

Study on behalf of the
European Portable Battery Association (EPBA)

The collection of waste portable batteries in Europe in view of the achievability of the collection targets set by Batteries Directive 2006/66/EC

Full report published first August 2013

Short Update (covering 2019/20 data) February 2022



Introduction

The collection of portable primary and rechargeable batteries in Europe is mandated by Directive 2006/66/EC which requires Member States to achieve a collection rate of 25% in 2012 and 45% in 2016. The European portable power industry commissioned consultants Perchards/Sagis to carry out a study investigating and advising on the achievement of mandatory collection rates for portable primary and rechargeable batteries in EU Member States, plus Iceland, Norway and Switzerland. In 2014/5/6/7, EPBA commissioned an update of the study taking into account the previous year's data. For 2017, 2018 and **2019/20 data, a short update was agreed**. Industry intends to use the study as a basis for dialogue with the European Commission, Member State Governments, their agencies, and other stakeholders to highlight the limitations of the current regulations and practices as a basis for suggested improvements.

Methodology

The study's findings rely on primary research of publications of collection organisations (notably annual reports) and national authorities, supported by questionnaires and interviews with representatives from these organisations between May 2012 to August 2013. The consultants have attempted to explain the stated collection rates quantitatively by collecting hundreds of data points for each country and trying to identify correlations between them. This has proven challenging for several reasons: A) The sheer magnitude of variables with multiple interdependencies; B) Incomplete and incomparable historical data (prior to Batteries Directive 2006/66/EC there were no requirements at EU level to report on portable batteries, and if data were collected they were based on varying definitions); C) Diverging national terminology for key parameters of the schemes and organisations, such as collection sources; and D) Ongoing changes in national legislation and rapid development of scheme implementation as a result of the short time since the transposition of the Directive.

Data sources and accuracy

Accuracy of portable battery collection rates in this report: In the absence of the official collection rates that may be adjusted by statistically significant estimates¹, the collection rates used in this report are calculated using unadjusted POM and collection volume data released by member states and / or organisations. Where current data are not available, earlier data or estimates based on earlier years or partial data from organisations are used. In September 2016, EUROSTAT released portable batteries data reported by member states to the European Commission. A new section in this report compares these data with those in previous versions of this report².

Per capita volume data: To allow for meaningful cross-country comparisons, it is necessary to use battery collection and POM data on a per capita basis. For consistency, this report only uses EUROSTAT population data to arrive at per capita volumes. Battery organisations and national authorities often use other data sources or data from a single base year. Thus per capita data in this report may vary slightly from those released nationally. In the 2016 update, the underlying EUROSTAT population dataset of 2012 was replaced with the latest dataset: Over all countries covered, the new set shows a 1% lower population in 2012. However, for some countries the numbers deviate significantly³, which affects the per capita POM and collection data in this report.

Sources for WEEE data: Eurostat EEE and WEEE data are used for comparison purposes.

Acknowledgements

The authors would like to thank the numerous individuals and organisations that have provided data and valuable input to this study. Any errors or omissions remain the responsibility of the authors.

¹ Batteries Directive 2006/66/EC requires member states to calculate the collection rate for the first time for the calendar year 2011 and report results of the four-year period 27 September 2008 to 26 September 2012 to the Commission by 26 June 2013. Commission Decision 2008/763/EC allows Member States to base their calculation of battery sales (POM, placed on the market) volumes on 'collected data or statistically significant estimates based on collected data'. For many countries these estimates may have a significant impact on the official collection rates, especially in those that did not have POM reporting procedures for batteries in EEE in place throughout the period 2009-2012 and those with high uncertainty about the reported collection volumes.

² EUROSTAT data on portable batteries had not been available until the 2016 version of this report (only a dataset for waste from all batteries from 2004 to 2010 without breakdown into portable batteries).

³ CY +4%, HR -3%, LV -7%, LT -6% and RO -6%.

Terminology

'Scheme'	is used to refer to the overarching regime in view of the parties responsible for the management (consumer awareness, collection and treatment) of waste portable batteries.
'Scheme models'	can be distinguished by the parties held financially and/or organisationally responsible for waste battery management. For the purpose of this study, the following main scheme models are identified: 'State fund model', a 'Single organisation model' (also 'Environmental agreement model') and a 'Competing organisations model'.
'Organisation'	is used to refer to entities engaged in coordinating waste battery management and involved in assisting to fulfil producer responsibility obligations. Subject to the national context, 'organisations' may be referred to as 'compliance systems', 'producer compliance schemes', 'producer compliance organisations', 'collective schemes' or 'approved waste managers' which may be subject to licensing or approval requirements, restriction on their ownership, profit objective and business activities, etc.
'POM'	(Placed On the Market) refers to sales volumes of portable batteries that producers are obligated to report.
'Collection rate'	refers to the use of the calculation methodology of Directive 2006/66/EC which divides the collection volume in the current year by the average weight placed on market in current and two preceding years. If, due to unavailability of 3 years of POM data, only the current year POM is used, the text states 'collection rate on current year basis'.
'Batteries Directive'	refers to Batteries Directive 2006/66/EC.

Country short codes

Austria	AT	Greece	GR	Poland	PL
Belgium	BE	Hungary	HU	Portugal	PT
Bulgaria	BG	Iceland	IC	Romania	RO
Croatia	HR	Ireland	IE	Slovakia	SK
Cyprus	CY	Italy	IT	Slovenia	SI
Czech Republic	CZ	Latvia	LV	Spain	ES
Denmark	DK	Lithuania	LT	Sweden	SE
Estonia	EE	Luxembourg	LU	Switzerland	CH
Finland	FI	Malta	MT	UK	UK
France	FR	Netherlands	NL		
Germany	DE	Norway	NO		

Table of content

COLLECTION RATE ACHIEVEMENT	4
Development of EEA wide reported POM and collection volumes	4
National portable batteries collection rates 2018	5
Uncertainties of the collection rate and subjective assessment	6
Countries' shares of EEA POM and collection volume	6
COUNTRY ANALYSES.....	7
AUSTRIA	7
BELGIUM	8
BULGARIA.....	9
CROATIA.....	10
CYPRUS.....	11
CZECH REPUBLIC	12
DENMARK.....	13
ESTONIA	14
FINLAND	15
FRANCE	16
GERMANY.....	17
GREECE.....	19
HUNGARY	20
ICELAND	21
IRELAND	22
ITALY.....	23
LATVIA	24
LITHUANIA.....	25
LUXEMBOURG.....	26
MALTA.....	27
NETHERLANDS.....	28
NORWAY	29
POLAND.....	30
PORTUGAL.....	31
ROMANIA	32
SLOVAKIA	33
SLOVENIA	34
SPAIN.....	35
SWEDEN	36
SWITZERLAND	37
UNITED KINGDOM	38

COLLECTION RATE ACHIEVEMENT

Development of EEA⁴ wide reported POM and collection volumes

Data available for this study suggest that in **2020 around 282,000 tonnes** of portable batteries were reported to have been **placed on the market** in the EEA plus Switzerland and the UK, **after annual increases of 7% in 2019 and 10% in Covid year 2020**. In this year, over **122,000 tonnes** of waste portable batteries were reported as **collected**, after an increase of 10% in 2019 and a light fall in 2020, blamed mostly on Covid related lockdowns. Due to the continued strong increase of POM, the collection rate fell to 47.3% in 2020, down from a peak of 50.3% in 2019.

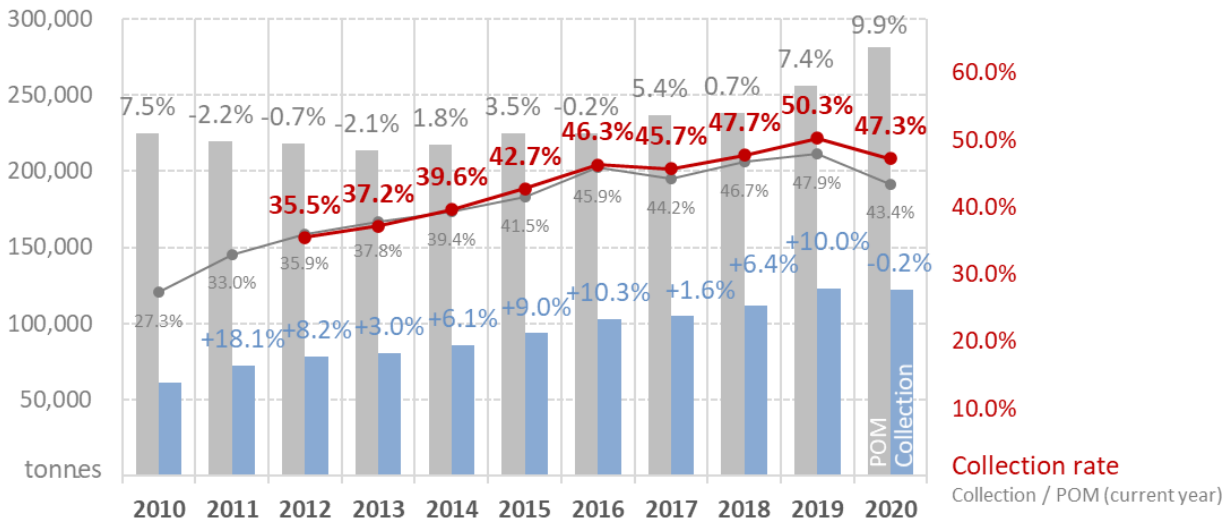


Figure 1: EEA + UK + Switzerland, portable battery POM and collection tonnages 2010 – 2020

POM: From 2010 to 2020, the total mass of portable batteries POM increased by an **annual average of 2.3%** (the population of the covered countries grew by 0.2%). Following the 2008 global financial crisis, POM declined to a low of 412 g per capita in 2013. POM has since increased and **peaked at 533 g per capita in 2020**. In unit terms, around **23 portable batteries per capita** were placed on the market in **2020**, up from 19 in 2013.

Collection: From 2010 to 2020, reported collection increased by an **annual average of 7%**: From 119g in 2010 per capita to a peak of **233 g in 2019 before declining to 231 g per capita in Covid year 2020**. Strong year-on-year growth was observed in 2011 and 2012 (+18.1% and 8.2%), as well as in 2015 and 2016 (+9% and +10.2%) to meet the collection rates mandated for these years. Few data are available about the number of units of waste portable batteries collected.

Portable Batteries, EEA + Switzerland	2010	2012	2014	2015	2016	2017	2018	2019	2020
POM (Grams per capita)	437	422	418	431	430	451	453	486	533
Collection (Grams per capita)	119	152	165	175	197	199	212	233	231
Collection / POM	27.3%	35.9%	39.4%	41.6%	45.9%	44.2%	46.7%	47.9%	43.6%
Collection rate⁵		35.5%	39.6%	42.8%	46.3%	45.7%	47.7%	50.4%	47.3%

Table 1: EEA + Switzerland, portable battery POM and collection, gram and units per capita

⁴ 31 countries are signatories to the European Economic Area (EEA) agreement. However, EEA member **Liechtenstein** is part of the Swiss customs territory and as such subject to a large part of Swiss legislation, including waste legislation, and the Swiss producer responsibility organisations operate on its territory. **Switzerland** is not a member of either the EU or the EEA but has adopted broadly similar rules on batteries as the EU. It is included in this study for the sake of completeness.

⁵ Collection rate calculation methodology of Batteries Directive: Collection / avg. POM of current year and past two years

National portable batteries collection rates 2018

Data from the 31 countries investigated suggest that as of 2020:

- **No country is close to reaching a 65% collection rate⁶ consistently⁷.**
- **Twenty-two countries** reached or exceeded a **collection rate of 45%⁸**.
 - **19 of these have consistently achieved rates above 45% after they first exceeded this threshold:**
 - **5 countries - Austria, Belgium, Luxembourg, Sweden and Switzerland - have exceeded 45% since before 2011;**
 - **8 countries - Denmark, Slovakia, Bulgaria, Finland, Hungary, Netherlands, Germany and Poland -reached 45% for the first time between 2011 to 2015;**
 - **6 countries - Croatia, the Czech Republic, France, Ireland, Lithuania, and Latvia - first reached 45% between 2016 and 2019.**
 - **3 countries are also likely to report to have reached 45% in 2020 -Romania, Norway and the UK.**
- **Nine countries remained below 45%:**
 - **Iceland, Cyprus, Spain, Italy reached rates between 40 and 45%:**
 - **Greece, Slovenia reached rates between 30 and 40%;**
 - **Portugal, Malta and Estonia are likely to have fallen below 30%.**

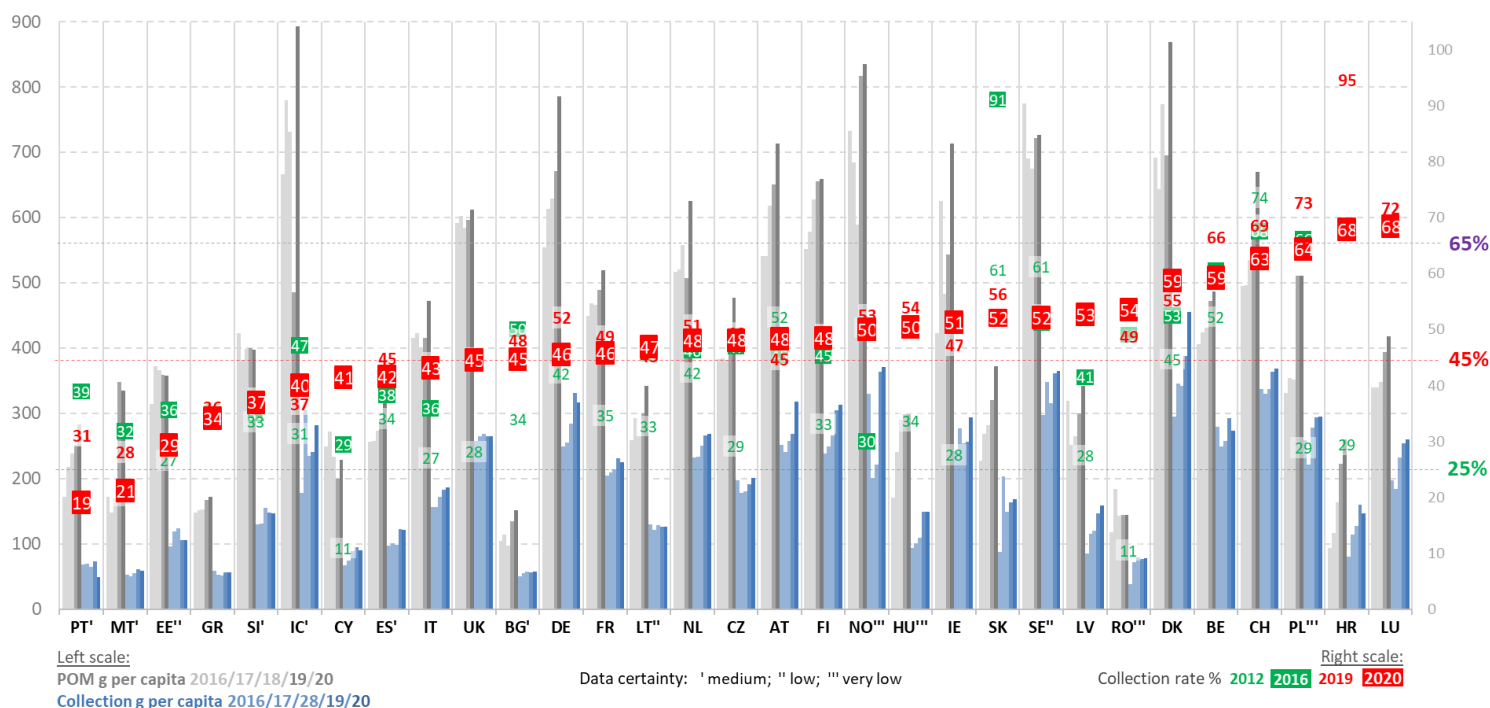


Figure 2: EEA + Switzerland + UK, portable battery POM and collection per capita and collection rates 2012 – 2020
[\[Open large image in browser\]](#)

⁶ The Commission proposal of a Batteries Regulation foresees collection rates of a 65% in 2025 and 70% in 2030. The European Parliament's Envie Committee proposes 70% in 2025 and 80% in 2030.

⁷ Except for Luxembourg, which arguably has comparatively low POM (418 g per capita in 2020, compared to 487 g in Belgium, 626 g in the Netherlands).

