentiate the products.

g. Access to relevant usage data history (e.g., cell impedance, conductance, selfdischarge) to facilitate State of Charge and State of Health determination: rather relevant, but there is a need to establish a standard for SOH calculation first. Then, the battery would only be required to provide SOH information. Detailed technical information is not relevant, and it may lead to uncontrolled operations of repair/re-purpose, with potential safety issues of repurposed batteries placed on the market by companies with lack of competence.

The Batteries Directive 2006/66/EC sets minimum recycling efficiency targets by average weight (65% for acid-lead, 75% for nickel cadmium and 50% for other waste batteries including lithium ion ones). Do you consider that design requirements on batteries could help Europe achieve higher recycling efficiency rates? Please rate the different options below from "Don't agree" to "Completely agree"

	Don't agree	Partially disagree	Neither agree nor disagree	Partially agree	Completely agree
a. No further action is needed for this aspect	○	○	○	○	◉
b. 'Design for recycling' requirements could help increase the efficiency of recycling plants (e.g., easy dismantling)	◉	○	○	○	○
c. Minimum weight based recyclability targets at product level could help increase recycling efficiency rates	◉	○	○	○	○
d. To achieve higher recycling efficiency rates, recycling technology and economics are more important than design requirements	○	○	○	○	◉

Please explain your reply further

For recyclability requirements: the main drivers are EPR (the producers are already driven to better recycling design and processes because of the cost that they have to carry) and potential safety requirements.

Some of the raw materials used in battery manufacturing (like cobalt, manganese, nickel and natural graphite) have a high economic importance as well as high supply risk (they are monitored by the European Commission as Critical Raw Materials - CRMs). In your opinion, should there be specific requirements to guarantee a minimum recovery rate of the CRMs contained in the batteries? Please rate the different options below from "Don't agree" to "Completely agree"

	Don't agree	Partially disagree	Neither agree nor disagree	Partially agree	Completely agree
a. I think that there is no need to focus on CRMs	○	○	◉	○	○
b. Specific criteria to facilitate the recovery of CRMs should be established (e.g., design for recycling)	◉	○	○	○	○
c. Minimum recyclability targets for CRMs at product level should be established	○	○	○	◉	○
d. Although it is important to recover CRMs, minimum requirements for product design are not the right way to address this question (please explain below how else this could be addressed)	○	○	○	○	◉

How to address the recovery of Critical Raw Materials otherwise

While batteries contain CRM-classified materials (cobalt, graphite, fluorine, phosphorus and soon lithium), the use of some of these in batteries is so low that the impact of recovering these materials is marginal compared to other industry sectors. By concentrating the recycling efficiency on pre-defined materials, however, technological advancements in the batteries industry may be prevented.

To achieve higher recycling efficiency rates, recycling technology and economics are more important than design requirements. Automated batteries removal, sorting and dismantling should be promoted to improve the quality of the collection and recycling processes.

If change were required to the existing recycling efficiency calculation, RECHARGE would promote the recycling of materials:
• that matter most in the battery industry
• bring the highest added value to the environmental profile of batteries
• and have the highest strategic impact on the future development of the European battery industry

RECHARGE also supports continuity for already existing recycling processes for other materials used in batteries but that do not require a regulatory push anymore (e.g. marketability already high).

At RECHARGE we have investigated in suitable resource efficiency methodologies and developed a science-based calculation approach that is:
• Process- and technology-neutral: every battery technology is evaluated individually and no battery technology, current or future, excluded
• Long-term oriented: by focusing on battery-relevant materials with a high environmental and strategic relevance, future demand needs are taken into account and risks from potential supply constraints (cost increase, shortages, dependence on third countries) can be prevented

Having run this new calculation approach for all major industrial (rechargeable) battery technologies available today, we can clearly state that focusing on the environmental impact of each battery material – instead of weight or CRM-classification - significantly improves the recycling quality, and hence resource

efficiency.

For more information, please contact cchanson@rechargebatteries.org.

The traceability of batteries can have a positive impact in many areas of the batteries value chain: from provision of information about the origin of the raw materials to identification of the chemistry and hazardous materials contained, which is useful for the EoL treatment. If a traceability system was to be developed for batteries, which would be in your opinion the key information to be provided and which would be the most appropriate format (e.g., product passport, QR code, etc...)?

The traceability of information is already required in the quality system of all battery manufacturers (associated with part numbers).

Since the legally required information attached to a battery is intensive, harmonization within a simplified marking seems necessary. This is to increase user-friendliness and to reduce the financial and administrative burden on battery manufacturers.

A QR code system on the battery itself is a practical system that could be accepted by both the industry and the consumer. A QR code would allow easy access to all relevant information, per stakeholder category.
- For consumers and all categories: access to the capacity (according to the Battery Directive), the energy in Wh (UN regulation), potential SVHC substances contained (REACH legislation 1907/2006 – Art 33)
- For recyclers: chemistry type (IEC 62902)
- For Member State authorities: battery chemistry (PoM in the Batteries Directive), level of social and environmental criteria achieved [also in a custom declaration?].

SOH is an information that requires electronics capabilities and cannot be provided for simple cells or batteries without calculation and memory capabilities in the BMS. The information should be accessible either directly on the battery, or on the equipment/vehicle hosting the battery, and could be available independently for all stakeholder categories.

Other:
The QR code could refer to information databases established by the individual companies.

Concerning traceability of the required information for batteries placed on the EU market, a common EU database would be useful, enabling policy monitoring.

Are there further comments you would like to make on anything that is not covered above?

Regarding risks for the EU to become a significant player:

1) Upfront investments and risks to start production are big.

2) There is a risk that the competitive industry outside of the EU takes benefit of less constraining rules concerning environmental and social regulations, and imports products manufactured at a lower cost – as a result of non-acceptable practices in these fields, according to EU standards - into the EU.

Although several social or environmental unacceptable practices have already been identified in the supply

chain of some imported batteries, there is no regulatory mechanism in place today that would or could prevent their import. While the ‘conflict minerals’ regulation could be a suitable instrument, the materials identified in this regulation are not used in batteries. This lack of level playing field for imported products is a major threat to the EU battery industry as it clearly undermines the potential development of a domestic manufacturing sector.

Finally, it should be mentioned that a number of non-EU manufacturers receive subsidies from their governments, in various forms. This support alleviates the risk associated with high initial investment requirements for cell manufacturing.

Regarding combining/not combining batteries for e-mobility applications and batteries designed for stationary use as energy storage in a regulatory sustainability proposal:

Some aspects of the battery technologies used in these two markets are quite similar. Sustainability criteria should be applicable to all batteries in a similar way, but the focus should be first on e-mobility batteries.

Regarding second life applications of batteries after their first use in e-vehicles:

Worldwide EV battery sales may exceed 1000 GWh/y in 2030. End-of-life EV battery volume will reach the same order of magnitude 10 to 15 years later. The stationary battery market is projected at or below 10 GWh /y in the EU.

Second life batteries could have a positive impact on this market development but the need for recycling batteries may remain the predominant end-of-life option for e-mobility batteries, due to their large excess in quantity.

Would you like to share with us a study or a position paper?

- (•) Yes
- ( ) No

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Contact

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