

November 2021

FACTSHEET: BATTERY MODELS

Analysis on the number of battery models and weight of batteries placed on the EU market

Executive summary

This document intends to assess the data needed to identify the **impact of the sustainability measures proposed in the Batteries Regulation**. The key sustainability measures in the proposed Regulation include the **carbon footprint declaration** and the **recycled content declaration**, both submitted to third party audits with notified bodies under the surveillance of the EU Member States.

It is important to clarify the battery applications falling under the scope of these measures as it has a very important impact on the **feasibility of the implementation and control of the measures**. The applications under the scope, impact directly the number of battery models for which carbon footprint declarations and the recycled content declarations will be required.

As the Impact Assessment study of the Commission (published together with the Regulation proposal) assessed the number of battery models that would be in the scope of the measures if applicable to EV batteries only, this document provides the required background information for other battery applications. This is particularly important, as the scope of the sustainability measures indicated in the proposed Batteries Regulation is including all EV and industrial batteries above 2kWh.

This factsheet aims at clarifying and demonstrating that a meaningful target would be the inclusion of EV above 2 kWh and ESS batteries only under the scope, covering the batteries representing the highest quantities per model, and thereby limiting the number of battery models under the scope at less than 5,000 for which the said sustainability declarations will be required.

Data sources

Two type of data sources were needed to establish this document:

1) Data for the weight of the battery models placed on the EU market

This data was available in the RECHARGE dataset already used for the EU Science Hub Raw Materials Information System (RMIS) datasets (see the Commission [website RMIS](#)). It has been updated with last market information (batteries placed on the market in 2020 only), such as presented in the Avicenne study (Batteries Event Lyon, 29 September 2021). This study enables a classification of the battery markets per application and provides information on the market size. The market data

generally provided in giga-watthours (GWh) have been transformed into kilotons (ktons) using the typical energy density per technology (GWh/ktons).

2) Data for the number of references of battery models placed on the market in EU

- First, the total number of producers has been established. As there is no precise data publicly available, these has been assessed based on the number of producers or brands proposing battery products per application. This information is available in market studies (Avicenne study, Batteries Event Lyon, 29 Sept 2021) and in the industry associations communications. The number of battery manufacturers declaring the batteries placed on the EU market is indirectly confirmed by the number of participants listed in the EU Collection and Recycling Organizations CROS (Corepile in France, GRS in Germany, etc...) for portable and industrial batteries in EU. It represents about 2,000 manufacturers for portable batteries, and about 1,000 for all other battery types.
- In a second step, the number of battery references offered by each manufacturer for each specific application has been assessed. It is based on the RECHARGE internal intelligence on the type of battery offered per market and can be cross-checked by verifying the product offers on the websites of some of the manufacturers. The number of a few hundred battery models for the EV application (>2kWh EV and PHEV) proposed in the Commission Impact Assessment is coherent with this approach. It is important to highlight, this factsheet identifies a total number of more than 110,000 of battery models placed on the market in the EU (see Annex I). Some general statistics available, demonstrate the coherence of the assessment, particularly for portable batteries. See the example of the cell-phone models in Figure 1 (<https://www.statista.com/statistics/632599/smartphone-market-share-by-vendor-in-europe/>).

