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From	:	Paul Van Tichelen	Annex(es):	Powerpoint presentations of the meeting (https://ecodesignbatteries.eu/documents) Spreadsheet with Task 1-5 data overview
To	:	Cesar Santos; Stakeholders		
Copy	:	Project team		

Minutes of stakeholder meeting for Ecodesign Preparatory Study on Industrial Rechargeable Electrochemical Batteries - First Stakeholder Meeting on 20/12/2018

Albert Borschette Centre, Rue Froissart 36, Brussels, Belgium

Participants

European Commission

DG GROW	Cesar Santos (CS)

Members of the project team present at the meeting

Fraunhofer ISI	Antoine Durand (AD)
Fraunhofer ISI	Tim Hettesheimer (TH)
Fraunhofer ISI	Cornelius Moll (CM)
Fraunhofer ISI	Christoph Neef (CN)
Fraunhofer ISI	Clemens Rohde (CR)
Viegand Maagøe	Jan Viegand (JV)
VITO Energyville	Paul Van Tichelen (PVT)
VITO Energyville	Grietus Mulder (GM)
VITO Energyville	Karolien Peeters (KP)
VITO Energyville	Wai Chung Lam (WL)

Stakeholders

Organization	First name	Last name	Acronym
ACEA	Norbert	Klein	ACEA - NK
ACEA	Jens	Warsen	ACEA - JW
Apple	Jonas	Dreger	Apple - JD
APPLiA	Giulia	Zilla	APPLiA - GZ
BASF	Tassilo	Galitz	BASF - TG
BEAMA	Simon	Harpin	BEAMA - SH
BEUC/ANEC	Aline	Maigret	BEUC ANEC - AM
BEUC/ANEC (Oeko-Institut)	Rasmus	Priess	BEUC ANEC - RP
CISMA	Richard	Cleveland	CISMA - RC

Organization	First name	Last name	Acronym
Continental	Desmond	Collins	Continental - DC
DG ENV	Michele	Galatolla	DG ENV - MG
DG Grow	Davide	Polverinni	DG Grow - DP
EASE	Marine	Delhommeau	EASE - MD
EBRA	Patrick	de Metz	EBRA - PdM
ECOS	Chloe	Fayole	ECOS - CF
ECOS	Aimilios	Orfanos	ECOS - AO
EGMF	Anne Claire	Rasselet	EGMF - AR
EIT InnoEnergy	Thomas	Aicher	EIT InnoEnergy - TA
EIT InnoEnergy	Guillaume	Gillet	EIT Innoenergy - GG
EMERSON	Johann-Christoph	Schueltz	EMERSON - JS
EMIRI	Philippe	Jacques	EMIRI - PJ
Enel	Silvia	Olivotto	Enel - SO
EnerSys	Gery	Bonduelle	EnerSys - GB
Eu Garden Machinery	Marina	Guajardo	Eu Garden Machinery - MG
EuRIC	Mélissa	Zill	EuRIC - MZ
EUROBAT	Francesco	Gattiglio	EUROBAT - FG
FORSEE POWER	Sophie	Tricaud	FORSEE POWER - ST
Global Battery Alliance	Andrew	Deadman	Global Battery Alliance - AD
InnoEnergy	Ilka	von Dalwigk	InnoEnergy - IvD
JRC	Marek	Bielewski	JRC - MB
JRC	Nieves	Espinosa	JRC - NE
JRC	Darina	Blagoeva	JRC - DB
JRC	Franco	Di Persio	JRC - FD
JRC	Pierre	Gaudillat	JRC - PG
JRC	Alejandro	Villanueva	JRC - AV
Nickel Institute	Veronique	Steukers	Nickel Institute - VS
Northvolt	Emma	Nehrenheim	Northvolt - EN
Northvolt	?	?	Northvolt -
ORGALIME	Ivana	Jakovljevic	ORGALIME - IJ
PSA	Nicolas	Leclere	PSA - LN
RECHARGE	Claude	Chanson	RECHARGE - CC
Renault-Nissan	Lucile	Fleuret	Renault-Nissan - LF
SAFT	Clemence	Siret	SAFT - CS
Schneider	Adele	Naudy Chambaud	Schneider - AN
SolarPowerEU	Raffaele	Rossi	SolarPowerEU - RR
Swedish EA	Emma	Olsson	Swedish EA - EO
TESLA	Jos	Dings	TESLA - JD
Transport & Environment	Julia	Poliscanova	Transport & Environment - JP
Umicore	Jan	Tytgat	Umicore - JT
Vaillant	Alexander	Dauensteiner	Vaillant - AD
VDMA	Hanna	Blankemeyer	VDMA - HB
ZVEI	Christian	Eckert	ZVEI - CE