⁸ Taking into account rounded percentages: e.g. 44.5% is counted as 45%

Uncertainties of the collection rate and subjective assessment

National collection rates **continue to be** subject to significant limitations and uncertainties, which limit them as a tool to compare the performance of collection schemes:

- Rates would be substantially lower in some countries if measures were taken to ensure that only waste lead batteries are counted towards the collection rate that were declared as ‘portable lead batteries’ when POM.
- Substantial uncertainties continue to exist about the weight of batteries embedded in EEE, for which data are not available in some countries.
- The increase of lithium accumulators and different national practices of counting them as either portable or industrial batteries at the POM and/or collection stages.
- Rates would vary by up to an estimated +/- 3% if a common interpretation of the term ‘portable battery’ was applied in terms of the weight thresholds for portable batteries used in some countries;

Countries’ shares of EEA POM and collection volume

Largely correlating to population size, seven countries (DE, UK, FR, IT, PL, ES, NL, SE) account for nearly 80% of POM and collection of portable batteries. Adding the next five (AT, BE, CH, CZ, DK) brings the total to around 90%:

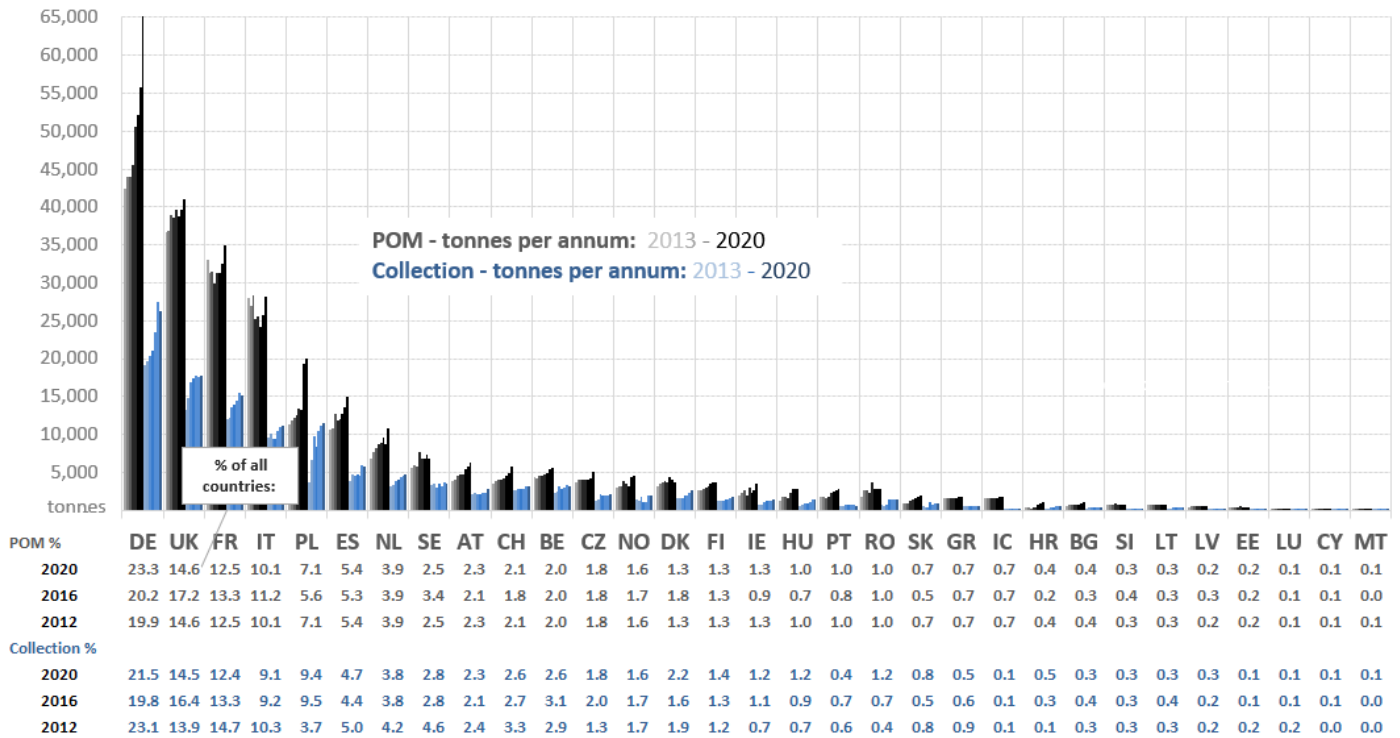


Figure 3: EEA + Switzerland, portable battery POM and collection tonnages per country 2012 – 2020

COUNTRY ANALYSES

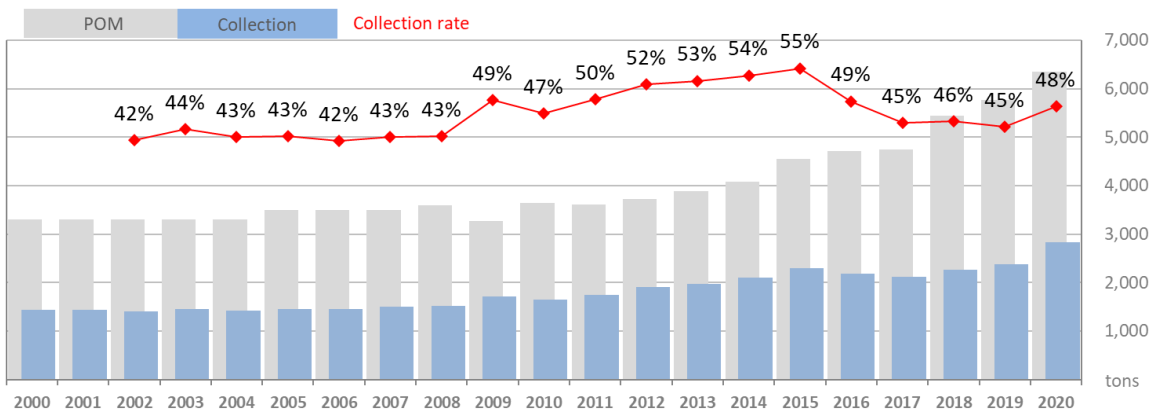
AUSTRIA

Legal and organisational developments: The Austrian battery collection scheme has been built up since the early nineties. In 2008, it transitioned from a single organisation model to competing organisations: Around 900 producers comply through four WEEE compliance organisations who all contract waste management company *Saubermacher AG*, which takes back batteries from retailers and around 1,600 municipalities. Municipalities continue to play a key role in collection. The clearing house organises awareness creation measures effectively. **In July 2021, an amendment to the Batteries Ordinance notably aligned the producer definition and registration requirements with those of the Waste Act and the WEEE Ordinance (tax number required, distance sellers now obligated) and removed the minimum market share requirement (5%) for PROs.**

Government guidance on the demarcation of battery categories, issued in November 2017, categorises *industrial* batteries used in household EEE as *portable* batteries to ensure the financing of their waste management. This requires batteries used, for example in e-bikes or wheelchairs, to be classified as portable batteries from 2018.

In October 2017, a new Waste Treatment Ordinance set out specific technical requirements for handling of lithium batteries: Lithium batteries must be removed from WEEE at the collection point if removable by the end-user. Moreover, certain lithium batteries, incl. those weighing over 500 g, must be collected and stored separately from all other batteries, including from other lithium batteries. As such, a new separate collection infrastructure for lithium batteries became necessary (notably at retailers) and battery compliance organisations now require POM declarations (and recycling fee payments) to be split into lithium containing and other batteries. Lithium battery collection is also operated by Saubermacher. In September 2018, the company established a lithium battery recycling plant in Bremerhaven, Germany and established a joint venture with German Interseroh to provide waste management services to end users of industrial lithium batteries in Germany.

Collection rate: Following a 55% peak in the collection rate in 2015, this fell to 49% in 2016 due a 5% drop in the collection volume. Clearing house EAK assumes that the drop was partly due to the increasing share of rechargeable batteries that remain in the market longer. In 2017, the collection rate fell further to 45% as collection fell again, by 3%, while POM increased by 1%. In 2018, POM increased by 15% over 2017 (supported by the categorisation of industrial batteries used in household EEE as portable batteries i.e. batteries used in e-bikes or wheelchairs – applied from January 2018), while collection also increased by 7%, bringing the collection rate to 46%. **2019 saw a slight fall in the collection rate to 45% as a 6% increase in POM surpassed the 5% rise in volumes collected. In 2020, the collection rate rose to 48%, driven by a 20% increase in collection to 318 g per capita, which exceeded a 10% rise in POM to 713 g per capita.**



Source: From 2011 EAK

Other issues: A February 2018 survey found a striking difference between younger and older respondents: 71% of over 50-year-olds said they always dispose of expired batteries in collection boxes at retailers or municipalities while only 38% of under 30-year-olds claimed to do so.

BELGIUM

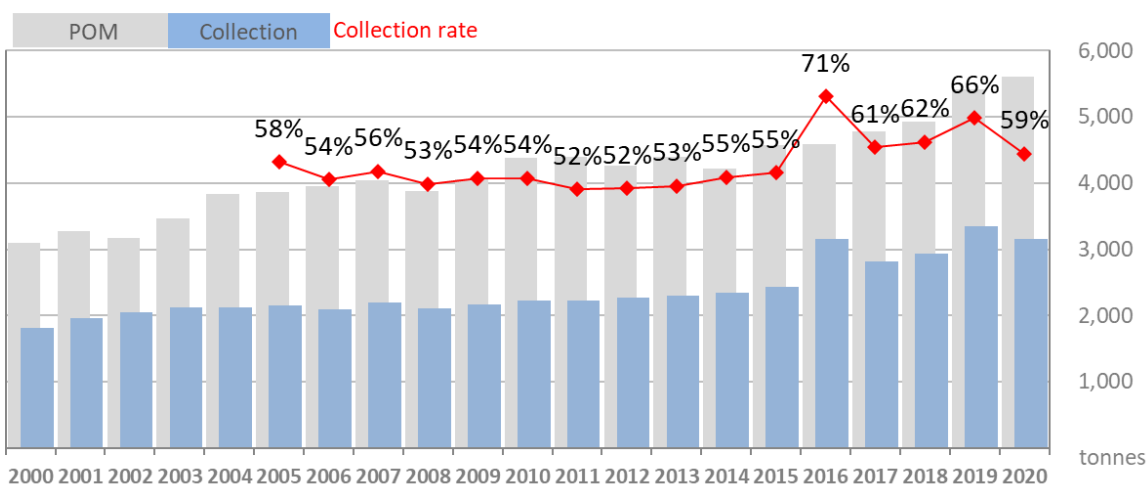
Legal and organisational developments: Backed up by an eco-tax from 1996 until the end of 2012, single organisation BEBAT has been in operation since 1996 and has achieved high consumer participation (87%). BEBAT’s operations are based on Environmental Agreements (MBOs) between each of the three regional governments and sector associations.

In December 2016, Bebat merged with Recybat, which had been the single organisation managing automotive batteries to streamline service for obligated producers. Bebat is now the only organisation responsible for all three battery categories (portable, industrial and automotive).

Since 2010, when Bebat established its sorting facility in Flanders, Wallonia has introduced various measures aimed at restricting Bebat’s operation in the region, notably 2016 legislation that would significantly change the waste batteries regime, but which has yet to be enforced. In Mar 2018, the Constitutional Court made it clear that Wallonia must consult with the other regions before doing so. In June 2018, Flanders and Brussels Capital region signed 5-year MBOs governing Bebat. The Flanders MBO was published and came into force in October 2018. The new MBOs now cover all battery types, after Bebat’s merger with Recybat. In addition, the Flanders Region signed an MBO for electric vehicle batteries governing organisation Febelauto. Producers of EV batteries now have a choice between Febelauto and Bebat.

From around 2015, the Flemish and Walloon Government charged an annual tax of 3% on the financial reserves of BEBAT and WEEE compliance organisation Recupel to accelerate their reduction. However, the collected taxes had to be returned after the constitutional court annulled them in 2017 and 2018. The Court i.a. argued that the regions did not have the authority to levy organisations not established on their territory and that the origin of the funds taxed cannot be traced to these territories only.

Collection rate: In 2016, the collection rate increased sharply to 71% (2015: 55%) due to exceptional events: According to Bebat, the increase is mainly due to doubling of collection in Flemish schools (+548 tonnes – schools contributed 28% to total battery collection in 2016, vs 16% in 2015) and collection by companies (+35%) due, in part, to the acquisition of a battery brand. In 2017, the collection rate recorrected to 61%: POM increased by 4% over 2016 while collection fell 11% below the ‘exceptional event’ driven volume, but was still 12% higher than in 2015. In 2018, a 3% rise in POM and 4% rise in collection increased the collection rate to 62%. **In 2019, POM and collection increased by 10% and 14% respectively, pushing the collection rate up to 66%. In 2020, the collection rate dropped to 59% as collection declined 6% while POM increased 4%.** According to Bebat, only 1 battery is found in every 100kg of residual household waste in Belgium, which means that Bebat collects 90% of all batteries that are available for collection as discarded by consumers.

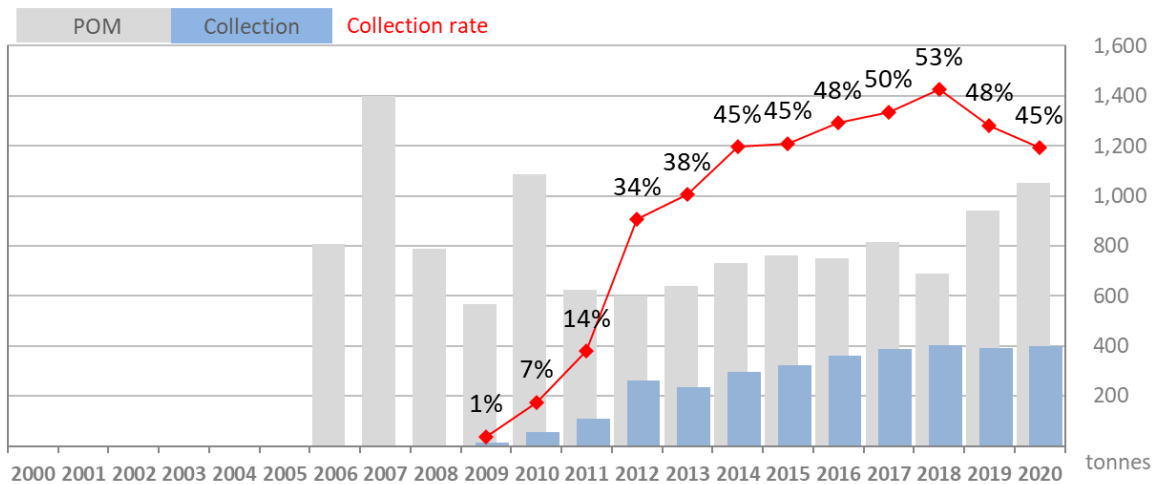


Source: BEBAT; Note: Pre-2010 BEBAT collection data are adjusted by us to account for portable batteries only: Based on confirmed data from 2010-12, the portable batteries share of all collected batteries by BEBAT is assumed to have been 86% in all years.

BULGARIA

Legal and organisational developments: Although batteries have been subject to mandatory take-back legislation and product fee legislation since 2006, the first battery compliance organisations were only approved in January 2009. Their number grew to 20 by 2011. Measures to reduce this number and ensure the targets are properly achieved came into force in 2013. Due to comprehensive legal requirements and good supervision, the regulatory mechanism appears to function solidly. In April 2016, a new Product Fee Ordinance replaced the 2008 ordinance but left the high product fee – to be paid if collection targets are missed – unchanged. **As of 2022, around 390** registered portable battery producers comply collectively through eight approved battery compliance organisations. All eight organisations cover all battery types **(still valid January 2022)**.

Collection rate: Volumes of portable batteries POM rose incrementally from 76g per capita in 2009 to a peak of 115g in 2017. The share of lead batteries in POM is low (2% in 2013). Collection volumes increased steadily from 2g per capita in 2009 to **56 g in 2019**. From 2009 to 2011, Bulgaria missed its national collection targets. Although the overall collection rate has been above 45% since 2014, not every compliance organisation has met their assigned targets. In 2018, POM decreased by 9% to 98 g per capita, while collection increased by 4% to 57 g, resulting in a collection rate of 53% - the highest to date. **In 2019, a 36% surge in POM over 2018 coupled with 2% decrease in collection lowered the collection rate to 48%.**



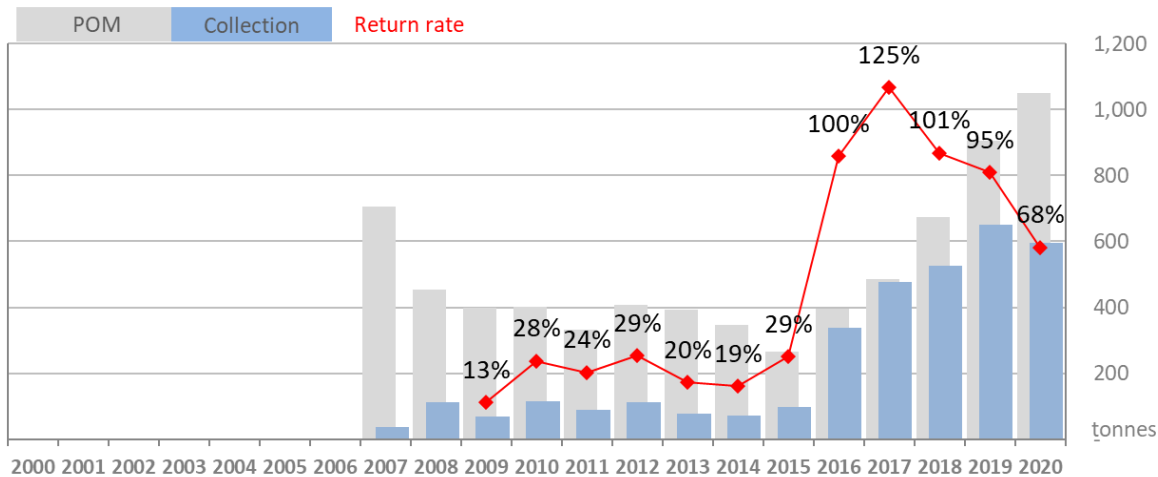
Source: Before 2013 EEA Register and Ministry of Environment; 2013/2014 EEA report; 2015 Eurostat (sum of Gov. order approved collection volumes for each compliance organisation results in 2% higher collection rate 2015); 2019 Eurostat; 2020 EEA (POM) and Sagis estimate based on partial data from PROs

CROATIA

Legal and organisational developments: Since late 2007, portable batteries (including those integrated into EEE) have been subject to fee payments to the Environmental Protection and Energy Efficiency Fund (EPEEF). In 2013, the option for producers to comply collectively or individually was implemented in framework legislation. In October 2015, a new Waste Batteries Ordinance removed industrial and automotive batteries from the fund financing regime. The new legislation lowered fees for portable batteries but remained subject to the fund regime. **A May 2020 amendment to the Batteries Ordinance lowered the waste management fees on all batteries from HRK 8,400 (EUR 1,110) to HRK 7,900 (EUR 1,043) per tonne POM.** In July 2021, a new waste management law transposing the EU CEP maintained the EPEEF at the centre of the EPR regime but enabled exemptions from the fees for approved collective compliance organisations. No compliance organisations have yet been granted exemptions.