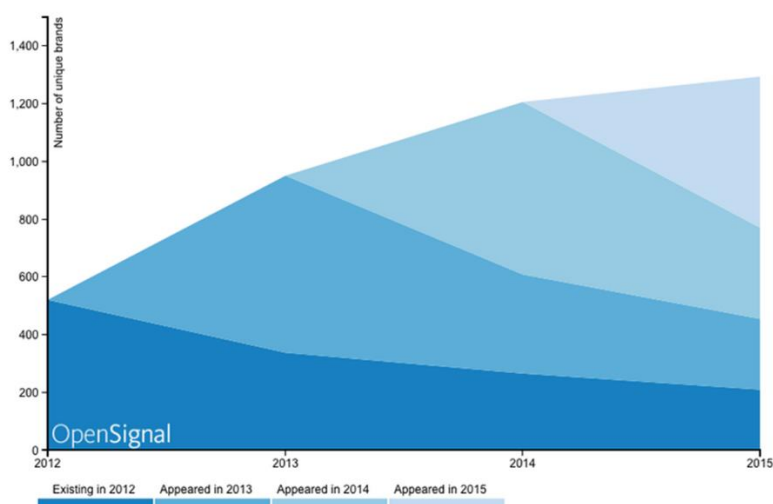
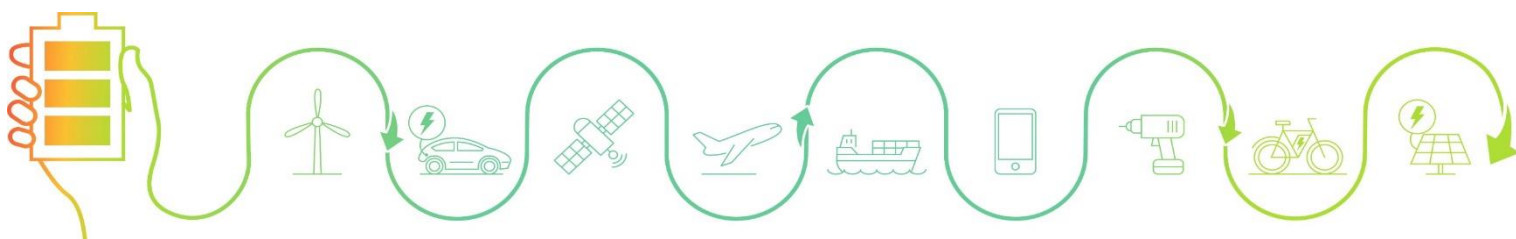


Figure 1: number of unique cell phone brands between 2012 and 2015



- Finally, there was a need to assess what would be the number of battery models corresponding to the industrial batteries above 2kWh, compared to the total number of models of all industrial batteries. As no existing data were available for this assessment, a sharing ratio of large and small industrial batteries has been proposed per type of application. For example, it is recognised that the vast majority of industrial batteries for emergency lighting (safety luminaires) is below 2kWh, only some batteries for centralised emergency lighting systems in public places being above 2kWh. Therefore, a ratio of 99% of these batteries has been proposed as below 2kWh. Same could apply to passenger cars HEV batteries. See in the Annex 1, the RECHARGE dataset for further information.

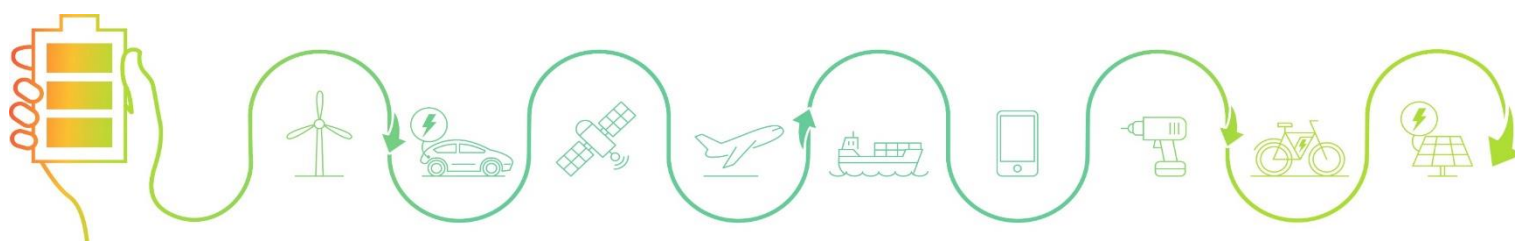
Database analysis

Based on the market research mentioned above, the database presented in Annex 1 has been generated. In absence of public information availability, some information has been completed by expert judgement. As a result, this dataset is not intended to represent any significant base for market study purposes, and RECHARGE is declining any responsibility for such type of use.

The following important information can be extracted from this data:

- The huge number of battery models makes it impractical for the declaration and control system of the sustainability criteria, such as proposed in the Batteries Regulation. **The need to make the Regulation enforceable, to establish the expected level playing field including imported products, requires that the number of references (models) is limited, at least for the first years of the implementation of the new Regulation.** Therefore, it is crucial to identify the applications which represent the largest weight of batteries sold in the EU market, but at the same time the minimum number of battery models. This can be calculated as an average quantity of batteries placed on the market per battery model (in tons/model).