Objective of the meeting

The intention of the meeting was to serve as a first stakeholder meeting for the Ecodesign preparatory study on Batteries. The purpose of this meeting was to discuss the initial findings of the Tasks 1 to 5 within the project and to the hear the views of the stakeholders on the findings so far. The draft reports for Tasks 1 to 5 can be downloaded from the project website (https://ecodesignbatteries.eu/documents). Stakeholders are invited to provide written comments. The deadline for written comments on Task 2 is 10/01/2019 and on Tasks 3-5 is 18/01/2019, for Task 1 the deadline was 14 December.

Note: complementary to this minutes of the meeting the meeting PowerPoint presentation can be consulted (https://ecodesignbatteries.eu/documents)

Agenda

9h00	Registration desk opens
10h00-10h15	Welcome and introduction to the study (DG GROW)
10h15-10h45	Agenda, tour de table study team, MEErP Tasks, data sourcing/feedback and planning (VITO)
10h45-10h05	Draft Task 5 presenting first draft LCA/LCC outcomes (VITO)
11h05-11h20	Questions and answers (VITO)
11h20-11h30	Coffee Break
11h30-11h50	Draft Task 1 Scope including standards (VITO)
11h50-12h10	Questions and answers (VITO)
12h10-12h30	Draft Task 2 Market model (Fraunhofer ISI)
12h30-12h50	Questions and answers (Fraunhofer ISI)
12h50-13h50	Lunch Break
13h50-14h20	Draft Task 3 battery use modelling (Fraunhofer ISI)
14h20-14h50	Draft Task 4 first outcomes (I Fraunhofer ISI SI)
14h50-15h30	Q&A + how to source data for the study (Fraunhofer ISI /VITO)
15h30-15h40	Objectives of an Impact Assessment & examples of other products (Viegand)
15h40-16h00	AOB, conclusion and next steps (VITO/DG GROW)

Minutes of Meeting

10h00 Welcome and introduction to the study

Cesar Santos (CS), commission official in charge of this ecodesign study on batteries, welcomes the participants and explains the political context and process for this study.

Political context

The study is part of the strategic action plan on batteries adopted by the Commission on 17th of May. The product group is not included in the ecodesign working plan that the Commission adopts every 3 years, however the strategic action plan on batteries is a political basis for this initiative. This study is one action amongst 37 other actions in the value chain for battery production in Europe. The battery value chain is considered of strategic importance for Europe.

Today we will discuss sustainability requirements for batteries. The assumption is that a regulatory intervention is necessary to make batteries produced in Europe and elsewhere in the world more sustainable.

The study will follow the typical ecodesign methodology (MEErP methodology). Today stakeholders can challenge the assumptions and preliminary findings proposed by the consultants. We are here to distil what is needed for the public interest and the common good. Your input is important to get a better outcome.

Process

This meeting is the first stakeholder meeting. A second stakeholder meeting will take place, probably in the second quarter of next year. The next step is the Ecodesign Consultation Forum. The Ecodesign Consultation Forum is comprised of Member States and countries in the European Economic Area plus representatives from industry and society such as environmental NGOs and consumer organisations. In the Consultation Forum it will be tested if a regulatory intervention is justified and which type of intervention this should be: an ecodesign regulation or an energy labelling regulation or both or a voluntary agreement. The outcome could also be that everything should be left up to the market and no regulatory intervention is needed. This may happen in the second quarter of 2019 or in 2020, but the timing is uncertain.
After this, the impact assessment will be submitted to the Regulatory Scrutiny Board. If a positive outcome is obtained, the vote is called in comitology with Member States. This will happen at the earliest in 2020 (but the timing is uncertain).

