

January 2019

Ecodesign Directive for Batteries

RECHARGE View on Criteria for Sustainable Batteries

Introduction

Over the next 15 years, a **significant and constant growth is expected in battery volumes** placed on the market, driven *inter alia* by the introduction of Battery Electric Vehicles (BEVs) which are expected to take a sizeable share of the Personal Car (PC) and Light Commercial Vehicle (LCV) markets.

Issues such as **sustainability** and **minimal environmental impact** of battery and its industry have been raised as **key aspects to be addressed**. In this context, the Ecodesign directive for batteries has been considered as a potential legislative tool to address most of these issues.

RECHARGE acknowledges this effort towards a sustainable industrial policy for batteries, however would like to stress that **the quality of the work should not be undermined in favor of a quicker legislative process**. Particularly, **the scope of the ECODESIGN for batteries should be enlarged to include the impacts from cradle to grave**, throughout all phases of a battery life from manufacturing (including the supply chain), use and to the end of life.

RECHARGE suggests some proposals, based on the key takeaways from RECHARGE's internal working groups, and the project for batteries within the Commission pilot "Product Environmental Footprint".

Key priorities for sustainability requirements for batteries

- **A result-oriented Ecodesign directive for batteries, focused on recognized and measurable impacts.**

As an overall recommendation, RECHARGE stresses that the Ecodesign directive **should not impose requirements on the very technical choices related to design and the process**, due to the infancy stage of batteries designs and industry processes for e-mobility, as many competing solutions are foreseen to increase the battery performance, and many more will be identified.

- **Raw materials: Ensure the setup of take back and recycling systems.**

Market projections for 2030 point to volumes up to 400 GWh or more¹ of batteries placed on the market per year, which equates to approx. 1.6 million tons a year. High performance Li-ion batteries require the use of some rare metals with a limited supply. It is therefore **necessary to establish take back and recycling systems, so that this source of secondary raw materials becomes available in Europe**.

¹ CEPS report No 2018/05, July 2018, Eleanor Drabik and Vasileios Rizos

It is however important to note that within the EU, an **Extended Producer Responsibility regime is already in place thanks to the battery directive**, whereby all used batteries must be taken back by Producers and recycled. This directive is currently undergoing a revision process, which could be used to further improve this instrument, should the need arise. For example, we recommend to recycle metals such as cobalt and nickel in Li-ion batteries *“to the highest degree that is technically feasible while avoiding excessive costs”*).

- **Climate change: CO₂eq content of finished e-mobility batteries as a criterion to discriminate across products placed on the EU market**

Electrification of road vehicle transportation aims at improving air quality within urban areas and reducing CO₂ emissions. The manufacturing of a battery, which weighs up to 40% of the vehicle for a BEV, is a new source of CO₂ emissions, and should be a component of the assessment the European Commission lays out (see annex).

The DG Environment PEF, despite still in need of much improvement and simplification, highlighted that **batteries impact can differ significantly across models on this criterion**, and demonstrated that a large fraction of impacts arises from metals extraction and refining as well as in the manufacturing of other components, whereas actual manufacturing operations (under the roof of the battery maker) and use in the vehicle have relatively limited impacts (see annex).

CO₂eq content of finished e-mobility batteries, normalized by total kWh output throughout the life of the battery, **should be a critical criterion to discriminate across products placed on the EU market**. Furthermore, low performing products should not be placed on the market, and identification should be implemented **to differentiate and incentivize higher performance products**.

- **CSR principles: Encourage the industry to source from supply chains located in countries implementing the 8 ILO conventions and truly apply them within their facilities.**

Much has been published on the way some supply chains either violate workers' rights or show disregard for the behavior of upstream operators. International bodies have created a legal framework to ensure a minimum set of standards be introduced in all national legislation, namely the 8 fundamental International Labor Organizations (ILO) Conventions.

To avoid a possible trade-off between better environmental performance and degraded treatment of workers, the legislative environment should encourage industry to source from supply chains located in countries, which fully implement these 8 ILO conventions and truly implement them within their facilities.



Advanced Rechargeable and Lithium Batteries association

- **Implementation principles in line with Understandable, Standardized, Accurate, Discriminating and Auditable Standards**

These criteria should be implemented along with U.S.A.D.A. standards, which means they ought to be **Understandable, Standardized, Accurate, Discriminating** and **Auditable**. The complete PEF methodology is not fulfilling these criteria.

