Position of ZVEI on the revision of the EU Battery Directive

Version 1.0 - June 2020

In October 2020, the European Commission will publish their proposal for a revision of the Battery Directive 2013/56/EU. In general, the current regulation is a success. However, there is a need to refit the framework conditions of the battery legislation. New battery technologies, new appliances and sustainability requirements need to be addressed. Energy storage with batteries will play an important role in the digitalisation and electrification of a circular economy, enabling e-mobility and providing renewable energy. The German battery industry can play a vital role to provide solutions and innovations for these challenges.

The future design of the battery regulation will have a major impact on the EU and German battery industry for the next decade.[1] The German electric industry, including battery industry and industries using battery applications, has a strong interest in a competitive battery legislation. This position paper contains in the following suggestions and recommendations for the revision of the Battery Directive.

Our main messages are:

1. We support the transformation of the Battery Directive into a regulation.
2. We underline the need for consistency with other regulatory frameworks.
3. We propose a change of calculation of collection rate for portable batteries.
4. We highlight the proper working of today's collection of industry batteries.
5. We support an intensified information provided to consumers and collection points.
6. We underline the need that the Battery Directive focuses on battery technologies.
7. We stress significance of safety and security when repurposing batteries.
8. We highlight the importance of maintaining a variety of battery technologies.
9. We question the practicability of mandatory use of recyclates in new batteries.
10. We support sustainability measures for batteries for e-mobility.

[1] With around EUR 3.1 billion (2019), battery manufacturers based in Germany stand for around one third of the turnover of batteries in Europe. More than 9,000 employees work in companies that are part of the battery industry. This is associated with much higher sales upstream (cell chemistry) and downstream industries (battery applications).

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1) Character of the regulation

Character of the regulation

It is under discussion whether European legislation on batteries should continue to be a directive that needs national transposition or should be converted into a regulation that would apply directly in all EU countries. Due to its dual purpose of minimising negative impacts of batteries on the environment and ensuring the functioning of the internal market, a regulation can deliver a more harmonised high level of environmental protection and a level playing field across all Member States. Full harmonisation across Member States of the explicit requirements for collection targets, statistics surveys, design and labelling of product containing batteries is of great importance to our members.

Beyond this, many of the topics along batteries are already discussed or implemented in other regulations or EU standards, like product design, chemicals used (REACh), environmental footprint and product group classification (EcoDesign, as far as applicable). The Battery Directive should focus on purely battery related topics. A double regulation (e.g. via End-of-Life Vehicle Directive) makes little sense, may create confusion and should be eliminated.

The directive should be transformed into a regulation. Double regulation with other related EU directives and regulations should be eliminated.

2) Collection and recycling of batteries

Collection targets portable batteries

Simply increasing the targets will not result in higher collection rates. The Commission report of April 2019[2] assessing the implementation of the Directive concludes on limitations of current legal provisions (e.g. obligation to ensure that batteries are removed from WEEE; unclear distinction between portable and (lead based) industrial batteries) which are hampering higher collection results. Furthermore, the collection rates are underestimated due to the fact of a fast-growing market and the long useful life of the batteries (of sometimes over 10 years, e.g. batteries for smoke detectors). Often batteries are also exported to non-EU countries (waste and secondary use cannot be measured precisely).

Proposal for calculating the collection rate for portable batteries: Old-Battery-Arising

An approach using "waste batteries arising" or "batteries available for collection" would have the advantage of better reflecting the realities of the battery market, as it takes into account the useful life of a battery and the export of batteries, also through (W)EEE, i.e. batteries that are not physically present on the EU market for collection.

Collection targets industry batteries

The Batteries Directive does not include a numeric collection target for industrial and automotive batteries. However, it obliges battery producers to set up end of life solutions as detailed in Art. 8.3 and 8.4. This obligation, combined with the ban on landfilling and incineration (Art. 14), results in an **implicit 100% collection target for automotive and**

[2] SWD(2019) 1300 final (https://ec.europa.eu/commission/sites/beta-political/files/swd-report-batteries-accumulators-april2019_en.pdf)

industrial batteries. Based on these strict obligations, on the data available, and the reality of the battery business in Europe, we are confident that this target is met.

