

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

20 August 2013



## 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 Norway and Switzerland.

The 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 suggestions improvements.

## Methodology

The study's findings rely on primary research of publications by collection organisations (notably annual reports) and national authorities, supported by questionnaires and interviews with representatives from these organisations from May-12 to Aug-13. 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. D) The on-going changes in national legislation and fast 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 estimates<sup>1</sup>, the collection rates used in this report are calculated using unadjusted POM and collection volume data released by member states and / or organisations. Where 2012 data are not available, 2011 data or estimates based on earlier years or partial data from organisations are used.

**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.

**Sources for WEEE data:** Eurostat EEE and WEEE data (2006 to 2010) are used for comparison purposes. (Eurostat has no data on POM of batteries. As regards batteries collection, there is one dataset for waste from all batteries 2004 to 2010 without breakdown into portables.)

## 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.

---

<sup>1</sup> 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.

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

Table of content

- SUMMARY .....5
- CROSS COUNTRY ANALYSIS .....11
  - Collection scheme models ..... 12**
    - Scope and producer responsibility under the 1991 and 2006 Batteries Directives.....12
    - Principal models of collection schemes .....13
    - Before and after the Batteries Directive – transitions between scheme models.....17
    - Comparative performance of models in view of the collection rate .....19
  - Scheme performance..... 21**
    - Drivers of consumer awareness creation measures .....23
    - Drivers of collection point availability.....25
  - Battery definitions and flows ..... 29**
    - Implications of the Directive’s battery definitions on waste battery collection .....29
    - Schematic view of battery flows and distorting effects.....31
  - Distortions in POM volumes ..... 32**
    - How accurate are POM volumes?.....32
    - Varying interpretations of ‘portable’ battery .....33
    - Estimates of batteries in EEE.....33
    - Free-riders and small producer exemptions.....34
    - Other causes of POM distortions.....35
  - Distortions in collection volumes ..... 36**
    - Distortions resulting from varying interpretations of battery definitions .....36
    - Distortions resulting from batteries in unreported WEEE and used EEE .....37
    - Market trends delaying or preventing waste generation .....39
- Conclusions ..... 40**
  - Conclusions about battery definitions and distorting flows .....40
  - Conclusions about national scheme performance.....40
- Options for improvement ..... 41**
  - A. Options to improve distinctions between portable and industrial batteries .....41
  - B. Options to improve measurement of actual scheme performance .....42
  - C. Options to reduce administrative burdens and distortions from batteries in (W)EEE .....42
  - D. Options to improve or adjust the collection rate to national circumstances.....44

COUNTRY ANALYSES.....45

**AUSTRIA**..... 46

**BELGIUM**..... 52

**BULGARIA**..... 58

**CYPRUS**..... 65

**CZECH REPUBLIC**..... 70

**DENMARK**..... 75

**ESTONIA**..... 82

**FINLAND**..... 87

**FRANCE**..... 92

**GERMANY**.....101

**GREECE**.....109

**HUNGARY**.....115

**ICELAND**.....121

**IRELAND**.....124

**ITALY**.....132

**LATVIA**.....138

**LITHUANIA**.....143

**LUXEMBOURG**.....148

**MALTA**.....152

**NETHERLANDS**.....157

**NORWAY**.....164

**POLAND**.....170

**PORTUGAL**.....178

**ROMANIA**.....184

**SLOVAKIA**.....190

**SLOVENIA**.....195

**SPAIN**.....200

**SWEDEN**.....207

**SWITZERLAND**.....212

**UK**.....218

PORTABLE BATTERIES LEGISLATION ELSEWHERE..... 227

**Croatia**.....227

**EU candidates**.....227

**EU neighbours**.....228

**Americas**.....229

**Asia**.....230

Annex.....231

**Sources**.....231

**References**.....234

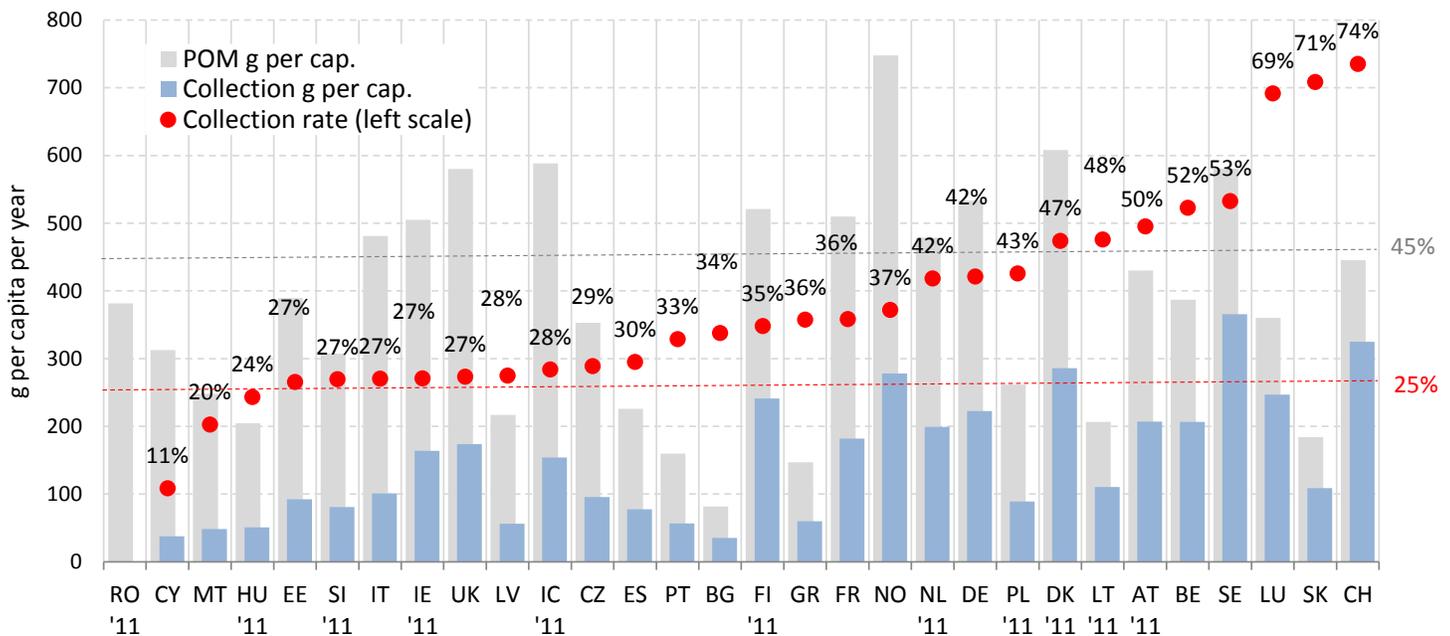
**Further research**.....234

# SUMMARY

## 2012 collection target expected to be largely achieved

On the basis of data available for this study, producers and importers reported having placed on the market in the EEA area, plus Switzerland, close to 230,000 tonnes of portable batteries in 2011, while around 72,000 tonnes of waste portable batteries were reported as collected. This corresponds to a collection rate on a current year basis of around 32%. Based on partially available data, a collection rate of 35% can be expected for 2012.

Batteries Directive 2006/66/EC requires the 29 EEA member countries<sup>2</sup> to achieve minimum collection rates for portable batteries of 25% in 2012 and 45% in 2016. Available data suggest that only **3 EEA members are likely to report having missed the 25% collection target** in 2012. These are Cyprus, Malta and Romania (whose schemes started only in 2012).



Unofficial data - Year 2012 unless indicated otherwise below country shortcode

<sup>2</sup> 30 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 and thus under no obligation to follow EU policy. Switzerland has nevertheless adopted broadly similar rules on batteries as the EU and is included in this study for the sake of completeness. **Croatia** only joined the EU on 1 July 2013 and is covered in this study in the section on EU candidates and neighbouring countries.

## Concerns about the collection rate as measure of scheme performance

The Directive's overarching objective – the availability of collection networks for all portable batteries - has been or is in the process of being implemented in all member states. However, the battery volumes used in the calculation of the collection rate in several countries raise concerns about the relevance of the collection rate as a measure of scheme performance:

- Collection volumes in some countries appear to be inflated due to shortcomings of the definition of 'portable' battery. This is manifested in a **disproportionate amount of lead batteries in waste portable battery collection volumes** - up to 4 times the amount of portable lead batteries placed on the market: For example, eliminating these volumes would probably reduce Poland's 2011 collection rate of 35% to around 25% and the UK's 2012 rate of 27% to around 13%. Collection of these lead batteries is driven by their abundant availability (twice the volume by weight of all portable batteries on the market), higher material value, lower collection costs and the impossibility at the collection stage of identifying whether these batteries were placed on the market as portable batteries.
- **Batteries not becoming waste in the country in which they were placed on the market:** Analyses in Belgium and the Netherlands suggest that less than 60% of portable batteries placed on the market actually become available for collection in these countries. This is probably due to rechargeable portable batteries (up to 40% of portable batteries POM) placed on the market in EEE<sup>3</sup> that are exported in second hand or refurbished EEE before the EEE becomes waste, 'secondary WEEE flows' (WEEE being illegally exported or treated but not reported) and WEEE containing batteries being shredded without prior removal of the batteries.
- **Uncertainty about POM volumes:** Differences in per capita POM volumes of portable batteries in countries with similar consumption patterns are probably due to varying interpretations of the term 'portable' battery as well as overriding battery legislation whose battery scope is based on customs tariff codes. The use of customs codes makes it difficult to distinguish between portable and industrial batteries and to accurately capture the weight of batteries incorporated into EEE.

