

BATTERIES DIRECTIVE - PUBLIC STAKEHOLDER CONSULTATION

1 Introduction

The following report provides an analysis of the information that has been collected through a public consultation held in the context of the "Study report in support of evaluation of the Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators". The stakeholder consultation was held between 06.09.2017 and 28.11.2017 as a public EU stakeholder consultation. It targeted all citizens and organisations. Among others, organisations and individuals with relevance to the Batteries Directive were identified at an earlier stage and invited to take part in the consultation. Aside from stakeholders invited to participate by the consultants, the European Commission also sent invitations to participate to various parties. The consultation was furthermore launched on the EU public consultation platform and was publicly available.

The consultation took place in the form of an on-line survey and enabled two forms of input:

- Ø Input through a stakeholder survey - here, aside from a first set of general questions, participants could either respond to a shorter questionnaire targeting input from "*citizens with a general interest on batteries and waste batteries*" or they could respond to a longer questionnaire targeting input from "*citizens and organisations with specific interest and knowledge on batteries and waste batteries*".

- Ø Written input - additionally stakeholders could provide written input, which allowed the submission of position papers as well as additional data.

In the following, an analysis of the survey inputs is provided in Section 2. The analysis only attempts to provide a quantitative analysis and reporting of the various aspects raised. An attempt is also made where possible to identify what aspects and views are typically raised by specific types of stakeholders. In Section 3 a list of stakeholders who have provided additional written contributions is provided. Section 4 summarizes the more common aspects raised by stakeholders through the various two input methods. The report does not reflect on the relevance of this information and its analysis to the evaluation of the battery Directive. Such analysis is foreseen to take place in the next phase and shall be addressed in the final report of this study, i.e. through reference to the information collected through this process.

2 Analysis of stakeholder survey results

2.1 General results

This section provides a description of respondents' answers to the personal information questions, i.e. information as to the types of stakeholders that responded, their location, etc. 151¹ respondents submitted the completed survey during the consultation period.

Please select the statement that best applies to you

Of the 151 respondents, 136 (90%) specified that they have specific knowledge and interest on batteries and waste batteries. The remaining 15 answered as citizens with only a general interest in the domain of batteries; however, 4 of these also specified that they answered on behalf of their organisations, while only 11 answered as individuals in their personal capacity.

In what capacity are you responding to this consultation

115 (75%) of all 151 respondents answered on behalf of an organisation or institution, 24 as individuals in a professional capacity and the remaining 13 as individuals in a personal capacity.

Where are you based?

97% of the respondents are based in the European Union (EU 28). The distribution of respondents according to the various EU countries can be seen in Figure 1. Of the remaining respondents, one was based in Switzerland, one in Lichtenstein and one in the USA, while the two others represent organisations (European and global). It is assumed that the fact that many of the respondents are based in Belgium is connected with Brussels being host to many of the EU institutions and thus also to many organisations that have affairs with these, such as industry associations, non-governmental organisations (NGO) etc. Of the 19 respondents located in Belgium, only one was responding as an individual with a personal capacity, 3 as individuals in a professional capacity and the rest on behalf of their organisations. This group further included 10 industry organisations, 3 businesses, 2 NGOs, 2 "others" (a citizen and a compliance organisations) 1 consumer association and 1 representative of government or public authorities.

¹ Further input was received after the consultation closed and was not included in the detailed analysis, however the input has been reviewed to identify additional aspects raised and where relevant comments are added in the analysis in this respect.

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Which category best describes you or the organization you represent:

The stakeholder type distribution is presented in Table 1 below.

Table 1: The category that best describes the organisations represented by responding stakeholders

| Category | Number of stakeholders | Inner distribution (category, number) | |
|--|------------------------|---------------------------------------|---|
| Academia or a research institution/educational institution | 3 | No further detail | |
| Business | 50 | | |
| Consumer association | 3 | | |
| Government or public authority | 12 | | |
| Industry association | 50 | | |
| Non-governmental organisation (NGO) | 7 | | |
| Other | 25 | Interested individuals | 5 |
| | | Associations | 1 |
| | | Consultants | 3 |
| | | Compliance schemes | 6 |
| | | Product & technology developer | 1 |
| | | Collection scheme | 2 |
| | | WEEE operators | 1 |
| | | Recyclers | 5 |

If industry association, please specify the sector (select one or more answers):

Industry associations described themselves according to the following categories

| | |
|--|----|
| Manufacturers | 5 |
| Retailers | 1 |
| Manufacturers; Importers; Retailers; Large selling brand; Other | 1 |
| Recyclers (of spent batteries) | 2 |
| Large selling brand | 1 |
| Collectors (of spent batteries) | 1 |
| Retailers; Collectors (of spent batteries); Recyclers (of spent batteries) | 1 |
| Manufacturers; Recyclers (of spent batteries) | 2 |
| Other | 11 |

More than 11 respondents responded when asked to specify "other" and it is assumed that the question could not be skipped. Thus the list below is assumed to include more than just the respondents who specified themselves as "other industry associations". Non-relevant answers (not applicable, not an industry association, doubles, etc.) have been removed and where permission for publication was not given answers have been anonymized:

- Ø A3M represents the steel and non-ferrous metals sectors.
- Ø Autokierrätys
- Ø Automotive Industry - Manufacturers
- Ø Battery Compliance Scheme - UK
- Ø BMG Metall und Recycling GmbH, Industriestraße 15, 9601 Arnoldstein, Austria, subsidiary of Ecobat Technologies:
- Ø Business
- Ø Car dismantler association
- Ø Car producers and importers

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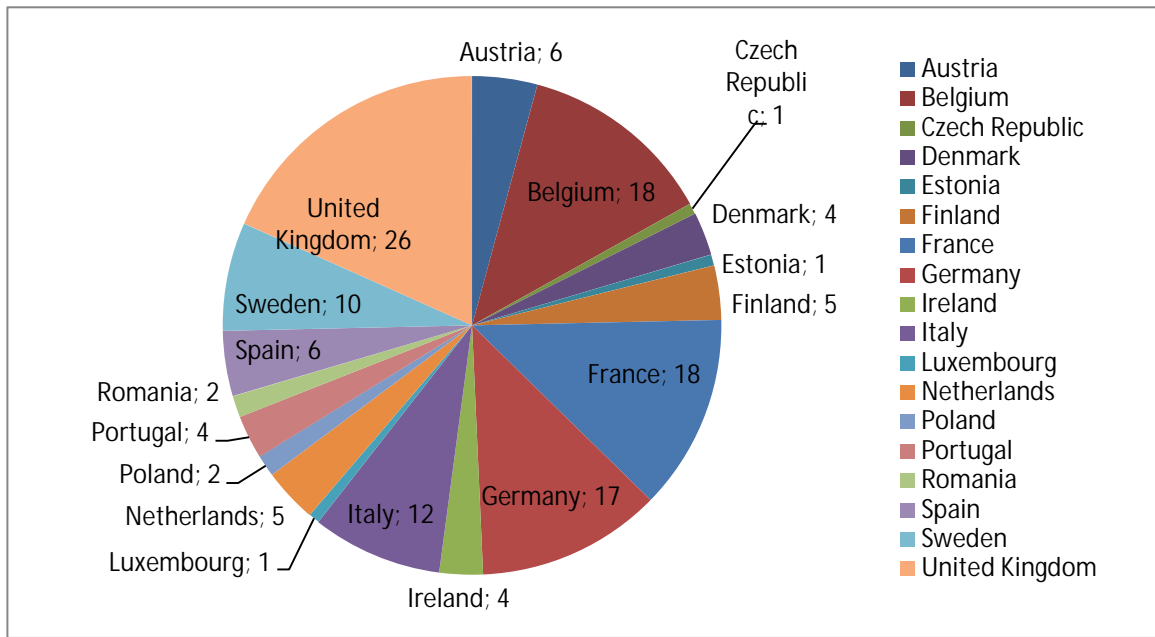
- Ø Clearing House
- Ø Company
- Ø Consortium of individual and collective collection systems
- Ø ECOBAT SpA - lead producer and recycler of lead batteries and other lead-containing materials in Italy. Member of ECOBAT Technologies.
- Ø ECOBAT Technologies - lead producer and recycler of lead batteries and other lead-containing materials.
- Ø EEE manufacturers when incorporators of batteries
- Ø Electric and electronic
- Ø EPR scheme
- Ø Global battery supply chain and recycler industry association
- Ø Intermediary for Collection and treatment of waste battery
- Ø Large user ie telecommunications
- Ø Manufacturers, Importers, Retailers
- Ø Most of the above
- Ø MRU GmbH Freiberg
- Ø National collection schemes for batteries (Non for profit organisation). That includes Manufacturers and importers
- Ø National compliance organization
- Ø Network of Social Enterprises active in Re-use, Repair and Recycling activities
- Ø Pan-European PRO (EPR scheme handling take-back and recycling of WEEE, BATT, PACK)
- Ø PRO
- Ø Producer Compliance Scheme for Batteries in the UK
- Ø Recyclers of products containing batteries and recyclers of batteries
- Ø Retail
- Ø Valpak Limited - UK producer responsibility compliance scheme operator for Packaging, WEEE and Batteries
- Ø Vehicle recyclers
- Ø WEEE Ireland - Producer Responsibility Organisation (Compliance Scheme) for WEEE and Waste Batteries. Members of both Eucobat and WEEE Forum.
- Ø Wholesaler

In which country is your organisation or institution located?

The organisations of 94% of the respondents are based in the European Union (EU 28). The distribution of respondents according to the various EU countries can be seen in Figure 1, with the main representation being from the UK (18%), Belgium (13%), France (13%) and Germany (12%). Of the remaining respondents, five are from organisations located in Switzerland, one in Norway, one in Lichtenstein, and two others represent organisations (multi-national and global). It is assumed that the fact that many of the organisations of respondents are based in Belgium is connected with Brussels being host to many of the EU institutions and thus also to many organisations that have affairs with these, such as industry associations, non-governmental organisations etc. Of the 18 respondents located in Belgium, only one was responding as an individual with a personal capacity, 4 as individuals in a professional capacity and the rest on behalf of their organisations. This group further included 11 industry organisations, 2 NGOs, 2 "others" (a citizen and a compliance organisations), 1 business, 1 consumer association and 1 representative of government or public authorities.

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Figure 1: Distribution of respondents according organization location



Please indicate below if you want your contribution to remain anonymous:

59 of 151 respondents requested their contribution to remain anonymous. The rest, 60%, agreed to the publication of all information of their contribution.

Is your organisation or institution registered on the EU Transparency Register?

Of the 151 respondents, around a third, 57, are aware that their organisations are listed in the EU transparency registry. 49 of the respondents organisations are not listed in the registry and the

2.2 Survey results for “citizens with a general interest on batteries and waste batteries”

This section provides a description of the results from the survey targeting input from citizens. 15 of the survey respondents provided answers to these questions. 11 of the respondents specified that they had filled this part of the questionnaire as individuals in a personal capacity, while 4 filled this part for their organisations (trade union, NGO, business and government or authority). It is noted that only 5 specified themselves in answers to the general questions as citizens/individuals and not as organisations. Of the others, respondents are from the business sector (4), from government or public authorities (2), consumer associations (1), trade union (1), NGOs (1) and from academia or a research institute/educational institution (1).

Based on the low number of respondents (15) the results cannot be assumed to have statistic relevance and as such cannot be taken as representative. Nonetheless the results are presented below to give indication as to possible views and perceptions that may be shared to some degree by citizens.

B-1: Did you know that there is EU legislation governing many factors related to batteries?

13 of the respondents were aware that there is EU legislation governing many factors relating to batteries, including the 4 which had specified answering for their organisation. Only 1 of the respondents, answering as an individual, out of a personal capacity, was not aware of such legislation and 1 respondent did not provide an answer.

B-2: What do you use batteries for (select one or more answers)?

13 respondents indicated that they use batteries in hand-held and portable devices, such as phones, laptops and wearables. 9 indicated using batteries in cordless power tools. Batteries are used by 9 respondents in home appliances (including for leisure) such as vacuum cleaners and games. 7 of the respondents use batteries for mobility, for example in e-bikes, electric cars, other vehicles. Only a single respondent specified using batteries for local energy storage, such as power walls, indicating that is a relatively uncommon use for private consumers.

One respondent indicated “other” uses, though when asked only hand-held portable devices were detailed, differentiating between disposable and rechargeable batteries.

See also answers to Q.B-3 for correlations.

B-3: The Directive distinguishes between various types of batteries (portable batteries, automotive batteries, industrial batteries). What batteries do you use (select one or more answers)?

The majority of respondents uses common cylindrical batteries such as AA or AAA batteries (13) and button cell batteries (10); Most respondents furthermore use batteries in communication devices such as mobile phones and laptops (11) and in other electrical and electronic appliances such as electric toothbrushes, hand-held vacuum cleaners and cordless power tools (11).

In relation to mobility, 8 of the respondents use batteries in vehicles for starting, lighting or ignition (SLI - lead-acid batteries). Only 3 reported using traction batteries in e-vehicles, wheelchairs, airport vehicles and e-bikes, all of which also indicated that they use SLI batteries in vehicles. There is generally a correlation between the answers in this question and the answers related to battery uses (Q.B-2): of the 7 users who specified using batteries for mobility, all except one also specified here using either SLI or both SLI and traction batteries. Two of the respondents who indicated using SLI batteries in vehicles did not indicate using batteries for mobility, meaning they probably assumed that SLI car batteries do not fall under this category in light of the examples. One respondent specified use of batteries for mobility in question Q.B-2, but not the use of SLI or traction batteries.

5 Batteries used in local energy storage systems (e.g. for emergency power supply and back-up or energy

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storage from renewable energy applications);

4 respondents specified using batteries in measuring devices, hand-held payment devices, barcode readers, etc.

B-4: To what extent do you agree with the following statements on portable batteries?