10h15 Agenda, tour de table study team, MEErP Tasks, data sourcing/feedback and planning

Paul Van Tichelen (PVT) presented the agenda and mentioned that Tasks 1 to 5 are in draft version available on the website and are open for commenting. Please send comments to the email address: edbatteries@vito.be.
A large team worked on the study with VITO leading the study, Task 1 and Task 5; Fraunhofer leading Task 2, 3 and 4 and Viegand leading the task to provide technical assistance for the impact assessment.

PVT presented an introduction to the MEErP process (see PowerPoint).
The study follows a structured process, MEErP, which contains 7 Tasks. Usually the tasks are iterative. Due to the strict timing of this study, the first 5 tasks have been developed in parallel. For this ecodesign preparatory study, there was a specific request from the Commission to use the information available in the Product Environmental Footprint (PEF) on batteries. The study should also be consistent with the Battery Directive. The fact that these two sources are available makes it possible to work faster than in other preparatory studies.
Next to the preparatory study and providing support for an impact assessment, input for the standardisation mandate will be given.

PVT presented the target planning (slide 7)
A draft version of Task 1-4 and a preliminary version of Task 5 are available on the study website. The current target is to complete the study in March 2019.

10h45 Draft Task 5 presenting first draft LCA/LCC outcomes
The aim to start with Task 5 in the presentation was to create a better understanding of which data we are looking for in previous Tasks and to focus on topics that impact the outcomes of Task 5.
Wai Chung Lam (WL) presented Task 5: Environment and economics (see PowerPoint).
Afterwards a discussion took place:

abbr	Comment/answer
CS	Can you please explain to the group the rationale behind the choice of the selected base cases (BCs)?
CM	This will be presented in task 3. The selection of BCs is based on the most energy consuming applications that have a big market potential in the future. We looked at GHG emissions in Europe in the transport sector. Passenger cars have by far the highest GHG emissions. BEV and PHEV are the most promising technologies so they have been separated in two base cases (BC 1 and BC 2).

	Light commercial vehicles (BC 3) and heavy duty vehicles (BC 4) and tractor units (BC 5) have big GHG emissions. They are also considered as base cases. The selection of storage systems was mainly derived by the future market potential. Residential storage and grid stabilisation have the highest market potential in future (BC 6 and BC 7).
RECHARGE	The functional unit (FU) is similar to what we use in PEF. But BC 6 and BC 7 cannot be qualified as mobile applications.
PVT	We are aware that FUs can differ. Grid supporting FUs can be very diverse and are not as harmonized as in cars.
ZVEI	We observe a very dynamic market in batteries regarding technologies and future uses. How will you manage the dynamic in the battery market and how will you reflect the uncertainties in the future market in this study?
PVT	Much of our study is indeed built on assumptions. Other ecodesign studies were based on the reference year 2015. Due to the very dynamic market, we potentially have to consider 2020 as a reference year.
CN	Take into account on how the future market will look like. Technology wise, the roadmap is set for at least 7 to 10 years. Beyond this it is very hard to know what will happen.
ECOS	We are wondering if off grid stationary applications should also be considered as base case. Batteries are also very important and critical in these applications. Secondly, medium size batteries are not included in the scope, only small residential and large grid stabilisation batteries. Should we also include medium size batteries e.g. used in tertiary sector buildings?
BEUC/ANEC	The scope is set for mobile applications but it also includes storage applications. This should be clarified. The task 1 report mentions e-bikes as an application. Shouldn't this be a base case as well?
CM	We tried to check in how far the FU used in the PEF for mobility applications can be used for stationary applications. We were not able to finally answer this question. We changed in a first approach the FU from the PEF a bit, but this approach can be discussed.
Tesla	The Ecodesign Directive says that it is not supposed to be used for transport applications. Can transport and components of transportation means be regulated under the Ecodesign Directive? We don't oppose this action, but we are wondering about the legal setting.
CS	The legal services in the Commission currently check if the Ecodesign Directive is applicable to batteries. If it is not, there is a plan B. It is possible to do something similar as has been done for tires, being a self-standing regulation. However, our assumption is that we will be able to put forward a regulation based on the Ecodesign Directive.
EBRA	There are many types of stationary batteries for grid services. Some focus on providing power instead of energy. Is focussing on energy the right driver for assessing the FU? Frequency regulation is mostly power driven. Regarding accuracy, how can you find information for highly specialized components which are trade secrets? More than 50% of the materials had to be fed in manually into the EcoReport tool. How do you know that the data are representative and what is the accuracy?
CS	We went through this process for 24 other products. It takes years, but it can be done. We need to make abstractions and reduce complexity. Of course by doing so, we also reduce accuracy. We cannot guaranty that every single product will be rewarded or not, but the net benefit for society is always positive. Better data of course help to better investigate the possibilities. Stakeholders can sign confidentiality agreements with consultants and/or the Commission.