## Options to improve distinction between portable and industrial batteries

The biggest challenge in ensuring the relevance of the reported collection rates is improving the distinguishability of portable and industrial batteries. Some member states have long used varying criteria for facilitating the identification of portable batteries. To avoid distortion of competition within the Community, the clarification of the term portable battery would ideally be provided at EU level. Any solution should take into account the limited feasibility of strict enforcement due to lower value and exposure of the waste batteries market when compared with other waste streams.

**Option A1: Excluding lead batteries from the calculation methodology of the collection rate:** Lead batteries contribute 0% - 3% of portable batteries POM in most countries (DK, GR, FR, DE, PL) but reach up to 15% in some (CZ, UK). Lead batteries are the main cause of uncertainty regarding the current collection rates. Their exclusion is unlikely to lead to improper disposal due to their positive material value.

**Option A2: Clarifying the term 'portable battery':** To harmonise national interpretations of the term 'portable battery' and to enable producers and collectors to distinguish between portable and industrial batteries consistently, the present definition could be complemented **by a weight criterion**, as is done in some countries<sup>4</sup>. Furthermore, the term 'electric vehicle' in the industrial battery definition should be clarified.

**Option A3: Requiring recycling efficiencies to be reported separately for each battery type** (e.g. for portable batteries) would allow reported collection rates to be verified by assessing the plausibility of the return rates of each of the three chemistries (lead, nickel cadmium, all other).

<sup>3</sup> Of which 80-90% are incorporated into EEE.

<sup>4</sup> Stibat (NL): portable battery < 1 kg; AFIS (GR) < 1.5 kg; Ecobatterien (LU) < 2 kg. In August 2013, UK authorities proposed a 3 kg threshold which is estimated to reduce overall POM by 12%.

### Options to improve the relevance of the collection rate as a measure of scheme performance

The following options could further contribute to the collection rate providing a more realistic assessment of the performance of a portable battery collection scheme:

**Option B1: Replacing POM with waste batteries ‘available for collection’** when calculating the collection rate. A methodological framework would need to be established for all member states to allow for a consistent identification of battery flows that are currently not accounted for (such as volumes of batteries that leave or enter a country in used or refurbished EEE or WEEE, that are treated with unreported WEEE) and the delayed waste generation effects due battery and EEE market trends.

**Option B2: Variations of POM base years and current year collection volumes:** By the time the 45% target will be effective in 2016, all countries will have fairly accurate and consistent POM data available for the past 5-6 years. To account for the trend towards rechargeable batteries with longer lifetimes, the POM base for later years could use 6 year POM averages to more accurately reflect the expiry of batteries.

### Options to reduce administrative burdens and avoid distortions

**Option C1: Excluding batteries in (W)EEE from the calculation of the collection rate:** Batteries in EEE are typically disposed of in WEEE and thus do not find their way into the *collection points* for separate batteries<sup>5</sup>. Excluding batteries in (W)EEE from the calculation methodology would

- a) remove key distorting waste battery flows (ex-, import of batteries in used EEE, WEEE)
- b) reduce administrative burden, in particular also for SMEs and producers of B2B EEE
- c) avoid double charging (EEE producers in most countries pay the same battery fees as producers of separately sold batteries. When integrated batteries are disposed of in WEEE, EEE producers finance two collection networks<sup>6</sup>)
- d) prevent two collection targets from being applied to parts of one and the same end-of-life product.

**Option C2: Exempting small battery producers from reporting and financing obligations** would reduce the administrative burden on SMEs as well as battery organisations themselves. 2/3 of battery producers and importers contribute 1% - 2% of POM, respectively the revenue of battery organisations<sup>7</sup>. The impact on the schemes’ functioning and the environment would have to be investigated.

### Battery collection scheme models and model transitions in the countries

Waste portable batteries have an overall negative economic value. Thus policy intervention is required to ensure schemes are set up to collect and treat waste portable batteries separately from other wastes. Beyond requiring producers to finance the net cost of collection and treatment of waste portable batteries, the Batteries Directive leaves it to each member state to choose the operators and set the operating parameters of the battery schemes.

Three main scheme ‘models’ used by member states can be distinguished<sup>8</sup>:

- a ‘single organisation model’, used in seven countries (BE, CY, GR, LU, NL, NO, CH),
- a ‘state fund model’ used in two (IC, MT) and
- a ‘competing organisations model’ used in the remaining 21 countries.

<sup>5</sup> The weight effect of replacement batteries on the two collection networks is neutral: If a battery in EEE is replaced and disposed of in the battery collection network before the EEE expires, the separately purchased replacement battery will be disposed of with the WEEE and add to the WEEE collection.

<sup>6</sup> In this option, the obligation to finance the *treatment* of integrated batteries would need to be shifted to the EEE producer.

<sup>7</sup> In the UK 67% of the over 1,500 registered portable battery producers in the UK contribute less than 1% of POM.

<sup>8</sup> Note: When the Batteries Directive was published in 2006, 21 countries had a variety of different national collection schemes. The transitions between models triggered by the transposition of the Directive have been complex notably due to the Batteries Directive’s explicit inclusion of batteries in EEE.

### Detailed requirements, not the model, determine scheme effectiveness

Available data suggest that any of the main collection scheme models can achieve high collection rates. Therefore detailed requirements on organisations, retailers and municipalities need to be investigated to identify drivers of scheme performance. Here the main conclusions:

- Single organisations appear to outperform other models in terms of **awareness creation**. This may be due to higher communications spending<sup>9</sup>, but also to a nationwide consistency of communication and collection containers that improves consumers' recall rates of the programme.
- When **minimum awareness creation measures** are legally required from organisations (BG, DK, EE, HU, LV, LT, PT), these tend to be more effective when quantifiable (e.g. minimum spending).
- The effectiveness of the **retailers' take-back obligation** is driven by additional parameters such as whether or not organisations provide retailers with collection containers (an important element of awareness creation); whether or not retailers can return batteries to municipal collection points; and the clarity of the retailers' obligation to provide information about the presence of collection points<sup>10</sup>.
- There is a notable correlation between a **take-back obligation for municipalities** and the collection rate achieved. In nine countries (AT, BG, GR, IE, IC, LU, PT, SK, SI), municipalities are (or can be) held responsible for collection in addition to retailers<sup>11</sup>.
- The collection rates in the two countries (DK, SE) which hold municipalities solely responsible for providing collection points (retailers are not obligated) show that **'alternative existing schemes'** can achieve comparable levels of collection<sup>12</sup>.
- Requirements on competing organisations to ensure **coordination of collection networks** appear to be more effective than coverage requirements for each organisation (e.g. minimum number of collection points).
- The presence of higher<sup>13</sup> or interim **collection targets** on organisations creates an urgency to take action, especially when backed up by automatically enforced fiscal instruments (eco-taxes, fees).

### Mitigating challenges of the competition model

The 'competing organisations model' faces a systemic challenge in implementing the two key success factors of waste portable battery collection: to provide nationwide sufficient conveniently-situated waste battery collection points<sup>14</sup> and to shape end-user behaviour through consistent awareness measures to dispose of waste batteries correctly.

To mitigate this challenge, the 21 countries using the 'competing organisations model' limit competition through licensing requirements (which usually involve the approval of an operational plan) or other measures. The following interventions can be identified:

- The obligation to operate the portable battery collection network is placed on municipalities (DK, SE), while competing organisations provide financing only.

<sup>9</sup> Financing aspects are not within the scope of this study

<sup>10</sup> The effect of exemptions of small retailers in four countries (CZ, EE, PL, UK) was not assessed

<sup>11</sup> A take-back obligation usually means that organisations do not compensate the obligated party for collection.

<sup>12</sup> As allowed for in Article 8.1(b). In SE, the Directive's target was met in 2012 though probably not the 65% national target.

<sup>13</sup> 10 countries (BE, FR, DE, HU, LV, LT, NO, PL, PT, ES, SE) set earlier or higher collection targets.

<sup>14</sup> At the end of 2012 the average collection point density in 26 countries from which data are known or can be based on substantiated estimates was one collection point per 690 residents (or 1.7 collection points per 1,000 residents).

## SUMMARY

- Approval to *operate* the waste battery collection network is granted to only one organisation, while all organisations provide financing (FI).
- The number of organisations is limited to two (FR) or organisations are assigned different geographic regions (IE).
- Legislation designates one organisation as the main organisation but allows competing organisations<sup>15</sup> to operate under largely the same requirements (DE).
- Organisations are required to join a ‘coordination centre’ to ensure nationwide coordination (AT, IT) through framework agreements with associations representing municipalities.
- Fiscal instruments (eco-fees, taxes) are applied so organisations can be fined for under-achievement of the collection target (BG, HU, LV, LT, PL, SK), but central coordination between organisations is not stipulated.
- In the remaining 7 countries with a ‘competing organisations model’, approved organisations compete without central coordination or fiscal enforcement instruments (CZ, EE, ES, PT, RO, SI, UK).

