EASE Reply to the European Commission Public Consultation on Sustainability Requirements for Batteries

August 2019

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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*

*The deadline for replies is **08.08.2019.***

You can send any additional information that you consider relevant to this consultation to the mailbox GR2OW-ECODESIGN@ec.europa.eu, indicating 'Public consultation sustainable batteries' in the subject of your email. Thank you for your cooperation.

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Market trends and existing policies

1. 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*

2. 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*

3. What are the reasons why you think that Europe will not be a significant player?

☐ *a) European manufacturers will not be able to compete with Asian ones*

☐ *b) It will be cheaper for European car makers and utilities to buy the batteries elsewhere*

☐ *c) Reduced access to raw materials for EU battery manufacturers*

☐ *d) Insufficient policy support (e.g., R&D funding, state aid, skills building) to get the value chain off the ground*

☐ *e) Upfront investments and risks to start production are too big*

☐ *f) Other (please explain):*

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

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☐ *a) No regulatory intervention is necessary*

☒ *b) R&D funding*

☒ *c) Financial instruments (preferential loans, grants)*

☐ *d) Training*

☒ *e) Requirements on ethical sourcing of raw materials and social protection of workers*

☒ *f) Limiting unfair competition from third countries*

☒ *g) Strict sustainability requirements (durability, low carbon footprint, reusability, recyclability, etc…)*

☒ *h) Encourage industry self-regulatory efforts*

☒ *i) Other (please explain)*

Other, please explain:

Creating a thriving market for battery storage technologies – i.e. supporting the deployment of stationary storage systems as well as electric vehicles – is another important aspect. The rapid implementation of the Clean Energy Package provisions related to storage, as well as additional efforts to remove barriers to storage in the electricity network codes and national policies, is of high importance to support a strong demand for batteries and other energy storage technologies.

To introduce a circular approach towards more sustainable products, an extension to the actual Battery Directive is essential. This would allow for the introduction and update of relevant aspects such as battery chemistries allowance or minimum requirements for Member States regarding reuse and recycling.

5. 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:

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There are discussions in the United States about placing a 25% import tax on batteries that are imported into the United States. A final decision has not yet been taken.

There are several different issues that can hamper trade of used batteries. One example is EU Waste Shipment Directive, which can cause difficulties related to end of life products/reuse. Internationally, if batteries are considered hazardous, the Basel Convention will also come into play, rendering the shipment and reuse of batteries difficult.

6. 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

7. 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*

These different types of batteries should be regulated together in one proposal, provided that there is a clear separation between electromobility and stationary batteries within the text, with different requirements and applications for each category.

Today, there is a significant overlap between the existing Battery Directive, End-of-Life Vehicles Directive, and REACH Regulation that impedes the development

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of an independent domestic battery manufacturing and recycling industry which maintains and creates jobs in Europe.

In the specific context of sustainability, batteries should be regulated according to the technology, not the application. We believe that Li-ion batteries should have the same regulation on sustainability issues whatever the application might be.

8. 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*

☐ *g) Other (please specify)*

Other (please specify):

Reporting obligations on all environmental aspects should be set, but no thresholds on the impact of production since these would only focus on the production phase. Some technologies could have a greater impact in production but less in the full life cycle of the battery (durability, number of expected cycles, recyclability…). If thresholds are set, they should take into account the full value chain of the battery, i.e. from cradle to grave.

9. 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?

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☐ *a) Yes, the generalisation 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*

☒ *c) I don't know, it is too early to say*

If yes, please explain:

The use of second life batteries could have a positive economic and environmental impact, but only if the risks are properly managed. According to a study by Element Energy, repurposing workshops could allow citizens to access more economical used batteries, delivering second life batteries at competitive prices (ca. $40/kWh for a repurposed battery) compared to new batteries ($68/kWh for a new one) by 2030. Second life batteries could boost storage and renewables deployment: the expected lower costs of second life modules and cells (compared to new) could help increase the levels of deployed storage capacities, supporting VRES deployment, displacing more fossil fuels and peaking plants, and reducing energy cost to consumers as well as CO_2 emissions.

However, given the large number of EV batteries that are expected to be sold, second life applications in the stationary sector will not be able to absorb all EV batteries. Moreover, new energy storage products specifically designed for stationary applications could have better performance and safety outcomes. In addition, there are currently many barriers to the safe and appropriate use of second life batteries in Europe.

A clear EU regulatory framework is necessary to enable EV batteries to be repurposed as stationary storage, and good standards should be in place for repurposing while addressing pressing questions related to safety and liability. The following actions should be undertaken:

1. Developing or improving standards, preferably compatible with global standards:
    - For testing and grading processes of EV battery packs, modules, and cells that are intended for a repurposed use application, such as stationary energy storage.
    - To implement specific processes to repurpose and remanufacture batteries.
    - To ensure and simplify/harmonise market compliance at EU level.

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- These standardised processes would help determine the state of health of batteries and other parameters to identify viability for continued use. It would also help reduce repurposing costs, and provide guarantees on the performance and lifetime of the second-life batteries.