Eight waste management companies are authorised to collect waste portable batteries and three of those companies are also authorised for waste battery treatment/export (all waste portable batteries are exported).

Collection rate: In 2015, the collection rate was 29% after 4 years of falling POM. The 100% collection rate in 2016 was supposed to be exceptional due to transition issues resulting from regulatory changes in 2015 and from the inclusion of 80 tonnes of waste portable batteries collected prior to 2016 and sorted out from the automotive and industrial batteries waste stream. However, the implausible collection rate persisted, presumably because declared POM volumes were far too low. POM increased from 63 g per capita in 2015 to a plausible 164 g per capita in 2018. **2019 saw a further 34% increase in POM to 223 g per capita, coupled with a 24% increase in collection to 160 g per capita. The 2019 collection rate remained very high (95%) and only in 2020 fell to a more plausible 68%, as POM increased 16% to 260 g per capita and collection declined by 8% to 147 g per capita.**



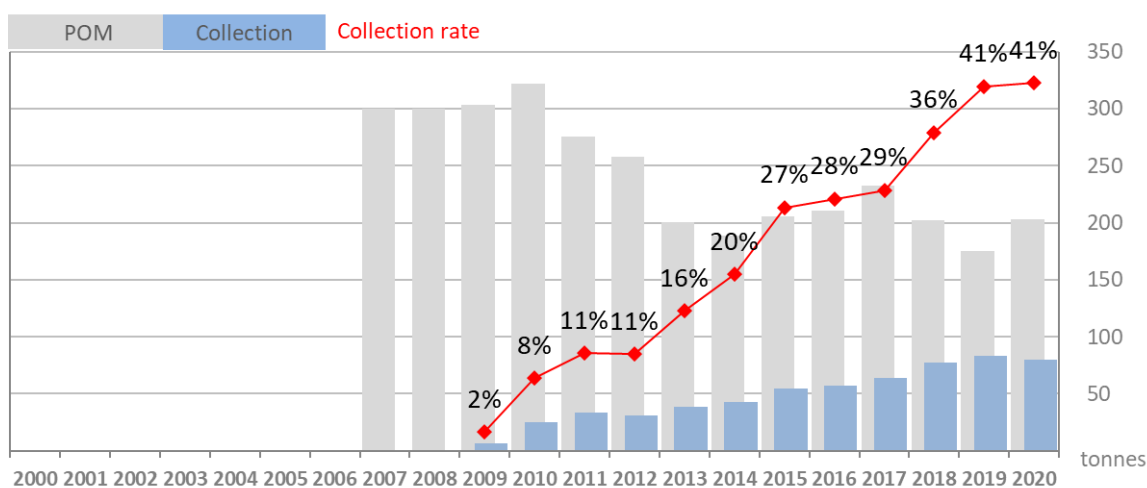
Source: Environment Agency

CYPRUS

Legal and organisational developments: The single organisation, AFIS (**204 producer members**), only began collection in late 2009 and collection facilities at municipalities 'green points' only became available after long delays. **As of 2021, AFIS serviced a network of about 4,300 collection points. Cyprus' CEP-transposition legislation of May 2021 had no effect on the batteries regime.**

Collection rate: The collection rate climbed from 11% in 2012 to 27% in 2016 and 2017. In 2018, a 13% drop in POM over the previous year coupled with a 21% increase in collection pushed the collection rate up to 38%. **In 2019, this trend continued and raised the collection rate to 41%. In 2020, a 16% increase in POM over the previous year and a 4% decrease in collection kept the collection rate flat at 41%.**

Note: We have revised the 2015 collection rate in the 2015 update of this report (25%) to 27% as newer data submitted to EUROSTAT have become available that show 15% lower POM for 2015.



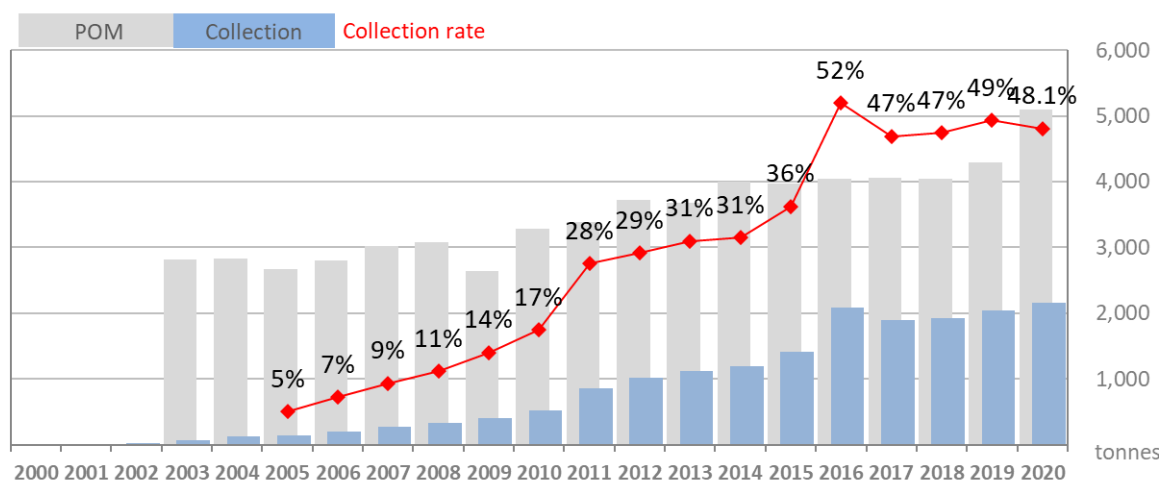
Source: AFIS; 2014/5/6: EUROSTAT; 2017: Collection: AFIS, POM: Sagis estimate (+5% over 2016)

CZECH REPUBLIC

Legal and organisational developments: In December 2020, a long-awaited Act on End-of-life Products – originally proposed in 2014 – newly enshrined the EPR provisions of the previous Waste Act and notably revised requirements on compliance organisations.

On the basis of a 2001 voluntary agreement between the Government and industry, Ecobat was the single battery organisation from 2003 to 2009. Under legislation transposing batteries Directive 2006/66/EC, REMA Battery (related to WEEE organisation REMA) was approved as a second battery collection organisation. **2020 data suggest that Ecobat's share of POM and collection declined from around 90% to 82%, with REMA Battery responsible for all of the remainder. Ecobat has about 1,250 producer members, while REMA about 970.**

Collection rate: In 2011, a 63% increase of volumes collected over the previous year brought the collection rate up from 17% in 2010 to 28%. From 2012 to 2015, volumes collected increased by an annual average of 13%, while POM increased by an average of 4%, pushing the collection rate up further to 36% in 2015. In 2016, the collection rate increased strongly to 52% in 2016 due to a 48% increase in collection to 200 g per capita, while 2017 and 2018 saw flat collection rates of 47% as collection decreased to around 180 g per capita over static POM. **In 2019, a 6% increase in both POM and collection resulted in a collection rate of 49%. Preliminary data for 2020 suggest POM and collection increased by 16% and 6% respectively, decreasing the collection rate to 48%.**



Source: EUROSTAT; Before 2009: Ecobat data, partial data from other organisations

Other issues: A survey conducted by Ecobat in mid-2016 discovered that 69% of Czech's were correctly separating their waste batteries from other household waste. 70% of those that said they did not separately dispose of waste batteries said they were too lazy to do so. The remainder commented that they believed their volumes to be insignificant and would not impact overall collection. **In 2021, Ecobat reports that its collection network covers only 64% of Czech municipal territory.**

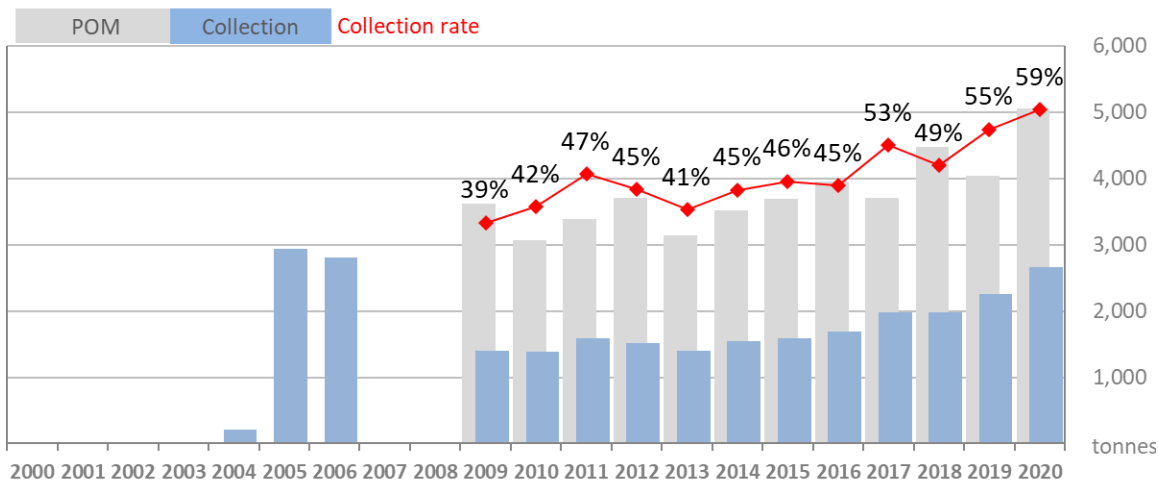
DENMARK

Legal and organisational developments: Municipalities have traditionally been responsible for the handling of household waste, including batteries. From the mid-nineties, the municipal collection of NiCd batteries was financed by producers. The implementation of the Batteries Directive in 2009 continued this approach: Municipalities have been made explicitly responsible for the collection of all portable batteries, while producers finance the municipal collection through a tax – **which has increased annually since 2016 – of DKK 5,400 (EUR 726) per tonne POM.**

Four battery compliance organisations – Elretur, ERP Denmark, Recipo (owned by Swedish WEEE organisation EAF), **and more recently RENE (owned by German-based RENE AG)** – take-back waste batteries from municipalities and from voluntarily-collecting retailers and other organisations. The compliance organisations also finance and organise public awareness measures. **Around 40%** of portable battery producers - all small producers - comply individually, as the allocation scheme is unable to allocate very small quantities of waste portable batteries to them.

POM of button cells: Data reported by DPA suggests that button cells containing mercury contribute about 1/3 of PM in terms of mass (in 2020, 36% or 1,841 tonnes). This is unusually high: In other countries button cells contribute only 2-3% to POM by mass.

Collection rate: The collection rate for all portable batteries declined from 47% in 2011 to 41% in 2013. Thereafter, volumes collected increased annually and the collection rate peaked at 53% in 2017, driven by a POM decline of 6% and a collection increase of 18% over 2016. It should be noted that annual fluctuations of around +/- 15% for POM and +/- 8% for collection volumes have been common. In 2018, the collection rate dropped to 49% due to increasing POM over static collection. **In 2019, POM declined by 10% to 695 g per capita while collection increased by 14% to 387 g, raising the collection rate to 55%. In 2020, POM jumped by 25% to 868 g per capita while collection increased 18 to 456 g, bringing the collection rate to 59%.** Around 95% of waste portable batteries derive from municipal collection points. Retailers are not obligated to take back waste batteries.



Source: Data after 2009: [DPA organisation](#)

Other: Elretur in 2015 ran an unusual awareness campaign entitled ‘Do not throw your batteries in the trash!’ ([website](#)), with the slogan ‘Skal du f**** med grundvandet!’ (You shall not f**** with groundwater!, emphasised in a 45 sec [youtube spot](#)), arguing an important message must be communicated strongly. The campaign gained significant publicity but was met with mixed opinion.

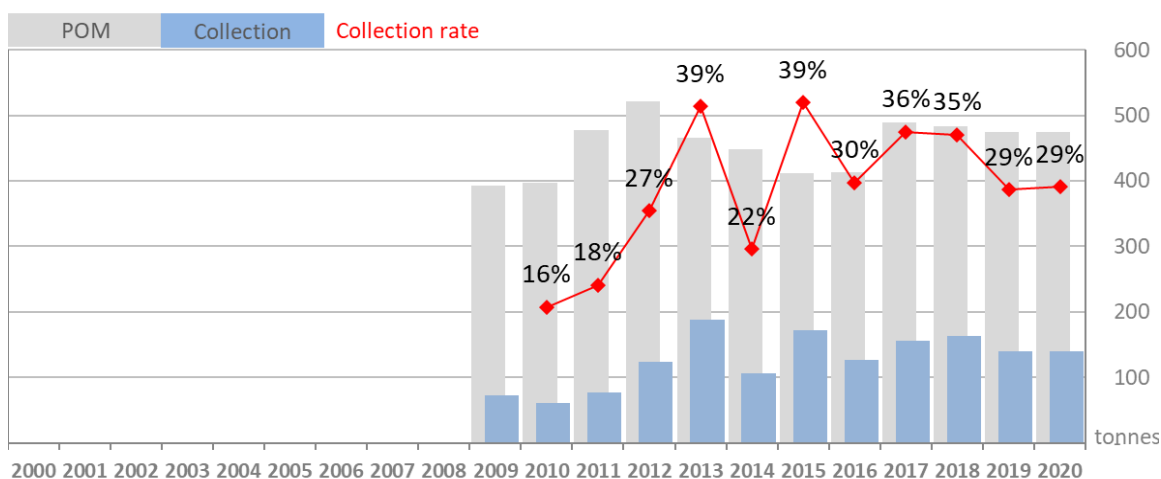
ESTONIA

Legal and organisational developments: Separate collection for portable batteries has been in place since the end of the nineties. Batteries could be returned free of charge to around 100 hazardous waste collection points managed by the municipalities. Since May 2004, producers have been legally responsible for waste portable batteries. However, no compliance organisations had been established until 2009, when two WEEE management organisations - EES-Ringlus and Elektroonikaromu - were approved as waste battery organisations.

In October 2017, the Government proposed the draft of a new Waste Act which i.a. would prohibit individual compliance for producers of portable batteries and tires. The Government argued that its motive was a lack of capacity to inspect individual collection networks. The draft was ultimately abandoned.

All portable battery producers comply through two collective compliance organisations, EES-Ringlus and Elektroonikaromu. EES-Ringlus' POM share dropped from 80% in 2013 to about 25% in 2015 due to an exit of a large foreign producer (P&G). The Estonian importers that subsequently assumed the producer's obligations joined Elektroonikaromu. **To improve collection performance, the activities of the battery PROS were consolidated into jointly coordinated activities under the brand name PATAREIRINGLUS in August 2021. This resulted in a substantial increase in battery recycling fees, which were initially low in comparison to other member states.**

Collection rate: The collection rate more than doubled between 2011 and 2013 (from 18% to 39%). From 2014 to 2016 the annual collection rate strongly fluctuated due to strong variations in collection. The collection rate was 36% in 2017 on strongly increasing POM (+24%). **In 2019, a 14% drop in collection lowered the collection rate to 29%.**

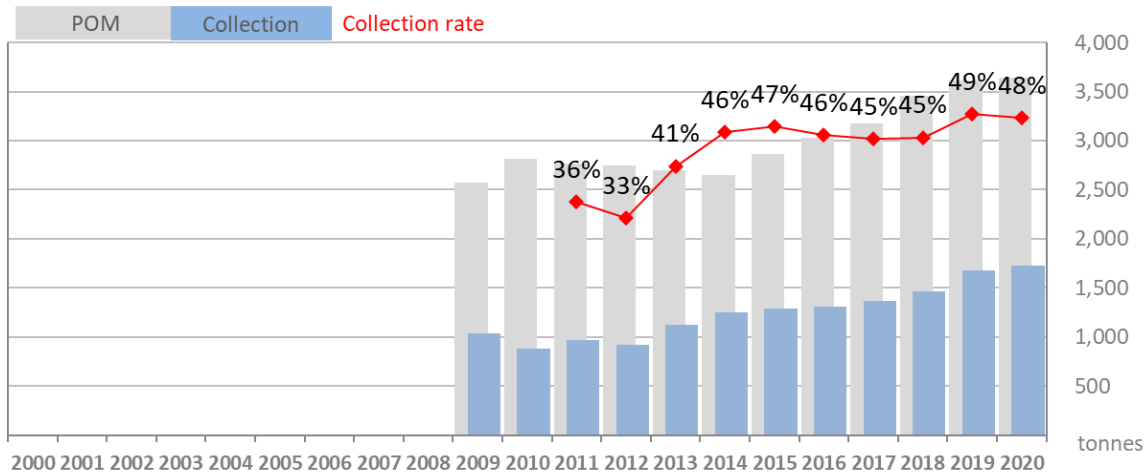


Source: EES-Ringlus, various; 2012-4: MoE; from 2015 Eurostat; 2020 no data

FINLAND

Legal and organisational developments: Finland transposed the EU Batteries Directive (2006/66/EC) in 2008. Since 2009, two producer-controlled organisations, Recser (owned by WEEE umbrella organisation Elker Oy) and ERP, have been approved as battery organisations. Both organisations are linked to WEEE organisations. Recser alone manages waste battery collection and awareness campaigns whose costs are shared between the organisations. As municipalities are not obliged to – and do not – take part in the collection of waste batteries, the retailer take-back obligation plays an important role.