### Conclusions about scheme performance

In countries where the schemes’ progress in rolling out or expanding existing battery collection networks has slowed before optimal coverage was reached, three market conditions can be identified: a malfunctioning market, a distorted market and an un-accelerated market (stagnant collection volumes). All three can occur in one country to varying degrees.

Improved distinguishability of portable batteries would largely remove the causes of malfunctioning and distorted markets. Challenges regarding stagnant or un-accelerated markets require introduction or fine-tuning of obligations on actors in the national collection scheme. In line with the principle of subsidiarity, such measures should be addressed at national level.

### 45% target in 2016 remains a challenge

An EPBA position paper during consultation on the Directive in 2005 considered the 25% target ‘ambitious but achievable’. However, EPBA raised concerns about the achievability of the 45% target set for 2016. Despite data suggesting that at least seven countries already exceeded the 45% collection target in 2012 and encouraging increases of collection volumes in other countries, EPBA’s concerns remain valid: In the authors’ view only a dozen countries are likely to achieve the 2016 collection target if the term ‘portable’ is consistently applied during POM and collection and between Member States.

As such, achievement of the 2016 collection rate will depend as much on the measures put in place to clarify the definition of ‘portable’ battery as on the operational performance of the collection schemes.

The following options could be taken in view of improving the collection rate by 2016 in some countries and to reflect specific national conditions:

**Option D1: Encouraging post collection sorting of unsorted MSW** (municipal solid waste) with a view to increasing the collection rate of recyclables, including batteries, can be an alternative to raising consumer awareness in countries where it is very low or so high that additional investments in consumer awareness do not raise the collection rate.

**Option D2: Applying derogated targets to at least the 10 member states** that are subject to derogations under WEEE Directive 2012/19/EU<sup>16</sup>. It appears likely that most of these, as well as others including Cyprus, Estonia, Portugal, Spain and the UK, will find it difficult to reach the 45% batteries target in 2016.

<sup>15</sup> These systems are de jure individual systems but de facto service providers for many producers.

<sup>16</sup> Lower interim and delayed final WEEE collection targets for BG, CZ, LV, LT, HU, MT, PL, RO, SL, SI: 40% from 2016 (rather than 45%) and the final rate (65%/85%) by 2021 (rather than 2019).

### Portable batteries placed on the market and collected 2011 (tonnes p.a.)



On the basis of the volumes available for this study, the portable battery collection rate on a current year basis of the entire EEA area plus Switzerland was about 32% in 2011. Producers and importers reported having placed on the market close to 230,000 tonnes of portable batteries, while around 72,000 tonnes of waste portable batteries were reported as having been collected.

## CROSS COUNTRY ANALYSIS

## Collection scheme models

### Scope and producer responsibility under the 1991 and 2006 Batteries Directives

A brief review of the scope and the producer responsibility requirements of the previous and current Batteries Directives helps to explain key implementation challenges.

Based on the environmental objectives of the European Treaty<sup>17</sup>, Council Directive 91/157/EEC required member states to *'ensure the efficient organization of separate collection'* of batteries containing hazardous substances. Member states were to determine who should be organisationally and financially responsible for collection and treatment of these hazardous substance containing batteries. Directive 91/157/EEC did not mention the principle of producer responsibility and did not set collection targets.

By 2006, 21 countries had a variety of different national schemes and instruments in place whose scope included the hazardous substance containing batteries covered by Directive 91/157/EEC but often also batteries not containing hazardous substances.<sup>18</sup> All except two (DK, LU), involved producers (more in the chapter on [Transitions between models](#)).

As early as 1997, the Commission proposed a comprehensive revision of EU legislation on batteries *inter alia* with the rationale that the internal market would function better if there were a clear legal framework for national battery collection schemes. Directive 2006/66/EC was therefore given a secondary legal base<sup>19</sup> and aimed to achieve its internal market objective by

- extending the scope to all batteries and also explicitly to batteries incorporated in EEE,
- defining batteries as portable, industrial or automotive,
- introducing minimum collection targets for portable batteries only,
- requiring producers to *finance* 'any net costs arising from battery collection, treatment and recycling' while
- allowing member states to continue to determine the operators and operational parameters<sup>20</sup> of the collection schemes.

Recitals 19 and 28 explain the Directive's intent as regards the principle of producer responsibility: financing schemes for waste battery management should *'give effect to the principle'* considering that a *'flexible approach is appropriate ... to reflect differing national circumstances and to take account of existing schemes, particularly [the WEEE schemes]'*.<sup>21</sup>

When countries began transposing the Batteries Directive, national WEEE legislation had just been introduced or revised to transpose WEEE Directive 2002/96/EC. The WEEE Directive's intent is *'to give maximum effect to the concept'* of producer responsibility as manifested in the requirement to enable not only collective but also individual producer responsibility.

<sup>17</sup> Article 175(1) of the European Treaty on protecting the environment

<sup>18</sup> Schemes whose mandated scope included only lead acid batteries, such as Italy's, are not counted here.

<sup>19</sup> Article 95(1) of the European Treaty on ensuring the smooth functioning of the internal market and avoiding distortion of competition within the Community

<sup>20</sup> Existing schemes can be maintained (Art 8.1) and alternatives are allowed to the distributor take-back obligation (Art. 8.2).

<sup>21</sup> Batteries Directive Recital 19 and 28, WEEE Directive 2002/96/EC Recital (20).

## Principal models of collection schemes

In all EEA countries, producers are currently held financially responsible for waste battery collection schemes. The organisational responsibility for the schemes, respectively the responsibility for decisions about which waste battery operations to fund, varies between member states. In the absence of a common terminology, we define the following four principal collection scheme models for the purpose of this study:

- State fund model
- Single organisation (environmental agreement) model
- Competing organisations model
- Model without organisations (producers fund battery collectors directly)

### State fund model

**Characteristics:** Producers are held only *financially* responsible for the costs of waste battery collection and treatment through payments of fees to a designated waste management fund or through taxation. The organisational responsibility for waste battery management, respectively for the decision about which waste battery collection operations to fund, resides with a government controlled organisation or with municipal or regional authorities.

**Origin:** Municipal waste management has traditionally been the responsibility of municipalities, financed by local taxes. With the introduction of national legislation requiring separate collection of (at least hazardous) waste batteries, municipalities needed funding for this newly separate waste stream. The state fund model provides this funding through a 'product fee' or 'charge' or an 'eco contribution' or 'eco-tax' payable by producers placing batteries on the market, usually to a government-controlled fund. Most of the pre-Batteries Directive organisations in Central and Eastern Europe and also in Sweden and Denmark were based on this model.

**Pros and cons:** The strength of this model is relatively high legal certainty for producers. The tax/fee is usually charged by customs code and there is a high degree of enforceability when the fee is collected by tax or customs authorities. However, use of the customs codes reduces the accuracy of the collection rate as it does not allow distinction between battery types (portable, industrial) and makes capturing batteries in EEE difficult as they fall under the customs code of the EEE they are integrated in. Moreover, with many state funds there is the risk that the Government may decide to allocate collected funds to environmental programmes not related to the products from which the funds have been raised.

### Variations of the state fund model

- **State fund financing diverse programmes:** The fund finances waste batteries but also other waste management-related projects of individual municipalities, regions or waste management firms. This model is still used in combination with other models to some extent in Slovakia and Lithuania.
- **State fund financing a single national battery programme:** State fund organisations that operate or finance a single national battery collection battery programme are currently used in Iceland and *de facto* in Malta.

## Single organisation (Environmental agreement) model<sup>22</sup>

**Characteristics:** In an ‘environmental agreement’ with government, the entire industry sector placing batteries on the market commits to *financing and organising* waste battery management through a single organisation. Typically, legislation is in place that would enforce taxation on battery producers in the event industry fails to meet mandatory collection targets.

**Origin:** Early battery and WEEE organisations in Western Europe were mostly based on this model (AT, BE, NL, CH).

**Pros and cons:** While the mandated monopoly position allows for a centralised and effective collection infrastructure and consumer awareness measures, single producer organisations – whether for WEEE, batteries or packaging – have been seen by competition authorities as shifting the balance of power among the stakeholders too much in favour of the single organisation and away from the waste sector and consumers, e.g. by not reducing fees to reflect actual costs. As all producers are charged the same fee, the incentive for producers to seek reductions is limited. The reductions of fee levels of WEEE organisations and some battery organisations over time suggests that only the introduction of competing organisations have changed this. The introduction of competing organisation schemes in neighbouring countries has also driven down fees in countries where an organisation retains monopoly status.

## Competing organisations model

**Characteristics:** Government authorises several organisations to assume the take-back obligation of producers. Organisations typically compete on the level of fees charged to producers, respectively on their costs of battery waste management to reach collection targets. Specific regulatory requirements such as mandatory participation of the organisations in a coordination body may be applied to ensure nationwide coverage of waste battery collection and to avoid distortions of competition.