2. Ensuring that the EU regulatory framework specifically enables EV batteries to be repurposed. Currently, the Battery Directive categorises EV batteries at the end of their first life as waste. The recast Battery Directive, under discussion, should therefore tackle this problem and introduce a clear definition and a legal framework for second-life batteries, without:
   - Hampering innovation in the stationary battery storage sector;
   - Making it more difficult for new stationary battery storage products to be developed and put on the market when more suitable than second-life EV batteries.
3. Ensuring that original equipment manufacturers (OEMs) cover, at least in part, the cost of recycling the batteries at end-of-life, including when EV batteries have been repurposed for energy storage purposes. The absence of legal clarity for second life batteries raises the issue of how to apply the extended producer responsibility to those batteries.
4. Ensuring that second-life batteries comply with environmental policies. Second-life batteries must not have a larger footprint in their second-life than when directly recycled and must alleviate environmental concerns.
5. Supporting RD&D in the fields of battery testing, battery repurposing, and battery management systems for second-life applications which could be used for a better assessment of the state-of-health of battery cells or modules.
6. Supporting the development of new business models, including product-service systems (PSS), for second-life batteries.
7. Promoting data collection and dissemination on second-life battery projects in an EU Energy Storage Observatory that would set up a database of all storage facilities across Europe to gain a clearer understanding of the current deployed capacity and planned developments.

10. 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.

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	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)	☐	☐	☒	☐	☐
e. Storage or charge retention	☐	☐	☐	☒	☐
f. 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

Batteries have many applications and each requires different characteristics, therefore it should not be compulsory to set minimum requirements. For example, batteries for back-up applications will need a limited number of cycles (i.e. In the range of 100 cycles), batteries for solar PV integration will need daily cycling (i.e. in the range of 3,000-6,000 cycles) and EVs normally need a weekly cycle (i.e. in the range 500-1,000 cycles in their lifetime). The same applies to energy density: energy storage applications do not normally need high energy density, but for EVs density is crucial. Durability is less relevant for EV batteries

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than for stationary energy storage applications. The only relevant aspect that is common to all applications is the efficiency of the battery, as this will have an impact on final energy consumption in the EU.

The C-rate is not equally important for all applications. In some applications high C-rates are needed and in others, low C-rates are needed. So this should not be a factor to consider for minimum performance requirements.

One point that is missing in the list above is the footprint of the battery (the space occupied by one kWh). This should be considered alongside the energy density.

11. 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	☐	☐	☒	☐	☐

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d. To achieve higher recycling efficiency rates, recycling technology and economics are more important than design requirements	☐	☐	☒	☐	☐

Please explain your reply further

To easily and successfully recycle batteries, it is important that the recycling company can easily disassemble the battery pack. Design requirements on this point would help increase efficiency in recycling. Improving and innovating in recycling technology is also very relevant.

12. 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)	☐	☐	☐	☐	☒

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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

Tracking the specific CRM content of each battery product is key for making recycling easier and more successful. In addition, the establishment of a battery tracking and identification system at EU level will allow the monitoring of an "average" battery lifetime, and could also define the completion of the battery value chain as the physical arrival of the battery at the collecting and/or recycling plant, detected by tracking system.

Minimum requirements for product design are problematic since it is difficult to define common design requirements for various types of batteries. When one considers other technologies such as flow, ceramic or solid-state batteries, it becomes practically impossible to develop minimum requirements. Therefore, the best way is to set minimum CRM recyclability targets that apply to all technologies – both today's mature technologies and any technologies developed in the future – in order to reach specific sustainability goals.

Recycling of batteries should remain strict and based on Best Available Technology (BAT): the updated Battery Directive should cover all batteries, specifically focused on recovering critical materials. Recycling requirements (including amount of recovered materials) should be set in line with BAT.

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13. 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...)?

A tracking and identification system for the entire lifetime of each battery on the market – across changes of ownership – would have a very positive impact. In addition, a European battery registry and standardised labelling could help to reduce recycling costs by decreasing complexity, resolving the problem of 'orphan batteries', speed up the repurposing process, and reduce testing times since the state of health of the battery and its history would be digitally available.

The development of a digital "materials passport", containing information about the battery's health (use, damage), history, and exact chemistry could ensure transparency along the entire value chain and the full battery lifecycle. Traceability should be also linked to the appropriate responsibilities in the supply chain (for safety, recycling, etc) and at the remanufacturing/reuse stage, there should be a transfer of extended producer responsibility obligations from the original producer to the party responsible for the new status.

Second life batteries should be clearly identified and characterised in terms of residual capacity, cycles, efficiency, etc. when placed on the second life market and sold to the new users. This identification change should ensure that the new original equipment manufacturer (OEM) will be responsible for the end of second life recycling and not the vehicle OEM.

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

When selecting the right incentive to support battery technologies, it is important to be open-minded and not exclude some technologies from the market. Recent trends of designing an 'EcoDesign' rule are unfortunately not entirely scientifically based and decisions are made based on only a few battery products and then extrapolated onto all battery products.

This consultation seems rather focused on Li-ion batteries. Although Li-ion batteries are at the moment the de-facto reference for batteries, it is fundamental

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to broaden the discussion to all technologies – present and future – in order to not hamper the development of alternative battery technologies. Otherwise, other world regions will take the lead in developing alternative technologies, leaving the EU behind.

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

☐ *Yes*

☐ *No*

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About EASE

The European Association for Storage of Energy (EASE) is the voice of the energy storage community, actively promoting the use of energy storage in Europe and worldwide. It supports the deployment of energy storage as an indispensable instrument within the framework of the European energy and climate policy to deliver services to, and improve the flexibility of, the European energy system. EASE seeks to build a European platform for sharing and disseminating energy storage-related information and supports the transition towards a sustainable, flexible and stable energy system in Europe.

For more information please visit www.ease-storage.eu

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Disclaimer

This response was elaborated by EASE and reflects a consolidated view of its members from an energy storage point of view. Individual EASE members may adopt different positions on certain topics from their corporate standpoint.

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