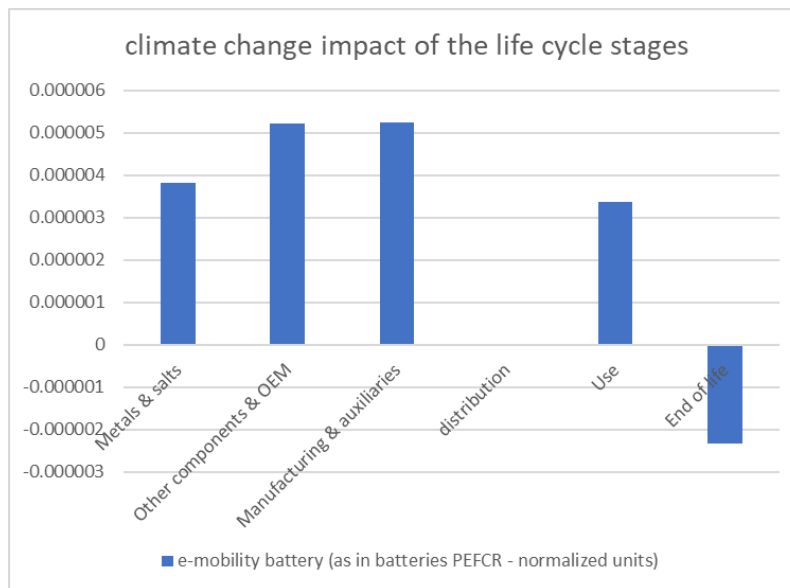
Comments of the proposed policy options of the inception impact assessment are presented in annex.

About

RECHARGE aisbl is the Advanced Rechargeable and Lithium Battery Association representing the specific interests of the Rechargeable Battery Industry in Europe. RECHARGE's mission is to promote the value of advanced rechargeable batteries through their life cycle. RECHARGE's Members include Rechargeable Battery Manufacturers, Original Equipment Manufacturers, Rechargeable Batteries Recyclers and Raw materials suppliers to the Battery Industry.

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ANNEX: Batteries climate change impact (based on Batteries PEFCR)



Explanation of graph

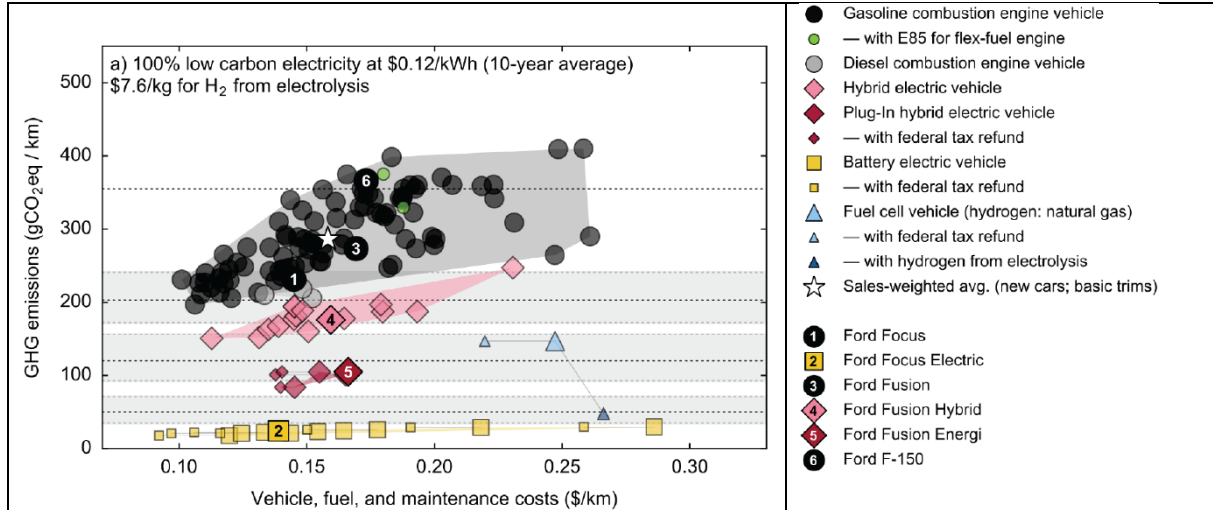
- The climate change impact is measured in “kg CO₂-equivalent”, before normalization (according the batteries PEFCR).
- **Metals and salts:** impact of the acquisition of the raw materials and transformation as batteries active materials (batteries cells material).
- **Other components and OEM:** impact of the batteries components such has electronics for safety protection and management, cooling systems as designed by the OEM (Original equipment manufacturer).
- **Manufacturing and auxiliaries:** impact of the cells and batteries manufacturing and assembly
- **Distribution:** impact of the transport and distribution, including intercontinental transport for the active materials.
- **Use:** impact of the electrical energy used in the battery during the use phase. Only the electrical energy losses of the battery are taken into account: the electrical energy transmitted to the vehicle is used by the vehicle, not by the battery.
- **End of life:** net impact credit of the recycling operation, calculated according the circular economy formula of the PEFCR, after deduction of the impact due to the process of recycling itself.