The most common answer is highlighted as follows : Agree / neutral / disagree

Ø B-4.1: Batteries are safe to use

80% of respondents agree that batteries are safe to use (4 strongly agree and 8 agree), while 2 are neutral and one disagrees. One respondent mentioned toxic components of batteries to support its disagreement to the statement. Another mentioned that some rechargeable batteries can explode if over-charged (e.g. batteries for mobile phones and hover-boards have been reported as exploding in the UK). One of the supporters stated that if the batteries are properly made and certified there should be no safety issues. This could also be understood from a respondent that disagreed that batteries are safe, explaining that a company process that is strictly adhered to will cause no problem but that guidelines are not always followed. 3 of the respondents who answered for their organisation agree that batteries are safe while the 4th was neutral.

Ø B-4.2: There is no risk to the environment in using batteries

10 of the respondents, representing 66%, disagree that there is no risk from batteries to the environment, 7 of these strongly disagree. 2 respondents were neutral, while 3 agreed (only 1 strongly) with this statement. A few of the respondents that do not agree with the statement mentioned the toxic/hazardous materials used in some batteries in this respect. Another few mentioned the fact that many batteries are not disposed of properly: "I would guess that the vast majority of consumers throw their batteries away with the general waste, rather than recycle them. Supermarkets and other retailers do offer a place to dispose of batteries safely, but I doubt most consumers use these facilities". One of the respondents who agreed that there is no risk to the environment from using batteries added in this respect that care is required in the proper use of batteries.

3 of the respondents who answered for their organisation disagreed (2 strongly) that there is no risk to the environment in using batteries, while the 4th was neutral.

Ø B-4.3: There is no risk to human health in using batteries

40% of respondents (6) neither agreed nor disagreed that there is no risk to human health in using batteries. 5 agreed (3 strongly) and 4 disagreed (2 strongly). Answers of respondents who agreed that there is no risk from batteries to human health or that were neutral correlated with answers of respondents in Q.B-4.1 that batteries are safe to use. Respondents who did not agree that there is no risk from battery use to human health mentioned the toxic materials that are present in batteries in this respect that for example could leak if the battery case is punctured. In this respect, one of the neutral respondents mentioned the importance of collecting of batteries for their recycling, seeing as depleted batteries tend to leak.

2 of the respondents who answered for their organisation were neutral while 1 agreed that there was no risk to human health from using batteries and 1 strongly disagreed.

Ø B-4.4: The lifespan of portable batteries is adequate

7 respondents, representing 47% agree that the lifespan of batteries is adequate. 5 respondents

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disagree with this statement (4 strongly), while 1 was neutral and two did not have an opinion on this matter. Here it was mentioned in one case that the lifespan of batteries has improved considerably over the years. Nonetheless, even respondents who agreed with the statement specified that the lifespan should continue to improve. Particularly in relation to electric-vehicles, this was pointed out as an area where further development and improvement is needed "to prevent massive surge is spent batteries". The disagreeing respondents mentioned that rechargeable batteries need to have a higher number of cycles. In two cases smart phone batteries were mentioned in this respect, as particularly when they cannot be removed by the consumer the whole device must be replaced, wasting a large amount of resources. In this respect it was mentioned that smart phone batteries degrade after one year, whereas their lifetime should be at least "four years, in line with handset life". Laptop batteries were also mentioned by the same respondent in relation to their poor performance, in which case after 6 months of use a significant degradation is already observable. The performance of the battery was said to be "dependent on the manufacture of the device and the software used in operating the application of work processes."

3 of the respondents who answered for their organisation agreed (2 strongly) that battery lifespan is adequate while the 4th did not know.

Ø B-4.5: Spent portable batteries are properly collected

7 respondents, representing 47% disagree (2 strongly) that batteries are properly collected. 4 are neutral to this statement, 2 agree that batteries are properly collected and 2 did not know. Three respondents from the UK mentioned there being collection points in supermarkets to allow safe disposal, however two of these assumed that as the consumer needs to bring the batteries to the supermarket that many are not collected. One of these even suggested that batteries be collected with other recyclables and separated at the recycling facility in order to increase the collection rate. A respondent from the Austria mentioned that though in the past batteries were collected through cardboard boxes at supermarkets, that such boxes were no longer common.

2 of the respondents who answered for their organisation were neutral while 1 strongly agreed and 1 disagreed. Not surprisingly, the answers to this statement are in strong correlation with answers to the statement in Q.B-4.5 whether portable batteries are properly recycled - see detail there.

Ø B-4.6: Spent portable batteries are properly recycled

53% of respondents did not have a clear position on this statement - of these 4 were neutral and 4 did not know. Most of these respondents were also neutral to Q.B-4.5 regarding the proper collection of batteries. 5 respondents, representing 33%, disagree that spent portable batteries are properly recycled. All of these also disagreed that spent portable batteries are properly collected. Only 2 respondents agreed (strongly) to this statement. Respondents who provided comments in relation to this statement generally did not agree with the statement assuming this on the basis that many consumers do not return their batteries to collection points. It was mentioned in two cases that further education is needed in this respect and that campaigns were not held often (regarding the importance of returning batteries to collection points to promote recycling).

2 of the respondents who answered for their organisation were neutral while 1 strongly agreed and 1 disagreed.

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B-5: Did you know that EU legislation stipulates that it should be possible for end-users or qualified professionals to remove batteries from appliances?

9 respondents, representing 60%, did not know that EU legislation requires batteries to be removable from appliances. All other respondents responded positively.

2 of the individuals answering for their organisation were aware of this aspect and two were not.

B-6: In your experience, is it easy to remove batteries from appliances?

67% (10 respondents) think that it is usually easy to remove batteries while another 27% (4 respondents) answered that it is mostly possible. 1 respondent views batteries as never removable. All individuals answering for their organisations agreed that batteries are mostly removable.

B-7: When buying portable batteries, do you check whether they fit with the requirements such as size/shape of the appliance in which they are to be used?

53% of respondents (8) always check the compatibility of batteries they buy with their intended use and another 4 (27%) mostly do so. 1 rarely check for compatibility when purchasing batteries and 2 never do.

It is assumed that respondents answering for their organisations responded to this question from personal experience and not necessarily in terms of what their organisation does.

B-8: Do you bring your spent (waste) batteries to battery collection points?

53% of respondents (8) always bring spent batteries to collection points, while another 33% (5) usually do so and 3 rarely do. None of the respondents reported never bringing batteries to recycling points. It is assumed that respondents answering for their organisations responded to this question from personal experience and not necessarily in terms of what their organisation does.

B-9: The Directive requires that all collected batteries undergo recycling. Do you think that this requirement is respected?

Only 1 respondent thinks that the recycling requirement is respected, where as 60% of the respondents (9) do not think that the requirements are respected and 5 (33%) do not know. In most cases this was explained to be based on the understanding that most consumers do not return their batteries to collection points. One respondent assumed that young people are more engaged and should be influenced through campaigns to “educate their seniors”. A few mentioned that batteries are often thrown to the municipal waste or for example with cell phones, that the devices are not disposed of but rather kept at home, including the batteries. One respondent assumes that mainly alkaline batteries are thrown to the municipal trash and suggests both in light of the differences in performance and price that “non-rechargeable AAA, AA, C, D batteries should be phased out and devices set to use 1.2v NiMH not 1.5v Alkaline”. Another respondent assumes that the collection only works up to a point (in light of consumers’ cooperation) and commented that the Directive needs to be much more effective, especially in light of the increase in E-vehicles. This respondent would treat batteries of smaller gadgets like motor car batteries in this respect and suggests that all batteries are required to be removable by the end-user.



B-10: Do you know what this symbol above means? (Wheelbarrow symbol)

6 respondents (40%) answered that they did not know what the wheelbarrow symbol represented. 5 answered that it meant that “At the end of its life, the battery should be disposed of in waste bins specially designated for battery collection” while 2 responded “At the end of its life, the battery should be disposed of in normal waste bins” and another two did not specify any of the pre-formulated answers.

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B-11: Are the characteristics of portable batteries clear from the labelling on the battery and/or the battery packaging?

8 respondents, representing 53% think that portable batteries have the right amount of information relating to their characteristics on their labelling or battery package. 3 think there is not enough information and 1 thinks there is too much, while 1 thought that the information is not clear and another two did not know. Only one respondent who finds the information not to be clear commented that there is no use on labels of "no standard colour or logo or RFID or barcode, etc. about content/type".

B-12: Are the instructions on using portable batteries clear from the labelling on the battery and/or the battery packaging?

In relation to the question if the instructions for using portable batteries are clear from the battery labelling and packaging, 7 respondents (47%) think that there is not enough information and another 2 think there is too much information, while only 3 think that the amount of information is sufficient. 3 responded that they did not know.

B-13: In terms of collecting and recycling spent batteries, to what extent do you agree with the following statements:

- Ø **B-13.1: I know what to do with spent batteries**
80% of respondents (12) agree with this statement (7 strongly) and know what to do with spent batteries. 3 disagree (1 strongly), suggesting that they are not sure how to dispose of spent batteries, at least in some cases.
- Ø **B-13.2: It is easy to return spent portable batteries to collection points**
67% of respondents agree that it is easy to return spent portable batteries to collection points, 1 is neutral and 4 disagree (1 strongly). Surprisingly, comparing results of this question with answers to question Q.B-13.1, reveals that one respondent strongly disagreed about knowing what to do with spent batteries, nonetheless the same respondent agrees that returning batteries to collection points is easy. The first statement was asked in relation to batteries in general, whereas the second is in relation to portable batteries. The same individual agreed in Q.B-13.3 that it is easy to return automotive spent batteries. This would suggest that either the answer to Q.B-13.1 is flawed (the individual meant to agree) or maybe the individuals' lack of knowledge as to what to do with spent batteries is more related to industrial spent batteries that he/she uses (e.g. E-bike) than to portable ones. In contrast one of the respondents that specified knowing what to do with spent batteries did not agree that returning them to collection points is easy. This is easier to follow as the ease of return depends on the location and dispersion of collection points for a specific individual and this may vary depending on the place of residency, mobility, etc. of the individual.
- Ø **B-13.3: It is easy to return spent automotive batteries to collection points**
Only 40% of respondents (6 - 2 strongly) agree that it is easy to return spent automotive batteries to collection points. 2 respondents were neutral about this question and 4 did not know how to respond. Only 3 disagreed (2 strongly) that it was not easy to return spent automotive batteries.
- Ø **B-13.4: The way in which spent batteries are collected reduces risks**
40% of respondents (6) are either neutral or do not have an opinion as to whether the way in

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which spent batteries are collected reduced risk. 33% agree with the statement (1 strongly), while 4 do not agree (1 strongly). There is some correlation between the answers to this question and the answers to Q.B-13.5 (those agreeing in relation to recycling tended to agree in relation to collection and vice versa). However, the slight miss-match suggests that at least some respondents assume that even if batteries are collected properly this does not automatically reduce risks related to batteries. This may be connected to their uncertainty as to if collected batteries are properly recycled or not.

- Ø **B-13.5: The way in which spent batteries are recycled reduces risks**
53% of respondents (8) agree that the way in which spent batteries are recycled reduces risks. 3 are neutral and one does not know, whereas only 3 disagreed (1 strongly) with the statement that the way in which spent batteries are recycled reduces risks.

- Ø **B-13.6: The information publicly available on the results of battery collection is sufficient**
Respondents did not agree with this statement. Most respondents (73 % or 11 in number) disagreed (2 strongly) while 2 were neutral and 2 did not know how to respond. The answers to this question were in high correlation to the answers to Q.B-13.7, suggesting that public information both on the results of battery collection and on battery recycling is not sufficiently available.

- Ø **B-13.7: The information publicly available on the results of battery recycling is sufficient**
Most respondents (73 % or 11 in number) disagreed (2 strongly) that the information which is publicly available on the results of battery recycling is sufficient. None of the respondents agreed with this statement while 2 were neutral and 2 did not know how to respond. All individuals responded exactly the same to both to this question and to Q.B-13.7. See details as to correlation in Q.B-13.7.

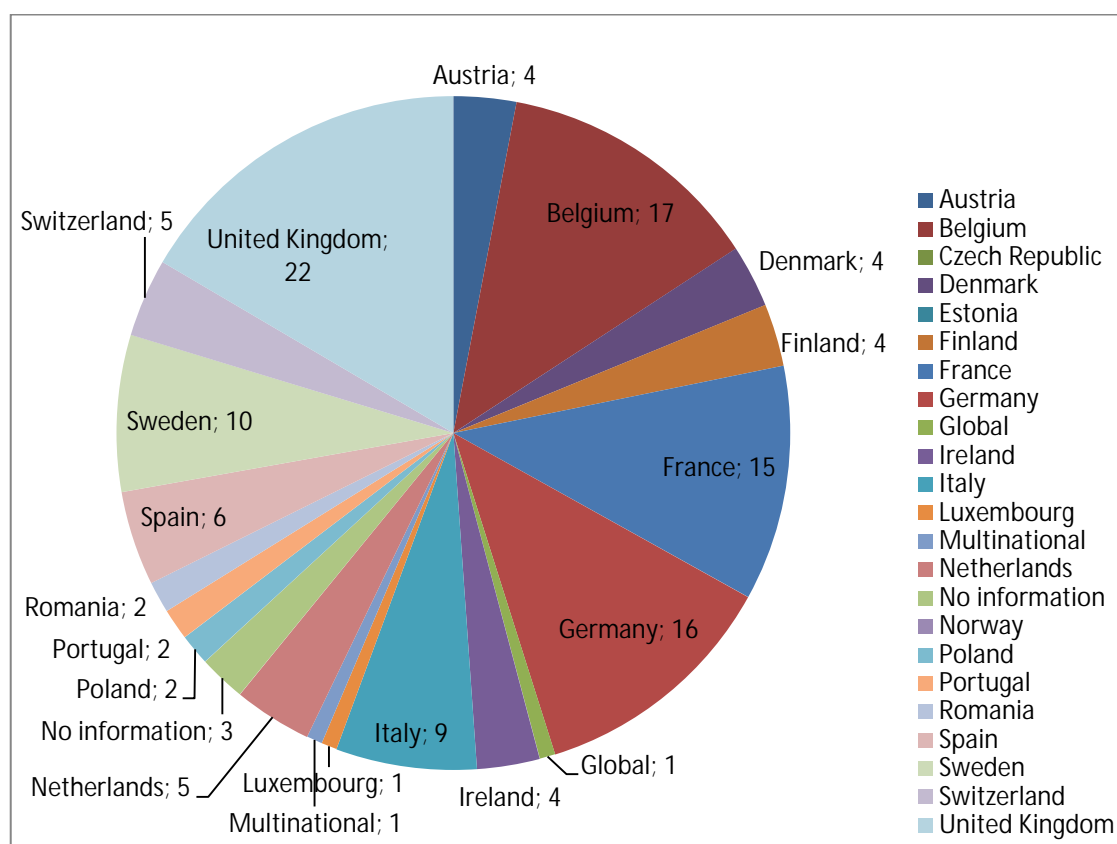
2.3 Results of survey for “citizens and organisations with specific interest and knowledge on batteries and waste batteries”

This section provides a description of the results from the survey targeting input from individuals and organisations with specific knowledge and interest on batteries.