Assumptions that not all waste industrial batteries are collected, are based upon the misleading concept of comparing industrial batteries placed on the market with batteries recycled in the same year. This is completely ignoring the "export in appliance" flow which is neither reported nor modelled, and also ignores use patterns of industrial batteries (e.g. lifetime in application) which have a useful life up to 15+ years, and therefore generates a misleading conclusion. Additionally, industrial batteries should be analysed as follows:

1) Lead based: positive value, recyclers, waste collectors and manufacturers have a direct economic interest in taking back and recycling these batteries. This is reality today.
2) Li-ion: according to its strongly increasing different appliances, this category should be broken down into three categories.
   a. Large mobility batteries (EV, PHEV and HEV): batteries are already regulated as part of the vehicle and as such the obligation to collect end of life vehicles is already described in the ELV Directive. Involvement of the car owner on servicing electrical powertrain and battery currently is and is expected to stay minimal. Professional actors do participate in the implementation of the take back system.
   b. "Conventional" industrial batteries: these batteries are used in a professional context in a B2B relation (e.g. fork lifter) and professionally managed at the end of their life.
   c. Light mobility batteries, manly used in a B2C context (eBikes, e-scooters, PeTs…): these batteries are placed on the market in mobility appliances through distribution outlets. They are used, maintained and discarded by the end consumer. On most aspects, their life and end of life is akin to that of portable batteries (it is only their "traction" function which makes them industrial). However, for reasons of higher energy content, they need to be treated with care to avoid possible safety incidents.

Due to the working recycling cycles, the lack of proper statistical data and the heterogenic market, no mandatory collection target for waste industrial batteries shall be established. We support a notification verification and validation system of industry batteries that become waste.

Classification of batteries

Proposals exist to amend the definition of industrial batteries by introducing a weight limit. However, the introduction of a weight limit for the distinction of portable vs. industrial batteries is misleading, because

- there is no deficit in the collection and recycling of small size industrial batteries. The collection of these batteries is done by means separate from the collection of portable batteries.
- if applied to lithium batteries and to lead based batteries a weight limit would lead to very different results, both with respect to energy content and with respect to their volume.
- Certain product categories would be "divided" by the possible weight limit, e.g. some power tools and eBike batteries could fall into different classes, depending on their weight. This is highly misleading and cannot be reasonably understood by the end customer / user.

A classification based on weight is not feasible and thus not recommended.

Batteries for e-scooters, eBikes and PeTs – compared to other batteries of vehicles – are relatively small and are handled by the end customer. This might give rise to confusion. They are classified, processed and collected similar to portable batteries already today, at least in some countries.

PeTs, eBike and e-scooter batteries should be classified in a separate sub-category of industrial batteries.

Motivating collection and sorting of batteries

For many years, portable, industrial and automotive batteries have been collected via a wide variety of systems and sent for proper recycling. The collection quotas specified by the battery law are met in general. According to our findings, the separate collection of batteries at municipal and commercial level works very well and without major accidents.

By intensifying the information provided to consumers and collection points for old appliances (according to the WEEE directive), the collection quantity and sorting can be further improved.

Currently, an introduction of a deposit scheme is discussed as an option for the coming regulation. We have identified the following aspects:

- A deposit is only applicable to new batteries placed on the market and is therefore working slowly.
- Place and method of bringing the battery into service would have to be tracked; especially sales by internet would have to be regulated with the same rules.
- Batteries have a long service life; this would result in the creation of a huge capital stock.
- A pan-European clearing system should be guaranteed. Even at national level this would lead to high costs.[3]
- Multiple batteries are often used in parallel or hoarded for future use in households and businesses; a deposit would not change this.
- A clear separation of deposit and non-deposit batteries would be necessary. The logistical effort as well as the danger of counterfeiting and misuse would be high.
- Theft of batteries would be promoted, as the batteries would have an even higher value.
- The deposit could impair the second and third use and resale of appliances with batteries and thus counteract a long product life.
- High deposit amounts would have a massive negative impact on the sale of especially low-priced products.
- Further details can be found in a position paper of ZVEI (Link).

Intensified information provided to consumers and collection points has the potential to improve the number of collected batteries and the quality of sorting.

We reject the introduction of a deposit scheme on batteries.

[3] In Printed Matter 19/4801 of the German Bundestag of 8 October 2018, the Federal Government commented on the difficulties in introducing a deposit for old electrical appliances.

3) Removability, replaceability and interoperability

Regarding EU Battery Directive 2013/56/EU Article 11 and the discussions on additional requirements for removability, replaceability and interoperability, the implementation of a product- safety-first-priority would be reasonable.