Figure 2 presents the number of battery models per application and the average weight per model in 2020. It shows that the inclusion of EV batteries above 2kWh and ESS batteries only, would represent the batteries with the larger quantities per battery model. **The inclusion of all the industrial batteries above 2 kWh, in addition to the ESS batteries, represents a four-times larger number of models.**



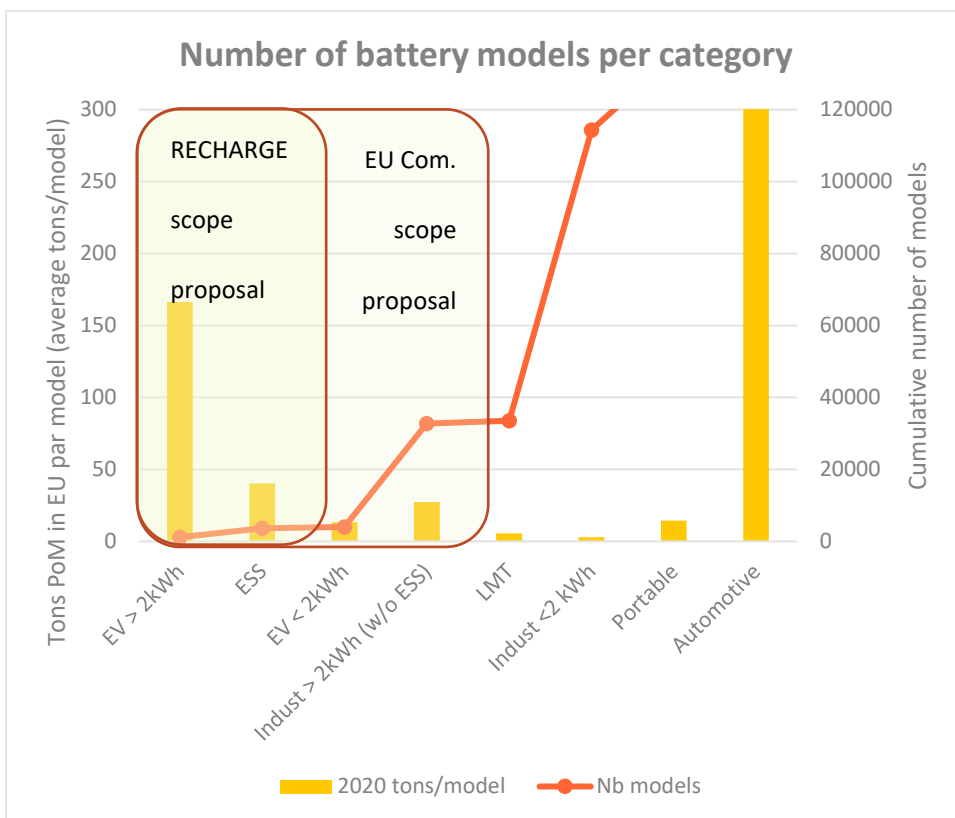
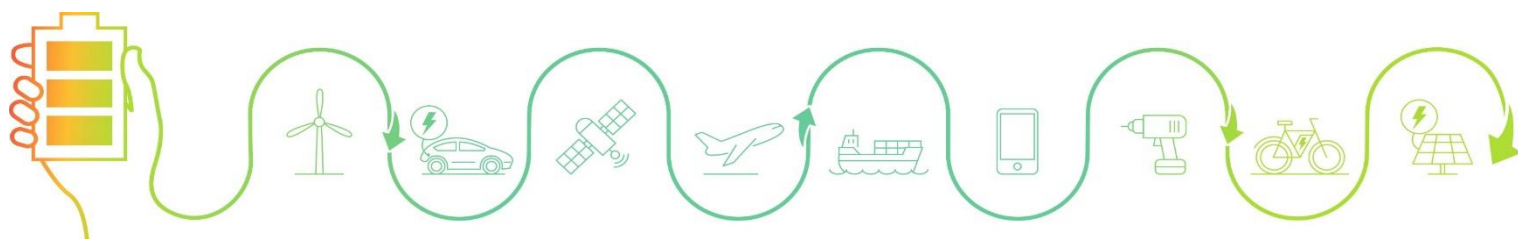


Figure 2: number of battery models vs. weight per application

Based on the data, it should also be underlined that the global scope of industrial batteries above 2kWh would represent 25,000 battery models. Furthermore, the total industrial batteries – including applications below 2kWh – would represent more than 110,000 models, making it very difficult to implement and enforce both for the industry and the authorities.