136 individuals filled in the questions² for citizens and organisations with specific interest and knowledge on batteries and waste batteries. Of these:

- ∅ 2 did so as individuals with personal interest;
- ∅ 24 answered to the survey as individuals in a personal capacity (a few of which detailed being involved with waste or batteries through their profession); and
- ∅ Most of the respondent’s organisations’ are located in the EU 28, while 5 are located in Switzerland and 1 in Norway. For more detail see Figure 2 below.

Figure 2: Distribution of respondents according to where their organization is located



- ∅ 110 individual’s answered on behalf of their organisations or institutions.
 - 48 of the respondents are industry associations: 6 specified representing either manufacturers or both manufacturers and recyclers, 1 specified being a “Retailers; Collectors (of spent batteries); Recyclers (of spent batteries)”, 1 is a retailer and 1 is a collector.

² It is noted that in the analysis below, in some cases individuals did not provide an answer to all questions. For most questions there are 133 answers. In a few cases there are less and in a few cases more. Such non-specified answers are not addressed in the following analysis.

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- 32 of the respondents specified themselves as businesses, while from the further details that some provided it is observed that of these 4 are manufacturers and recyclers of batteries and 1 is a national producer compliance scheme.
- Of the 14 individuals who responded as "other", 6 are compliance schemes and/or EPRs, 5 are recyclers and 3 are collectors. Another 6 specified themselves as others but answered on their own behalf. As the "other" classification includes mainly operators of recycling, collection and compliance schemes, attention is often given to the views that they have specified.
- The remaining 16 individuals responding on behalf of their organisation represent Government or public authorities (10), NGOs (5) and academia (1).

In the following, an analysis of the survey results for questions targeting citizens and organisations with specific interest and knowledge on batteries and waste batteries is presented. Results relate to 136 respondents who provided answers for these questions. In some cases, individuals did not provide an answer to all questions (i.e. the answer for a specific question was not specified). For most questions there are thus 133 answers. In a few cases there are less and in a few cases more. Such non-specified answers are not addressed in the following analysis. It is further noted that for some questions, the survey allowed providing "open" answers. In such cases, aside from specifying how much "open" comments were submitted, the analysis summarises the aspects most often raised by stakeholders or in some cases a summary of "new issues" that are addressed by stakeholders (i.e. not addressed by the Directive up to now). A full version of the "open" answers submitted to such questions is provided in annex.

C-1: To what extent do you agree with the following statements:

Ø C-1.1: The concepts and definitions used in the Batteries Directive are in line with the meaning they have acquired over time

50 % of all the respondents (67) agree (of them 19 strongly agree) that the concepts and definitions used in the Batteries Directive are in line with the meaning they have acquired over time. Of these, most represent businesses (21) and industry associations (27). While 28 are neutral to this statement, only 35 (26%) disagree (1 strongly) and 3 respondents do not know. All individuals from academia agreed with the statement and most NGOs either agreed (4) or disagreed (2). Individuals that disagreed commented that:

- There is a need to specifically address Li-Ion batteries in the Directive in light of their growing market share and importance, also mentioning in some cases for example the need to promote recycling for such batteries (the current requirement is easily achieved despite not promoting resource efficiency), the associated safety risks and additional aspects.
- There is difficulty of classifying batteries in relation to the current definitions, for example where batteries defined as industrial are mainly used by private consumers (e.g. E-bike batteries). Differentiating between portable and industrial batteries is not always straightforward.
- Differentiating between products to be considered as EEE and products to be considered as batteries is not always straightforward, for example where the battery is a large part of the EEE.
- Harmonization of definitions in different Directives is necessary e.g. producer definition etc. Particularly the definition of recycling (what is considered recycling and what is not needs to be harmonized between the Batteries Directive, the Waste framework, WEEE, etc.

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- Ø **C-1.2: The scope of the Batteries Directive covers all common battery types on the market**
51% or 69 of all respondents agree (24 strongly) that the scope of the Batteries Directive covers all common battery types on the market, while 29% or 39 individuals disagree (6 strongly), 20 are neutral and 5 do not know. For most represented groups, the distribution of responses is in all groups (agree/disagree/neutral). Individuals representing NGOs either agreed (4) or were neutral in relation to the statement.
Individuals that disagreed commented that:
- Many stakeholders mention the fact that Li-Ion is not specifically mentioned and that it may be considered to add this chemistry in light of the increase in use. Nonetheless, it is also stated in a few cases that though not specifically mentioned, Li-Ion is still covered by the Directive and that lithium should not be restricted as a material. Additional stakeholders mention for example that Li-Ion should be addressed through some of the requirements to improve separation and recycling.
 - A few stakeholders commented that the scope of the common battery types needs to be updated in line with batteries on the market place. There is a need for detailed definition of chemical composition including new technologies. Flow Vanadium batteries, Super capacitors, Fuel cells are not in scope. Atomic/beta voltaic batteries, rechargeable button cells, and easy-to-use designed battery rechargers were also mentioned.
 - A few organisations commented that batteries contained in uninterruptible power supplies (UPS), when placed on the market, are not consistently defined by member states. In some countries these batteries are defined as Portable and in other countries as Industrial. Manufacturers of such batteries propose to manage all UPS batteries as Industrial.
 - In theory, the definitions cover all battery types. The problem lies with the end-of-life where it is not always possible to identify under which category a battery falls. It is possible that a battery is placed on the market as a small industrial battery but ends up in the waste stage in the collection systems for portable batteries.

C-2.: To what extent do you agree with the following statements:

- Ø **C-2.1: The objectives established by the Directive are still relevant**
102 respondents, representing 77%, agree (39 strongly) that the objectives established by the Directive are still relevant. 21 respondents disagree to this statement (16 %), while the rest are either neutral (8) or don't know (2). There was good correlation for these results in businesses, industry associations and government and public authorities, all of which exhibited 80% agreement (agree/strongly agree). The "Other" respondents were also not far from these results with 75% being in agreement, while opinions of both NGOs and consumer organisations were distributed half-half between agreement and disagreement.
- Ø **C-2.2: The requirements established by the Directive are still relevant**
73 respondents, representing 55%, agree (23 strongly) that the requirements established by the Directive are still relevant. 41 respondents disagree to this statement (31%), of which 3 disagree strongly, while the rest are either neutral (17) or don't know (2). The distribution of opinions for this question is strongly related to the type of organisation. Though both businesses and the "other" group exhibited 50% agreement, another 43% of businesses were in disagreement, while only 25% of the other group shared this disagreement. Industry associations were in 62% agreement, while 24 % disagreed and the rest were neutral.

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Respondents answering for government or public authorities were either in agreement (77%) or neutral (22%), while both consumer associations and NGOs were more or less distributed half-half between agreement and disagreement.

C-3: Examples of where the Batteries Directive has adapted well/not so well:

Ø C-3.1: To changing societal needs and technological developments

Positive:

- The targets of banning certain materials in batteries is still relevant;
- The target of collecting batteries is still relevant and in line with the circular economy;
- Categories of actors in the value chain are properly defined and responsibilities are clearly assigned as a result of the Directive;
- People are aware that spent batteries should not be disposed together with undifferentiated waste, though collection points are not always sufficiently accessible;

Negative:

- The Directive has not adapted well to the emerging markets of 2nd-life use of batteries. The Directive needs to encourage this potentially very valuable re-use of resources. The trend towards ownership versus rental of E-vehicle batteries needs to be adapted to;
- Societal needs with regard to collection are not being met, collection of waste batteries used in small volumes is not being carried out and the collection of batteries with a high (treatment) cost is delayed. Batteries are stockpiled due to commercial considerations, creating a risk should stockpiled be abandoned. The collection target doesn't take into account the increasing demand for rechargeable batteries with a much longer lifespan/hoarding time. The collection targets need to be improved;
- Clear guidance and options for recycling of industrial types of batteries which may end their life in a private household (energy storage equipment, UPS) is lacking;
- Battery recycling programs address consumer applications of batteries and are no longer effective for the management of professional/industrial battery applications;
- The Directive should ensure the collection and treatment of small batteries, particularly where the trend is towards miniaturization;
- The Directive needs to adapt in light of the expected increase in E-mobility batteries, i.e. in relation to relevant chemistries, specific requirements for collection and recycling to ensure that this aspect does not set-off the contribution of E-vehicles to sustainability;
- Labelling is inadequate to identify hazardous substances and handling risks, i.e. various compounds present in Li-Ion batteries;
- There is a discrepancy with the requirement on capacity marking for primary portable batteries, especially for button cells - technically not possible so the requirement should be removed;
- A new legislative proposal should be developed that facilitates a goal of encouraging the development of all battery technologies by replacing the existing focus on substitution of hazardous substances/heavy metals with wider sustainability and circular economy objectives such as design for recyclability, resource availability, and minimizing environmental risk through closed loop recycling using processes that maximize material recovery by establishing high recycling efficiency targets for all chemistries;
- The objectives are focused mainly on end of life of all batteries, not durability of rechargeable batteries.
- Stipulations do not apply to distance selling. There is an increased purchase of products

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- from outside the EU using online platforms;
- o Various matters related to Li-Ion batteries not covered - how are the costs of the collection and recycling financed (non-profitable recycling, second-life). The legislation should not describe what needs to be done as the technology is dynamic and changes fast, but rather describe what goals need to be reached;
- o In some Member States, imported batteries (from other Member States) are included in the calculation of the collection target. This disrupts the existing collection systems and undermines the logic behind setting such collection targets;
- o The Batteries Directive requires producers to consider the removability of batteries when designing products. The increasing use of rechargeable batteries means this requirement may not be as appropriate now;

Ø C-3.2: To technological developments

Positive:

Battery manufacturers were able to develop and produce mercury-free button cells following stricter requirements imposed by the Directive;

The broad scope of the definition of batteries (Art. 2) ensures that the Directive is a future-proof concept as it is applicable on new technologies. Furthermore, it has enhanced innovations by prolonging the lifecycle, removing hazardous substances and so on;

Negative:

The Directive is not adapted to use of mobile devices (the batteries that they use, their low reparability and their high turnover);

The 2nd use of batteries needs to be addressed and regulated. As remanufacturing centers might be located abroad therefore an international cross border transport is needed. A definition of remanufacturing in the waste legislation would allow effective reuse and remanufacture of products by avoiding their premature classification as waste. The end of waste status has to be defined;

When batteries are integrated into the product like they are with UPSs, then they should not be managed separately - it is inefficient and acts as a barrier to effective recycling.

Adjustment of recycling efficiencies to new technologies (Li-Ion) needed. Smaller devices point to growing importance of "specialty cells" such as coins and buttons. Battery Directive ought to adapt better to specialty cells that use ion technology; high-power lithium, silver oxide and special alkaline;

Adaptation to technological developments: vanadium batteries, whose chemistries and functions (and recycling) are completely different from any kind of other batteries;

In some countries the targets are met and a revision is to be considered, in other, due to lack of enforcement the targets are not met and needs to be better promoted;

Concerning Recycling, the Directive has targeted at least use of BAT, and expected the further development - but industrial development has taken opposite direction. Low cost, low yield, low match with Directive overarching target; The use of multiple preceding year placed on the market data to calculate producer obligations may no longer be the most appropriate due to technological change, both with regards to the batteries themselves and the products they power. The technological progresses would allow to increase the recycling efficiency far over 50% with the same effort as initially decided. But in the last years, actors wish to increase rentability at 50% efficiency instead of progressing towards 80% with investments;

When batteries are integrated into the product like they are in EEE (e.g. UPSs), then they

should not be managed separately

Requirements for recycling are not specified in relation to the battery system/cell/module and leave room for interpretation. The recycling targets for "other batteries" could be further differentiated: alkaline, Li-rechargeable, Li-primary. The actual weight-based recycling targets do not differentiate between recycling of "critical/valuable materials" and recycling of abundant components (for example oxygen). It is recommended to increase the Recycling Efficiency target for all waste batteries up to 75 % according to technological developments made and need to encourage real recycling solutions to Lithium-ion battery chemistries; New concepts that need to be adapted to: E-mobility (batteries), smart cities, 2nd life and reuse of batteries;

The Directive does not appear to distinguish between rechargeable and single use batteries. Neither, it is noted, does the EU Ecolabel guide customers as to which is environmentally preferable.

Insufficient focus is given to issues such as safety and liability of second life use, specific recycling efficiency targets, product identification to allow safe and efficient sorting and design for recyclability of lithium ion batteries;

In order to focus on closing material loops (for metals and other valuable materials), specific targets for the recycling of specific materials could be added. For example: Pb recycling target, Cd recycling target, Co recycling target;

Technological developments aimed at reducing or even phasing out the amount of hazardous substances used in batteries should be encouraged. In this regard, the Directive could be amended to introduce a mechanism similar to Article 6 of the RoHS Directive (Directive 2011/65/EU), which enables the adoption of new chemicals restrictions.

C-4. To what extent did the following battery features change since the Directive was adopted in 2006?

In relation to the various aspects mentioned, most respondents agreed that the features had changed significantly since 2006 ("a great deal" or "quite a bit") or had no opinion as to the degree of change ("don't know/no opinion"). This could be interpreted to mean that this feature has improved in light of the Directive or that the feature should be addressed/reconsidered in the context of the Directive, however the fact that respondents agree that a feature has changed still does not clarify how respondents feel as to the relation between the future and the Directive, for example, whether the Directive has led to the change (retrospective) or whether the Directive should be adapted in light of the change (with a view to the future). This may differ for the various features addressed.