Collection rate: Since 2013, collection volumes have increased by an average of 6% annually. The collection rate increased from 33% in 2012 to 46% in 2014, driven by 2% annual decreases in POM coupled with rising collection. Between 2014 to 2018, the collection rate remained static at between 45-46% as increases in POM offset the rises in collection. **In 2019, the collection rate peaked at 49% as collection increased by 15%. The collection rate edged lower to 48% in 2020 as POM and collection rose by 1% and 3% respectively over 2019.**



Source: From 2015 Eurostat; Pirkanmaan ELY-keskus;

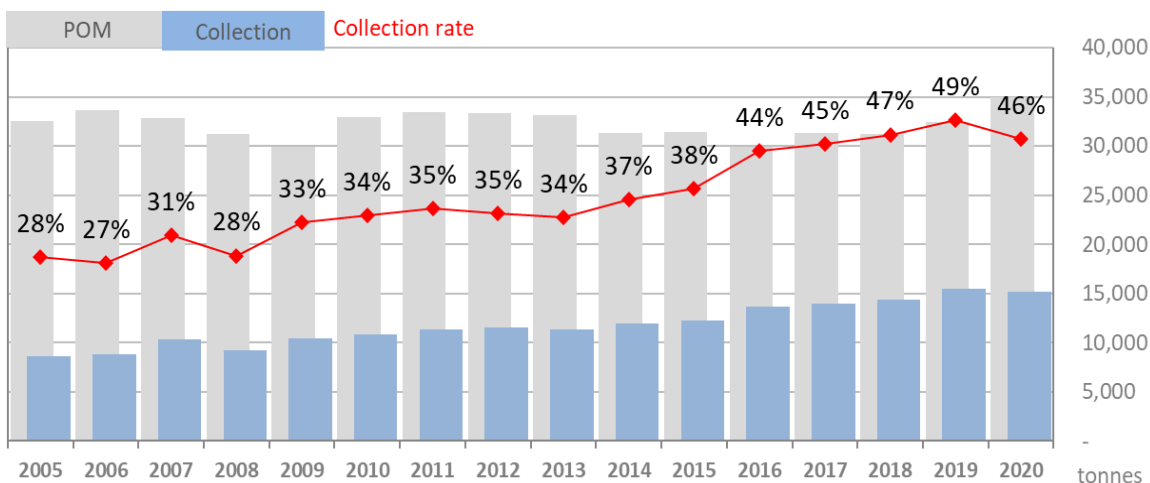
FRANCE

Legal and organisational developments: Since January 2001, producers have had to take-back waste batteries collected by distributors, municipalities and other final holders. While large retailers initially ran individual compliance programs, by 2012 only two producer-controlled battery compliance organisations remained: Corepile and Screelec. The licences of compliance organisations for the period 2016-2021 enabled the Government to set a collection target above 45% if one of the organisations exceeded 45% (Cahier des charges IV.1) **and a 51% target was set for 2021. This provision was not carried over into the 2022-2024 licenses. In 2020, both organisations had about 900 producer members each, while Corepile represented 63% of POM.**

Collection: In 2016 collection increased by 11% over 2015. Half of the increase is the result of an increase in collection volumes of battery compliance organisations, as both organisations continued to develop ‘multi-waste-stream collection partnerships’ with other EPR organisations. Corepile executed 3-4 times more marketing measures in 2016 than in 2012 and Screelec changed the branding of its Batribox collection boxes to ‘shock-pink’. Over 2017-2018, collection increased by 2% and 3% respectively.

Lead: Since 2016, the Government has adjusted the collection volume by adding waste portable lead batteries that were collected and processed by French recyclers - outside of the compliance organisations’ network. The decision was based on a 2016 study by consultants Terra which estimated that 3,500 tonnes of waste portable lead batteries are treated annually outside of the compliance organisations’ network. **The ‘additional volumes effect the collection rate:** For example, in 2016 682 tonnes of such batteries were added, which contributed half of the collection increase from 38% in 2015 to 44% in 2016. The ‘additional’ volumes increased to 833 tonnes in 2017, **1,336 in 2019, and 1,474 tonnes in 2020. The return rate of lead portable batteries remained plausible, as the share of lead portable batteries of total POM also increased steadily – from 2.4% to total POM in 2016 to 5.9% in 2020. Over the period 2016-2020, 4,820 tons of lead portable batteries were placed on the market and 5,598 tons of waste lead portable batteries from French sources were processed by recyclers (124% of POM).**

Collection rate: From 2009 and 2013, the collection rate remained at 33%-35%. Since 2014, it has consistently increased and **reached 49% in 2019, driven by a collection increase of 8% over 2018. In 2020, the collection rate declined to 46% driven by a 7% POM increase and a 2% decrease of collection in all channels (the collection mass passing through PROs decreased by 4%, blamed largely on Covid lockdowns blocking collection points). As both trends continued in 2021, it appears unlikely that the two compliance organisations can meet the 50% national collection target imposed on them in 2021.**



Source: ADEME annual battery reports (example: [2016 report](#)). Note: ADEME reports frequently make adjustments to previous years’ data. For example, ADEME revised 2015 POM by -0.6% in its 2016 report due corrected producer declarations, etc. For 2016, the sum of POM listed in the compliance organisations’ annual reports is 3% higher than POM in the ADEME report.

GERMANY

Legal developments: From 1988, industry operated a voluntary organisation collecting only ‘environmentally hazardous’ batteries. In response to the 1998 Batteries Ordinance, producer organisation GRS was established and its special role as the ‘joint’ organisation was confirmed under the 2009 Waste Batteries Act. In addition, three “producers’ own take-back systems” were operating (under approvals from the state in which they are based that are valid nationwide). A 2015 amendment to the Batteries Act required municipalities to hand over free-of-charge waste batteries - which they collect voluntarily or which they remove from WEEE (which they are obligated to collect) – to the ‘joint battery organisation’ GRS who must take them back. At the same time, the revised WEEE Act required municipalities to remove batteries from WEEE that are ‘not enclosed’ by the WEEE (municipalities collect about 90% of household WEEE). Also in 2015, the option to require “producers’ own take-back systems” to participate in the financing of GRS information campaigns was activated for the first time under the neutral branding and jointly with municipalities. **In response to compliance market developments, a new Batteries Act was published in October 2020. It notably no longer foresees a designated ‘joint system’: All organisations compete as “producers’ own take-back systems” on the same terms and are newly subject to authorisation by WEEE register EAR, from 1 January 2022 at the latest. While the Act does not stipulate a clearing mechanism, and does not ensure that all battery collectors are serviced by the compliance organisations, it introduces a common-sense requirement as regards lead batteries (see below).**

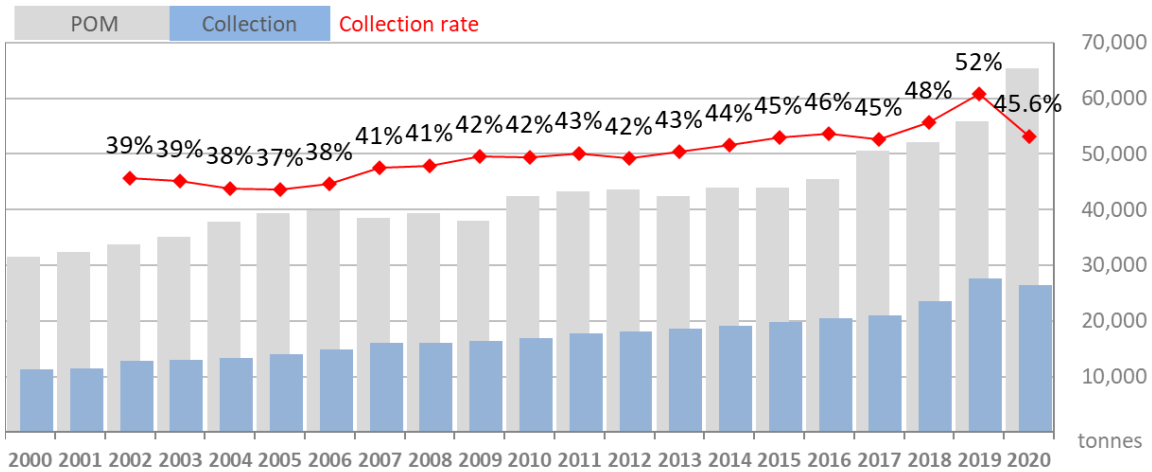
Organisation developments: Until 2017, GRS was operating as designated “joint system”, with a quite stable POM share of above 75%, besides three “producers’ own take-back systems”: CCR Rebat (POM share about 19%), ERP (3.5%) and ÖcoReCell (0.3%). A dispute began in 2016 when a large battery importer terminated its affiliation with GRS and joined ERP. As each origination’s collection target reflects the current and past 2 years of POM, but the recycling fees are charged on a pay-as-you-go basis, this and subsequent switches led to substantial underfunding of GRS, which responded with a temporary fee increase. After an April 2018 outline paper for a revised EPR regime proposed by the Federal Environment Ministry (BMU) was widely rejected, **GRS decided to relinquish its status as ‘joint’ system to create a level playing field for all compliance organisations. GRS was approved as ‘producer’s own take-back system’ (valid nationwide) in January 2020 by the Hamburg state authorities. In that year, GRS’ POM share had fallen to 31%, having been overtaken by CCR Rebat (43%). At the end of 2020, ERP and Ecobat ceased their portable battery compliance operations. However, from end 2012, ERP parent Landbell itself and subsidiary DS were authorised by WEEE register EAR. GRS had 4 sectoral entities approved to enable customized collection solutions and flexible pricing options: a) GRS eMobility for portable or industrial batteries from e-bikes and other light vehicles; b) GRS Powertools for batteries from power and garden tools, etc. c) GRS Healthcare for batteries from hearing aids and other medical devices; d) GRS Consumer in particular targeting retailers. In November 2021, all “systems” launched a new, joint common logo and [information platform](#).**

Lead portable batteries: The return rate (collection/POM) of lead batteries in total waste portable collection volumes was **144% in 2020 (2018: 115%, 2017: 98%; 2016: 96%)**. **The 2020 Batteries Act mandates that – when calculating the collection rate - the mass of lead batteries collected may not exceed their 3-year average POM (max. return rate is 100%).**

POM share 2016/2020		Collection rate:	2016	2017	2018	2019	2020
GRS	78% / 31%	All chemistries	46%	44%	46%	76.1% [54%]*	46.6% [36%]*
		Excl. lead	46%	43%	46%	55%	36%
ERP	3% / 13%	All chemistries	46%	46%	48%	47%	47%
		Excl. lead	29%	15%	13%	19%	32%
Rebat	19% / 43%	All chemistries	44%	50%	55%	46%	49%
		Excl. lead	42%	48%	56%	42%	47%
Ecobat	0% / 13%	All chemistries				50%	66%
		Excl. lead				21%	32%

* Rate announced in GRS annual reports and calculated on the basis of a December 2017 guidance [rate calculated using tonnages reported in GRS annual reports]

Collection rate: Since 2012, the annual growth of POM has averaged 1.2% and that of collection 3.2%. The collection rate increased gradually from 37% in 2005 to 46% in 2016, before falling back to 45% in 2017, driven by an 11% increase in reported POM. In 2018, POM increased by 3% to 630g per capita, and collection by 12% (driven by Rebat, who achieved a 55% collection rate). **In 2020, a 16.9% POM increase and a 4.5% decrease in collection reduced the collection rate to 46.6%.**



Source: Summary of volumes in annual reports of the compliance organisations

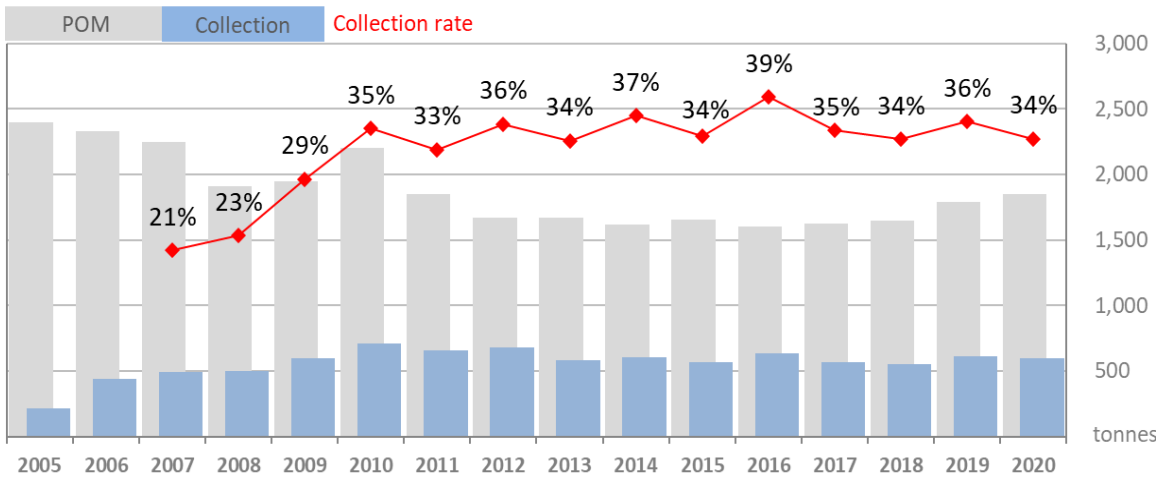
GREECE

Legal and organisational developments: A 2004 Presidential Decree required producers to set up battery organisations and achieve a collection rate of 30% by 2006. In response, AFIS, the only collective compliance organisation for batteries was established by battery importers. A replacement Decree transposed Batteries Directive 2006/66/EC in 2010. It initiated a register of battery producers and allowed producers of batteries integrated into EEE to comply through their WEEE organisation, which meant that the weight of batteries placed on the market in EEE was no longer reported from 2011. A new operating approval, issued in March 2020, sets AFIS’ collection target at 45% in 2020/1, followed by 47.1% in 2022 and annually increases to 52% in 2025.

There are over **71,000** of AFIS’ waste portable battery collection points or **one per 151 citizens**. **About 75% of the total weight of batteries collected derive from supermarkets and shops**. AFIS noted that even its very high collection point density still needs to be supported by awareness campaigns to increase collection volumes, and quadrupled its ad budget for 2019 to EUR 0.04 per capita (EUR 400 K total).

Batteries embedded in EEE: Until end 2020, EEE producers did not have to report the weight of batteries placed on the market in EEE separately. **Preliminary data suggest that the mass of embedded batteries in 2021 was around 900 tonnes, far higher than the estimated mass AFIS had added to POM in previous years. As a result, 2021 POM is expected to jump by 1/3 to around 2,800 tonnes (about 260 g per capita). This may depress the 2021 collection rate to around 28%.**

Collection rate: The collection rate reached a peak of 39% in 2016 as collection increased 11% to 59 g per capita over slightly decreasing POM. The collection rate fell to 35% in 2017 due to a 10% drop in volumes collected to 53 g per capita and in 2018, fell further to 34% as collection dropped to 51 g – over static POM. **In 2019, a 9% increase in POM to 167 g per capita and a 10% increase in collection to 57 g raised the collection rate to 36%. In 2020, the collection rate fell back to 34% as collection remained flat and POM rose by 3%.**



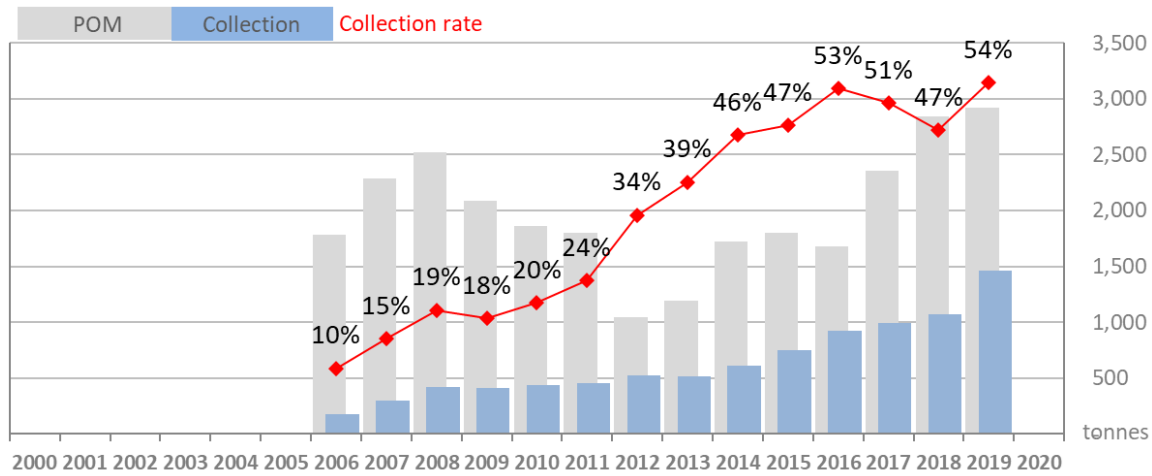
Source: AFIS

HUNGARY

Legal and organisational developments: Since 2000, the **Product Fee Act** has applied to accumulators (but not single charge batteries). From 2005, collective compliance became feasible as a compliance option and three producer’s organisations, RE’LEM, Re-bat and CCR Rebat have been operational since then. The management of waste batteries by ‘producer responsibility organisations’ has been working well, leading the Government to keep the waste producer responsibility scheme for batteries as it is when it replaced the competing organisation model applied to most other waste streams with state fund model from 2012.

Collection rate: Data reported by the Hungarian government to Eurostat show that collection increased strongly from 2014 (2014: +14%, 2015 +19%, 2016 +19%), following the introduction of the obligation for producers to ensure at least one collection point in communities with over 100 inhabitants. The collection rate increased to 53% in 2016 and fell back to 51% in 2017 as a 40% POM increase offset the strong collection growth. In 2018, POM increased by 19% to 286g per capita, while collection increased by 8%. **In 2019, the collection rate increased to 54% driven by a reported collection increase of 36%. No data are available for 2020.**

Note: Our estimate of the collection rate in 2016/7 remains inconclusive: While RE’LEM (estimated POM share about 75%) notes that it has achieved the 45% collection target, we could not obtain any nominal POM or collection volumes that could be used to assess the Eurostat data.