PVT	Regarding the difference in FU for grid support applications. We are fully aware of this, it can be country or business case specific. We already received comments on this and we will answer these comments in the presentation of Task 1. We are also aware that life cycle data is not always available and indeed proxies are necessary.
VDMA	Production has a very high contribution to the LCA results. It is also important to take the energy source into consideration. Is this taken into account?
PVT	Intrinsically yes, it is in the LCA databases we have, but it is not modelled to the last factor. This is however something we cannot regulate.
CS	The purpose of the Ecodesign Directive is to set requirements for the product itself. The requirements need to be verifiable for the products itself. There are other policies at EU level to force the use of renewable electricity. In the preparatory study EU averages are used for electricity and for many other parameters.
Transport & Environment	The biggest impact comes from the production and the raw materials. How can the ecodesign directive solve this issue?
CS	Requirements set in the past are related to the energy efficiency, water, noise and circular economy. For the production there is the problem of extraterritoriality. We cannot set hard requirements on this.
EBRA	Isn't there a huge incentive lost for industry to improve if you are not able to take into consideration the geographic source of the materials and associated energy?
CS	This takes us into other policy fields. Ecodesign is about requirements that can be verified in the battery itself related to their energy density, energy efficiency and the way they are built to facilitate recycling and second hand applications. The requirements are the same for batteries produced here or elsewhere. If batteries are placed on the EU internal market, the product has to fulfil the requirements. The requirements have to be verifiable.
Tesla	Is it really necessary to distinguish between passenger cars and vans? There is a huge variety within the base case of cars. Marine applications are left out of the base cases.
CR	The rationale for the choice of base cases will become clear in the next task presentations. Marine applications do not play a big role when looking at the market.
Recharge	You need the impact of the manufacturing process for the study. It may not be easy to have access to the real representative manufacturing process for the products used. In PEF we used a number of proxies. Some proxies are not good at all.
PVT	We are aware of this difficulty.
Global Battery Alliance	Why are busses and public transport not covered?
CM	Busses are important for cities, but not for the European market in terms of capacity and sales figures. Also current emissions from busses are low compared to other base cases we are considering.

11h30 Draft Task 1 Scope including standards

Paul Van Tichelen (PVT) presented Task 1 (see PowerPoint).

The list in slide 5 will be adapted according to the comments received. The team already received comments on batteries not included in the list.

Afterwards a discussion took place:

CS explains that the discussion on the scope is one of the most important discussion of the study. The scope of the study will impact the scope of the Regulation.

abbr.	Comment/answer
BEUC/ ANEC	The title of the study is very comprehensive. The scope you are looking at is narrow. This is confusing. The task 1 report contains different references to different kinds of scopes. The later tasks narrow this down, but the rationale for the selection is missing, especially for the smaller ICT mobile applications. Similar for lead acid batteries. Task 1 report would benefit from making this much more stringent and prepare for the later tasks. There was a question whether home storage should be covered or not. This is an important product group, the environmental impact is important and it should be looked at. E-bikes are qualified as low quantity. What do you consider as low quantity? In terms of quantity sold they are quite relevant.
Tesla	In general we would find it very difficult if this regulation favours second life over recycling. For resource efficiency it is not always better to keep batteries as long as possible in the system.
CS	This discussion is premature at this stage.
ECOS	One of the slides mentions that the scope should be restricted to Li-ion batteries. This is not the conclusion of the study? The 100 Wh/kg limit excludes some battery technologies such as nickel metal hydride which are used in hybrid vehicles. This is however a big market share and should not be excluded by this threshold. Regarding our comment on UPS applications. We didn't say it should be clarified how UPS should be used. It should be clarified how we should treat places in which stationary batteries are also used as UPS. Our comment on second life should be seen in a general context. Second life batteries should in general be treated as products and not as waste, because this creates a legal problem for reuse. This is also a problem in the Battery Directive.
PVT	The second life improvement options will be discussed in Task 4. Some battery technologies can indeed also be used for UPS. It is not yet clear how we will deal with this issue.
CS	What happens to chemistries other than Li-ion?
GM	The following chemistries fall into the scope as well: sodium nickel chloride and sodium sulphur (grid connected) batteries. Lead acid and the larger nickel metal hydride batteries fall below the threshold of 100 Wh/kg.
ECOS	These batteries should be included. They are used in hybrid vehicles.
TH	We concentrated on batteries and chemistries with high market shares. We also see that nickel metal hydride batteries are more and more substituted by lithium ion batteries. e-bikes: With quantity we didn't mean the sales. We multiplied the sales with the capacity, which is rather low and below the threshold of 2 kWh.
CS	How future proof is this threshold for energy density (100 Wh/kg)?
RECHARGE	Arising technologies with high energy density are not mentioned here. If we agree that the scope is indeed large vehicles and electro mobility, than it is an acceptable threshold and it will probably be valid for many years. The energy density will only increase in future.