Ø C-4.1: Lifespan

103 of the respondents, representing 77%, think that the lifespan of batteries has changed either a great deal (36) or quite a bit (67) since the Directive's adoption. 21 respondents had no opinion or did not know how to answer to this question. Only 9 respondents answered differently: no change (4), very little (3) or not at all (2). 7 of this last group were either representative of business or of industry associations, though this is not surprising considering their general share in the respondents (46 and 50 individuals respectively of a total of 136 respondents).

Ø C-4.2: Number of charging cycles for rechargeable batteries

91 of the respondents, representing 68%, think that the number of charging cycles for rechargeable batteries has changed either a great deal (29) or quite a bit (62) since the

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Directive's adoption. 33 respondents had no opinion or did not know how to answer to this question. Only 9 respondents answered differently: no change (4) or very little (5). 8 of these respondents were distributed almost evenly between business, industry associations and "other" representatives, the 9th representing government or a public authority.

Ø C-4.3: Safety requirements

97 of the respondents, representing 73%, think that the safety requirements of batteries have changed either a great deal (38) or quite a bit (59) since the Directive's adoption. 21 respondents had no opinion or did not know how to answer to this question. 15 respondents answered differently: no change (10), very little (2) or not at all (3). Those answering "very little" both represented "other" organisation types whereas the other 13 were all representatives of business, industry associations or government and public authorities. Aside from one who responded "do not know", academia representatives, NGOs and consumer associations all specified that safety requirements had changed a "great deal" or "quite a bit". In this sense, the responses of business, industry associations, government and public authorities and "other" were distributed between among both answers aside from "very little".

Ø C-4.4: Performance

99 of the respondents, representing 73%, think that the performance of batteries has changed either a great deal (36) or quite a bit (63) since the Directive's adoption. 83 of these represented the business, industry association and "other" type of organisation. 30 respondents had no opinion or did not know how to answer to this question. 27 of these were also of the above three sectors. Only 3 respondents answered differently (all of the business organisation type): no change (2) or very little (1). Except for one, all NGOs and consumer organisations specified that they viewed that there had been a significant change (great deal, quite a bit) in relation to battery performance. 7 out of the 9 representatives of governments and public authorities also specified a significant change. In both cases, the remaining (1 and 2 respectively) had no opinion.

Ø C-4.5: Consumer-related features

80 of the respondents, representing 60%, think that the consumer related features of batteries have changed either a great deal (38) or quite a bit (59) since the Directive's adoption. 39 respondents (30%) had no opinion or did not know how to answer to this question. 15 respondents answered differently: no change (7), very little (5). 13 of these 15 respondents were either from the business or from the "other" types of organisations. Almost all respondents with "no opinion" also represented these two types or industry associations, whereas respondents that agreed that consumer related features had changed significantly (quite a bit, a great deal) were distributed among all organisation types.

Ø C-4.6: Other

Only 98 respondents answered to this question (79% of those answering to this part of the survey). Of those, 71% (70) did not know how to answer to this question or in other words did not know which other aspects had changed since the Directive was adopted. 9 respondents answered "a great deal" and 15 answered "quite a bit". These respondents are distributed among all organisation types with good correlation to the general shares of organisation types (a large share of business and industry associations, a moderate share of

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“other” groups and a few representatives of government and public authorities, academia and NGOs. 4 respondents, all of the “other” type of organisations, specified the remaining answers: no change (2), very little (1) and not at all (1).

When asked to specify in relation to other aspects, 50 respondents provided comments.

Among others the following aspects were mentioned:

- o Electro-mobility;
- o Energy storage;
- o Li-Ion batteries were mentioned in relation to their growing market share, safety requirements, as a possible alternative to lead-acid batteries, etc.:
- o More applications have embedded batteries that cannot be removed and that are not properly recycled according to the Directive requirements;
- o The ease of collection in terms of the number and density of collection points has improved;
- o The performance of batteries has increased, but not as a direct result of the Directive;
- o Energy density and the average size of batteries has increased quite a bit;
- o Some stakeholders specified that their answers (Q-4.1-6) were for industrial batteries;

C-5: Are you aware of any problems/ issues related to batteries, including their impact on the environment and human health that the Batteries Directive does not address?

76 respondents (57%) answered positively when asked if they were aware of problems/issues related to batteries that the Directive does not address. 51 respondents (38%) did not feel there were such problems or issues and a further 7 did not know. Aside from one, all NGO’s and both academia representatives felt there were issues/problems not addressed by the Directive. In contrast, both consumer organisations answered negatively to this question.

The following comments are among the aspects raised by those who answered positively (79 stakeholders):

- o Stockpiling of unidentified batteries where these cannot be identified;
- o Impacts related to batteries being recycled along with other equipment (i.e. shredded with EEE) such as risks of leaks and releases, fires. Designed for recycling is not properly addressed in the Directive.
- o Recyclers are focused on recovering metals, however new technologies (Li-Ion) only have small metal quantities and recyclers should broaden their focus to additional resources. For li-Ion this is also a result of the recycling rate which allows compliance without needing to broaden types of materials to be recovered.
- o The fact that only 50% of batteries placed on the market are recycled means that there is a risk that the rest lands in the environment. This needs to improve to 80-90%.
- o A legal framework for the second life of batteries is missing.
- o Some stakeholders recommend listing all hazardous and non-hazardous substances used in batteries to be listed in an annex.
- o In light of a high number of cases where children were harmed due to swallowing batteries (Germany) it is proposed to add the following to battery labels: *“Attention: Keep the batteries/ button cells out of the reach of children. Could be harmful or causes death if swallowed due to chemical corrosion of the oesophagus and potential trachea perforation. In case of swallowing: immediately consult a medical doctor!”*
- o Li-Ion batteries were mentioned by various stakeholders in relation to safety issues (fires, explosions);
- o When batteries are shipped outside the EU (within products to be reused) the level of treatment at EoL is not guaranteed.

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- The lifetime of rechargeable batteries is not addressed in the Directive (for example through requirements related to minimum recharge cycles).
- Batteries sold on the internet from third countries directly to consumers in EU countries should be regulated, i.e. such players should be required to register and pay the demanded fees.
- Mining of resources used in the manufacture of batteries has impacts on the environment and local communities. This should be considered and addressed.
- Human health is not in the scope of the Directive.
- Differentiating between batteries of different chemistries should be possible, particularly to allow identification and proper treatment and disposal of hazardous substances.

C-6: To what extent has the Batteries Directive been effective in achieving the following objectives?

Ø C-6.1: Protecting human health

For a total of 74%, 67 of the respondents (51%) think that the Directive has been somewhat effective in achieving the objective of human health and 31 respondents (23%) answered that it has been very effective. Aside from one NGO who views the Directive neutrally in this respect, all NGOs viewed the Directive as somewhat effective in this respect. Only 5 respondents viewed the Directive as ineffective in achieving the objective of human health (3 as somewhat ineffective and 2 as ineffective). Most of these are understood to be from the commercial sector (business, industry associations, other). 21 respondents did not view the Directive as either effective or ineffective in this respect, while 8 did not know. Most of the respondents who responded that they did know represented industry associations. In relation to other answers there is a better distribution of respondents in relation to the organisation types.

The relation between the answers of this question and the answers of Q.C-6.5 are discussed below (see Q.C-6.5).

Ø C-6.2: Protecting the environment

Most respondents (83%) viewed the Directive as effective in achieving the objective of protecting the environment in relation to batteries - of these 32% of the respondents (42) view the Directive as very effective and the rest as somewhat effective (68 respondents or 51%). Only 10 respondents view the Directive as ineffective in this respect (7 as somewhat ineffective and 3 as very ineffective). 7 thought it was neither effective nor ineffective and 5 did not know.

Ø C-6.3: Ensuring a well-functioning internal market

In total only 54% of the respondents feel that the Directive is effective in achieving a well-functioning internal market in relation to batteries. 27 respondents (21%) view it as very effective and 44 as somewhat effective (33%). Of the NGOs and the consumer associations that responded to this part of the survey, aside from one NGO that viewed this aspect neutrally, the other seven were split between viewing the Directive as very effective or somewhat effective in ensuring a well-functioning internal market. The situation for representatives of government and industry associations is similar, though here 2 of the 10 did not respond: 1 of the others was neutral and the others viewed the Directive as effective (6 somewhat and 2 very). Almost 20% (26 respondents) view the Directive neutrally in this

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regard while 14 view the Directive as very ineffective and another 4 respondents as somewhat ineffective. Another 17 respondents did not know. Of the 20 respondents from “other” organisation types, 75% view the Directive as effective in ensuring a well-functioning internal market, while only 10% view it as ineffective in this respect.

Ø C-6.4: Boosting innovation

Only 36% of respondents view the Directive as effective in boosting innovation (3 as very effective and 44 as somewhat effective). 47% were either neutral in this respect (27 respondents or 20%) or did not know (35 respondents or 27%). 16 respondents think the Directive is somewhat ineffective in this respect and 6 think it is very ineffective. In relation to most of the possible answers, there is a good distribution of respondents in relation to the various organisation types. Though most of the respondents responding very ineffective represent businesses, when both this view and the somewhat ineffective view are considered, the distribution is better correlated with the breakdown of respondents to the various organisation types, i.e. all types are represented. The neutral view is mainly populated by the various commercial sectors (business, industry associations and other) while the positive views are also distributed among all organisation types.

Ø C-6.5: Improving environmental performance

63% of respondents think the Directive is effective in improving the environmental performance of batteries (14 or 11% very effective and 69 or 52% somewhat effective). 20 respondents or 15% are neutral in this respect and 11 do not know. While 11 think it is somewhat ineffective and 7 think that it is very ineffective in achieving this objective. It is interesting to compare the results of this question with Q.C-6-1 which regards environmental protection. A larger number of respondents view the Directive more effective in achieving environmental protection than improving the environmental performance of batteries. Though this could be related to how respondents interpret environmental performance (i.e. in relation to what, for example battery manufacture, battery disposal and treatment at end of life, etc.) it is difficult to say in light of the question formulation and as an option for giving additional comments in relation to these questions was not available.

C-7: To what extent do you agree with the following statements on the use of heavy metals and dangerous substances in batteries?

All in all, 64 respondents provided comments to this group of questions. Some of the comments are detailed in relation to the relevant question below.

Ø C-7.1: Nowadays, batteries contain lower amounts of mercury

75% of the respondents (97) agree (of them 65 strongly) that nowadays batteries contain lower amounts of mercury. 13 of the respondents viewed this statement neutrally and 18 did not know, while only two did not agree with this statement (1 strongly). 5 of the 6 NGOs and all consumer associations and academia representatives (2 and 2) view the statement positively. 6 out of the 10 representatives of government and public authorities are also in agreement and the additional 4 either do not know or did not specify. Both of the latter represent the “other” type of organisation. Respondents that did not know represent industry associations for the most part (61%) followed by businesses (27%). Most of the neutral views are from industry associations’ representatives (69%).

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Stakeholders stated:

- Fewer batteries are on the market, however mercury batteries are expected to still contain similar amounts.

Ø **C-7.2: Nowadays, batteries contain lower amounts of cadmium**

61% of the respondents (80) agree (42 strongly) that nowadays batteries contain lower amounts of cadmium. Here too the situation is similar with one NGO being neutral and all other NGO, consumer association and academia representatives being in agreement. In this case 27 respondents (or 20%) are neutral to the statement and 19 do not know. Only 5 respondents disagreed to this statement (1 strongly), 4 of them being from the "other" organisation type and one a business representative. In relation to cadmium, most of the neutral views are from industry associations' representatives (68%). For other answers the responses are more distributed among the various organisation types.

Stakeholders mentioned in this respect:

- The market is moving rapidly to rechargeable battery systems, which no longer contain e.g. Cd, but contain hazardous metal oxides, halogenides or organics, which are of similar concern along the road of use and recycling.
- The same technologies are still on the market. Cadmium batteries still contain similar amounts of cadmium. It was however stated that fewer nickel cadmium batteries are assumed to be on the market than in the past.
- The use of Ni-Cd batteries is now restricted to industrial applications.

Ø **C-7.3: Nowadays, batteries contain lower amounts of lead**

Only 39% of respondents (51) agree (13 strongly) that nowadays batteries contain lower amounts of lead. Such respondents are distributed among all organisation types that answered this part of the survey. An almost equal amount, representing 40% of respondents are either neutral (27 or 21%) or do not know (25 or 19%). Here too the respondents are distributed among the various organisation types. Another 28 respondents (21%) disagree (12 strongly), while in this case aside from 1 academia representative, all respondents who disagreed either represent businesses, industry associations or "other" organisations. When looking at the various organisation types, most NGOs (4) did not know how to respond to this question while one was neutral and one agreed. In other organisation types there was a better distribution of responses between the differing answers.

In this respect stakeholders commented that:

- Lead acid batteries still predominant in cars starter batteries.
- The same technologies are still on the market. Lead batteries still contain similar amounts of lead though a further stakeholder stated that due to technical improvement, less lead is needed to produce the same amount of energy.
- There is still an increasing demand for lead batteries globally. Lead batteries are the battery of choice for many applications including automotive micro/mild hybrid and stop-start batteries. Lead batteries are also used in increasing and emerging markets such as energy recovery (48V), storage application for renewable energy / solar / windmills, emergency power.
- There is no amount restriction for lead, only a requirement of labelling.

Ø **C-7.4: Nowadays, batteries contain lower amounts of other dangerous substances**

In relation to dangerous substances in general, only around 25% of the respondents (32 - 5 strongly) feel that nowadays batteries contain lower amounts of such substances. 33% of

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respondents (24) do not agree to this statement, 14% or 19 respondents strongly. In the case of those that strongly disagree, 68% of these represent businesses and another 21% are from “other” organisations. Representatives that disagree moderately (or somewhat) mainly represent industry associations and businesses. 23 respondents (around 18%) are neutral to this statement and 33 do not know (25%). In this case only one NGO agreed with the statement while 3 were neutral and 2 did not know. Both consumer associations agreed while responses of other organisation types were more distributed in relation to the differing answers.