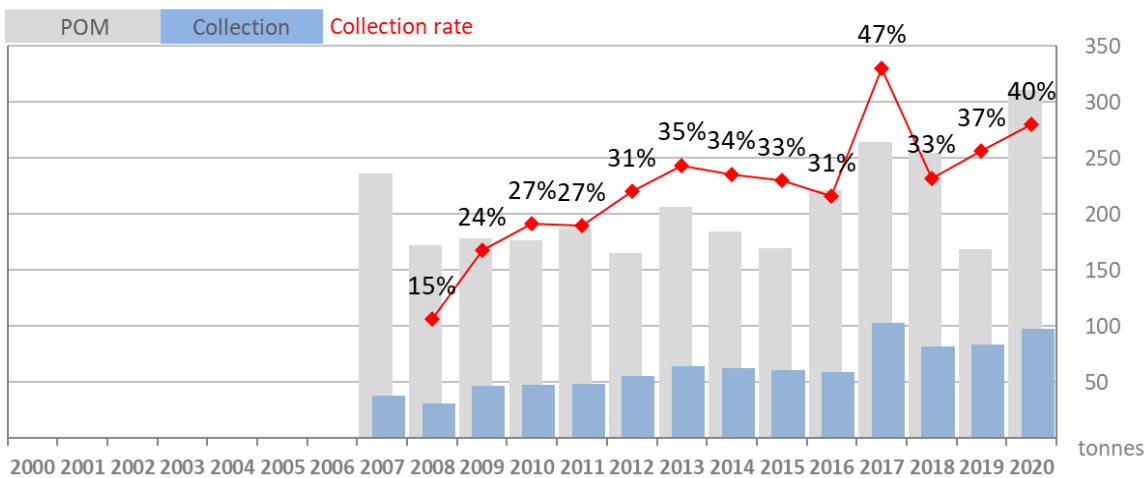
Source: 2009-2019 Eurostat

ICELAND

Legal and organisational developments: Iceland’s 1999 Regulation on Batteries imposed eco-fees on batteries, to be charged by customs on the import of batteries. This was to fund the separate collection of hazardous wastes, including waste batteries, by the government’s Icelandic Recycling Fund. Legislation transposing Batteries Directive 2006/66/EC extended the scope of batteries covered, and maintained the existing financing and collection mechanisms. The Fund must ensure that battery collection targets are met. From 2017, the Recycling Fund increased recycling fees for batteries by 120% as it had run into a deficit (as of January 2022, the Fund’s fees remain unchanged). A June 2021 amendment to the Waste Act transposing the CEP added industrial batteries to the scope of batteries subject to the Recycling Fund. Batteries embedded into EEE continue to be excluded.

The Customs Authority’s latest list (2022) of producers shows 1,297 companies registered as battery producers.

Collection rate: In 2016, the collection rate decreased to 31% due to a 23% increase in POM. In 2017, the collection rate exceeded 45% for the first time, driven by a 74% increase in collection over 2016 as funding became available again. POM increased by 19% in 2017 (31% in 2016) to 780g per capita, making Iceland the country with the highest per capita POM of the countries investigated. In 2018, a slightly lower but still very high POM (731g per capita) and a 21% decrease in collection pushed the collection rate down to 33%. Due to the small market, a few large imports can significantly affect POM. In 2019 POM dropped 34% to 485 g per capita, while collection increased by 3%. In 2020 POM surged 84% to 893 g per capita. A 17% increase in collection to 281 g per capita nudged the collection rate higher to 40%.



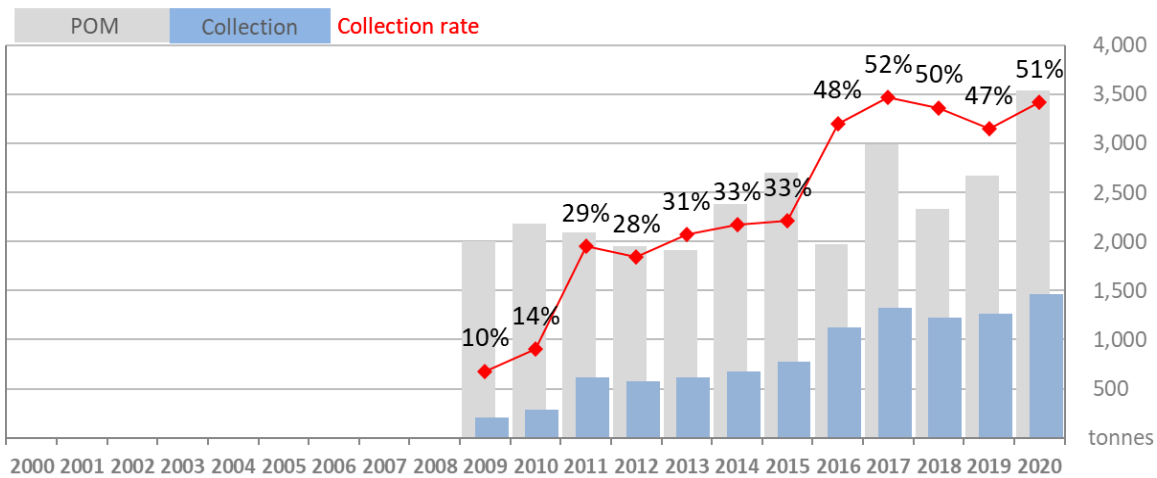
Source: Icelandic Recycling Fund. Note: The reported collection relates to the year in which collectors submitted data and requested compensation from the Fund, and not the period in which collection occurred.

IRELAND

Legal and organisational developments: In July 2008, Ireland became the fourth member state to complete the transposition of Batteries Directive 2006/66/EC. The two approved WEEE compliance organisations - WEEE Ireland and ERP Ireland - were quickly approved as battery compliance organisations. To avoid duplication, each organisation is given responsibility for WEEE in different Irish counties and Dublin city districts. The allocated areas are adjusted periodically to reflect changes in POM share of the organisations. **For 2020, WEEE Ireland data suggest its share of portable batteries POM was 71% (2016: 77%) and its collection share 64% (2016: 76%).**

Collection rate: The collection rate rose from 33% in 2015 to 48% in 2016 due to a fall in POM of 27% and an increase in collection of 46% over 2015. In 2017, volumes POM surged by 52% to 625 g per capita while collection continued its increase (+18%) to 278 g, resulting in a collection rate of 52% - the highest to date. In 2018, POM fell 22% to 484 g per capita, while collection declined by 8%, lowering the collection rate to 50%. **In 2019, the collection rate fell further to 47% due to a 14% increase in POM. In 2020, POM jumped 33% to 714 g per capita, as collection also increased strongly by 16% to 294 g – the highest POM and collection volumes to date – pushing the collection rate back up to 51%.**

Note: Based on partial data from compliance organisations, we estimated the collection rate reached 45% in 2016, after a not quite as strong fall in POM (-23%) and a similar increase in collection (+27%).



Source: Eurostat; data from compliance organisation

ITALY

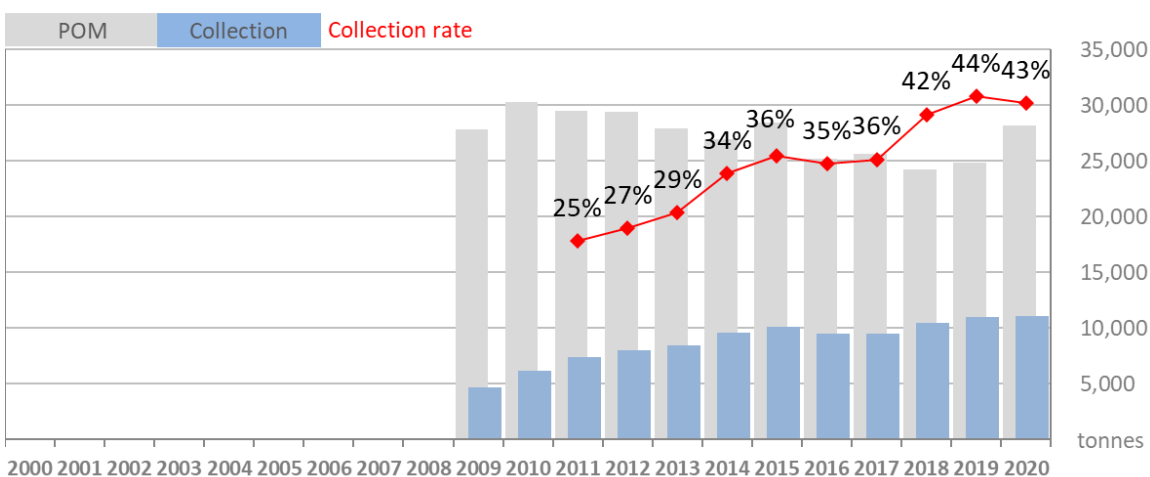
Legal and organisational developments: Decree 188/2008 transposing Batteries Directive 2006/66/EC entered into force on 18 December 2008. Subsequently, 13 organisations for portable batteries emerged, of which all except COBAT (established in 1988 as a national consortium for lead batteries and later extending its scope to other chemistries) originated from WEEE organisations. The organisations are legally obligated to join a single Coordination Centre to ensure homogenous battery collection throughout Italy. The Centre (CDCNPA) became operational only in late 2012 after it had signed with the association of the Italian regions ANCI which defined the operational parameters for take-back from, and the compensation paid to, municipalities. In July 2016 a revised agreement (2016-2019) with ANCI was signed. **After 2019, CDCNPA unilaterally extended the agreement annually on the same conditions (as of Feb-22, not yet for 2022).**

The three largest of compliance organisations for portable batteries - COBAT, ERP and REMEDIA - represent a combined POM share of over 70%. COBAT retains the largest market share (**30% in 2018**) as it acquired large WEEE producers during the market exit of RAECYCLE, which ceased to provide compliance services in early 2016.

Collection points: By the end of **2020** there were **10,952** CDCNPA registered waste portable battery collection points (2018: 7,500, 2016: 5,300), or one per **5,400** residents. About 80% of collected batteries originate from municipalities, of which 30% (2016) derive from municipal waste management companies and 50% from voluntary collectors.

Distinction between battery categories: **As of 2022, the national battery register list about 6,500 entities as battery producers, 920 as individual compliers, and 20 compliance originations. A distinction by battery category - portable, industrial, and automotive - is not published. Compliance originations and individual compliers of all battery categories are obligated to join the CDCNPA. However, CDCNPA lists only 13 compliance organisations and 3 individual compliers as members. There is no information about the battery categories they put on the market.**

Collection rate: National authorities' data show a collection rate of 25% in 2011. By 2018, the collection rate had edged up to 42%, **as reported POM had fallen to its lowest point in a decade (401 g per capita)**, and collection increased by 10% over 2017 (driven by the centre region +21%), following CDCNPA's re-allocation of regions and PROs. **In 2019 and 2020, POM increased by 3% and 13% respectively to 472 g per capita in 2020, while collection increased by 5% and 1%, bringing the 2020 collection rate to 43%.**



Source: Eurostat, 2020 CDCNPA; Note: Since the 2016 update, we have replaced the CDCNPA with those from Eurostat when available. As the Coordination Centre's data do not reflect the POM of up to 900 individual compliers, the Centre's collection rate is 2 to 4 percentage points higher.

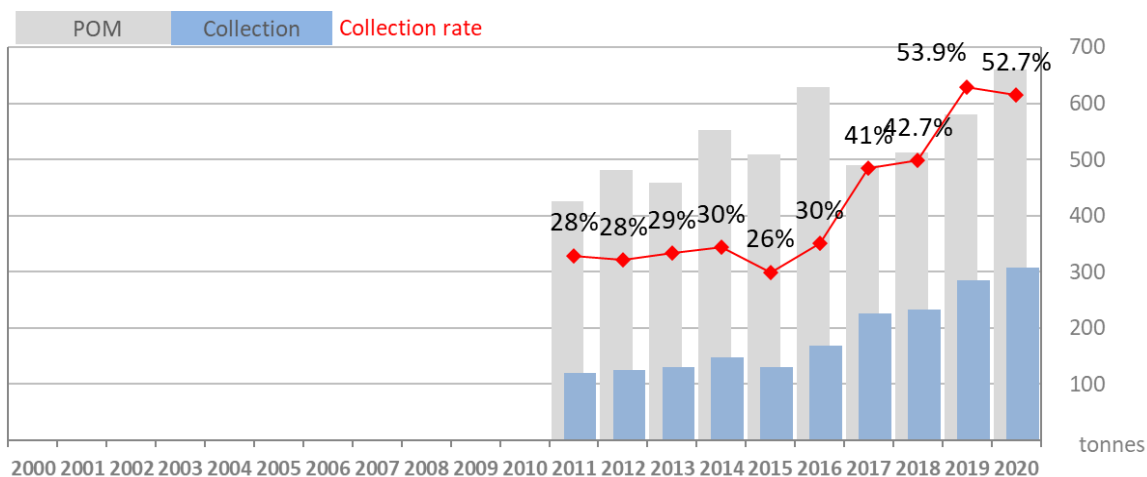
LATVIA

Legal and organisational developments: A separate collection organisation for batteries from households was introduced in 2001, managed by hazardous waste management company BAO. A Natural Resources Tax (NRT) has applied to separately sold batteries since July 2006, and since January 2011 to batteries embedded into EEE also. Producers can be exempted from the tax by achieving collection targets. Legislation transposing Batteries Directive 2006/66/EC came into force in May 2011, while the NRT – significantly increased from 2014 – continues to be maintained as an enforcement instrument.

In 2017, most of the 650 registered producers comply through 15 organisations – both waste management companies, such as BAO, and producer-controlled organisations – that may act as battery compliance organisations for producers by having been granted an exemption from the NRT. In 2018, LZE and Nordic Recycling (Kuusakoski) had their approval as battery organisations withdrawn, following fines of a total of EUR 22 million for failing to properly recycle packaging and hazardous waste, mostly tires but also batteries (10 x the amount of the natural resource tax that would have applied). In June 2018, the Administrative District Court rejected LZE's appeal against the fine and the company appears to have closed. LZE and Nordic Recycling no longer operate.

As of 2022, 4 organisations have been granted an exemption from the NRT for batteries: The largest two represent 97% of POM: Zala Josta (52%) – established by a group of waste management companies – and packaging compliance organisation Zalais Punkts (45%).

Collection rate: Government data show the collection rate in 2015 fell to 26% from 30% the previous year due to a 12% decrease in collection. 2016 saw sharp increases in both POM and collection at 23% and 30% respectively, lifting the collection rate to 30%. In 2017, POM plunged 22% over the previous year while collection continued to surge 33%, pushing the collection rate further to 41%. In 2018, collection grew 3% as POM – although remaining low – recovered slightly and the collection rate continued to 42.7% [Note: Eurostat data show a collection rate 45.4% due to a calculation error]. **In 2019, both POM and collection continued to rise (+13% and +22% respectively) resulting in a peak collection rate of 54%. In 2020, a 14% increase in POM over an 8% increase in collection edged the collection rate down to 52.7%. 2020 data are not available.**



Source of underlying tonnage data: 2015-18 Eurostat; before Compliance organisations, MoE 2019 POM estimate

Other: There are 2 reporting obligations for all battery types: The natural resources tax is calculated based on chemistries (lead accumulators, Ni-Cd and Fe-Ni accumulators; Primary batteries; Other) but not battery type (portable, industrial, automotive), while the producer responsibility organisation requires distinction by battery type to be exempt from the NRT. As the NRT law is the overriding legislation, collection reporting focuses on the chemistries.

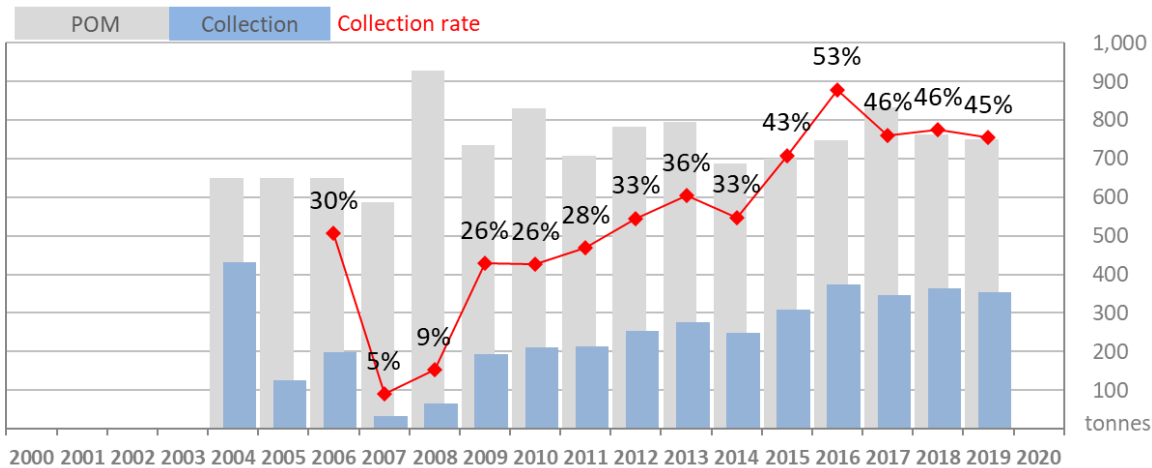
LITHUANIA

Legal and organisational developments: Since 2003, producers have had to pay an **environmental pollution tax (EPT)** on batteries. From 2008, producers could avoid the tax if they achieved collection targets by buying recycling notes from recyclers or through collective organisations. The collection target was lowered from 80% in 2011 to 25% in 2012, but the tax effectively increased by a factor of 6, which boosted the membership of the two producer-controlled compliance organisations. Since 2010, over 20 amendments and new legal texts have optimised the batteries EPR regime.