**Origin:** Due to difficulties experienced by monopoly organisations in the 1990s<sup>23</sup>, regulators, competition authorities and also producers supported legislation allowing competing organisations during the transposition of the WEEE Directive in 2004-8. During the subsequent transposition of Batteries Directive 2006/66/EC, many member states aimed to align battery organisations with WEEE organisations to reduce administrative burdens for producers and to enable synergies of the collection networks. In consequence, 21 of the 29 EEA countries now use a multi organisation model.

**Pros and cons:** While the competing organisation model ensures organisations operate “lean and mean”, the competing organisation model has a few intrinsic challenges:

- **Nationwide coordination** is needed to optimise the effectiveness of consumer awareness measures and the provision of sufficient collection points for consumers, and to ensure the take-back of waste batteries from all entities that collect them without distorting competition between the organisations.
- The **control of waste battery flows:** The risk of inaccurately reported data flows increases with the number of supply and trading relationships between organisations, collectors and waste traders.
- Strong distrust between the organisations due to alleged **distortions of competition** in particular when
  - there are no legal requirements on organisations to make key information about their business model public, for example regarding the chemistries collected or basic information about the collection model,

<sup>22</sup> Depending on context and translation, this model has also been referred to as single collective organisation, monopoly organisation, designated system and in US states as ‘state system’ (whereby ‘state’ can refer to the coverage, not the control of the organisation)

<sup>23</sup> e.g. Germany’s Green Dot packaging system, DSD

- producer-controlled non-profit battery organisations compete with organisations controlled by waste management companies which both supply and compete with organisations [*efforts to prevent such distortions, for example by requiring organisations to be non-profit, remain largely ineffective*],
  - battery organisations have access to very different waste battery collection channels – and thus business models – due to their ownership structure (e.g. retailers) or commercial relationships (e.g. as reverse logistics partner to large battery users).
- The same lack of transparency requirements can make it **difficult, especially for smaller and medium-sized producers, to take an informed decision about which compliance organisation to choose**. Flooded with offers emphasising ‘lowest compliance costs’ it is difficult even for producers that invest considerable man-power in compliance to assess if an organisation’s business model reflects the distribution pattern of his products.

### Variations of the competing organisations model

National legislation aims to ensure fairness by setting collection targets for each organisation and enforcing fines for underachievement (e.g. BG, LV, PL) or by requiring them to participate in a single clearing house (AT, IT) or through a consultative commission (FR) to ensure coordination of the development of nationwide collection infrastructure and consumer awareness measures. However, in many member states no such measures is implemented consistently.

- **Competing battery organisations - enforcement of targets through eco-fees:** To ensure each organisation collects waste batteries in the same proportion as the new batteries its members place on the market, some countries (e.g. BG, LV, PL) apply the same collection target rate to each organisation. The previous eco tax/fee is converted into a penalty instrument that is applied when an organisation does not achieve the target. The organisation or the producer missing the target pays the tax/fee as a fine on the ‘under-achieved’ amount (difference between target and actual collection rate).
- **Competing battery organisations – fairness through other clearing mechanism:** While national legislation may or may not apply the Batteries Directive’s collection target to each organisation or producer, only the six member states with an ‘eco’ fee/tax have an effective mechanism in place to sanction underachievement of the target, except for the outright withdrawal of an organisation’s approval which is rarely used. As such, to ensure fairness and encourage collection, each organisation participating in the market should at least collect as much as the other organisations *pro rata*. To ensure this, all organisations are required to join a single clearing house or coordination body<sup>24</sup>. The main functions of this body are usually to
  - assign to each organisation collection responsibilities (e.g. geographically) proportionate to the volumes the organisation’s members place on the market
  - ensure that the collectors, notably municipalities, can rely on a scheme taking back collected batteries
  - coordinate awareness creation measures (e.g. by collecting funds from each organisation for national campaigns)

The clearing house usually prepares framework contracts with the national associations representing municipalities or regions. These contracts define the condition under which organisations receive waste batteries collected by municipalities (who may be legally required to collect or may collect voluntarily). In particular the framework agreements define subsidies for collection infrastructure measures undertaken by municipalities, uniform compensation rates for the waste batteries that municipalities hand over to the organisations (thus stabilising the market by preventing waste batteries being passed to the highest bidding organisation), or the terms under which municipal collection points accept waste batteries collected by retailers.

<sup>24</sup> In some countries the regulator assumes the role of clearing house, for example in Ireland, where the regulator allocates regional coverage for each of the 2 systems regularly to reflect their market shares.

## Model without organisations

**Characteristics:** Each producer finances authorised waste battery companies (collectors and transporters) directly to meet the collection targets imposed on him. There are no legal provisions for authorising organisations to coordinate battery waste management on behalf of producers.

Legally, this model is in place in Slovakia and Poland<sup>25</sup>. However, battery producers there comply through service providers that fulfil a similar role as collective organisations while the take-back obligation is retained by the individual producer.

---

<sup>25</sup> In Germany a variant of this model is used for WEEE: A central clearing house assigns WEEE take-back requests from municipal collection points to individual producers who in turn pay contracted waste management companies directly to fulfil the take-back request.

## Before and after the Batteries Directive – transitions between scheme models

By 2006, 21 countries had a variety of different national schemes and instruments in place whose mandated scope included different types of hazardous and often also non-hazardous batteries.<sup>26</sup> 19 of these (all except DK, LU) involved producers:

- 9 single schemes (CZ, PT, ES, AT, BE, GR, NL, NO, CH)
- 7 state fund schemes (BG, HU, SK, IC, DK, SE, MT, LU<sup>27</sup>)
- 3 competing schemes with state fund / eco-tax back up (LV, LT, PL),
- 2 competing schemes (FR, DE)

While the Batteries Directive stipulates that financing schemes give effect to the ‘*principle of producer responsibility*’ it also recommends that ‘*a flexible approach is appropriate ... to reflect differing national circumstances and to take account of existing schemes, particularly [the WEEE schemes]*’<sup>28</sup>. When countries began transposing the Batteries Directive, national WEEE legislation had been newly created or revised<sup>29</sup> to meet the WEEE Directive’s mandate ‘*to give maximum effect to the concept of producer responsibility*’ by enabling individual producer responsibility.

The Batteries Directive’s explicit coverage of batteries in EEE amplified the complexity of its transposition into national law. The strong interest groups involved in shaping producer responsibility policy – municipalities, the waste sector, battery producers and now also EEE producers – made transitions between scheme models a challenge that often continues today:

- Single organisation schemes remain in place in BE, CH, GR, NL and NO and were newly introduced in CY.
- In AT, the single battery organisation became redundant as retailers were made responsible for returning batteries to municipal collection points from which producers finance them through competing organisations. In CZ a competing organisations scheme was introduced but the formerly single organisation remains dominant.
- The transition from state fund to competing organisations schemes with eco-tax enforcement has probably been the most complex. Two sets of legislation (fiscal and environmental) with different scopes and Ministerial authorities need to be introduced (BG, HU) or adjusted (HU), leading to frequent regulatory changes (LV, LT). This transition is the least advanced in SK where the dissolution of the fund model is under discussion.
- The remaining state fund schemes were maintained after much consideration in IC, maintained *de facto* due to a lack of available alternatives in MT, maintained but restricted to financing collection by municipalities in DK and converted into a *de facto* single scheme in LU.
- Existing legislation on competing organisations was incrementally adjusted in DE and FR where over time fewer organisation have been authorised.
- Transition from single to competing schemes remains difficult in ES because a key challenge – regional authorisations and waste reporting – has only recently been addressed, and in PT.
- In the absence of previous schemes, competing organisations were introduced in IE, SI and EE which achieved a good collection point density in a short time. The introduction of competing organisations in the UK which allowed organisations to choose how they collect waste batteries appears to have discouraged investment in the collection network. In RO comprehensive legal requirements have only been in place since 2012.

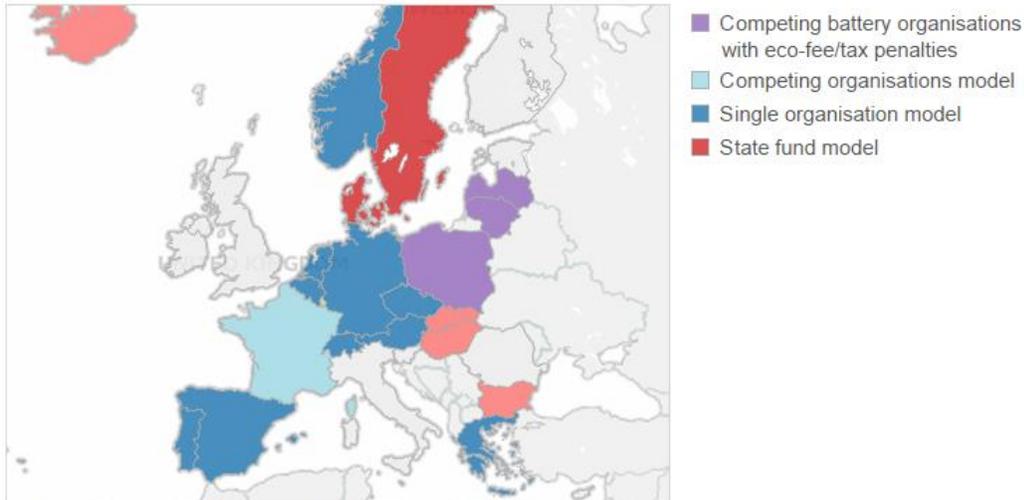
<sup>26</sup> Schemes whose mandated scope included only lead acid batteries (such as Italy’s) are not counted here