- o Stakeholders commenting here identified additional substances they considered to be dangerous, mentioning among others lithium, phosphate, cobalt and manganese. Some substances were detailed along with classifications: Lithium cobalt Oxide- Repr. 2, H361f, Lithium Hexafluorophosphate-Skin corr 1A, H314, Diethyl and Ethylene carbonate- STOT RE 2, H373, n-Methylpyrrolidon-Repr. AB, H360D).
- o It was also mentioned that lithium batteries may contain substances which especially in case of accident may produce dangerous gasses.
- o It was generally mentioned that batteries nowadays contain more volatile materials, increasing the risk of fires and subsequently environmental and human health risks.
- o Searching for efficient harmless materials for batteries should be prioritised in the EU.
- o All battery systems contain hazardous substances as classified by the EU Waste Catalogue. The control of the integrity of batteries till the processing plant is key in minimizing the exposure of the environment to hazardous substances. The collection efficiency or the take back of batteries is also critical in minimizing the potential losses of batteries and of their hazardous content to the environment.
- o A few stakeholders are of the opinion that any new substance restriction should be managed via REACH rather than bringing new substances under the Batteries Directive.
- o The Directive should strengthen the development of recycling options for all substances used in batteries and promote a secondary raw materials market.
- o Besides recycling, reuse of batteries should be promoted in order to extend the lifetime of batteries and reduce resource consumption.

C-8: On collection and recycling, to what extent do you agree with the statements below

- Ø C-8.1: The number of waste portable batteries collected is higher today than in the past 77% of respondents (12) agree that the number of waste portable batteries collected is higher today than in the past and 42 respondents strongly agree, representing 32%. 16% neither agree nor disagree and 14 do not know. Only 1 respondent did not agree to this statement.

Both consumer associations agree with this strongly statement and both academia representatives agree. NGOs either agree (4) or strongly agree that the number of waste portable batteries collected is higher today than in the past. Only one of the respondents representing industry disagrees with the statement, while in general in the other groups (business, industry associations, government and public authorities, “other”) the opinions are mostly agreement (agree, strongly agree) with some representatives neither agreeing nor disagreeing and some specifying “don’t know”.

- Ø C-8.2: The Directive’s broad scope ensure economies of scale in collection and recycling 62 respondents (47%) agree and 16 strongly agree (12%) that the Directive’s broad scope

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ensures economies of scale in collection and recycling of batteries. 33 respondents (25%) neither agree nor disagree with this statement while 10 do not know. 10 disagree and 2 strongly disagree. All 6 NGO representatives agree that the Directive's broad scope ensures economies of scale in collection and recycling of batteries. Of the academia representatives 1 agrees and one is neutral and of the consumer association representatives 1 agrees and one agrees strongly. The "other" group is evenly distributed between strong agreement, agreement, neutrality and disagreement, whereas among the industry association there is a strong agreement with this statement (27 agree, 7 strongly, 9 are neutral, 2 disagree and 4 do not know). Most business representatives either specified their agreement (19 agree, 2 strongly) or their neutrality (15) with a much lower share disagreeing. Government and public authorities either agree or are neutral/do not know).

Ø **C-8.3: Recycling processes (for all batteries) within the EU are more efficient than in the past**

65 respondents (42%) agree and 11 strongly agree (8%) that recycling processes within the EU are more efficient than in the past (for all batteries). 27 respondents (20%) neither agree nor disagree with this statement while 19 respondents (14%) do not know. 8 disagree and 3 strongly disagree.

Representatives of all groups showed more support for this statement (agree, strongly agree) than objection (disagree, strongly disagree), though in some cases the neutral and "I don't know" answers were almost as common (NGOs, government and public authorities and "other"). All representatives of academia and consumer organisations agreed that recycling processes within the EU are more efficient than in the past.

Ø **C-8.4: The recycling of (all types of) batteries carried out in the EU takes place in an environmentally-friendly way**

45 respondents (34%) agree and 17 strongly agree (8%) that recycling of (all types of) batteries carried out in the EU takes place in an environmentally-friendly way. 21 respondents (16%) neither agree nor disagree with this statement while 27 respondents (20%) do not know. 20 respondents (15%) disagree and 3 strongly disagree.

In relation to this statement there was also a broader support for the agreement statements. In the groups business and "other" the disagreement statements were more common, but still representing less than a 30% of the group representatives. The "I don't know" and neutral answers were more common in the industry associations group (15 and 6 respectively) and in among NGOS (2 and 2 respectively).

Ø **C-8.5: The Directive's broad scope ensures optimum resource savings**

Most respondents (43 or 33%) neither agree nor disagree as to whether the Directive's broad scope ensures optimum resource savings or not. 33 respondents (25%) agree and 12 strongly agree. 14 respondents do not know. 21 respondents (16%) disagree and 8 strongly disagree. NGOs mainly disagreed (3) or were neutral (1) to this statement, similarly to the academia representatives (neutral and disagreement). Among consumer representatives and government and public authorities support was more common. Opinions of the business, industry associations and "other" groups were more distributed among the answers, with the business group tending to be more neutral or in disagreement and the latter two groups being more in agreement and neutral.

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C-9: To what extent do you agree with the statement that the Batteries Directive is properly enforced by the responsible authorities in your country (or at EU level if you are answering for an EU stakeholder)? Enforcement carried out by the responsible authorities is...

52 respondents (31%) feel that enforcement carried out by the responsible authorities is somewhat effective and 26 respondents (20%) feel that it is very effective. 28 respondents (21%) feel that enforcement is somewhat ineffective while 8 feel it is very ineffective. 8 respondents are neutral and 10 do not know.

Most of the stakeholder groups agreed that enforcement carried out in their country or at (EU level) is either somewhat effective (chosen the highest number of respondents in the groups business (18 respondents), industry associations (16) and other (11)) or very effective (business (9), government and public authorities (4) and industry associations (10)). In other groups there is a larger distribution between the available answers (effective, ineffective, etc.), for example by academia representatives, NGOs, consumer associations)

C-10: To what extent do you agree with the following statements on the availability and reliability of information on batteries in your country (or at EU level if you are answering for an EU stakeholder)?

Ø **C-10.1: Information is available on the production of batteries**

39% or 52 respondents agree that information is available on the production of batteries while 14% (19) strongly agree. 15 respondents are neutral and 29 do not know. 13 respondents disagree that information is available on battery production and 5 strongly disagree.

Business (24 respondents), government and public authorities (5), NGOs (4) and "other" (10) organisations generally agreed with this statement, while industry associations tended to agree or strongly agree (9 and 10 respondents respectively).

Ø **C-10.2: Information on the production of batteries is reliable**

27% or 36 respondents agree that the production of batteries is reliable while 19 strongly agree. 24 respondents (18%) are neutral and 38 respondents (29%) do not know. 13 respondents disagree that information on the battery production is reliable and 2 strongly disagree.

Most businesses showed a general agreement to this statement (18 respondents). Industry associations were more divided between agreement and strong agreement (9 each) and having a more reserved opinion (20 answered "don't know"). Government and public authorities mainly agreed (3) or did not know (3). Answers of both NGOs and "other" organisations were more distributed among the various possibilities.

Ø **C-10.3: Information is available on buying/selling batteries**

74 respondents (56%) agree that information is available on buying/selling batteries, while 9 strongly agree. 13 respondents (9%) are neutral and 25 respondents (19%) do not know. 10 respondents disagree that information is available on battery buying/selling and 2 strongly disagree.

Businesses, consumer organisations and NGOs largely agreed with this statement. Industry associations either agreed or did not know whereas government and "other" organisations tended to agree but also showed other opinions (disagreement, neutrality, do not know).

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- Ø **C-10.4: Information on buying/selling batteries is reliable**
23% of respondents (30) do not know whether information on buying/selling batteries is reliable and another 23% do not know (30 respondents). 45 respondents (34%) agree that such information is reliable while 9 strongly agree. 16 respondents disagree and 1 strongly disagrees.
In relation to this statement, businesses tended to agree (19) or were neutral (13), whereas most industry associations either agreed (20) or did not know (17). In the “other” group most respondents disagreed (8) or were neutral (5), while answers of government and NGOs were more distributed among answers (agreement, neutrality, don’t know)
- Ø **C-10.5: Information is available on the collection of spent batteries**
59% or 78 respondents agree that information is available on the collection of spent batteries while 18% (24 or %) strongly agree. 12 respondents (9%) are neutral and 12 (9%) do not know. 4 respondents disagree that information is available on the collection of spent batteries and 2 strongly disagree.
In relation to this statement, the most common answers from all stakeholder groups are “agree” and strongly agree. Only a few respondents from business, industry associations and “other” groups specified their disagreement, though altogether this amounted to only 6 respondents. A slightly larger number of respondents in these groups also specified their neutrality or that they did not know (12 in total in each case).
- Ø **C-10.6: Information on the collection of spent batteries is reliable**
42% or 56 respondents agree that information is available on the collection of spent batteries while 26 (or 20%) strongly agree. 13 respondents are neutral and 18 (14%) do not know. 12 respondents disagree that information is available on the collection of spent batteries and 7 strongly disagree.
Here too, respondents of most stakeholder groups largely showed their agreement, except in the case of consumer organisations which were divided between agreeing and being neutral and NGOs, whose opinions were more evenly distributed among the various answers.
- Ø **C-10.7: Information is available on the recycling of spent batteries**
47% or 62 respondents agree that information is available on the recycling of spent batteries while 22 (or 17%) strongly agree. 20 respondents (15%) are neutral and 12 do not know. 14 respondents disagree that information is available on the recycling of spent batteries and 3 strongly disagree.
Most stakeholder groups largely agreed with this statement, though in a few cases some disagreement was also observed though usually in much smaller numbers (business, consumer associations, government, industry associations and “other”).
- Ø **C-10.8: Information on the recycling of spent batteries is reliable**
29% or 38 respondents agree that information on the recycling of spent batteries is reliable while 21 (or 16%) strongly agree. 29 respondents (22%) are neutral and 22 (or 17%) do not know. 13 respondents disagree that information on the recycling of spent batteries is reliable and 8 strongly disagree.
Results for this question were much less homogenous for the various stakeholder groups. Most business representatives (18) were neutral to the statement and industry associations mainly agreed (20) or strongly agreed (10), while answers of “others” and NGOs were more

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evenly distributed between the various options.

C-11a: To what extent do you feel that the Directive sufficiently addresses resource efficiency/circular economy issues? (waste prevention, reusability, recycling):

Ø **C-11.a.1: The Directive's broad scope should ensure economies of scale in battery collection and recycling**

44% or 57 respondents agree that the Directive's broad scope should ensure economies of scale in battery collection and recycling, while 25 (or 19%) strongly agree. 23 respondents (18%) are neutral and 8 do not know. 14 respondents disagree and 4 strongly disagree.

Though business and industry associations showed a large agreement with this statement, about a third of the NGO and the "other" groups specified their disagreement.

The following aspects were addressed:

- Small collections in the UK are generally not economically viable apart for the 2 major battery collectors in the UK.

Ø **C-11.a.2: The Directive's broad scope should ensure optimum resource savings**

44% or 47 respondents agree that the Directive's broad scope should ensure optimum resource savings, while 24 (or 19%) strongly agree. Another 28 respondents disagree that optimum resource savings is ensured and 4 strongly disagree. 19 respondents (18%) are neutral and 9 do not know.

Academia and NGOs showed a higher disagreement to this statement than other groups (50% and 60% respectively). Business, industry associations and consumer associations mainly agreed with the statement while answers of respondents from government and public authorities were more distributed between the various options.

The following aspects were addressed

- The lowest common denominator is in place, where as detailed beforehand, cost is king resulting in poor practices being carried out as they are not addressed in the Directive.
- Second-use of batteries needs to be addressed in the Directive.
- Resource savings is directly linked with 50% rules in recycling efficiency. This number has been put in place more than 12 years ago without sound consultation with experts. Thus, the related regulation 493/2012 cannot support sufficiently the target of optimum resource savings. Directive should clearly address WHAT kind of materials should be saved as resource.
- Resource efficiency and a circular use principle should be included in the objectives of Article 7.
- There should be incentives to enable recycling within Europe. Especially recycling of lithium and aluminium should be incentivised, preferably taking place in Europe.
- Currently the Directive has different recycling targets, which does not encourage equal levels of waste prevention and resource saving for each battery chemistry. This is why we encourage the adoption of a higher and common recycling efficiency target.

C-11b: Are there specific requirements in the Batteries Directive that have led to significant costs for you or your organisation? Please consider both monetary and non-monetary costs.

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77 respondents (59%) have answered positively to this question, confirming that there are specific requirements in the Directive that have led to significant costs for their organisation (or for themselves). 36 respondents (28%) answered negatively and do not think the Directive requirements have resulted in costs for their organisations. The remaining 17 respondents do not know.

Respondents from both businesses and industry associations specified that the Directive had led to significant costs for their organisations. Government and NGO representatives mainly did feel this way (5 and 4 respectively) while in "other" organisations views were split between "yes" and "no".

The following aspects were addressed as requirements that have led to costs:

- o Li battery pack certification
- o Though the ban of substances forced a shift to a new technology, the Directive may have actually accelerated this move which may have actually helped improving profit / sales.
- o Inconsistent applicability definition results in significant differences in management from member state to member state.
- o Trying to manage batteries incorporated into WEEE as a separate material introduces additional costs.
- o The requirement to report, for example, lead acid batteries split by Automotive, Industrial and portable types - where the recycler is only interested in the overall chemistry, lead acid. The application of this requirement has led to additional sorting, which (from a human health and environmental perspective) is unnecessary.
- o Requirements on high recycling rates for batteries containing no valuable materials.
- o Lack of labelling for example for Li-Ion has resulted in fires, explosion, property damage and significant human harm: additional costs for identifying batteries also incurred.
- o Costs of compliance (labelling and packaging, supply chain communication);
- o Collection & recycling schemes should not be implemented in a way that would increase EV batteries treatment cost. In cases where batteries can be subject to collection schemes, the Directive should make sure that EV batteries are not included in such collection schemes. Any EV battery subject to a leasing program should also especially be excluded from collection schemes.
- o The application of the Directive in the UK has led to significant costs to operate as a producer compliance scheme. Annually we pay £90,000 to operate as a batteries compliance scheme compared to £0 to operate as a packaging compliance scheme.