	The big concern today is indeed Li-ion and so it is meaningful to study this. However, not studying the others is worrying us. The whole study might not be relevant for other technologies.
Tesla	The scope might lead to having 99 Wh/kg as a way to escape the regulation?
BEUC/ ANEC	We do not understand the rationale for this limit. Also the 2 kWh limit. What is the rationale for setting these thresholds?
CR	The market in the range we defined is much more homogenous (few applications). If you go beyond these threshold, you have very fragmented markets. Also, environmental impact are very much linked to the mass of the battery.
ECOS	I understand that we need to limit the amount of applications. But this should not be done by setting a threshold in energy density but by defining applications which are in scope.
CS	Summary of the discussion: There is still some work to be done in terms of reconciling different applications, chemistries and energy density thresholds to define the scope. I will have this discussion with the study team.

12h10 Draft Task 2 Markets

Christoph Neef (CN) presented Task 2: Market (see PowerPoint)

Afterwards a discussion took place:

abbr.	Comment/answer
ECOS	Second life batteries: how many of these batteries will become available for second life use? How do you expect the market of second life batteries to grow?
CN	There is a lack of data on old batteries. We know from the publicly available data on Tesla cars that the batteries might still be very good after 12 years, but we cannot generalize this. We don't know the strategy of the Automotive OEM. Overengineering batteries is costly, but it might also be a business model. We don't know if the decommissioned batteries will be really finished or if you will be able to reuse them. This depends on the strategy of the OEM.
GM	Lab tests show that batteries become end of life not due to capacity but because they are not able to cope with the imposed driving cycle. This is an issue of internal resistance.
RECHARGE	We are not able to predict whether second life will be a successful business case. We have here an assessment of what the market could be, but there is an uncertainty. Future tasks should work with a minimum and maximum and not only with a medium.
Tesla	The assumed life time and mileage of the EVs must be longer. It is expensive to buy, but cheap to use. 180 000 km is too low because of self-selection of the markets you are in.
Transport & environment	We suggest to align some of the assumptions with the Commissions own work such as the 2050 roadmap. We have a comment on slide 13 with shares of passenger cars that can be replaced with other technologies. For passengers cars 75% is assumed, this is too conservative. BEV and PHEV are competing with each other as well.
ECOS	In task 1 there is a definition on End of life (EoL) which says the battery reaches EoL at 80% state of health. It doesn't makes sense to have an absolute value on EoL. The EoL is dependent on how it has been used and whether it can support a profile.

13h00 Lunch break

14h10 Draft Task 3 battery use modelling

Cornelius Moll (CM) presented Task 3: Users (see PowerPoint).

14h40 Draft Task 4 first outcomes

Tim Hettesheimer (TH) presented Task 4: Technologies (see PowerPoint).

Antoine Durand (AD) presented the excel spreadsheet for the data collection exercise for the seven BCs. The spreadsheet will be shared with the stakeholders in order to receive feedback. [Note added after the meeting: the spreadsheet is e-mailed on 21/12/2018 to the stakeholders who participated and provided their e-mail at the meeting registration. Please contact the project team via edbatteries@vito.be if you haven't received the spreadsheet but still want to.]