<sup>27</sup> Luxembourg’s scheme was operated and financed by the municipality; transposition made producers responsible for both

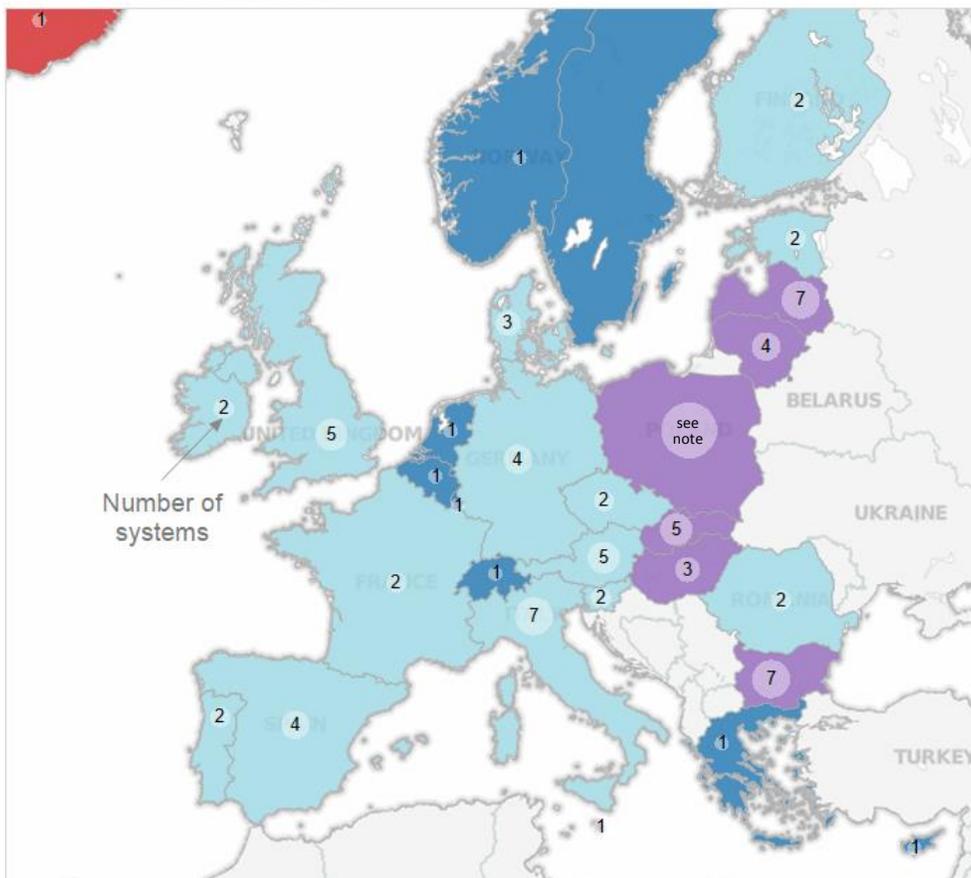
<sup>28</sup> Batteries Directive Recital 19 and 28, WEEE Directive 2002/96/EC Recital 20

<sup>29</sup> 13 countries had nationwide WEEE schemes in 2005

**Dominant scheme model 2006**



**Dominant scheme model 2012**



*Note: National batteries legislation alone is often insufficient to determine a country's dominant de facto scheme model as market conditions or later regulatory intervention may for example mean that a competing organisation is legally but not practically possible. The maps above aim to take this into account.*

*Note on Poland: There are about 50 waste battery collection organisations that offer compliance services directly to producer.*

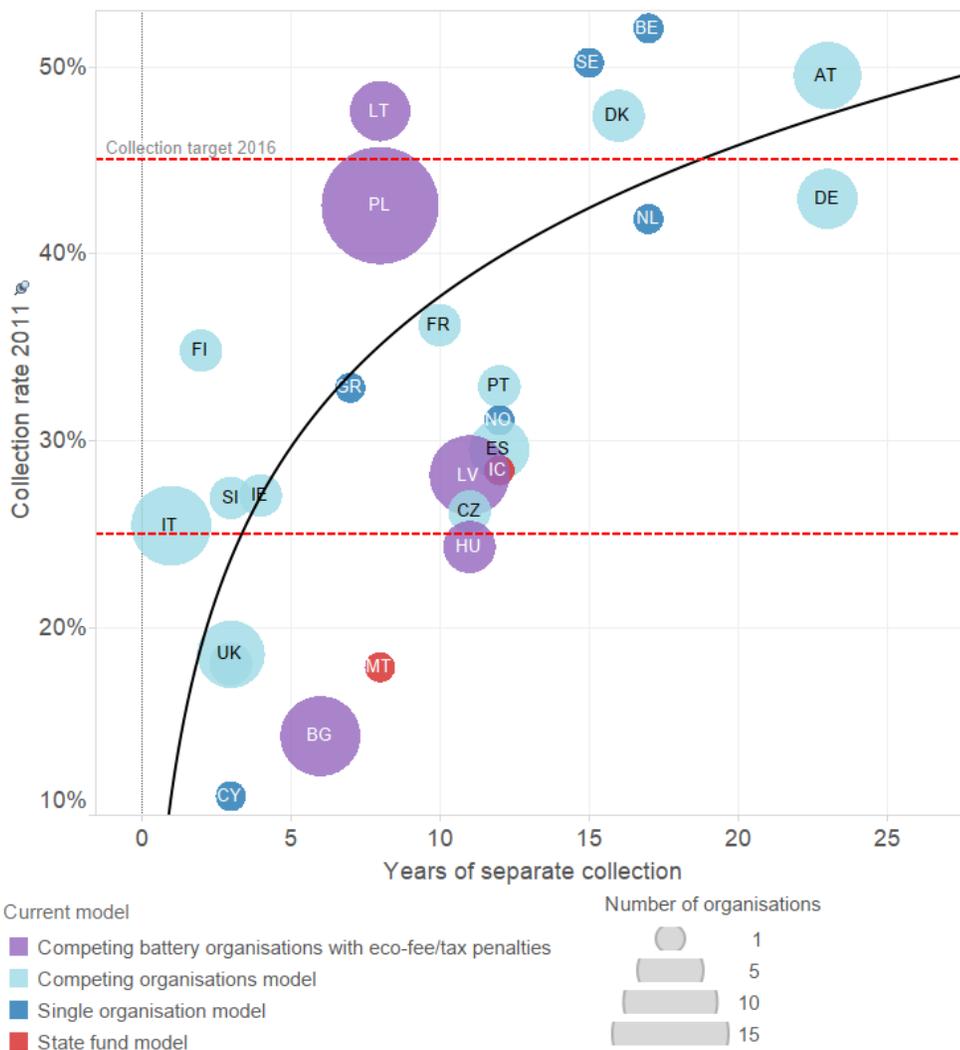
## Comparative performance of models in view of the collection rate

### Achievability of the 45% target

Overall, the collection rates reported in countries with different models suggests that a 45% collection target can be achieved by any model. As one would expect, there is a correlation between the length of time separate collection has been in place and the collection rate being achieved.

The collection rates reported in countries with competing organisations suggest no correlation between the degree of competition – expressed by the number of organisations (circle size) – and the collection rate.