The status quo of article 11 is acknowledging that safety, performance, medical or data integrity have to be secured first and foremost by manufactures. This approach is fit for purpose and shall remain. Indeed, for several product categories, as for example small hand-held electrical appliances which need to be water-resistant in order to ensure safety of end-users it is extremely important to address first the safety of the product design as international standards demonstrate perfectly, for example IEC 60335-2-52, *Household and similar electrical appliances— Safety— Part 2-52: Particular requirements for oral hygiene appliances.*

Removability of waste batteries and accumulators

EU Directive 2013/56/EU amending Directive 2066/66/EC introduced with Article 11 requirements on the removability of waste batteries and waste accumulators.

Thus, also manufactures who produce appliances with integrated batteries are contributing to I4R platform: APPLiA and DIGITALEUROPE together with the WEEE Forum, have pioneered an online solution for recyclers with I4R (https://i4r-platform.eu/). I4R provides additionally to instructions to professional recyclers, which are accompanied within, online information or within instruction manuals how to remove waste batteries and waste accumulators at the end of life.

Thus, the requirement to provide removal instructions for appliances with incorporated batteries should be uphold. Art 11 in its current formulation suggests that instructions on safe removal by “either the end-user or by independent qualified professionals” shall be provided. The Commission has acknowledged the I4R Platform as best practice. Feedback from professional recycler association clearly showed that this information on a product category level is best suited to address the information needs for the professional recycling industry.

To secure a proper treatment of batteries in appliances, manufacturers shall be obliged to provide, by electrical means, instructions to recyclers – ideally on a product category rather than product model basis.

Replaceability of waste batteries and waste accumulators

Replaceability of batteries integrated in electronical appliances would require the users to access enclosures which protect the user e.g. from electrical shock. The safety of users is of highest priority for manufacturers, especially for small hand-held re-chargeable appliances with water-resistant features. Industry is keen on assuring that only specialized service personnel are authorized to access areas of tools which are hazardous for users without product specific training. It also depends on which product groups are addressed when discussing a replaceability concept from environmental point for view. There are some cases, where replaceability might even increase a waste stream of batteries compared to the overall use-phase of products with perfectly integrated batteries. Reasons for arguing that integrated batteries result in less waste are, that those are optimised for the specific product group and intended use.

The extent to which batteries in appliances can or should be replaceable should be considered product group specific. A possible replacement should only be for the whole battery (pack), not for single cells within a battery (pack). In addition, possible adjustments in the design and development of appliances are needed. Thus, these issues should to be dealt with in ecodesign.

The Battery Directive should focus on battery technologies. Replaceability should be addressed product-specific in ecodesign. We call for a deletion of replaceability in the context of the Batteries Directive. Within those discussions it is important to ensure always that the best possible electrical safety design practices for appliances with water resistant features can be maintained. Thus, any discussion on removability needs to consider the international product safety regulation and standardisation.

Interoperability of [waste] batteries and accumulators

For some sectors, like power tools or gardening tools, interoperability is given between a number of tools within the portfolio of a company – mostly not between competitors. In contrast to small hand-held appliances for hygiene use cases which have a very different usage profile than larger devices such as a drill where a single usage session may require several swaps of charged batteries. For those small appliances a single battery charge is sufficient for several uses of the appliance in contrast to larger appliances as for example a power tool.

Battery safety in combination with a certain application has to be guaranteed. This is required by EU directives as well as standards alike. Complete interoperability between products of different companies is likely to create safety issues and violate the above requirements.

The aspect of interoperability of portable batteries must therefore first be analysed for specific product groups and accompanied by appropriate and stringent handling and application of all product safety requirements.

Repurposing of batteries ("2nd life")

The possible repurposing of batteries must be done without any compromise on safety of batteries. Thus, the regulation must address safety and security risks in these operations. When reintroducing the battery to the market, a repurposed battery must be seen as a new product with (new manufacturer) responsibilities, meeting all safety and transport tests required for batteries as well as meeting end of life recycling requirements by the (new) manufacturer. Where appropriate, a permanently touch-protected design of the individual battery modules could be considered as a design option for simplified and safe handling in second Life applications.

The application of a not fully certified repurposed battery in the original application shall not be permitted.

Repurposing of batteries should only be possible under clear rules. Safety, security and a clear determination of the manufacturer are essential. The name of the manufacturer must be labelled on the product and all labelling related to the original manufacturer must be deleted.

4) Information requirements and labelling

With a growing market share of lithium ion batteries in certain segments of the automotive and industrial battery market, an effective method of identifying and separating used batteries of different chemistries has become essential to guarantee the safety of transportation and recycling operations.