Scope	Tons per model	Number of battery models
RECHARGE proposal	Above 40 tons/model	<5,000
Commission proposal	Above 10 tons/model	>20,000
Enlarged scope incl. <2kWh	No limit	>110,000

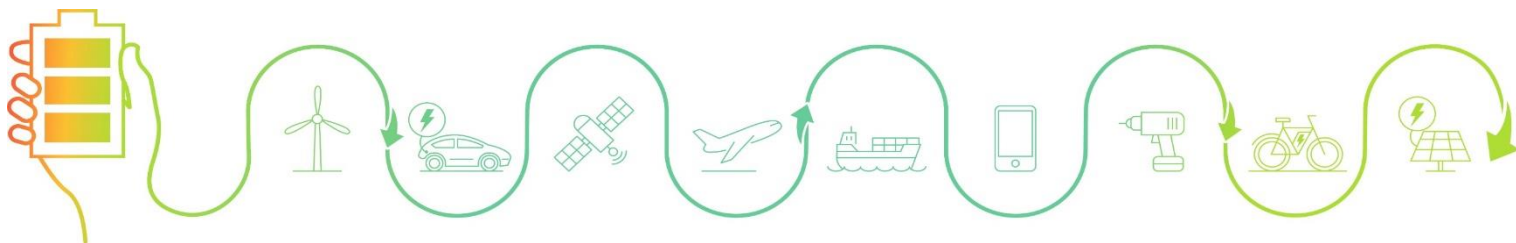


The future development of the EV batteries market in EU is expected to further increase the relative weight of the EV batteries, making the scope of the carbon footprint measure even more relevant. For other applications, sector specific analysis should be required before the inclusion in the scope of the sustainability requirements and mandatory declarations in order to clarify the feasibility and associated costs.

Conclusion

This document clarifies that **for the scope for sustainability measures such as the carbon footprint declaration and the recycled content declaration, only the inclusion of EV batteries above 2kWh, and ESS batteries would be a meaningful target.** This would covering the more important battery models included in the proposed Commission scope and would at the same time **limit the number of battery models under the scope at less than 5,000 models.** On the contrary, the larger scope, as proposed by the Commission, would represent more than 25,000 battery models, with marginal increase of the total weight of batteries represented.

RECHARGE is the leading industry voice of the advanced rechargeable and lithium batteries value chain in Europe. Founded in 1998, it is our mission to promote advanced rechargeable batteries as a key technology that will contribute to a more empowered, sustainable and circular economy. RECHARGE's unique membership covers all aspects of the advanced rechargeable battery value chain in Europe: From suppliers of primary and secondary raw materials, to battery, equipment and original equipment manufacturers, to logistic partners and battery recyclers.



ANNEX 1: RECHARGE DATASET

Batteries categories	Batteries application	Nb. of Models/manufacturer	Nb. Of manufacturers PoM in EU		Nb. Battery models	Weight (ktons)
Portable	portable applications		2309		20724	300
Automotive	SLI batteries	30	50		1500	1600
Automotive	Li batt	5	5		25	1
		total	55		1525	1601
LMT	e-bike	10	50		500	3
LMT	e-scooter	3	50		150	1
LMT	e-quads	3	10		30	0
LMT	prof e-transporrtter	5	10		50	0
		total	120		730	4
EV	HEV cars	15	25	below 2 kWh	375	5
EV	PHEV cars	5	25		125	26
EV	EV cars	10	25		250	157
EV	HEV trucks	10	15		150	1
EV	EV trucks	3			1	1
EV	HEVbuses	10	20		200	2
EV	EV buses	10	20		200	1
EV	E-boats	10	20		200	0
EV	E-aircrafts	1	5		5	0
		total	155	%ref > 2 kWh	1506	193
Industrial	ESS storage	50	25	99%	1250	89
Industrial	ESS grid regul	50	25	99%	1250	11
Industrial	ESS residential	20	50	80%	1000	1
Industrial	UPS,safety backup p	500	50	50%	25000	133
Industrial	UPS consumer	20	50	5%	1000	11
Industrial	safety lighting	30	50	1%	1500	6
Industrial	safety alarms	50	50	1%	2500	6
Industrial	Telecom	100	25	99%	2500	155
Industrial	Railways onboard	100	10	80%	1000	1
Industrial	Aviation onboard	100	10	50%	1000	1
Industrial	Drones	3	30	10%	90	1
Industrial	Forklifts	10	50	95%	500	299
Industrial	other indust motive	100	50	90%	5000	11
Industrial	Robotics	1	10	50%	10	0
Industrial	airport electrif eqpt	50	20	90%	1000	0
Industrial	metering	200	50	1%	10000	1
Industrial	medical	50	100	10%	5000	55
Industrial	oil &gas industry	50	50	5%	2500	55
Industrial	others	1000	50	10%	50000	277
		total	755		112100	1112