C-12. To what extent do you agree with the following statements on the costs and benefits of the Batteries Directive:

Ø **C-12.1: It has improved the corporate image of the different sectors involved (manufacturers, producers, collectors and recyclers)**

53 respondents (40%) agree that the Directive has improved the corporate image of the different sectors involved in its implementation (manufacturers, producers, collectors and recyclers), while 12 (or 19%) strongly agree. 36 respondents (27%) are neutral and 23 (or 17%) do not know. Another 6 respondents disagree that the Directive has improved corporate image and 2 strongly disagree.

In all three commercial groups (business, industry associations, "other") and in academia, answers were mainly distributed between the agreement statements and neutrality. Both government and NGO representatives either agreed or did not know how to answer while both respondents of consumer organisations agreed.

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Ø C-12.2: It has led to innovation

63 respondents (47%) agree that the Directive has led to innovation while 7 strongly agree. 27 respondents (20%) are neutral and 15 do not know. 17 respondents (13%) disagree that the Directive has led to innovation and 5 strongly disagree.

Respondents of the three commercial groups (business, industry associations, "other") and the NGO group mainly agreed that the Directive led to innovation. Consumer associations were in complete agreement, government representatives mainly agree or do not know, while the two academia representatives disagree or are neutral.

Ø C-12.3: It has led to improved environmental performance

70 respondents (53%) agree that the Directive has led to improved environmental performance while 26 respondents (20%) strongly agree. 16 respondents (12%) are neutral and 11 do not know. 6 respondents (13%) disagree to this statement and 4 strongly disagree. In the three commercial groups (business, industry associations, "other"), in government and in NGOs, between 66% and 83% of respondents agree that the Directive has led to improved environmental performance. Both respondents of consumer organisations agreed as well.

Ø C-12.4: It has led to market opportunities

45 respondents (34%) agree that the Directive has led to market opportunities while 17 strongly agree. 39 respondents (30%) are neutral and 19 respondents (14%) do not know. 10 respondents disagree that the Directive has created market opportunities' and 2 strongly disagree.

While most NGOs and all consumer associations agree that the Directive has led to market opportunities, respondents of the three commercial groups (business, industry associations, "other") are mainly divided between agreeing or being neutral to this statement. Representatives of government and public authorities agreed, were neutral, or, did not know how to respond to this statement.

Ø C-12.5: It has levelled the playing field for all operators involved within the EU

38 respondents (29%) agree that the Directive has levelled the playing field for all operators involved within the EU and an almost equal amount (39 respondents) are neutral on this matter. 13 respondents strongly agree to this statement. 20 respondents (14%) do not know whether the Directive has had this affect, 10 respondents (13%) disagree and 2 strongly disagree.

Responses of business and "other" organisation representatives were mainly neutral to this statement, though with a fair share of respondents agreeing to the statement. Government and NGO opinions were more evenly distributed among the questions. Industry and consumer associations both show a more equal distribution between agreeing and being neutral, with academia representatives both agreeing that the Directive has levelled the playing field.

Ø C-12.6: It has helped protect the environment

The majority of respondents (84%) agree that the Directive has helped protect the environment. 75 respondents (56%) agree to this statement and another 37 respondents (28%) strongly agree. 7 are neutral, another 7 do not know and only 7 disagree, 4 of these strongly disagreeing that the Directive has helped protect the environment.

In all stakeholder groups the most common answers to the question whether the Directive

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has helped protect the environment, was that they agree or in some cases strongly agree. Only in single cases were other opinions specified.

Ø C-12.7: It has helped protect human health

Most respondents (76%) agree that the Directive has helped protect human health. 80 respondents (61%) agree to this statement and another 16 respondents (15%) strongly agree. 20, or another 12% are neutral, another 10 do not know and only 5 disagree, 3 of these strongly disagreeing that the Directive has helped protect human health.

Respondents of most stakeholder groups have most commonly specified that they agree that the Directive has helped protect human health. Though at a lower level, it was also relatively common for representatives of government and industry associations to specify their strong agreement with this statement. Only in the case of NGOs was the neutral answer more common than agreement answers, while industry associations and business representative also specified their neutrality more often than the remaining answers (disagreement, don't know).

Ø C-12.8: It has reduced costs for the sector (e.g. due to harmonised rules and facilitation of intra-EU trade)

Only 29 respondents (slightly over 21%) think that the Directive has reduced costs for the batteries sector due to harmonised rules and facilitation of intra-EU trade: 18 agree and 11 strongly agree. 32 respondents disagree that costs have decreased as a result of the Directive and 11 disagree strongly, making up for 32% of all respondents. 28 respondents (21%) are neutral and another 33 or 25% do not know.

In relation to harmonization and the facilitation of intra-EU trade, business and industry representatives most commonly specified their disagreement or strong disagreement with this statement. Government and NGO representatives mainly did not know, while answers of representatives of "other" organisations were distributed among all answer options with preference to neutrality or disagreement. Both academia representatives were neutral.

Ø C-12.9: The costs involved in implementing the Directive are justified given the benefits that have already been achieved

46 respondents (35%) agree that costs involved in implementing the Directive are justified given the benefits that have already been achieved and another 10 respondents strongly agree. 29 respondents (22%) are neutral to this statement and 31 respondents (24%) do not know whether the Directive has had this affect, 12 respondents (13%) disagree and 3 strongly disagree.

Though there is a slight preference to agreement, both government and "other" representatives most commonly specified that they agreed or did not know how to respond as to whether costs for implementing the Directive have been justified by benefits to have already occurred. NGOs, consumer organisations and academia either agreed or were neutral. In businesses, though most respondents were in agreement (18), other answers were not rare: don't know (15 respondents) was almost as common as agreement, while neutral and disagreement answers were also specified by some respondents. For industry associations the neutral answer was just as common as agreement (15 respondents), while "don't know" and disagreement were both half as common (7).

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Ø C-12.10: The costs involved in implementing the Directive are justified given the benefits that will be achieved in the longer term

44 respondents (34%) agree that costs involved in implementing the Directive are justified given the benefits that will be achieved in the longer term and another 17 respondents strongly agree. 25 respondents (19%) are neutral to this statement and 32 respondents (24%) do not know whether the Directive has had this affect, 10 respondents (13%) disagree and 3 strongly disagree.

Government, NGO and “other” representatives tend to agree that Directive costs are justified given the benefits to be achieved in the longer term, though in some cases also specifying that they do not know or in a few cases that they are neutral. Business most commonly specified their agreement or that they did not know and industry organisations most commonly agreed, or were neutral, though in both these groups specifications of disagreement were also not uncommon.

C-13.1: Which of the following sectors contribute the most to bearing the costs involved in implementing the Directive:

Only 25 respondents answered to this question, meaning that though the answers provide indication to stakeholder opinion on this matter, they cannot be considered statistically representative. As it was possible to specify multiple sectors, the results specified below add up to more than 25.

Answers were only provided to this question by industry associations, businesses, government or public authorities, “Others” and a single NGO. Industry associations had the largest share (11 of 25) and NGOs the smallest.

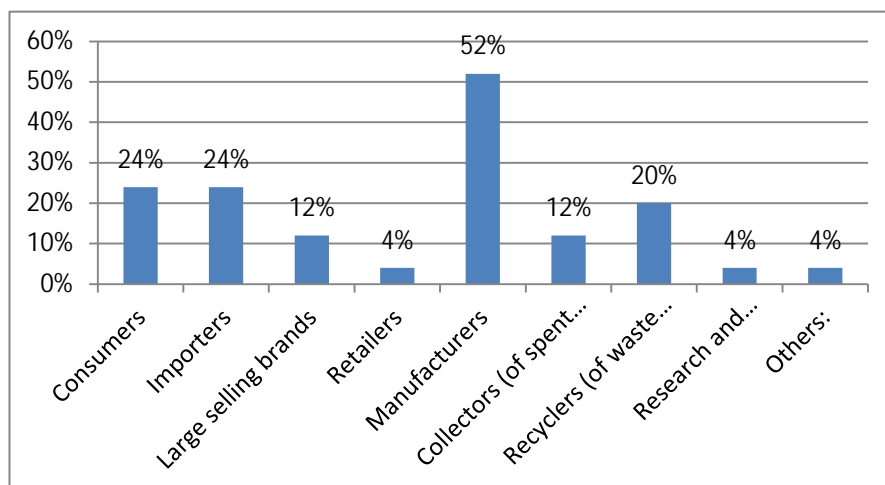
Academia and consumer associations did not provide specification at all, while only 1 NGO specified manufacturers as contributing the most to bearing the costs of implementation. Though differences were small, business representatives most commonly specified manufacturers and collectors and industry associations most commonly specified manufacturers and recyclers, while “other” representatives mainly specified consumers and manufacturers. There was no preference in the answers of government representatives to a specific answer.

Table 2: Share of responding stakeholders which specified sector as one of the largest contributors to bearing the costs involved in implementing the Directive

| Sector | No. of stakeholders which view sector as one of the larger contributors | Share of stakeholders which view sector as one of the larger contributors |
|---------------------------------|---|---|
| Consumers | 6 | 24% |
| Importers | 6 | 24% |
| Large selling brands | 3 | 12% |
| Retailers | 1 | 4% |
| Manufacturers | 13 | 52% |
| Collectors (of spent batteries) | 3 | 12% |
| Recyclers (of waste batteries) | 5 | 20% |
| Research and development | 1 | 4% |
| Others: | 1 | 4% |

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Figure 3: Share of responding stakeholders which specified sector as one of the largest contributors to bearing the costs involved in implementing the Directive



Ø C-13.1: In your opinion, which of the following sectors benefit the most from the Directive:

Only 14 respondents answered to this question, meaning that though the answers provide indication to stakeholder opinion on this matter, they cannot be considered statistically representative. As it was possible to specify multiple sectors, the results specified below add up to more than 14.

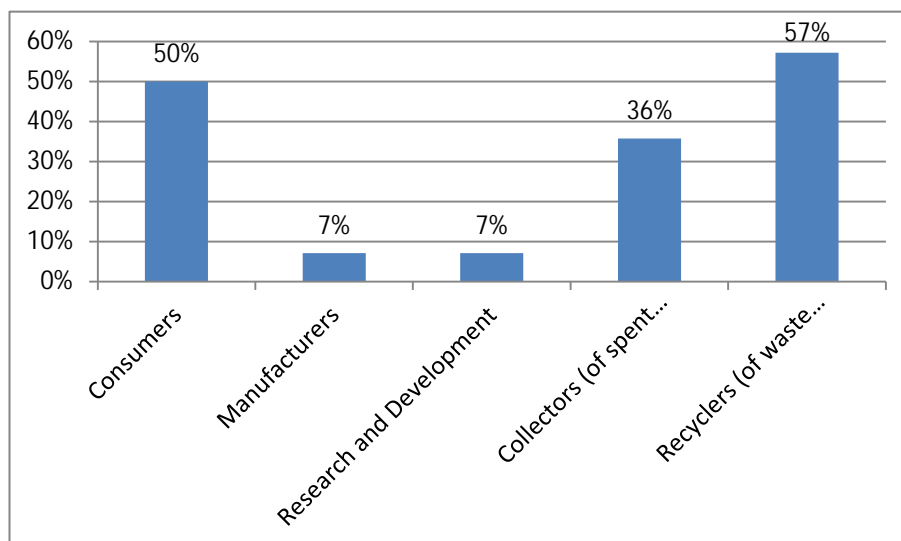
Answers were only provided to this question by industry associations, businesses, government or public authorities and "Others". Respondents who specified "other" in the prior question most often detailed manufacturers as sectors that benefit the most from the Directive, or recyclers. Only businesses, government, industry associations and the "other" group responded here.

Table 3: Share of responding stakeholders which specified sector as one of the sectors having the most benefit from the Directive

| Sector | No. of stakeholders which view sector as one of those having the largest benefit | Share of stakeholders which view sector as one of those having the largest benefit |
|---------------------------------|--|--|
| Consumers | 7 | 50% |
| Manufacturers | 1 | 7% |
| Research and Development | 1 | 7% |
| Collectors (of spent batteries) | 5 | 36% |
| Recyclers (of waste batteries) | 8 | 57% |

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Figure 4: Share of responding stakeholders which specified sector as one of the sectors having the most benefit from the Directive



C-14: To what extent do you agree with the following statements on the labelling requirements set out in the Batteries Directive:

Ø C-14.1: Labelling requirements are clear

55 respondents (43%) agree that labelling requirements set out in the Directive are clear and another 18 respondents strongly agree. 17 respondents are neutral to this statement and 10 respondents do not know. 18 respondents (14%) disagree that the requirements are clear and 11 strongly disagree.

Businesses, government and industry associations mostly agree that the labelling requirements are clear, though also disagreeing in a few cases. For both GOs and “other” representatives, both agreement and disagreement were as common. Consumer associations agreed and academia disagreed.

The comments submitted in this respect, included among others the following:

- The labelling requirements are not enough, as the result is that only 45% of the batteries come back to be recycled.
- To some extent, the labelling requirements are overachieving.
- The labelling information is very complicated to understand for the majority of the EU population and isn't too easy to read in many types of batteries, normally the portable batteries.
- Labelling of products containing batteries is often absent, incorrect, mostly unreadable and certainly not uniform.
- Not enough information on lifetime of rechargeable batteries
- Not enough information on how best extend the rechargeable battery life (advises or software to optimise load period and limits)

Ø C-14.2: Labelling requirements are sufficient to inform users about the characteristics of the battery, also in terms of recycling later on

37 respondents (29%) agree that labelling requirements are sufficient to inform users about the characteristics of the battery (also in terms of recycling at end-of-life), and another 11

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respondents strongly agree. A similar amount opposes to these views: 36 respondents (28%) disagree that the requirements are sufficient and 12 strongly disagree. 23 respondents (18%) are neutral to this statement and 10 respondents do not know.

In both businesses and industry associations, agreement was about as common as disagreement (both given as the most common answers). Both consumer association representatives agreed with this statement, while for the other groups disagreement is the most common answer.