Prior to 2012, due to the low tax rate on batteries at the time, producers preferred to pay the tax rather than support organisations’ investments in collection infrastructure. Following a substantial increase in the tax in 2012 (and 2016) and the abolition of purchasing recovery notes (PRNs) as a compliance option from 2013, many producers joined collective compliance organisations.

Since 2017 **and as of 2022**, nearly all portable battery producers comply through three licensed compliance organisations: EEPA and GIA, originating from WEEE compliance organisations, and AGIA, licensed in June 2016 for all battery types and controlled by four automotive/industrial battery producers. Following a disputed temporary suspension of EEPA’s WEEE licence in 2016, GIA’s membership increased significantly and its POM share of portable batteries grew to 43% in 2016 (up from 30% in 2014 and 2015).

Collection rate: The collection rate climbed from 26% in 2010 to 53% in 2016 as collection increased 21% over 2015, while POM grew by 7% only. In 2018, POM fell by 5% to 271 g per capita, collection increased by 5%, raising the collection rate to 47.2%. **2020 data are not available.**



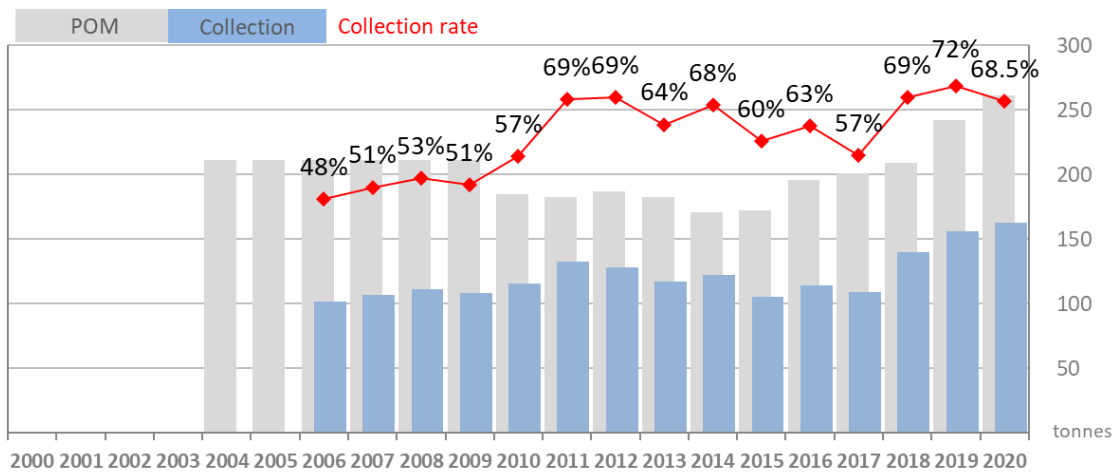
Source: MoE⁹ and other government sources; 2018/9 Eurostat

⁹ The Ministry of Environment attributes the wide fluctuation of collection data before 2009 to changes in the reporting organisation.

LUXEMBOURG

Legal and organisational developments: The 1994 Waste Management and Prevention Law, replaced by the 2012 Waste Management and Prevention Law, made local authorities responsible for separately collecting the new waste category of ‘problematic wastes’ needing special treatment. This category included batteries and accumulators. The 2008 Law on Batteries and Waste Batteries, transposing Batteries Directive 2006/66/EC, required the existing public collection of batteries through the SuperDrecksKëscht programme to be preserved while now requiring producers to fund the organisation. Producer controlled battery compliance organisation Ecobatterien, established in 2009, thus replaced municipalities as the contracting party to the agreements with the private waste collection companies that operate the SuperDrecksKëscht programme. In January 2015, Ecobatterien was approved for another 5-year period.

Collection rate: Since 2006, a collection rate of over 48% has been achieved. In 2018, the collection rate was 69% as collection increased by 28%. The Government appears to adjust POM reported to compliance organisation Ecobatterien by +5% to reflect the amount of batteries being ‘imported’ through purchases by Luxembourg residents in neighbouring countries. Luxembourg’s comparatively low POM – 347g per capita in 2018, versus over 600g in Germany and around 500g in France – suggests that the 5% adjustment maybe too low to fully reflect the private ‘imports’.



Source: 2010-14 Ecobatterien; 2015-8 Eurostat

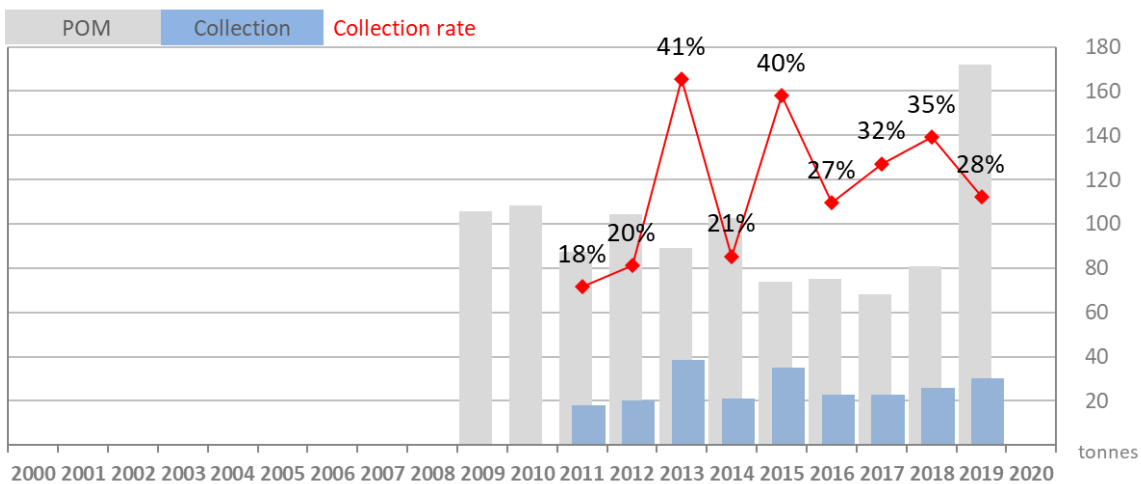
MALTA

Legal and organisational developments: From September 2004 to October 2016, the Eco-Contribution Act applied a tax to non-rechargeable batteries with a weight below 35g at a rate of EUR 0.06 per unit, and to rechargeable batteries with a weight above 35g at a rate of EUR 1.63. It did not apply to batteries embedded into EEE. Government established WasteServ Malta Ltd. operationally managed the collection of waste batteries. In 2007, Batteries Regulations transposed Batteries Directive 2006/66/EC (in force from 2010), while the existing financing mechanism continued.

In 2008, Eco-Contribution Regulations provided exemptions from the tax for members of an approved battery organisation. However, they never came into force. In consequence, industry did not establish battery compliance organisations, arguing that doing so would mean paying twice for battery waste management. From October 2016, the eco-contribution was eventually removed from batteries.

In December 2016, a compliance organisation geared towards portable batteries was approved: ‘GreenPak Battery Recycle’, an initiative of packaging compliance organisations GreenPak COOP. In March 2017, GreenPak announced the nationwide initiative [BATREE](#) to replace WasteServ’s collection network and Batterina battery collection campaign. **As of January 2022, 139 producers are registered with GreenPak Battery Recycle and 3 comply individually.**

Collection rate: POM and collection volumes have fluctuated strongly in the small market, typically between 20% and 40%, at a comparatively low POM (around 170g per capita). Collection data were uncertain in 2016/7 as a consequence of the transition from WasteServ to a new collection scheme, which became a certainty around mid-2016. In 2018, POM increased by 19% to 170 g per capita and collection by 13%, raising the collection rate to 35%. **In 2019, a 112% jump in POM – to a still very low 178 g per capita – brought the collection rate down to 28%. 2020 data are not available.**

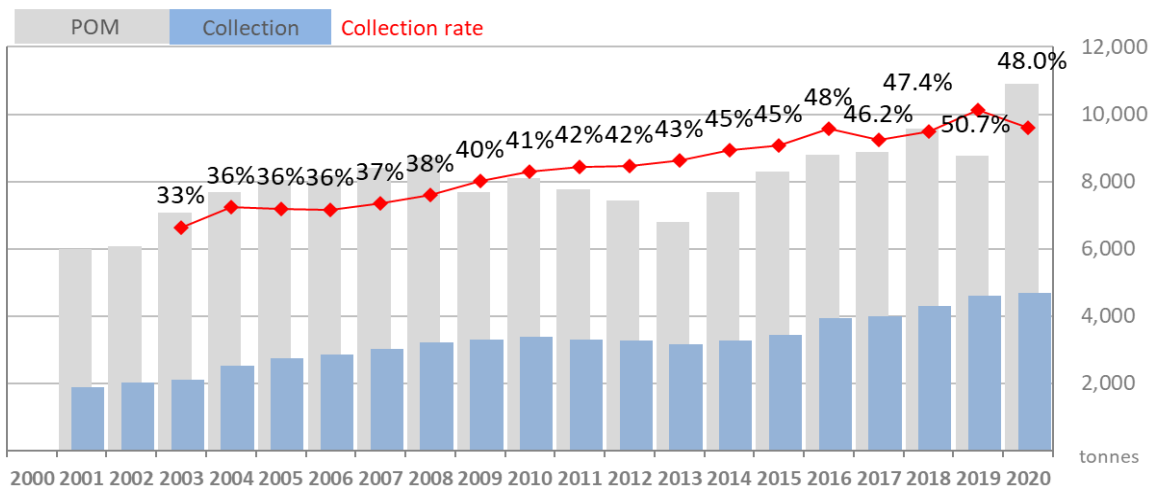


Source: Since 2015: Eurostat, before MEPA; 2020 based on GreenPak estimates

NETHERLANDS

Legal and organisational developments: A Government Decision of 1995 held producers of batteries weighing 1kg or less responsible for collecting 90% of waste batteries by 1999 through approved waste plan(s). In mid-1995 the Battery Foundation (Stichting Batterijen, or Stibat) set up a collective organisation to take-back waste batteries. In 2008, a Batteries Regulation transposed Directive 2006/66/EC, obliging retailers to take back batteries and producers to reach a 25% collection target in 2012. From 2020, Stibat introduced the option of a simplified POM declaration for producers whose recycling fees in the past 12 months were below EUR 2,500. **From 2022, Stibat increased its fees by 11-14% to prepare for the higher collection targets and newly imposed separate fees on portable lead and NiMh batteries.**

Collection rate: From 2010 to 2016, the collection rate increased steadily from 41% to 48%. POM and collection decreased from 2010 to 2013, but increased in 2014, 2015 and especially in 2016 (POM +6%, collection +15% over 2015). In 2017, the collection rate fell to 46% over static POM and collection. In 2018, an 8% increases in both POM and collection lifted the collection rate to 47.4%. **In 2019, the collection rate increased to 50.7% due to a 9% fall in POM and a 7% increase in collection. In 2020, POM increased sharply (24%) to 626 g per capita while collection nudged up (+2%), depressing the collection rate to 48%.**



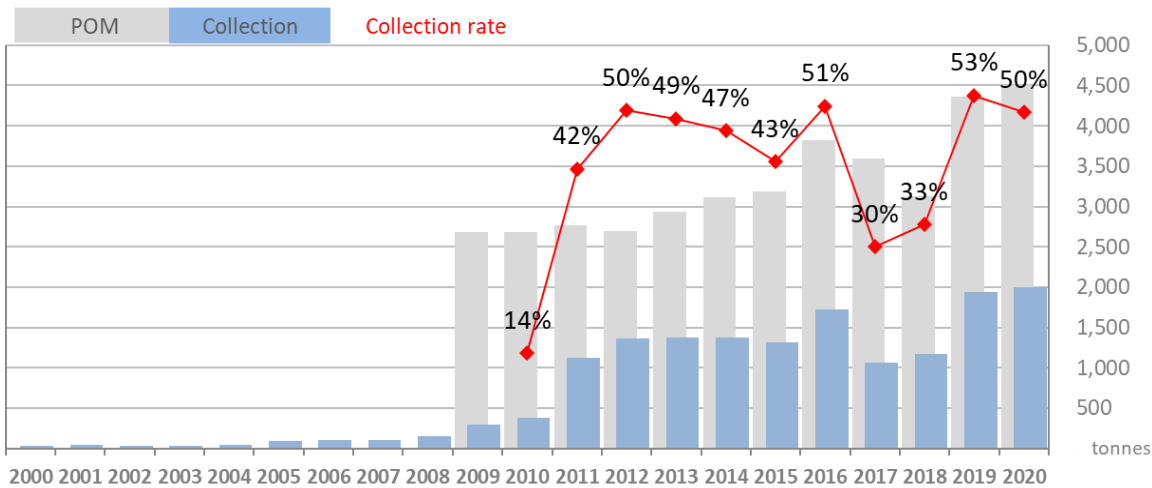
Source: Stibat

NORWAY

Legal and organisational developments: Since July 2000, Regulations on Waste Recycling have imposed take-back and reporting obligations on producers of lead-acid, industrial nickel cadmium and rechargeable batteries only. An amendment in October 2012 included an extension of the take-back obligations to all waste batteries and set a collection target of 30% for portable batteries placed on the market in the previous year. As of 2022, the 30% collection target remains applicable to portable batteries. However, the collection rate cannot be calculated for batteries embedded in EEE as there are no requirements to report them separately.

From 1999 to 2014, Rebatt AS had remained the only collective compliance organisation for separately sold portable batteries. It shares its management with and operates collection under the name of Batteriretur, which has been the organisation for automotive lead-acid batteries since 1993. In 2014, a second battery organisation Batterigjenvinning (Battery Recycling) was approved. It is a subsidiary of EEE producer-controlled Norsirk, which offers joint WEEE and packaging compliance services through Elretur and Emballasjegjenvinning. *Note: Since mid-2016, all compliance organisations have charged fees to producers directly. Previously, the organisations had contracted this task to the customs authority who charged the fees on import.* In October 2017, Rebatt/Batteriretur joined forces with WEEE organisation RENAS and packaging Organisation GreenPointNorway to offer compliance services under the brand RETURFELLESSKAPET (Take-back Community). In mid-2018, SERVA was established as a competing compliance organisation for WEEE and batteries. **In 2021, WEEE organisation ERP Norway acquired SERVA to expand its scope to portable batteries.**

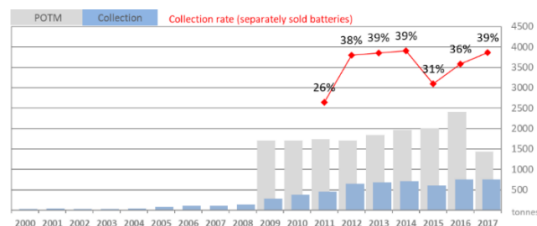
Collection rate: The collection rate has been subject to significant uncertainties about volumes of batteries in EEE and WEEE: We estimate the collection rate at 51% in 2016, falling to 30% in 2017 (Note: EUROSTAT data for Norway result in a collection rates of 33%/87%/41%/39%¹⁰ in 2015/6/7/8 (Note: In our view, EUROSTAT POM data before 2017 does not account for the weight of embedded batteries POM, hence the higher collection rates). In 2018 Eurostat data show that POM fell by 13% to 590 g per capita while collection increased 10%. **In 2019, a 40% increase in POM – to 818 g per capita – coupled with an even higher increase in collection (+66%), pushed the collection rate up to 53%.**



Source: Annual POM and collections volumes: 2008-16 Sagis estimates assuming embedded portable batteries contribute 36% to total portable battery POM. 2017/8 Eurostat

The collection rate of separately sold batteries as reported by Elretur members was around 36% in 2016 and 39% in 2017, as reported POM dropped 40% while collection remained flat.

Source: Collection data: Batteriretur; POM estimates based on Batteriretur communication



¹⁰ Calculated using the tonnages which Eurostat lists. Note that Eurostat shows a collection rate of 74% for 2018 which does not correspond to the volumes listed.

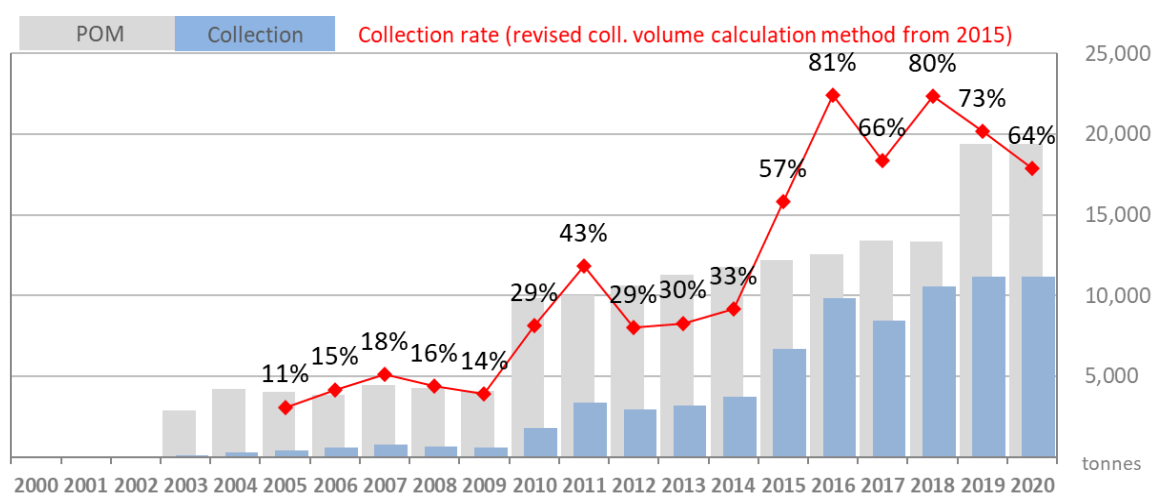
POLAND

Legal developments: Since 2002, the Act on Entrepreneurs' Obligations has required producers to individually achieve collection targets and pay product fees if the targets are not met. The Batteries and Accumulators Act of 2009 left the collection target/product fee mechanism in place and did not define or regulate compliance organisations. A 2013 amendment to the Waste Act called upon municipalities to contribute to the battery collection network from 2015, and a 2014 amendment to the Municipal Cleanliness and Waste Disposal Act required them to include batteries in the list of wastes for which municipalities must provide collection points, which reportedly led to a significant increase in battery collection points. A further 2014 amendment to the Batteries Act introduced i.a. a formal role for compliance organisations, allowing them to take legal responsibility for member producers' obligations.