Models, collection rate and years of separate collection



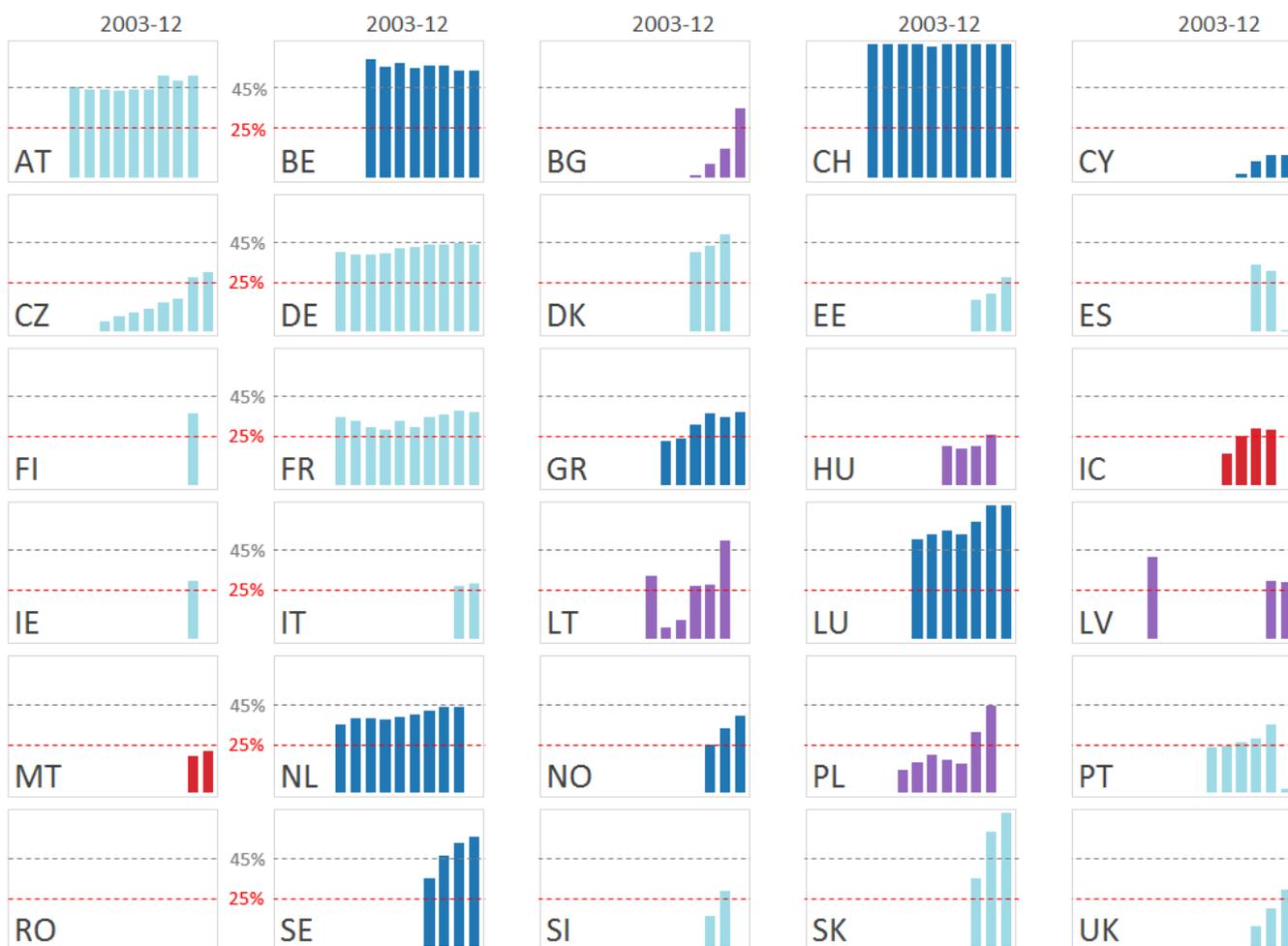
Note: For visibility purposes outliers CH, LU and SK are not included in this chart. Inclusion would raise the logarithmic trend line above 45% after 18 years, largely due to CH and LU's collection rates of around 70%. These exceptional rates may be due to relatively low POM per capita in both countries. In CH – which is not required to follow EU legislation – these may in particular be due the absence of some batteries POM in EEE.

### Long term collection rates

Data from well performing organisations suggest that a strong increase in the collection rates often levels off after 3-5 years. Organisations that have achieved collection rates above 40% in the first few years usually find it difficult to maintain, let alone increase, this level.

Though some countries with schemes using competing organisations with eco-fee enforcement show very high recent collection rates (BG, LT, PL), rates for this model historically trail those of single organisations or schemes with competing organisations without eco-fees. This is probably due to the less advanced waste management infrastructure in eastern European member states where the model is used.

### Collection rates 2003-12



The graphs show that long term collection rates tend to plateau, often after 3-5 years. Graphs for many countries do not show collection rates of previous schemes as these are either unavailable or not comparable (e.g. applying only to certain chemistries). Nevertheless, current collection rates build on collection infrastructure and consumer awareness generated by the previous schemes. Sources of the data sources are listed in the country sections of this report.

- Current model
- Comp. organisations with eco-tax penalties
  - Competing organisations model
  - Single organisation model
  - State fund model

## Scheme performance

### Key success factors of collection schemes

A waste battery collection scheme's effectiveness in

- *communicating and shaping end-user behaviour* and
- *in providing sufficient and convenient waste battery return facilities*

determines whether end-users will dispose of batteries correctly rather than 'hoarding' them near the place of use or disposing of them with other waste.

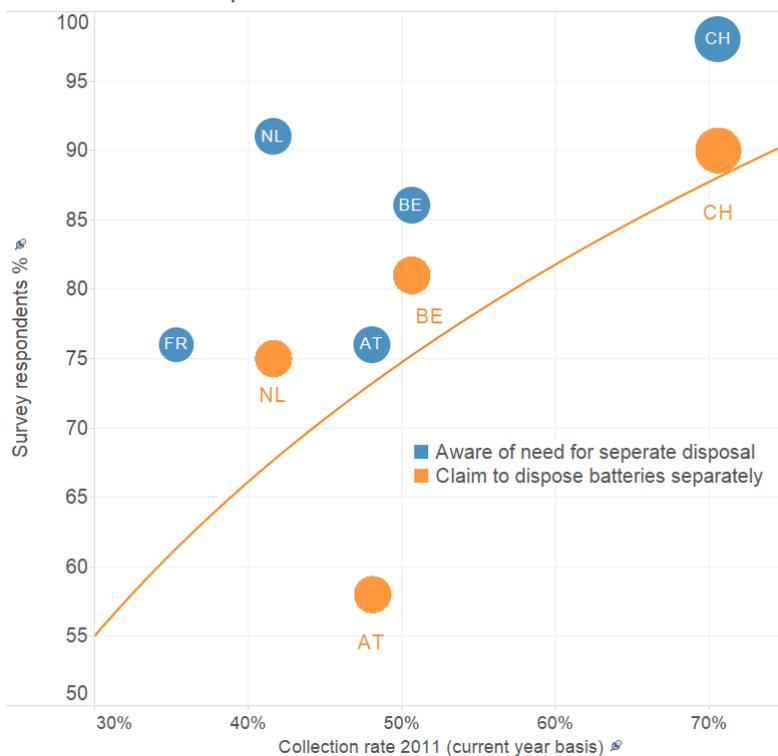
### Consumer awareness and disposal behaviour

Surveys of consumer attitudes to waste battery disposal provide an indication of the amount of waste batteries hoarded or incorrectly disposed of. In Austria, Belgium, France, Netherlands and Switzerland – all of which already achieve a collection rate exceeding 35% – regular surveys have tracked consumer awareness of waste battery collection. While details of the surveys vary, common questions concern respondents' awareness of the need for separate collection as well as their actual disposal behaviour.

The results of the latest surveys suggest that the percentage of respondents aware of the need for separate disposal of waste batteries is typically around double the collection rate.

Unsurprisingly there is a gap between respondents' awareness of the need for separate disposal and their claimed disposal behaviour. The gap is significantly wider in the Netherlands and Austria than in Belgium and Switzerland.

Consumer awareness & disposal claims and the collection rate



### Sources of collection volumes

As a result of different collection network and business models, the origin of the volume of collected waste batteries varies widely.

Data from 24 countries that was publicly available or received for this study from organisations on a confidential basis suggest that on average about 1/3 each of waste batteries are deposited at municipal collection facilities and in retail distribution.

The municipalities' share can be as high as 90% (DK) where municipalities are obligated to collect but retailers are not. However, these percentages do not allow conclusions about where end-users dispose of batteries, as retailers may voluntarily offer collection services and then return collected volumes to municipal collection sites.

| <i>Origin of collected batteries % estimate</i> | <i>Average</i> | <i>Maximum</i> |
|---|----------------|----------------|
| Retail  | 31             | 60             |
| Municipal collection centres                    | 36             | 91             |
| Schools   | 12             | 60             |
| Companies                                       | 19             | 65             |

## Drivers of consumer awareness creation measures

### Legal obligations affecting consumer awareness

Over all battery chemistries, the value of recycled materials deriving from waste portable batteries is lower than the costs of collection and recycling and is tending to fall due to a reduction of cobalt in lithium batteries.

Legislation, particularly in countries with competing organisations, thus needs to provide clear obligations to motivate organisations to increase consumer awareness.

The key approaches providing this motivation are ranked here in order of their effectiveness in increasing the collection rate, as suggested by the trend lines in the graph on the next page:

- **Mandatory consumer awareness contribution to clearing house:** In Italy and Austria, battery organisations must join a coordination centre which also collects set fees and organises nationwide consumer awareness measures. A similar mechanism is being developed in France through a national coordination commission.
- **Measurable awareness creation obligation in a competitive organisation model:** Quantifiable consumer awareness obligations, such as minimum spending (e.g. 3-5% of fee revenue) or frequency of awareness campaigns help to ensure that public awareness is raised by organisations and to limit distortions to competition. By contrast, in a single organisation model the regulator may put a ceiling on consumer awareness spending to limit the scheme's costs to the public.

#### Measurable legal requirements on systems' awareness creation

|             |  |
|-------------|--|
| Bulgaria    | at least 3% of revenues on awareness measures                              |
| Denmark     | obligation of each producers (depend on POTM ; waived if national campaign |
| Estonia     | nationwide media campaigns, at least once a year                           |
| Hungary     | two mass media campaigns per year  |
| Latvia      | 4 measures per year  |
| Lithuania   | at least 5% of revenues on information campaigns                           |
| Portugal    | at least 5% of revenues on information campaigns                           |
| Switzerland | at most 25% of revenue on information campaigns (before 2009 15%)          |

- **No measurable awareness creation obligation in a competitive organisation model:** In a competing organisations model, organisations compete primarily on fees charged to producers which are determined by the organisation's costs. The absence of measurable obligations with regards to consumer awareness measures increases the probability of organisations opting to meet their collection by focusing on the collection of heavy waste batteries from commercial applications. These may not represent the batteries the producer members of the organisation have placed on the market and which may not have been placed on the market as portable batteries in the first place (see [here](#)).