We propose to include in the Battery Directive a rule for marking batteries. The current standardisation work in IEC TC 21 on marking should be taken into consideration. Further, batteries below a certain size (e.g. 900 cm^3) should be excluded from a mandatory marking.

5) Recycled content in new batteries

This discussion is extremely complex, as various elements in the process have to be taken into account, such as the different chemicals, the availability of recycled content, the location of the production plant or the impact on the production processes due to the introduction of new substances. All aspects must be considered to assess whether the use of recycled materials has environmental benefits and is economically viable.

Recycled content is directly related to 2nd life of batteries. We need a decision here. One can either reuse the material (which is recycling efficiency and recycled content) or you can reuse that battery (which is 2nd life). You cannot do both at the same time.

Lead based batteries

Recovered metals can be almost completely reused. For example, the share of secondary lead in lead based batteries varies between >50 % and nearly 100 %, with the best values for the industry as a whole being 85 % of secondary lead. From a technological point of view, however, various applications require the use of a minimum amount of primary lead (e.g. certain sealed batteries designed for low water consumption; these batteries often require primary lead as the basis for the active material (slightly less than 50 % of the total lead content).

NiCd and Li ion batteries

For NiCd batteries produced in Europe, not enough recycled cadmium is available due to the high export of these batteries in industrial goods. For Li ion batteries, there is currently a gap between batteries placed on the market on the one hand and recycling and production capacities on the other hand.

Batteries in general

To produce batteries of acceptable quality, high purity raw materials are essential. Using less pure materials may result in less powerful batteries and generates more waste.

It is also possible that the use of recycled materials may require more active material to achieve the same discharge efficiency, which would result in an overall neutral or even negative environmental footprint.

Tracking and tracing of materials poses a high burden on the manufacturers. Secondary materials often cannot be reliably distinguished from primary material. A level playing field for EU battery manufacturers is needed, thus these requirements would have to be strictly enforced on imported batteries as well.

Therefore, battery legislation should not contain rigid requirements for the use of recyclates in new batteries of any chemistry.

6) Importance of existing battery technologies

Why lead based batteries are needed also in the future

Lead based batteries are by far the dominant technologies in the field of automotive and industrial batteries. As the use of Lead in lead-based batteries is the most controlled and most sustainable use of Lead, a ban of Lead for that application cannot be justified even if Lead and Lead compounds are candidate listed under REACH.

Lead based batteries are collected in closed loop systems and the recovered materials can be completely reused for lead based batteries.

Lead in hearing aid batteries is necessary to ensure electrochemical stability of the Zinc/Air system. Without lead the batteries would show less capacity and inferior safety behaviour. Hearing aid batteries are medical devices. In order to fulfil the General Safety and Performance Requirements of the Medical Device Regulation (EU) 2017/745 the safety behaviour would have to be enhanced by other means. This would increase production cost. As a consequence, the end-customers would have to pay more for a product showing less performance than state-of-the art.

Therefore, we oppose the idea of a ban on lead-based batteries and see the discussions on this issue critical.

Why primary batteries are needed also in the future

The designation “single-use” is misleading. Primary batteries have very low self discharge rates and outlast rechargeable batteries if used infrequently and over many years. In such cases they have considerable ecological advantages. A primary battery can be used multiple times and in multiple appliance. It can power an appliance for multiple years (depending on the energy output needed), often for the whole lifetime of the application. As an example, a general-purpose lithium coin cell can function more than 10 years; in metering applications it can be in use for 15 years.

In general: For all appliances that require little or no current over long periods of time, rechargeable batteries are not a suitable alternative because they require much more energy and other resources (also like an additional charging system), also due to their higher self-discharge rates.

There are a lot of products which can only function (or function in the best way) with primary batteries. Some usages are corresponding to very long time (15 years in sensor and metering applications) where recharging the battery is not needed, and/or would have a negative environmental impact (additional charger needed). Their format can be any of the following: button cells or cylindrical, typically from AAA to D size, larger even custom-made batteries. There is a wide variety of products:

- General purpose (e.g. car or garage keys)
- Safety & security: smoke detectors, remote monitoring devices, sensors
- Health: implantable devices – a lot of medical products can only function on primary batteries for hygiene purposes

- Portable emergency equipment (defibrillators, torch lights, etc.)
- Remote controls
- Hearing aids
- Watches
- A multitude of industrial applications

For certain safety technologies especially for explosive atmospheres the usage of primary batteries offers technological benefits due to their properties. On top of this products and its components to be used in explosive atmospheres have to meet the requirement acc. IEC600791[4].