Organisation developments As of February 2022, about 18,500 entities are registered as battery producers (all battery categories) in the new BDO register, as well as 25 'intermediaries' that act as battery compliance organisations. The previous GIOS registration ended in 2018 with 3,390 registered portable battery producers (2017: 2,856) that complied through 84 registered 'collectors/service providers' of which 29 had 10 or more producer clients. The organisations include REBA, set up in 2003 and whose sole shareholder since around 2016 is battery manufacturer GP Batteries, as well as entities set up by WEEE organisations, such as ERP Poland, whose market share increased from 10% in 2012 to 28% in 2013.

Each year since 2013, about 25% (30% in 2017, but only 3.7% in 2018) of producers – respectively their compliance service provider - fail to fulfil the national collection target. Environment Agency GIOS suggests that collection could increase significantly by increasing the product fee. However, this has not yet been acted upon yet.

Collection rate: From 2010 to 2016, POM volumes increased steadily by an annual average of 4%. Collection volumes grew particularly strong in 2014 and 2015 (+18% annually) when municipalities were held responsible for separate collection of batteries. The official collection rate reported by GIOS from 2011 to 2016 increased from 29% in 2011 to 39% in 2016. However, in its report for 2017, GIOS states that collection volumes in earlier reports only included collection volumes declared by collectors on behalf of producers, and that the necessary revision (all batteries declared by collector should be counted) would result in return rates of 55% in 2015 and 78% in 2016 (current year basis). Actual tonnage data are not provided. We follow GIOS correction by adjusting our collection values to arrive at the revised return rates. The results show a collection rate of 81% in 2016, easily exceeding the 45% target, and collection rate of 66% in 2017, as collection decreased 15% and POM increased 5%. In 2018, POM remained flat at 351 g per capita. Collection increased by 25% over 2017 and exceeded the previous peak in 2016 by 7%. GIOS attributes the strong 2018 collection to increased educational campaigns and awareness creation measures. GIOS has not publicly released battery data for 2019



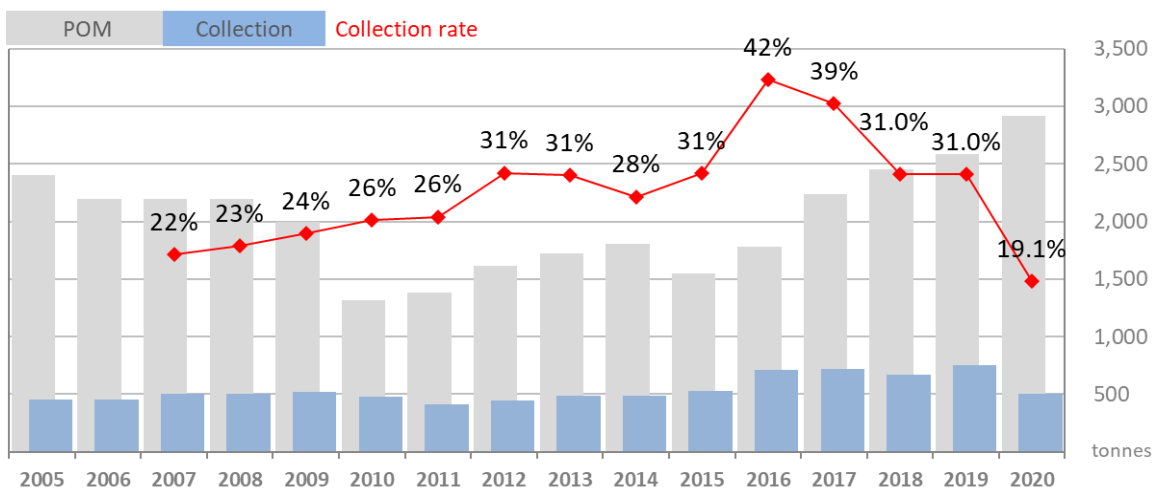
Source: Pre 2010: REBA collection only; 2010-2017 GIOS (Environmental Inspectorate) reports; 2019 Eurostat; 2020 Sagis estimate

PORTUGAL

Legal developments: In response to the 2001 Decree on Batteries, which required producers to take-back waste batteries through a licensed recovery organisation, not-for-profit battery compliance organisation Ecopilhas was set up in 2002. The 2009 Batteries Decree Law, which transposed Batteries Directive 2006/66/EC, tightly regulated battery organisations. Municipalities remain responsible for collecting waste batteries and must be compensated by the organisations for their services. A new Decree Law, in force from January 2018, consolidated 13 legal texts related to products subject to EPR (including batteries) to reduce legal uncertainty for producers and waste operators. As regards batteries, the Decree Law largely maintained the previous provisions but i.a. foresaw an allocation and compensation mechanism to be defined by the Commission for the Monitoring of Waste Management (CAGER) – if more than one compliance organisation is active for a given waste stream. **In September 2020, clearing rules for battery organisations were eventually published.**

Organisation developments: Ecopilhas was set up in 2002. In March 2010, two WEEE organisations **Electrao (formerly AMB3e)** and ERP Portugal were licenced as battery organisations. In December 2017, all three organisations were granted new licences for the period 2018 to 2021. **In November 2020, Ecopihlas terminated its operations, leaving Electrao and ERP Portugal as the only two battery compliance organisations through which around 1,100 battery producers comply. In 2020, Electrao had the largest POM share (55%) and over-collected significantly (68% share of collection). In July 2021 the organizations' licenses were extended to December 2022.**

Collection rate: As a result of the 2008 economic crisis, POM decreased by 1/3 in 2010 to 125 g per capita **and since then has increased every year – except for 14% drop in 2015 – to 283 g per capita in 2020.** Estimated¹¹ collection reached a low in 2011 at 42 g per capita **and since then has grown to a peak of 73 g per capita in 2019. In 2020, collection is expected to tank, mainly due to the market disruption following the exit of Ecopilhas. This might depress the collection rate in 2020 temporarily under 20%.**



Source: Pre 2016 estimates from PROs, notably Ecopilhas (difference to EUROSTAT data 2013/4 minor); 2019 EUROSTAT; 2020 Sagis estimate based on partial PRO data

¹¹ Due to the two licensed producer registers (Ecopilhas as well as ANREE - used by ERP and AMB3E), POM data are uncertain: Our estimate is based on collection data released by producer register [ANREE](#) and data from Ecopilhas, which preferred to announce collection data in battery units (8 million in 2004, 16 million in 2005, 20 million 2009, 2010).

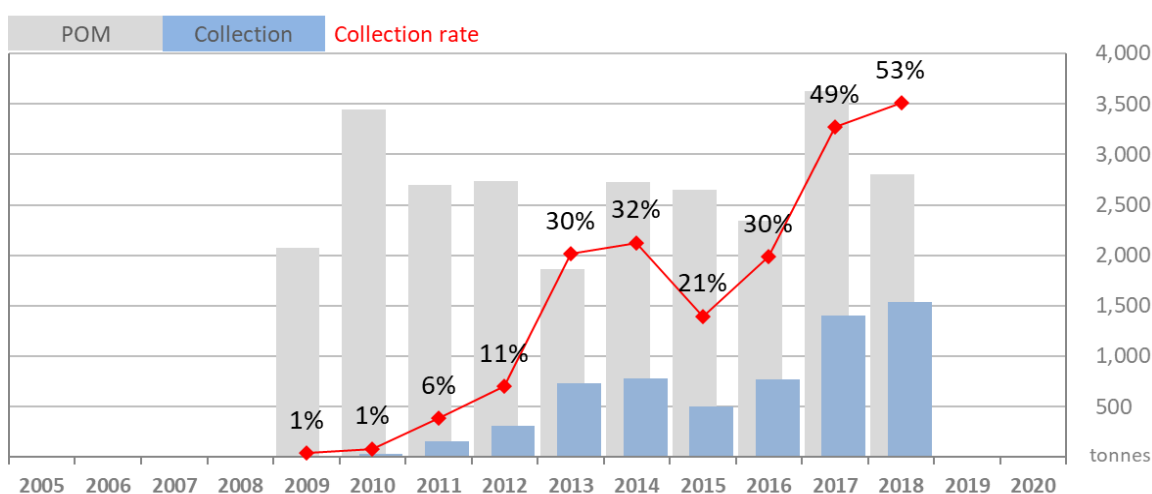
ROMANIA

Legal and organisational developments: Romania is one of a the few ‘new’ member states that *initially* transposed the Batteries Directive without a state-fund financing mechanism. The 2008 Batteries Decision transposed the EU Batteries Directive 2006/66/EC but required extensive implementing legislation. Ministerial Orders in July and October 2009 defined registration and reporting procedures for producers. A 2012 amendment to the 2008 Decision – much delayed due to stakeholder concerns – defined the approval requirements for individual and collective compliance.

A 2016 amendment to the 2008 Batteries Decision eventually introduced a state-fund financing mechanism. Penalties payable to the Environmental Fund were introduced for not reaching the collection target (from 2018) and for erroneous reporting. A July 2016 amendment to the 2011 Law on Waste and to the 2008 Batteries Decision i.a. introduced an obligation for local authorities to collect waste batteries and tightened controls of battery compliance organisations by removing the possibility for operating under ‘tacit’ (but not explicit) approval.

As of **2022**, about 550 producers of portable batteries were complying through **six** (2017: 5) authorised compliance organisations.

Collection rate: EUROSTAT data available for 2015 show much lower collection volumes than in previous updates of this report. According to these data, the collection rate in 2015 was 21% rather than 32% as estimated by us. **Data for 2018 show a POM decline of 23% to 143 g per capita, while collection increased by over 9%, bringing the collection rate to 53%.**



Source: Ministry of Environment (MoE); 2015-18 Eurostat;

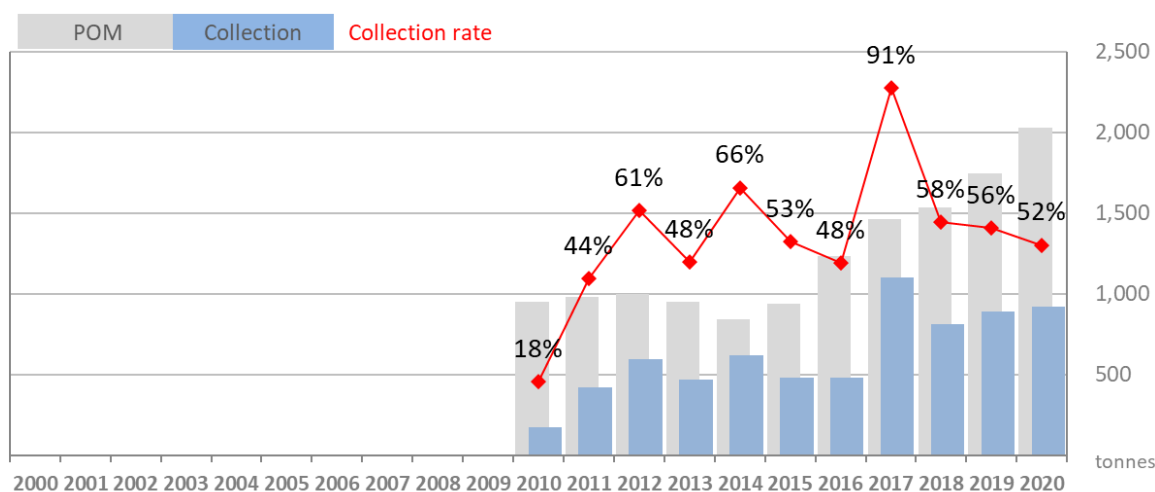
SLOVAKIA

Legal and organisational developments: From 2001 to June 2016, the Product Fee Act subjected separately sold batteries to fees of the Recycling Fund on 100% of batteries placed on the market less the amount of batteries collected by producers themselves or collected on their behalf. The Recycling Fund was a non-state body run by a Government-appointed Board of Directors. Waste management companies Mach Trade and Elektrorecycling are two of four companies mandated to operate battery collection organisations for municipalities, financed by local taxes and the Recycling Fund.

A new Waste Act, in force from 2016, introduced full EPR (competing organisations with a clearing house – **the KC BAA for batteries**), requires producers to comply through approved compliance organisations (that must be controlled by producers) or through waste management companies authorised as ‘third parties’ and abolished the Recycling Fund. Implementing regulations, including a ‘Decree on EPR and management of selected product waste streams’, provide detailed registration requirements, authorisation and reporting requirements. In 2018, Environment Minister László Sólymos (resigned in January 2020) confirmed plans to replace the producer responsibility organisations with a monopoly agency that would be established and managed by producers under Government supervision. These plans have not progressed. **The Ministry of Environment plans to move the EPR provision of the Waste Act into a new Law on EPR (draft legislation was expected in November 2021) have been postponed.**

As of 2022, about 1,700 producers of portable batteries comply through **nine** entities: Compliance organisations Asekol, SEWA (ERP), Natur-pack, Slovmas, E-cycling and Spoločný baterkový systém (SBS) as well as three waste management companies which are authorised to provide compliance services as ‘third parties’: Mach Trade, Insa **and Power Battery**. **All authorised entities’ operating licenses will expire at the end of 2024 (Power Battery end-2025).**

Collection rate: Before 2016, POM remained below a comparatively low 185 g per capita, while collection and the collection rate fluctuated strongly. In 2017, the collection rate peaked at 91% due to a 131% increase in collection. **Since then, POM has increased steadily – to 372 g per capita in 2020 (+16% over 2019) – while collection has yet to reach the 2017 level again. As a result, the collection rate moved downwards, but was still 52% in 2020.**



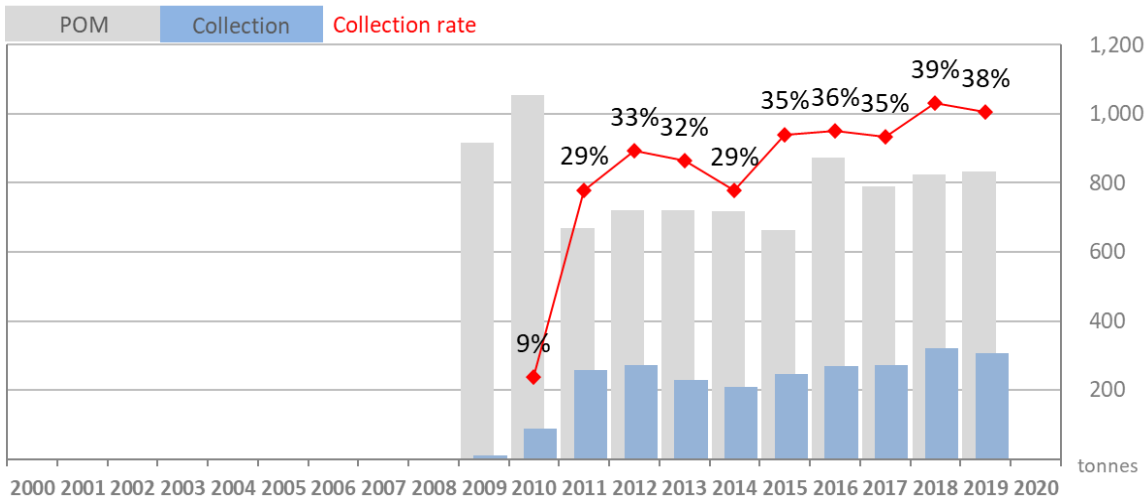
Source: 2018 Eurostat; 2016/7 Ministry of Environment. The MoE data are based on data provided by producers involved in authorised battery compliance organisations. Data are not verified by a third party and provide no breakdown of chemistries.

SLOVENIA

Legal and organisational developments: Since 2003, municipalities have been obliged to separately collect hazardous wastes including batteries. They remain responsible for financing their collection infrastructure. In 2008 and 2010, Decrees transposing Batteries Directive 2006/66/EC required individual producers of separately sold batteries to achieve collection targets by taking back waste batteries from retailers, municipalities and their own collection points through approved waste management plans. Producers of EEE with integrated batteries do not need a separate waste management plan for batteries, but rather, comply through their WEEE management plan.

As of early 2022, over 670 producers of separately sold portable batteries complied through the 5 joint plans (compliance organisations).