Comments on Batteries climate change impact

- The impact of the use phase represents only around 20% of the total impact throughout the product life cycle.
- The main sources of impact are the materials and components acquisition, as well as the manufacturing phase.

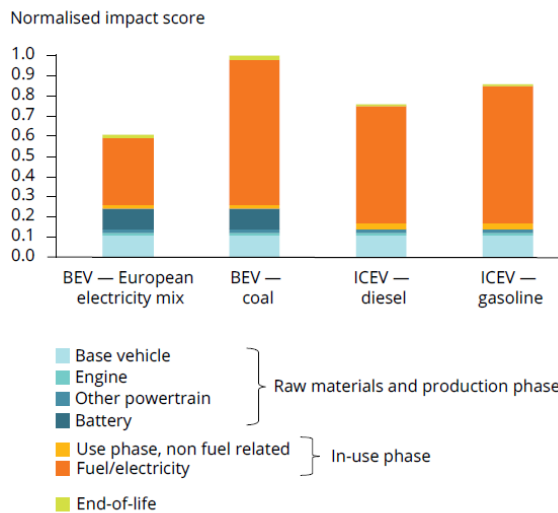
Vehicles climate change impact

On a full lifecycle basis and decarbonized grids (24 gCO₂e/kWh), electrification is the THE ONLY known technology to meet the 2050 climate target of 80% reduction vs. 1990.^{2 3}



TODAY, on a full lifecycle basis, EV lifecycle emissions are better than all other options, at EU average mix (276 gCO₂e/kWh).

Figure 6.1 Climate change impacts: example comparison of BEVs with ICEVs



Note: See footnote 8 for a description of the study system.

Source: Hawkins et al., 2013.

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² Trancik, J.E. et.al, Personal Vehicles Evaluated against Climate Change Mitigation Targets, Environ. Sci. Technol. 2016, 50, 10795–10804

³ European Environment Agency (EEA) 2018: <https://www.eea.europa.eu/data-and-maps/indicators/overview-of-the-electricity-production-2/assessment>

⁴ <https://www.eea.europa.eu/publications/electric-vehicles-from-life-cycle>

Analysis and proposals for the policy options

As a general comment on sustainability requirements, RECHARGE stresses that the Ecodesign Directive should **avoid any overlaps with the Battery Directive** and any **specification of a technical solution**, but should rather focus on the criteria rewarding environmental and social performance of the product. Moreover, the selected **criteria should be evenly applicable to all batteries** in the scope which are used in Europe, **including the imported products**.

Consequently, RECHARGE supports the implementation of a combination of targeted parts of the policy option outlined in the European Commission's Inception Impact Assessment:

Option 1 No EU Action

- RECHARGE does not consider option 1 is an efficient way to reach the objective, due to the high competition in battery manufacturing which does not leave room for a fair development of best social and environmental practices if not rewarded.

Option 2 Self-regulation by industry on the performance and sustainability of batteries

- RECHARGE considers crucial to only propose regulation whereby economical competition does not drive the product design and manufacturing in a 'sustainable direction'.

Option 3 Minimum energy performance requirements

- RECHARGE stresses the importance of a differentiated approach for the battery performances requirements: some of the suggested life duration measures are not applicable due to the different nature and combination of the performance criteria depending on the application.
- Requirements for energy efficiency performance can be considered, as long as they provide potential benefit for a recognized environmental impact: the climate change. In this case, RECHARGE recommends creating a criteria for climate change impact of the complete life cycle, based on CO₂ eq content of finished e-mobility batteries, normalized by total kWh provided.

Option 4 Minimum sustainability requirements

- As in option 3, RECHARGE stresses the importance of a differentiated approach. In case of recyclability, there are already existing criteria in the Batteries Directive. To avoid any overlaps, RECHARGE suggests redefining the **criteria for recycling only in the Batteries Directive**, if changes are needed.

Option 5 Criteria on ethical sourcing of raw materials for the production of batteries

- RECHARGE supports the set-up of a criteria for Corporate Social Responsibility, such as the ILO standards, in particular for raw material sourcing but not limited to it.