The comments submitted in this respect, included among others the following:

- Labelling requirements do not give information what happens with the battery after EOL/collection
- Most rechargeable batteries contribute significant hazards, which are explained with its MSDS, but not mentioned on battery label
- Current labelling does not cover detail information about the suitable recycling channel and options. Missing guidelines on risks users may be exposed to, in particular for new technologies (li-ion).
- Labelling should be limited to the information in the fields where the consumer can have a real impact (importance of separate collection, availability of collection network,...)

Ø **C-14.3: Labelling requirements are sufficient to inform users about the potential risks involved in using the battery and collecting or recycling it at the end of its life**

37 respondents (29%) disagree that labelling requirements are sufficient to inform users about the potential risks involved in using the battery and collecting or recycling it at the end of its life, and another 16 respondents strongly disagree, making for a total of 41% who oppose to this statement. In contrast, 36 respondents (28%) agree that the requirements are sufficient and 8 strongly agree. 21 respondents (16%) are neutral to this statement and 11 respondents do not know.

Though in some stakeholder groups disagreement was the most common opinion in relation to this statement (business, government, industry associations and “other”), NGO representatives were split between disagreement and neutrality, while both consumer associations agreed to this statement.

The comments submitted in this respect, included among others the following:

- Could be better with a colored label indication the harmfulness of the battery against the environment.
- There are no labelling requirements for traceability nor safe use. The new or revised battery Directive should contain the essential safety objectives for batteries that are placed on the European market. CE-marking also for batteries.
- Labelling requirements are sufficient to inform users about the characteristics of the battery, also in terms of recycling later on, about the potential risks involved in using the battery and collecting or recycling it at the end of its life.

Ø **C-14.4: Labelling is sufficient for all type of batteries**

39 respondents (30%) disagree that labelling is sufficient for all types of batteries, and another 27 respondents (21%) strongly disagree, making for a total of 41% who oppose to this statement. A much smaller share agrees to this statement: 21 respondents (16%) agree that the requirements are sufficient and 8 strongly agree. 22 respondents (17%) are neutral to

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this statement and 12 respondents do not know.

In almost all stakeholder groups, disagreement is more common to this statement than other answers (for businesses and industry associations, this is divided between disagreement and strong disagreement). Only government and consumer associations have a tendency to either agree or answer neutrally.

The comments submitted in this respect, included among others the following:

- Clear requirements for different lithium chemistries may help recycling in the future - a label showing "Li-Ion" is insufficient and development is expected.
- Though a small share, UPS batteries - especially new lithium ion technologies - do not fit the existing labeling requirements well.
- ...batteries which are not portable batteries should be obligatorily labelled (color-coding) according to IEC standard 62902 „Secondary batteries: Marking symbols for identification of their chemistry“. This should be recorded in Art. 20 Information for end-users and Art. 21 Labelling. For primary batteries the capacity is not a suitable parameter for labelling. Other parameters such as current capability and self-discharge rate often have a higher influence on a battery's performance and ecological footprint than its capacity. It is therefore proposed to revise the Battery Directive in this aspect.
- Labelling of products that embody a battery is insufficient

Ø C-14.5: The labelling requirements help improve both sorting and recycling

23 respondents (17%) disagree that the labelling requirements help improve both sorting and recycling and another 31 respondents (24%) strongly disagree, making for a total of 41% who oppose to this statement. A smaller share agrees to this statement: 35 respondents (29%) agree that the requirements help and 5 strongly agree. 22 respondents (18%) are neutral to this statement and 10 respondents do not know.

In most stakeholder groups, the answers specified in relation to whether labelling helps to improve sorting and recycling are mainly distributed between agreement and disagreement. Only NGOs and consumer associations show a clear tendency to agree with this statement.

The comments submitted in this respect, included among others the following:

- Clear requirements for different lithium chemistries may help recycling in the future - development is expected.
- The labelling requirements are not distinctive enough to aid the sorting and recycling of the batteries.
- Sorting plants and recyclers do not look at the labels on batteries to identify them.
- Labelling on small batteries is on the packaging - this is not present at the battery's end of life for sorting/recycling, and thus is of no help.
- There are still far too many Industrial batteries reaching sorting plants with no label at all.
- Automatic sorting of consumer batteries does not rely on labelling.

C-15: Please indicate any gaps, overlaps, inconsistencies or discrepancies in the provisions of the Directive and/or between the Batteries Directive and other EU legislation. Where you have indicated specific gaps, overlaps and/or inconsistencies, please explain their impact.

Ø C-15.1: Gaps: 1) Within the provisions of the Batteries Directive

Among others stakeholders mentioned:

- capacity rating, safety notes, chemistry labelling;
- A clear definition of "disposal is lacking for cases where recycling not economically

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feasible;

- A clear definition of producer (a clear distinction between manufacturer and wholesaler/retailer);
- Increasing environmental performance (addressed in Art. 5) is more than just minimising the use of selected hazardous substances.
- Second life batteries are not addressed (for example through allowing the transfer of EPR obligations).
- The Directive does not specify mechanisms for evaluating ecologic footprint, i.e. to determine with new technologies what substances should be removed/recycled/disposed.
- Distant sellers not sufficiently addressed (promotes free riding where financing of battery disposal and treatment is concerned);
- The Directive does not permit producers to deduct batteries placed on the market, but which are then subsequently exported, from their declarations - i.e., producers are required to finance the recycling of waste batteries that are unlikely to be disposed of in their country.
- The Directive assumes the average tonnage of portable batteries placed on the market in the current and two previous years is a sound basis for calculating the amount of waste portable batteries available for disposal in the relevant compliance year. Increasingly, battery powered products have a longer lifespan and consumers possess many more battery powered products than when the Directive was first implemented. This increases the likelihood of consumers retaining battery powered products for a longer period of time.
- The Directive is application specific instead of material/technology specific, which would allow focus on resource efficiency (particularly important for Li-Ion).

Ø C-15.2: Gaps:2) Between the Directive and other legislation (e.g. national legislation, global standards)

Among others stakeholders mentioned:

- Labelling in the Directive does not support Dangerous Goods transportation requirements -logistics have to calculate the transport thresholds from battery parameters.
- In relation to chemical restrictions and safety, the interaction of a number of legislations should be simplified (Batteries Directive, ELV, REACH).
- Harmonisation of the Batteries Directive with WEEE Directive would help, e.g. on the definition of producers including distance sellers, the implementation of the authorized representatives model etc.

Ø C-15.3: Overlaps:1) Within the provisions of the Batteries Directive

Only the following comment was specified:

There is a gap in Article 5 as it restricts the improvement of environmental performance to minimizing selected dangerous substances only. Increasing environmental performance is more than that and the sustainability of electrochemical systems used for batteries (battery performance, availability of resources, socio economic aspects such as EU manufacturing footprint, recycling efficiency) has to be taken into account.

Ø C-15.4: Overlaps:2) Between the Directive and other legislation (e.g. national legislation, global standards)

Among others stakeholders mentioned (see also annex for further detail):

- There is an overlap relation to batteries in EEE and the scope of the Batteries Directive and WEEE (i.e. compliance with requirements).
- In relation to chemical restrictions and safety, the interaction of a number of legislations should be simplified (Batteries Directive, ELV, REACH). Double charging of producers when car batteries are collected should also be avoided.
- End of life vehicles and industrial batteries (in vehicles). The two need to be harmonised so that there is no potential for contradictory obligations in future and to make application of the law easier for car manufacturers.

Ø C-15.5: Inconsistencies/discrepancies:1) Within the provisions of the Batteries Directive
Among others stakeholders mentioned (see also annex for further detail):

- Inconsistency in reporting from MS with regard to Recycling Efficiency - different MS have different methods/interpretations, for example in application of definition of portable batteries. Particularly in the UK with regard to portable lead acid batteries, where there has been a consistent 500% collection rate over a number of years.
- Definitions of producer and placing on the market are inconsistent with the WEEE Directive.
- The aim of minimising costs and the negative environmental impact of transport of recycling schemes is inconsistent with the fact that quantities collected can often be sub-optimal, both from a cost and environmental impact perspective. Careful consideration of the impact of these conflicting priorities and the underlying objectives of the Batteries Directive would be beneficial.
- In calculation of collection rates, the longer life of some batteries (e.g., Li-Ion) is not taken into account.
- In relation to chemical restrictions and safety, the interaction of a number of legislations should be simplified (Batteries Directive, ELV, REACH).

Ø C-15.6: Inconsistencies/discrepancies:2) Between the Directive and other legislation (e.g. national legislation, global standards)

Among others stakeholders mentioned:

- REACH regulates lead compounds in batteries in a way that make batteries difficult to manage.
- Some batteries not removed from EEE and thus not clear to what degree Battery Directive requirements related to collection and recycling are complied with.
- In relation to chemical restrictions and safety, the interaction of a number of legislations should be simplified (Batteries Directive, ELV, REACH).
- The fact that batteries are not concerned by the RoHS Directive 2011/65/EU is indicated in recital 14 of the RoHS Directive, but should be more clearly mentioned in article 2 of the ROHS Directive (scope). This causes misunderstanding within the supply chain.
- EWC codes and IMDG are inconsistent in their approach as to what is classified as hazardous.

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- The labelling requirements for starter batteries (Annex III in combination with Commission Regulation 1103/2010) are inconsistent. Annex III refers to an accuracy of +/-10%. The IEC standard does not contain this level of accuracy and is stricter. The wide tolerance band is weakening the consumer information.
- The reference periods for reporting are inconsistent between the Battery Directive (during that calendar year and the preceding two years) and WEEE (in the three preceding years).

C-16: To what extent are the policies below supported by the provisions of the Batteries Directive?

Ø C-16.1: Resource efficiency / Circular Economy

54 respondents (41%) agree that Resource efficiency and Circular Economy are supported by the provisions of the Batteries Directive, and another 22 respondents (17%) strongly agree. 34 respondents (26%) are neutral to this statement and 5 respondents do not know. 9 respondents disagree that the policies are supported and 5 strongly disagree.

Both businesses and industry associations tended to agree with this statement, though about a third specified neutral answers. Consumer associations, governments and “other” mainly agreed with this statement, while NGOs showed a relatively high disagreement.

The following comment was given in this respect: Recycling batteries contributes to resource efficiency and circular economy but in an indirect way. Indeed, the freedom to choose what to recycle in order to achieve the recycling efficiency does not necessarily lead to a higher resource efficiency or a better circular economy.

Ø C-16.2: E-mobility

28 respondents (22%) agree that E-mobility is supported by the provisions of the Batteries Directive, and another 4 respondents strongly agree. 38 respondents (30%) are neutral to this statement and another 39 respondents (~30%) do not know. 18 respondents disagree that the policy is supported and 1 strongly disagrees.

Though a large number of businesses agreed to this statement, it was also quite common to be neutral or to specify “do not know”. The case for industry associations is different, where most representatives are neutral or do not know. Government and NGOs were usually either neutral or did not know how to respond to this question.

Ø C-16.3: Energy storage

30 respondents (23%) agree that energy storage is supported by the provisions of the Batteries Directive, and another 2 respondents strongly agree. 40 respondents (31%) are neutral to this statement and another 34 respondents (~26%) do not know. 22 respondents disagree that the policy is supported and 1 strongly disagrees.

While most business representatives agree that the Directive provisions support energy storage, industry associations are mainly split in their opinions between agreeing and being neutral. In both of these groups, there are also some respondents who disagree or do not know, however such answers were much less common. A few further stakeholder groups mainly agree with the statement (consumer associations, government, “other”), NGOs mainly disagree (NGOs), while governments are distributed among agreement, neutrality and not knowing.

Ø C-16.4: Hazardous waste

61 respondents (48%) agree that energy storage is supported by the provisions of the Batteries Directive, and another 14 respondents strongly agree. 22 respondents (17%) are neutral to this statement and another 13 respondents do not know. 17 respondents (13%) disagree that the policy is supported.

Most of the stakeholder groups show agreement with this statement. It is only in the groups business, industry associations and "other" that some disagreement is observed, though by much fewer respondents.

Ø C-16.5: Other

Only 51 respondents answered to this question. Most respondents, 29 in number, did not know what to answer. This represents 57% of respondents to the question, but less than half of the stakeholders answering the survey. 6 respondents were neutral as to whether other policies were supported by the Directive provisions. 4 agreed and 2 agreed strongly. 9 respondents disagreed and one disagreed strongly.

Despite close to a third of stakeholders responding to this question, and indicating that they were of the opinion that other policies were also supported by the Directive, of these, most (29) did not provide detail as to their opinions and specified that they did not know to respond to the question. This was the most common response of representatives from business and from industry associations.

Among the policies mentioned in this respect were:

- Reuse and second life are not supported by the Directive;
- Non-removable batteries should be banned
- Transportation requirements
- Innovation in battery technology is not considered appropriately.

C-17: To what extent do you agree that the Batteries Directive has made it easier to buy or sell batteries, spent batteries and recycled products within the EU:

○ C-17.1: Buying/selling of batteries

42 respondents (33%) neither agreed nor disagreed that the Batteries Directive has made it easier to buy or sell batteries, spent batteries and recycled products within the EU. 31 respondents (24%) did not know what to answer. 18 respondents agreed and 14 strongly agreed that it has become easier to buy or sell batteries, spent batteries and recycled products within the EU. 21 disagreed (16%) and 2 strongly disagreed.

Business representatives were mostly neutral (17 respondents) to this statement though also specifying other answers at a significant share (agree, disagree, don't know -7 respondents each). Government responses were almost evenly distributed between agree, neutral and disagree. For "other" the distribution was similar, though also specifying "I don't know more often. Though some industry associations specified other answers, the most common neither agree nor disagree and don't know (14 each). Academia representatives were bot neutral and consumer organisations both agreed, while NGOs mainly did not know what to respond.

Among others, stakeholders provided the following comments:

- The regulations limit the possibilities for companies located in the EU to develop, manufacture and sell Li batteries that are in line with current market requirements.

This supports products that are made in China and will lead to a situation where most EU brands depend on suppliers located in PRC. We simply "export" our environmental issues.