Collection rate: In 2016, POM increased by 32% over 2015 to 420 g per capita, and collection by 9%, leading to a collection rate of 36%. **In 2018, the collection rate peaked at 39%, driven by an 18% collection increase (POM + 4%). In 2019, POM stagnated and collection decreased by 4%. 2020 data are not available.**



Source: Republic of Slovenia Statistical Office

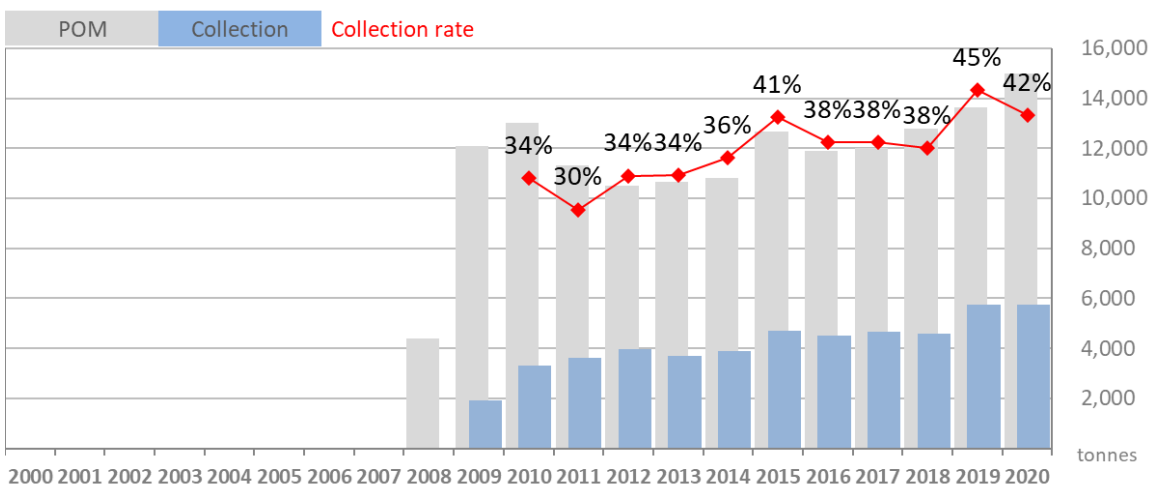
SPAIN

Legal developments: Royal Decree 45/1996 held the Autonomous Communities responsible for separately collecting waste batteries. Royal Decree 106/2008 transposing Batteries Directive 2006/66/EC made producers responsible for taking back waste batteries and left each Autonomous Community responsible for authorising organisations operating on their territory, which slowed the implementation of producer compliance organisations and complicated waste flow monitoring. The 2011 framework Law on Waste established a much-needed Coordination Commission on Waste, comprising members from all Autonomous Communities, to implement waste policies more effectively. An amendment to the Law in May 2012 strongly simplified authorisation requirements for collective compliance organisations by making the authorisation in their home region valid for the entire national territory. In 2015, a new WEEE Decree extended EEE reporting and take back obligations to ‘batteries that the end-user cannot manually remove from WEEE’. The (unknown) POM weight of these batteries is reflected in the WEEE collection target calculation. A July 2015 amendment to the Battery Decree i.a. harmonised the Decree with the 2011 Law on Waste and the 2015 WEEE Decree, and introduced collection targets to 2020. **A January 2021 amendment notably obligated foreign distance sellers as battery producers.**

Organisation developments: **As of early 2022, about 1,800 battery producers** are complying through **five** authorised compliance organisations: Ecopilas (POM share **about 53% in 2020**), set up in 2000 by battery producers, WEEE compliance organisations ERP (POM share **34% in 2020**), Ecolec, Unibat **and Reinicia (Reboot)**. WEEE compliance organisation Eco-RAEE has ceased to offer waste battery management services.

Collection rate: In 2015, a 22% increase in POM coupled with a 17% increase in collection resulted in a 41% collection rate. **In 2019, a 7% POM increase and a 31% increase in collection let the collection rate peak at 47%. In 2020, a 10% increase in POM to 317 g per capita and an estimated 4% decrease lowered the collection rate to 42%.**

Note: Based on data from the battery register and the compliance organisations, we estimated that in 2016 POM fell by -13%, while collection increased +15%. This results in a higher 2016 collection rate of 41% (Eurostat 38%). Eurostat data suggest the collection increase already took place in 2015. Our estimate of the 2015 collection rate was therefore lower (37% vs 41% Eurostat).



Source: 2018 Eurostat, 2019 and 2020: POM from register, Collection Sagis estimates (data from Ecopilas and ERP + estimate for Ecolec)

SWEDEN

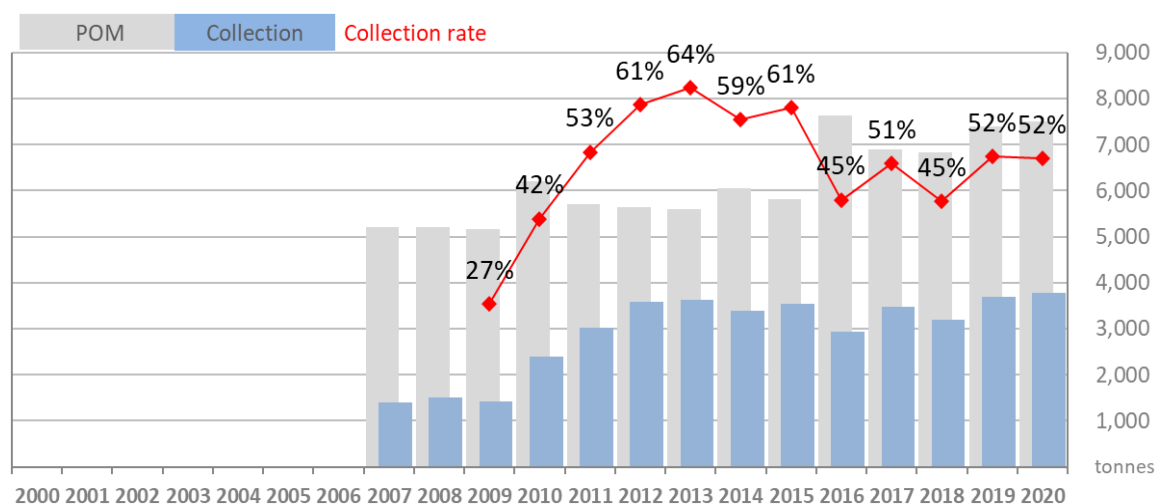
Legislative developments: Following the 1997 Batteries Order, all of Sweden's 290 municipalities had to set up their own battery collection, while producers of certain hazardous batteries financed these organisations through fees paid into a recycling fund managed by environment agency SNV. Batteries Ordinance 2008:834 transposed Batteries Directive 2006/66/EC, and from January 2009 de facto shifted the collection responsibility to producers.

Organisation developments: As of early 2022, around 1,600 battery producers comply through two authorised WEEE organisations which, by way of their WEEE authorisation, qualify as battery compliance organisations. About 1,350 battery producers are signed up to El-Kretsen - set up in 2001 by 21 trade associations - and around 150 producers are signed up to Recipo (until May 2017 Elektronikåtervinning Förening, EAF), established in 2007 as a not-for-profit organisation by SIBA, a large EEE retailer. Recipo claimed a market share of 25% of EEE and batteries POM in 2016¹². An estimated 200 individual B2B EEE compliers also cover integrated portable batteries in their WEEE programmes. In 2018, El-Kretsen serviced 50,000 collection containers for WEEE and around 5,000 for batteries. During 2017/8 all were replaced by smaller, closable bins to reduce fire risks from expired Lithium batteries.

Until the end of 2015, El-Kretsen charged battery fees only on separately sold batteries, while integrated batteries were covered by the WEEE fee, thus ensuring that producers of integrated batteries do not pay for two collection infrastructures. However, from 2016, El-Kretsen began charging for batteries put on the market in EEE at the same rates as those for separately sold batteries.

Lithium portable batteries: In 2016, POM increased by 31%, exclusively due to a 123% increase in lithium batteries (presumably from e-bikes, hover boards and power packs). The increase means that 46% of total battery POM consisted of lithium batteries in 2016, up from 28% in 2015.

Collection rate: In 2016, the collection rate fell to 45% (2015: 61%) due to a 17% decrease in collection (no conclusive explanations for the decrease, we suspect a clearing dispute) and the aforementioned 31% POM increase due to a doubling of lithium POM. In 2017, the collection rate was 51% as both POM and collection volumes receded from the unusual 2016 values (POM - 10%, collection +18% over 2016). In 2018, POM declined 1% to 675 g per capita and collection fell by 8%. **In 2019, POM was back at over 720 g per capita (+8%), and collection increased by 16%, raising the collection rate to 52%.**



Source: SNV, 2017/9; Eurostat; 2020 Sagis estimate based on collection data

¹² Since 2017, the battery collection volume reported to Eurostat closely corresponds to that reported by El-Kretsen only.

SWITZERLAND

Legislative developments: Legal requirements for the take-back of batteries have been in force since 1986, and voluntary financing by producers began in 1991. A 2001 Ordinance made the financing obligation mandatory through an Advance Recycling Fee (ARF) and a 2010 revision aligned the Ordinance with Batteries Directive 2006/66/EC. From 2016, new provisions for handling lithium containing WEEE in the ADR regulations came into place.

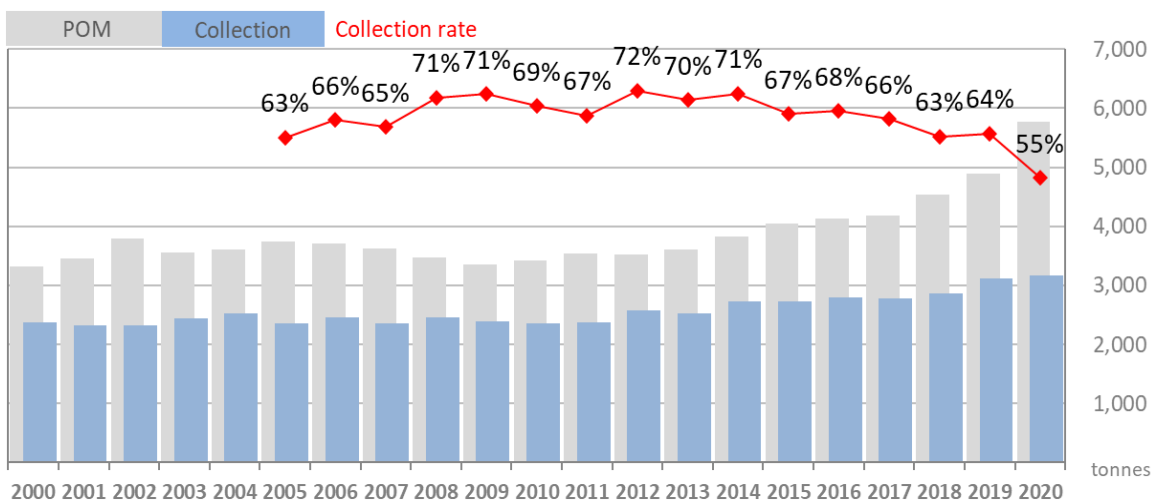
Organisation developments: From 2001 to 2016, the Government appointed producer-controlled non-profit INOBAT to manage the ARF and waste battery management. INOBAT later outsourced its operations to ATAG, a privately held public-services management company. From 2017, the Government appointed ATAG only to manage the ARF, required INOBAT to transfer the rights to the name INOBAT to the federal government, and the owners of the non-profit INOBAT to remove the word INOBAT from the organisation’s name from 2017. INOBAT mainly collects waste batteries from voluntary municipal collection points and obligated retailers.

POM of embedded batteries: INOBAT’s annual reports show that consistent POM increases (2011-16) are largely due to increased volumes of embedded batteries. As producers of EEE with embedded batteries do not report their POM, the POM of embedded batteries is based on estimates: These resulted in a share of embedded batteries in total POM of 15% in 2009, 25% in 2015, 23% in 2017, 22% in 2018, **25% in 2019, and 20% in 2020.**

Improved calculation methodology for the collection rate: Due to concerns that the increasing share of lithium batteries would depress collection rates as they become available for collection only after a 7-12-year lifecycle, INOBAT will be publishing 3 collection rates to more accurately reflect collection performance:

1. First, the **current collection rate methodology** is maintained for all batteries subject to the ARF to ensure transparency (this rate is shown in our graph below);
2. For **non-Lithium batteries** subject to the ARF: The collection rate is calculated as collection in current year divided by **2-year avg. POM**. This results in a collection rate of 76%, 82%, 84%, 82%, **85%, 82%** for 2015/16/17/18/**19/20** respectively.
3. For **lithium batteries** subject to the ARF: The collection rate is calculated as collection in the current year divided by **7-year avg. POM**. The full 7-year POM dataset will be first available in 2021. POM, the lithium return rates are 16%, 16%, 18.8%, 19.5%, **20.5% and 18.6%** for 2015/16/17/18/**19/20** respectively.

Collection rate: A collection rate¹³ well above 60% has been achieved every year since 2000. The collection rate declined from 71% in 2014 to 68% in 2016 as POM increased (+6% in 2015, + 2% in 2016) faster than collection. In 2018, POM increased 10% to 533 g per capita, collection increased by 3%. **The strong POM increases since 2018 (2018: 8.5%; 2019: 7.6%; 2020: 18%) to 670 g per capita moved the collection rate downwards to 55% in 2020.**



Source: Inobat

¹³ POM volumes (and the collection rate shown here) reflect the average of the current and the preceding year.

UNITED KINGDOM

Legislative developments: The Waste Batteries and Accumulators Regulations of April 2009 introduced the producer responsibility provisions. The first compliance period (of one year) began on 1 January 2010. Compliance organisations are free to choose how they collect batteries but must ‘co-operate’ to ensure that waste batteries are picked up from local authorities and those retailers that are obliged to take back waste batteries. Small producers (POM < 1 tonne) only have registration and reporting obligations and are not required to join a compliance organisation. **In November 2021, a new framework law [entitled the Environment Act] laid out post-Brexit environmental policy.**

Organisation developments: **As of early 2022, 507 producers** comply through five approved battery compliance organisations. In addition, there are about **1,870** small producers not adhered to a compliance organisation, who jointly represent around **0.3%** of POM. As of 2016, BatteryBack remained the largest compliance organisation (**2020 share of POM 35%**), followed by ERP (**30%**), Valpak (**21%**), Ecosurety (**10%**) and Repic (**4%**).

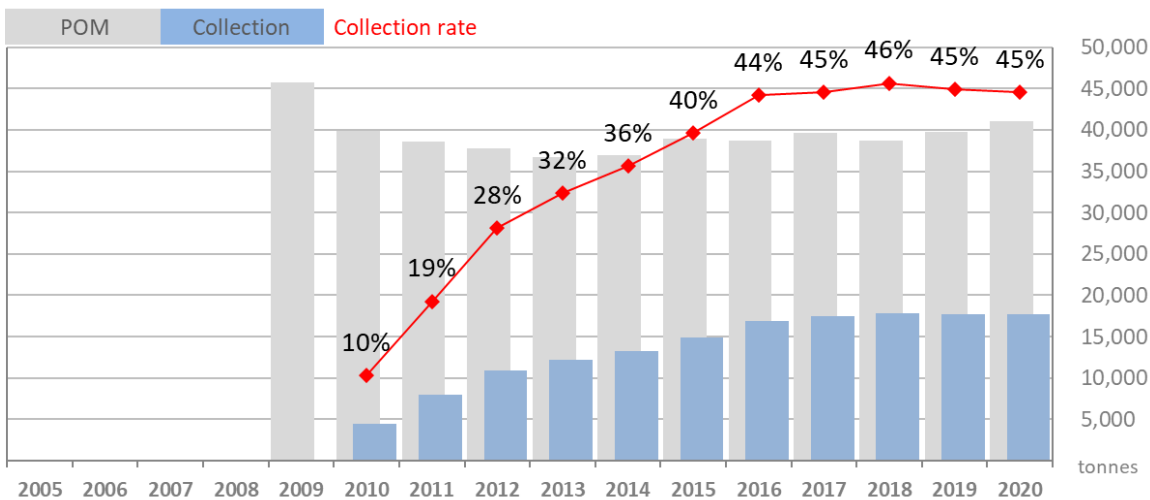
Lead share in collection: The relevance of the collection rate as a measure of scheme performance can be disputed:

- The weight of lead ‘portable’ batteries collected has been a multiple of lead portable batteries POM (2019: 8.8 times POM; **2020: 8.4 times POM**). An implausible amount of lead batteries first appeared in BatteryBack volumes in 2011 (after it tripled its POM share by signing a large producer and needed to increase collection) as well as EcoSurety. In 2012, Repic and Valpak followed suit. ERP bucked the trend until 2016.
- The **collection rate of all other chemistries** increased **to a peak of 32% in 2020, up from 15% in 2019.**
- Assuming a plausible scenario in which all lead batteries POM are collected (100% return rate), a **plausible collection rate** would have peaked at 26% in 2016, falling to 20% in 2019, **and 19% in 2020.**

The lead share in the UK’s portable batteries POM has been higher than in most countries (8% until 2012, 6% in following years, and 5% in 2016/7). The 4 kg threshold per portable battery introduced in 2016 decreased POM and collection of lead portable batteries by nearly 20% and their share of total portable batteries collected fell to 51%.

Collection rate, current year basis	2010	2011	2012	2013	2016	2017	2018	2019	2020
All chemistries	11%	21%	29%	33%	44%	44%	46%	44%	43%
Lead	55%	179%	295%	478%	457%	556%	684%	878%	839%
All chemistries except Lead	7%	6%	6%	5%	21%	18%	20%	15%	16%
All batteries, assuming plausible lead collection (100% PB return rate)	15%	14%	14%	11%	26%	24%	25%	20%	19%

Collection rate: The collection rate increased from 10% in 2010 – the first ‘compliance period’ for battery collection organisations – to a peak of 46% in 2018. **In 2019 and 2020, the collection rate stayed at 45%. Unlike elsewhere, the first COVID year 2020 only led to a moderate POM increase (+3.3).**



Source: Derived from batteries data published on Environment Agency’s National Packaging Waste Database