After the presentation on Task 3, 4, and the spreadsheet, the following discussion took place:

abbr.	Comment/answer
CS	Fully understands that it is tedious to deal with the calculations and the data collection exercise, but this really underpins the regulatory process. Later on in the regulatory process, the requirements, regarding such as energy and CO2 savings, are defined to reduce the environmental impact of the batteries. Those environmental claims will be directly based on these calculations, so it important that we get the numbers right.
North volt	First question regarding the coverage and applicability of the FU. Are we certain that an EV and ESS have the same FU? Is there such a good overlap that we can use the same FU? The numbers vary a lot. Don't we also need to consider that in 5 years from now we potentially will not be using the same batteries? Second question regarding the presented assumptions: how will we define what is the first, second, and third life of a car, or when a car is born, and what the lifetime is? Would we still know that of a car after 5 years? As most of the parts in a car currently are remanufactured. So a lot of the mechanical parts in a car today are already in there for a second or third use. This adds complexity and it might result that we can't talk about a first or second life. We should assume that the variety of the product and the specifics in the application related to the FU are more complex, therefore a sensitivity analysis, feasibility study and the coverage of this model needs to be further analysed in depth. Final question regarding the used criteria. For instance slide 21 of the Task 3 presentation, in which yellow, green and red markings are used to indicate whether a battery can be used for second life. What are the criteria behind the markings? And what are the criteria behind for instance the degradation presented in Task 4. What is a second life, and what is just a remanufacturing of a pack?
CS	On your question about the requirements and when it makes sense to set them, so far only ecodesign regulations set requirements for the moment when products are placed on the market. What "placing on the market" means is defined by the EC Blue Guide on CE marking, but in principle it is when a product is made available for the use for the first time on the EU market. There might be, but I'm only speculating now, requirements on energy efficiency or self-discharge; there might be requirements on facilitating a second life, but those will apply to new products, so only for fresh batteries placed on the market for the first time. Hence, the requirements will be on the products that are new and placed on the market for the first time. Whether it makes sense to set requirements to facilitate second life or not is a discussion that we will need to have. Whether that happens or not depends on the market and economics, those requirements facilitate people that want to use batteries in second life applications to have the information they need to do that. Just to be clear: there will be no requirements down streamed from placing a product on the market after several years. The requirements need to be verified when a product is first placed on the market. In the case of an OEM that manufactures its own batteries, that moment will probably be when a car is sold. In the case of an OEM that buys its batteries from

	a battery manufacturer, that moment will be the transaction between the battery manufacturer and the car OEM. Can the study team complement on the other aspects?
TH	Regarding the "birth" of a car, it's about the first life of the battery and not of the car. I want to make clear that we really are concentrating on the battery.
AD	In addition regarding to the FU, as already mentioned before, we stick to the FU for mobile applications even for BC 6 and 7, as we assume that the main goal of BC 6 and 7 is to store energy and not to deliver power. Improvements on this are welcome if they are provided.
North volt	Than it is even more important to make sure that we have the coverage. How many cars will be sold in 5 years and how many EVs? Just make sure that all the different scenarios are covered.
AD	Just to conclude on the second life application: if for BC 6, in case second life batteries are used in which only cells are second life but used in a system that is placed new on the market; then of course we might have ecodesign requirements that are applicable for these cases.
EBRA	From our perspective as battery manufacturers, and I think also from the commissions perspective, we are all trying to set up a battery industry that will serve the OEMs with a view to allow the OEMs to comply with very strict regulations when it comes to CO2 emissions among others. And we're trying to do this in the best possible way with products that bring true benefits to society. Questions that we keep hearing from the public and regulators is: "Do those electric cars really bring CO2 benefits? Where is the energy coming from? What is truly the net gain from those cars relative to internal combustion engine cars? Is there really a net gain for CO2 emissions?". That are questions we need to address. We need a clear answer on this, otherwise we will be losing if we cannot address the concerns of the public. Other questions we are getting are: "Where are you buying the raw materials, who do you buy from? How are your vendors treating their employees, are they properly protected?". I don't see any of those questions being addressed here. I know it's a bit on the side of the ecodesign directive, but it's a key thing. It's quite a challenge today to be able to create this industry, the design, the research, the development, setting up the processes. Are you here trying to give us an additional set of advice or incentives or requirements to tweak our design requirements and making it even tougher for us to serve the European OEMs we are trying to serve? It's already challenging, so I really want to make sure that we are adding things that are really contributing to create value to society. I'm concerned we're missing the target here. If in the end of the day, we're just replacing a little bit of glue with some screws, so it's easier to dismantle, but in reality they are being put into a big oven where pyrolysis takes care of the glue and the screws alike in the end; then we haven't achieve that much. If you're asking us to redesign batteries so they can go into ESS systems, while we know that the ESS market will be just a few GWhs per year while the EoL will be hundreds of GWhs. Most of the batteries won't go to ESS anyway. Do we really need to add that additional complexity to the batteries? So I want to make sure that all the choices we make are going into the right direction, help society, and help European and global industry.
CS	We are not here to discuss whether the environmental footprint of electric cars are larger or smaller than internal combustion cars, or where manufacturers should source their raw materials from. We are here to discuss how to influence a market that is going to explode and how to make sure that those batteries that are produced in Europe are produced following strict environmental standards that bring benefits to society in terms of reduced energy consumption, CO2 and more; a product that is easier to reduce and to recycle.