- The Directive has not made it easier or harder to buy or sell batteries - it has increased the volume of spent batteries being collected and recycled, and the ease of trading has not changed. It has also increased the available information about batteries being sold, and has increased the costs of producers (and thus consumers) to ensure the batteries are correctly recycled - but none of this affects the ease of buying or selling.
- Buying/selling of recycled products refers to the so-called 2nd life approach. This approach needs to be backed up by a definition in the Battery Directive. That definition also serves to clarify that all responsibilities for a 2nd life application go with the "new" producer.
- In light of the increase in costs of batteries (collection scheme rules across the EU market) it has become harder to sell batteries.
- The undifferentiated consideration of new technologies hinders their introduction to the market.
- Importing batteries has additional reporting bureaucracy and financial implications due to producer responsibility. Therefore, it is more difficult for companies now to buy/sell new batteries than before the Directive. However, we agree that this extra barrier is required to make producers responsible for the products they trade.
- The ban of hazardous substances in most consumer batteries eases the purchasing decision for the consumer.

Ø C-17.2: Buying/selling of spent batteries

52 respondents (41%) neither agreed nor disagreed that the Batteries Directive has made it easier to buy or sell batteries, spent batteries and recycled products within the EU. 32 respondents (25%) did not know what to answer. 19 respondents (15%) agreed and 3 strongly agreed that it has become easier to buy or sell batteries, spent batteries and recycled products within the EU. 17 disagreed and 5 strongly disagreed.

Businesses and industry associations both most commonly provided a neutral response to this statement, though industry associations also specify "don't know" quite often. For government and NGOs, the most common answer is "don't know, though some support is also specified. "Other" responses were more distributed between the answers, though with a stronger tendency to disagree to the statement.

Among others, stakeholders provided the following comments:

- BatDir. has clearly increased volume of spent batteries, separately collected and available for sales. Thus - the number of recycling products has increased as well. It is yet not significant in comparison with recovered material stream from other recycling sectors - but is expected to be significant in future due to change of materials (use of critical materials in batteries).

Ø C-17.3: Buying/selling of recycled products

55 respondents (43%) neither agreed nor disagreed that the Batteries Directive has made it easier to buy or sell batteries, spent batteries and recycled products within the EU. 36 respondents (28%) did not know what to answer. 24 respondents (19%) agreed and 2 strongly agreed that it has become easier to buy or sell batteries, spent batteries and recycled products within the EU. 9 disagreed and 1 strongly disagreed.

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Though businesses, government and industry associations show some agreement with this statement, neutral answers or “don’t now” was most commonly specified. NGOs mainly did not know how to respond.

Among others, stakeholders provided the following comments:

- BatDir. has clearly increased volume of spent batteries, separately collected and available for sales. Thus - the number of recycling products has increased as well. It is yet not significant in comparison with recovered material stream from other recycling sectors - but is expected to be significant in future due to change of materials (use of critical materials in batteries).
- The mandatory collection of Lithium-Ion batteries allowed for the recovery and recycling of cobalt like the mandatory collection of lead-acid batteries allowed for the recycling of lead. However, this is only the case for batteries that contain valuable resources like the above.

C-18: Without the Batteries Directive, i.e. if measures had been taken at national level only, what would it be like in your country (or on average at EU level if you are answering for an EU stakeholder) in terms of:

Ø **C-18.1: Protecting human health**

42 respondents (39%) responded that without the Batteries Directive (i.e. only national measures), protecting human health would be worse than it currently is. Another 17 respondents (~16%) thought that it would be much worse and 32 respondents (30%) thought that it would have been the same. 17 did not know how to answer.

The most common answer to this question from business (15 respondents), industry associations (17) and “others” (6) was that without the Batteries Directive (i.e. only national measures), protecting human health would be worse than it currently is. Though in some cases stakeholders (11 business representatives, 3 industry associations and 4 “other”) thought that protection of human health would be better than it currently is, this was not a common answer. Consumer associations, government and NGOs thought it would be worse or the same.

Ø **C-18.2: Protecting the environment**

19 respondents (15%) responded that without the Batteries Directive (i.e. only national measures), protecting the environment would be worse than it currently is. Another 48 respondents (~39%) thought that it would be much worse and 21 respondents (17%) thought that it would have been the same. 18 respondents (14%) thought that the environment would be better off and 3 thought that much better. 15 did not know how to answer.

Business and academia respondents were mainly split between thinking that protection of the environment would be better or would be worse without the Directive. Consumer associations, government and NGOs tended to think that environmental protection would either be the same or worse. Industry associations and “other”s mainly specified that the situation would be worse or much worse, though also specifying other answers.

Ø **C-18.3: Functioning of the internal market**

19 respondents (15%) responded that without the Batteries Directive (i.e. only national measures), the functioning of the internal market would be worse than it currently is. Another 34 respondents (~27%) thought that it would be much worse and 25 respondents

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(20%) thought that it would have been the same. 14 respondents thought that the functioning of the internal market would be better off and 23 thought that much better. 31 respondents (25%) did not know how to answer.

Businesses mainly specified that the functioning of internal markets would be better or the same if measures were only taken on a national level. Industry associations mainly thought that the internal market function would be much worse in this case and consumer associations and NGOs also tended to respond worse or much worse. Government representatives mainly specified the same or don't know, while "others" answers were more or less evenly distributed between the same, worse/much worse and don't know.

Ø C-18.4: Innovation

37 respondents (30%) responded that without the Batteries Directive (i.e. only national measures), innovation would be worse than it currently is. Another 7 respondents thought that it would be much worse and 36 respondents (29%) thought that it would have been the same. 18 respondents thought that innovation would be better off and 23 thought that much better. 27 respondents (22%) did not know how to answer.

Business tend to be of the opinion that innovation would be better-off (14) or the same (17) without the batteries Directive, while both industry associations and "others" mainly specified the same, worse or don't know in relation to this statement. Consumer associations, government and NGO opinions most commonly specified that innovation would be worse.

Ø C-18.5: Environmental performance

45 respondents (36%) responded that without the Batteries Directive (i.e. only national measures), innovation would be worse than it currently is. Another 19 respondents thought that it would be much worse and 19 respondents thought that it would have been the same. 21 respondents thought that innovation would be better off (17%). 20 respondents (16%) did not know how to answer.

Business representatives are split in their opinions as to whether environmental performance would be better (14), the same (7) or worse (15) without the Directive. "Other" opinions are distributed similarly. Industry associations mainly specified worse (16), much worse (11) and don't know (12) in relation to this question and government representatives showed a similar distribution. Consumer associations and NGOs mainly specified that environmental performance would be worse.

3 List of stakeholders who provided additional written contributions

In total, 27 stakeholders submitted additional input in writing. The contributions have been reviewed and inputs have been taken into consideration in the evaluation report. Stakeholders who supported position papers submitted by other stakeholders are not detailed here, nor are stakeholders which only submitted their filled in survey or who provided their contributions in confidentiality. In Table 4, an overview is given of the stakeholders who submitted written input and as to the type of input (written comments, data, type of input when of specific nature).

Table 4: Overview on submitted answers to the questionnaire

| | Stakeholder | Type of submitted input (position paper, data, etc.) |
|----|--|---|
| 1 | ACCUREC Recycling GmbH (Germany) | Written comments |
| 2 | European Automobile Manufacturers' Association - ACEA | Written comments |
| 3 | ARGE österreichischer Abfallwirtschaftsverbände - Austrian Waste Association | Provided Training document prepared for municipal workers and personal on the new separate collection of Li batteries and an article on E-bike batteries. |
| 4 | AUTO Recycling Netherlands (ARN), www.arn.nl | Written comments |
| 5 | BEBAT vzw-asbl | Written comments |
| 6 | German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) | Statement of the Federal Government regarding the public consultation on the evaluation of the Batteries Directive. |
| 7 | Detail Handel Nederland | Written comments |
| 8 | DIGITALEUROPE | Additional comments on some of the survey questions of the public consultation on the evaluation of the Batteries Directive. |
| 9 | Duracell | Additional comments on some of the survey questions of the public consultation on the evaluation of the Batteries Directive. Written comments |
| 10 | European Environmental Bureau (EEB) | Discussion paper |
| 11 | EES-Ringlus (www.eesringlus.ee) | Written comments |
| 12 | Evonik Industries AG | |
| 13 | Association of European Automotive and Industrial Battery manufacturers (EUROBAT) | Position paper - supported by Johnson Controls, Exide |
| 14 | European Portable Battery Association (EPBA) | Written comments |
| 15 | EUROMETAUX | Position paper - supported by the European Copper |

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| | | |
|----|---|--|
| | | Institute |
| 16 | Izba Gospodarcza Metali Nieżelaznych i Recyklingu (IGMNiR) | Written comments |
| 17 | European Copper Institute (ECI) | Introductory letter |
| 18 | International Lead Association | Position paper - supported by ECOBAT Technologies, by H.J. Enthoven & Sons |
| 19 | The European Recycling Platform (ERP), a company of the Landbell Group | Written comments |
| 20 | Battery-pack [©] | A presentation of the technology "Battery Pack" |
| 21 | JP Wiaux - Consultant | Comments regarding the collection targets of portable batteries |
| 22 | The Advanced Rechargeable & Lithium Batteries Association (Recharge) | Additional comments on some of the survey questions of the public consultation on the evaluation of the Batteries Directive. |
| 23 | SUEZ GROUPE | Position Paper |
| 24 | Thüringen Ministry for Environment, Energy and Protection of Nature (TMUEN) | Written comments |
| 25 | Umicore | Written comments |
| 26 | German Electrical and Electronic Manufacturers' Association ZVEI | Position paper |
| 27 | Ministry of the Environment of Estonia | Written comments |

4 Summary

The following section summarizes the more common aspects that have been raised by stakeholders in comments to survey questions and in the written contributions. The fact that certain aspects are mentioned here does not suggest how a certain point shall be weighed in relation to the evaluation of the Directive, but only means that a certain view is observed to be more common.

- Ø Though many stakeholders agree that the definitions of the three battery types basically cover all batteries, various adjustments are proposed, in some cases to prevent differing interpretations and in others to adapt definitions to new trend (industrial batteries such as those of E-bikes and energy storage systems mainly being used by private consumers). In some cases it is suggested to adapt the examples provided in the Directive to each of the battery types.
- Ø The aspect of battery miniaturization was raised by multiple stakeholders. Various aspects are raised for consideration here: whether a new battery type should be added to the definitions; whether such batteries could be excluded from the scope of the Directive or from compliance with some requirements (for example when not using hazardous substances), etc.
- Ø A few stakeholders suggest adding incentives for recycling operations that achieve higher efficiency rates, in order to promote the market to move away from a preference for the lowest cost of compliance (i.e., where minimum efficiency rate achieved) to a preference for recycling operators achieving higher rates (i.e. competition on the base of technological preference and BAT and not just on prices once the minimum rates are achieved).
- Ø Multiple stakeholders pointed out to the REACH Regulation as the prevailing piece of legislation dealing with chemical products. This is raised with the opinion that any new substance restrictions should be managed via REACH rather than bringing new substances under the Batteries Directive. There are further comments specifying that currently substance restrictions specified under the Battery Directive, ELV and REACH apply, and that it should be considered if all restrictions would not be better-off when addressed under a single Directive (different opinions are expressed as to the preference).
- Ø In relation to automotive batteries (i.e. the exemption for Pb-acid batteries) being regulated through the ELV Directive and not through the Batteries Directive, stakeholders show opposing views. Some are of the opinion that such batteries should remain under ELV and others would like all restrictions of hazardous materials (or exemptions) to either be under the Batteries Directive or to be moved to the REACH Regulation.
- Ø Various stakeholders pointed to inconsistencies in how the battery definitions and classifications are transposed in the Member States, with possible effects on market surveillance, on the classification and sorting of batteries and subsequently on achieving and reporting on collection targets and on the possibilities of comparing data of various MS. These aspects are raised in relation to the need for harmonization of Directive implementation among the various MS. For example, in this respect, it is stated by various stakeholders that for certain types of batteries, weight thresholds are used by some MS to sort between portable and industrial batteries.
- Ø Battery removability is raised in some cases, often in the context of possible inconsistencies with the WEEE Directive and the need for clarification as to when a product containing a battery is to be considered EEE and when it is to be considered a battery as well as the need for harmonization between the Directives as to how collection and reporting and the reporting thereof are to be carried out.
- Ø Comments related to labeling most commonly discuss the suitability of the labeling of capacity on batteries or the need to develop labeling or color coding for some battery chemistries (particularly L-Ion), possibly in alignment with various standards currently defining rules for color coding.
- Ø Many stakeholders in the survey, but also in written contributions specify that Li-ion batteries are growing in their volumes of use and in the scope of applications in which they are applied. This is often

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specified to at least require consideration as to what Directive provisions should be more revised to address Li-Ion batteries separately.

- Ø Multiple stakeholders mention the need to address the second use of batteries in the Directive and particularly to clarify responsibilities in the supply chain (for safety, for recycling, etc.) and the transfer of EPR obligations from the original producer to the party responsible for remanufacturing/reuse.
- Ø In relation to Small and medium-sized enterprises (SMEs) it is difficult to point to the actual number of organizations that have responded to the public consultation (either through completing the survey through submitting written comment or both). Respondents were not specifically asked to specify whether their organizations were SMEs or not. Furthermore, this would also depend on how SMEs are to be defined. The main factors determining whether an enterprise is an SME according to the EU recommendation 2003/361 are:
 1. staff headcount
 2. either turnover or balance sheet total

| Company category | Staff headcount | Turnover | or | Balance sheet total |
|------------------|-----------------|----------|----|---------------------|
| Medium-sized | < 250 | ≤ € 50 m | | ≤ € 43 m |
| Small | < 50 | ≤ € 10 m | | ≤ € 10 m |
| Micro | < 10 | ≤ € 2 m | | ≤ € 2 m |

In relation to the various respondents (i.e. their organizations), some may be small in terms of the amount of staff but have a larger turn-over and vice versa. In general, it is observed that on the national level various operators of recycling and collecting facilities as well as operators of compliance schemes have responded. It is assumed that at least some of these would fall under the definitions of SMEs, or would at least represent smaller sized enterprises of relevance to the battery sector and its supply chain.