### Coordination and consistency of awareness creation measures

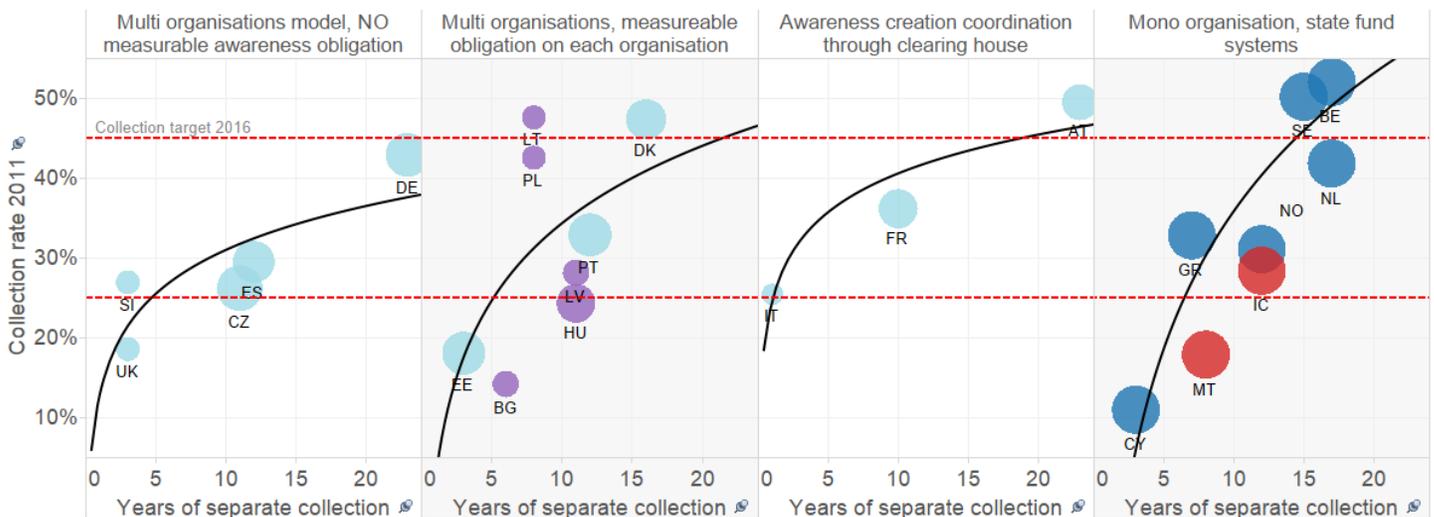
Without specific regulatory requirements, only the single-organisation model and the competing organisation model with clearing house ensure consistent nationwide campaigns.

Taking into account the collection rate achieved and the number of years that separate collection of waste batteries has been in place, the trend lines of the two graphs on the right below support the notion that a single national campaign can be more effective in raising consumer awareness than several smaller ones.

The mono-organisation model’s outperformance of all other organisations is probably due to a single, consistent design language on collection points. Collection boxes/containers themselves are an important element of awareness creation measures.

A consistent collection container design increases the frequency of a consumer’s contact with the design and thus his/her recall rate of the waste battery collection programme. Some organisations, for example in France, therefore account for the costs of retail collection boxes under the communications budget line.

Collection rate in view of factors impacting awareness creation and years of separate collection



## Drivers of collection point availability

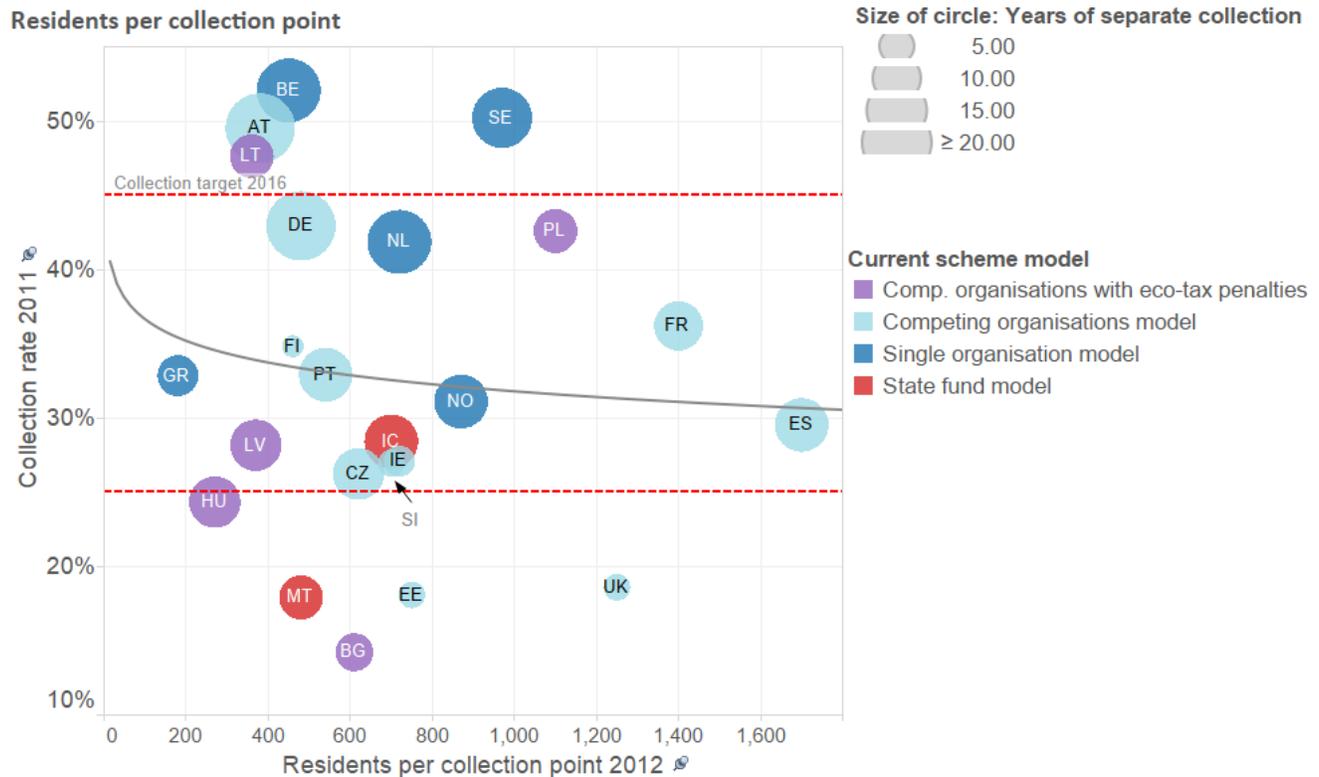
Turning end-user awareness into disposal behaviour requires the availability of sufficient<sup>30</sup> return facilities for waste batteries. Detailed and measurable obligations on organisations, retailers and municipalities can help to speed up the roll out of sufficient return facilities and raise the long term collection rate.

### Number of collection points

The optimal number of collection points depends on local conditions, such as population density and the type of collection network. For most countries, an optimal density of collection points appears to be reached when there is one point for every 300 - 500 residents.

At the end of 2012, the **average collection point density** in the 26 countries<sup>31</sup> from which data are known or can be based on substantiated estimates was one collection point per 690 residents (or 1.7 collection points per 1,000 residents), ranging from one point for 190 residents in Greece to one collection point for around 1,600 residents in Spain.

However, collection point numbers released by organisations are not fully comparable as criteria for counting them vary: For example, Belgian organisation Bebat only counts a registered collection point if it is ‘active’, i.e. defined as triggering at least one take-back request of a full box per year<sup>32</sup>. Other organisations could not apply this counting criteria as their logistics model services all collection points at regular intervals rather relying on requests from the collection point host.



<sup>30</sup> Batteries Directive Art. 8.1(a) requires such schemes to ‘... enable end-users to discard waste portable batteries ... at an accessible collection point in their vicinity, having regard to population density’

<sup>31</sup> Data not available for RO, SK; IT and DK data not taken as only number of municipal collection points is known.

<sup>32</sup> About 70% of Bebat’s registered collection points are ‘active’.

### Legal obligations on organisations

As with costs for awareness creation, competing organisations need to minimise their costs of collection. Legislation is therefore critical in providing clear obligations that motivate organisations to invest in the collection network without the risk of reducing their competitiveness in acquiring or retaining producers. A few key approaches can be identified, ranked here by their effectiveness in increasing the collection rate as suggested by the trend lines in the graph below:

- A **central coordination of collection**, such as that provided by a mono-organisation or a clearing house, optimises the activities of individual organisations, ensure homogeneous geographical coverage and uniform operating conditions, thus increasing a scheme’s effectiveness in building and maintaining collection infrastructure.
- **Coverage requirements for each organisation:** Organisation approval requirements stipulating nationwide coverage or a minimum number of collection points. (Another approach was proposed in an April 2013 draft amendment of the Bulgarian Batteries Ordinance: Each organisation must set up a number of collection points pro-rata to its market share).
- **An annual collection target<sup>33</sup> for each organisation**, especially if annually enforced by fines for underachievement or similar instruments<sup>34</sup>, provides a strong incentive for collecting up to, but not over, the target. Moreover, if not combined with other requirements, it does not prevent cherry picking and may leave less densely populated areas uncovered.