	The summary of our discussion is that when we are proposing requirements it will be supported by an impact assessment and a cost-benefit-analysis showing that those requirements make sense and the net benefit is there. There are other views that begs to differ to what we've just said, other stakeholders that have other opinions. So we need to balance a strike between the interests of the different stakeholders.
ECOS	Concerning the improvement measures that were suggested, especially for reuse of batteries, I quite agree with what was stated. But I like to underline that the problem is not so much the BMS that cannot be integrated ESS applications, it's more that they cannot be interfaced with external Energy Management Systems. In general, BMS interoperability is a big hurdle for direct reuse and second life in general. So we believe it's more important to give incentives to BMS to be interoperable at the EOL of the EV, and we should rather use the term 'interoperable' than what was used in the first place.
Tesla	Apart from some figures that could be improved, a major element that is mostly incorrect or missing in the analysis is the material efficiency improvement of batteries over time. Everybody who is engaged in battery manufacturing of every OEM is really trying to reduce especially the cobalt content, because we all agree that it's a problematic material. The data so far shows that we are quite successful, and the reduction of that content is between 5-10% per year depending on the source. In the table on policy design with six possible ecodesign criteria I saw that two of them are on extending the battery life, which would be the wrong direction. If you put an old heavy cobalt battery in a system, is it really better for the environment? I'm sure if you model certain presumed reductions of material footprint per FU, that you will come to the conclusion that there is an optimal lifetime of a product and that recycling is even better for the environment. The CRM list is not there for nothing. Regulation should minimize the use of CRM. I urge to model the battery properly: which shape, form and use of batteries reduce the amount of CRM the most? The fact that the battery technology is maturing and batteries are being improved need to be encapsulated in the measures.
CS	It is not in our intention to oppose innovation.
AD	The XLS table does not show any requirements, it only shows design options. We need to see what the result will be of Task 6. In Task 6 we will mix several design options to define the Best Available Technology (BAT), the Least Life Cycle Costs (LLCC) product,... A possible result of Task 6 could be that a shorter lifetime is maybe more interesting.
TH	Actually, we did consider the material efficiency improvement of batteries over time. This issue for example was considered in the case of NCM 811 by having a lower share of cobalt.
JRC - AV	It might be a case of how to interpret data. Harmonising how to measure and report lifetime is needed. It can be useful for many purposes, not necessarily just for extending the lifetime.
North volt	The functional kWhs is imbedded in your FU and thus an energy density too. With this I mean it's not only the raw materials that goes from one cell to the next generation, it is also the quality of that cell and the function it will have in a next generation. Please take that into consideration.
CS	We will not feel apologetic for looking into things like durability, reusability, or recyclability. We have a political imperative to look into these things as part of the circular economy action plan. There is a trend towards proposing requirements like this and we will only do it if we are supported by a clear cost-benefit analysis. It's not an ideological position, it's a political mandate that we have been given to ourselves to look into such things whenever we do an ecodesign study supporting an ecodesign regulation.
RECHARGE	First of all about the life cycle gain, the number of assumptions as presented in Task 3 should be improved with real data if possible. Real data would be just better than just taking eight