Primary batteries have a lower energy density compared to secondary batteries. This results in lower surface temperature as well as lower lower short-circuit currents. These properties play an important role regarding the standard IEC 60079.

Where primary batteries can be used for such applications without any further modification, secondary batteries have to be encapsulated by potting. The use of potting material lowers to recyclability as the separation of potted secondary batteries is very difficult while waste treatment. On top of this the additional potting has negative impact to the carbon footprint when taking raw material consumption, production, transport as well as disposal aspects into consideration.

There should not be a ban on primary batteries since every battery & chemistry has its function. This is subject to the type of appliance in which a battery is being used and the intensity of the use.

It will be more important to focus on making sure that the right battery is used for the selected appliance. This is linked to ensuring that the most sustainable option available to every application is being used.

Primary batteries offer technological benefits for certain technical applications, e.g. working in explosive atmospheres. Regarding specific safety standards, primary batteries are the preferred option.

7) Sustainability criteria

We support the Commission's efforts in laying down sustainable, environmental and energy requirements for rechargeable batteries, leading to a competitive, innovative and greener battery ecosystem.

The potential of e-mobility batteries to back up European decarbonised economy is enormous, given their strong growth forecast in the market.

We support the scope of the future sustainable measures for batteries that includes high capacity rechargeable batteries with internal storage for e-mobility.

Stationary storage batteries are very different technology and still constitute a niche market. Hence, many of the sustainable measures suggested for e-mobility batteries are simply not fit-for-purpose for stationary storage. That is why we recommend learning in the e-mobility area first and then applying lessons learnt in the stationary storage market later.

[4] IEC 60079-0: Explosive atmospheres - Part 0: Equipment - General requirements; IEC 60079-11 : Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

We suggest delaying actions on stationary storage batteries (for home energy storage).

We recognize that the carbon footprint of batteries is high at the beginning of their lifecycle. A clear methodology of determining this carbon footprint, however, does not exist today. Additionally, we remind that once batteries are in the use phase, their overall carbon footprint gradually declines. At this stage, an initial reporting phase without mandatory carbon footprint thresholds could be useful while battery manufacturers together with standardization agencies work out an unambiguous and transparent calculation methodology. At least initially, PEF Category Rules should be applied to the batteries for e-mobility. Some of the rules already exist for those batteries. With regard to the potential introduction of a carbon footprint declaration, ZVEI would be supportive of such a measure being consistent with the WTO rules. We need a sound model first. This has to be applied worldwide to create a level playing field for all players within the EU and outside.

We consider introducing carbon footprints requirements acceptable, while drawing the European Commission's attention to the difficulty in obtaining comparable, verifiable and reliable carbon footprint data.

According to the OECD due diligence guidelines[5], our companies can, on a voluntary basis, report the procurement of some raw materials, such as tungsten and tin. Moreover, the EU supply chain due diligence Regulation[6] foresees a voluntary system for downstream users of tin, tungsten, tantalum and gold. It is crucial that the system remains voluntary, as mandatory requirements would be an undue burden for our downstream companies, in particular for SMEs based in the EU.

We suggest setting voluntary sustainable raw material sourcing requirements for batteries.

Substances in batteries

All current battery technologies use substances, such as lead, cadmium, cobalt, nickel or lithium, that are potentially hazardous to health. However, batteries are sealed articles without any intended release of any of the substances, which means there is no risk of exposure to users and the environment if the battery is handled correctly. Exposure risks of workers along the value chain are already addressed through the existing EU legislative framework (e.g. REACH & Occupational Health and Safety Legislation).

Right now, the Batteries Directive identifies a limited number of substances as hazardous using unclear criteria, prohibits their use or encourages substitution (which will even be impossible in certain battery types). This approach is disproportionate to the actual exposure risk and an assessment of this would be more effective and proportionate.

In line with other existing legislations, such as REACH, the risk assessment should be supplemented by an evaluation of Socio-economic cost-benefit and also include wider sustainability or life cycle considerations to ensure that European battery manufacturing remains competitive in the global marketplace.

[5] OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas, 2016
[6] Regulation (EU) 2017/821 of the European Parliament and of the Council of 17 May 2017 laying down supply chain due diligence obligations for Union importers of tin, tantalum and tungsten, their ores, and gold originating from conflict-affected and high-risk areas