	years. Because eight years is the warranty period of a battery, clearly the real life will be longer than the warranty. If you just neglect that, you will make wrong assumptions. Secondly, having a lot of details and precise data to make the model as accurate as possible and representative correct is fine. However the process you are going through currently is a difficult process and the way you are asking the stakeholders to bring in data seems like a hazardous way to move. Because you will need to know which market share the received data represents, it can make a huge difference. The process of sourcing data from stakeholders should be carefully controlled. Another aspect is, by having a better representative product, the better we will get insights in what is used in an application; but that will be still far from the reality. The reality is, as you already mentioned: a market that is not fully established yet, and a big complexity in product design and technology with varying options. It's far too early to come with design options for improvements. We have no idea yet whether some options are good or bad, not all benefits are demonstrated. I do understand the high level requirements like increased durability and service, which is the way we should go. But the practical way to translate them in design requirements is another type of exercise. Several of the proposed criteria are not applicable to products in practice. Before we go to the design options, we need a better understanding of what we are discussing.
ECOS	Substantial issues have been raised right now, but we want to question the deadline that has been set for this preparatory study. It's not the first time we are in a situation of a fast-track approach in which stakeholders and study team are rushed in finalising the study. But based on my past experience, the regulatory process didn't go as fast as the speed of the preparatory study resulting that nothing is done with the study for 3 years. So I would recommend to manage our expectations in the deadline of finalising the study to have good technical basis for taking future decisions. A last comment regarding the design options, more specifically regarding recyclability. The design option was restricted to CRM recycling. A broader approach of recyclability of the product including repairability should be considered and not only be restricted to CRM.
Transport & environment	The current debate in Brussels is very wild regarding whether to have second life or recycling of batteries. I think we will not find any answers on this within this forum due to the size of the debate. On the other hand we do see that the value of materials in batteries is very high. For example at a recent workshop, an approach by Chinese academics was presented in which it makes sense to recycle NMC. When talking about LFP batteries, there are no valuable materials so maybe second life is a better option. How to incorporate this is difficult, but there should be a diversative approach. My suggestion for the preparation of Task 7: identify policies or recommendations that are common to all EOL options, for example ease of disassembly can be beneficial for second life as well as recycling. Instead of stepping into the argument between the two, see which design EOL options will be beneficial no matter what you do.

15h50 Objectives of an Impact Assessment & examples of other products

Jan Viegand (JV) gave a brief presentation on impact assessment.

There were no comments nor questions on the impact assessment presentation.

16h05 AOB, conclusion and next steps

Wrap up by CS

Issues that CS will discuss with the study team: the questions on the scope, FU, and BCs; and the organisation of the tasks till end of the contract including impact assessment.

In January, the date of the 2nd stakeholders will be announced, the meeting will probably be right after Easter, meaning the end of April. So the final draft reports of tasks 1 to 7 will be provided in the beginning of April.

After that the preparatory study will be completed, and as already said this morning, it is not yet said what will happen after that.
The next meeting will take place in the same building and then we will have a discussion on Tasks 6 and 7 including the policy options. It will be a more meaningful and policy-oriented discussion on what will be the right thing to do with this product group.
If the stakeholders are registered on the website they will be automatically informed about the date of the second stakeholder meeting and the availability of draft documents in advance of the meeting.

abbr.	Comment/answer
BEUC/ ANEC	What are the deadlines for the commenting?
PvT	The deadline is 18th of January for Tasks 3-5 and for Task 2 it the 10th of January. See also the website, please respect these deadlines as much as possible. The bottleneck for the study will be Task 3 and 4 and related to that the spreadsheet data. The most important item for us is the spreadsheet. Adjustments to the text will be done, but collecting data is the biggest bottleneck. If you have other design options that you want to suggest than the ones we included in the columns, feel free to do so. We welcome all data. Please announce to us if you think you can supply data to us, so we can change our planning according to that if needed. Also in case you have fundamental comments. I count on the cooperation of the manufacturers for improving the quality of the data. As already mentioned, the policy will be preferably built on evidence.

CS thanked the participants for their contributions and closed the meeting.

Annex

The PowerPoint presentation of the meeting are available at the project website: https://ecodesignbatteries.eu/documents