Collection rate in view of factors affecting coordination of collection activities



<sup>33</sup> Note: Intermediate or higher collection target

|           |   |
|-----------|---|
| Belgium   | 45% in 2010; 50% in 2012                            |
| Denmark   | 1991-96: 75% for the NiCd batteries in 90ties       |
| France    | 33% in 2010, increasing by 2% annually              |
| Germany   | 30% in 2011, 40% in 2014                            |
| Hungary   | 18% in 2008 to 45% in 2016                          |
| Latvia    | 25% in 2011, or NRT                                 |
| Lithuania | 25% in 2012, or NRT (80% before 2012)               |
| Norway    | 30% of past year POTM for separately sold batteries |
| Poland    | 22% in 2011 to 45% in 2016                          |
| Portugal  | 25% in 2010 to 45% in 2015.                         |
| Spain     | 25% by end 2011, 45% by end 2015                    |
| Sweden    | 65% in 2012, 75% in 2016                            |

<sup>34</sup> Collection targets enforced annually by fines or similar in Bulgaria, Hungary, Latvia, Lithuania, Poland, Slovakia only

In the competing scheme model especially, an organisation's collection network is often driven by its owner- or membership structure: retailers whose outlets are used as collection point hosts; EEE producers controlling a WEEE organisation who have access to batteries from WEEE dismantlers; or waste management or logistics companies serving municipalities or industries.

### Legal obligations on retailers

Batteries Directive 2006/66/EC requires distributors or retailers to take back waste batteries, but allows member states to waive this requirement *'if an assessment shows that alternative existing schemes are at least as effective in attaining the environmental aims'* of the Directive. The high collection rates achieved by Denmark and Sweden - where retailers have no take-back obligation - and Greece - where retailer have no take back obligations unless assigned by an organisation – show that 'alternative existing schemes' can achieve comparable levels of collections.

In the remaining 27 countries covered by this report national legislation obligates retailers of batteries to take back waste batteries. Four of these countries exempt small retailers from the obligation.<sup>35</sup>

The effectiveness of the retail return points varies widely between member states due to a number of additional legal requirements, most notably on whether or not

- organisations are required to provide retailers with collection containers, thus ensuring waste battery campaign recognition,
- organisations are required to pick up full containers within a reasonable time period, or alternatively whether municipal collection points are required to accept waste batteries from retailers and whether
- retailers are subject to a measurable obligation to display the availability of the collection point.

---

<sup>35</sup> Small retailers are exempt from take back in Czech Republic, Estonia, Poland and UK

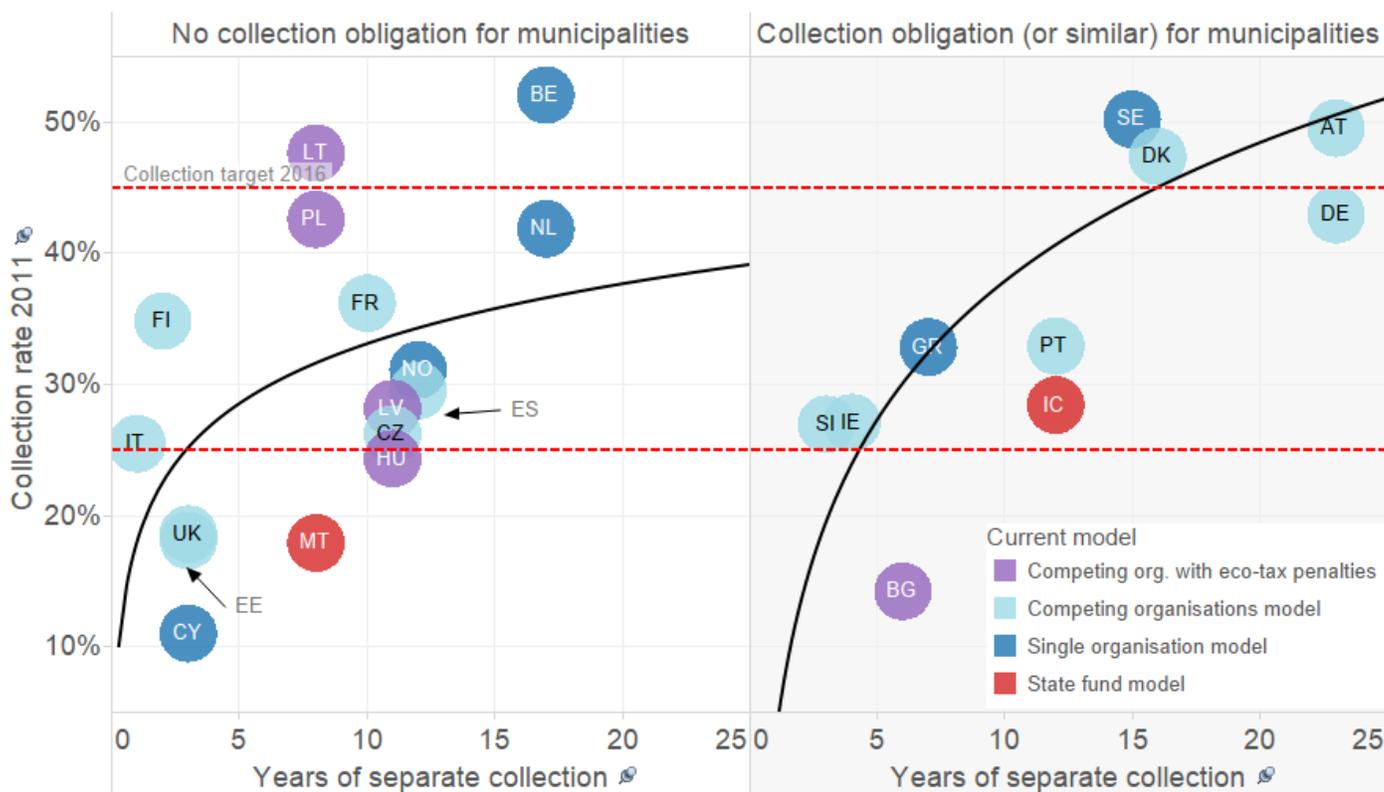
### Legal obligations of municipalities

While the Batteries Directive is silent about the responsibilities of municipalities, national legislation in 11 member states holds municipalities partly or fully (DK) responsible for waste portable battery collection. (Municipalities usually oppose an outright legal obligation for collection, as it is usually interpreted as forfeiting compensation for collected batteries.)

Where municipalities have no legal obligation, they still often collect waste batteries. In AT and IT they do so supported by framework agreements between all organisations and a coordination centre that ensures *inter alia* nationwide uniform compensation for waste battery collection.

Taking into account collection rates achieved and the length of time that separate collection has been in place, the data suggest that a collection obligation on municipalities contributes positively to the overall collection rate.

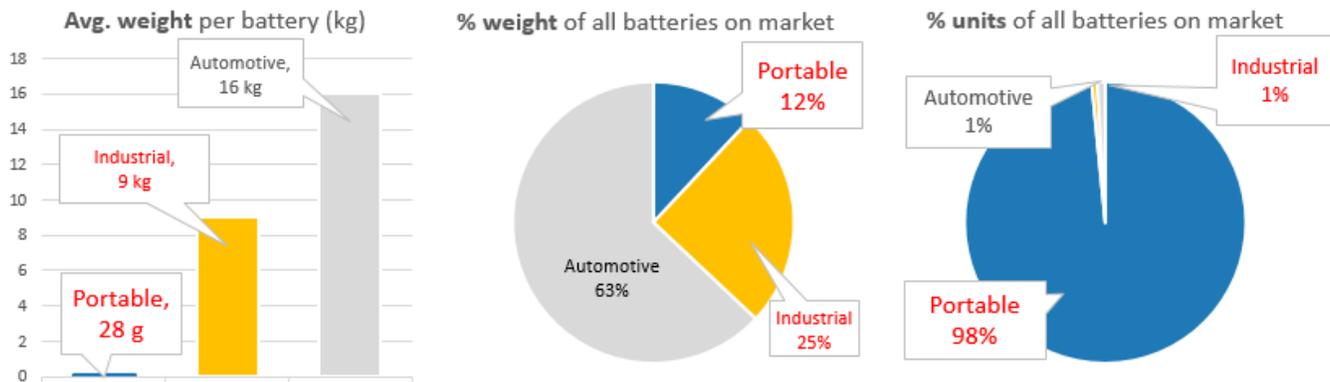
Collection rate in view of participation of municipalities in collection



# Battery definitions and flows

## Implications of the Directive’s battery definitions on waste battery collection

The dynamics and challenges of the waste *portable* battery collection market can be explained by reviewing the characteristics of *all* batteries being placed on the market in view of their distinction into portable, industrial and automotive batteries by Batteries Directive 2006/66/EC:



|   | <i>Portable</i>  | <i>Industrial</i>   | <i>Automotive (starter)</i>                                      |
|---|--|---|--|
| <b>Definition</b><br>(according to Directive)               | Sealed, can be handheld and is neither an industrial nor automotive battery  | Designed exclusively for industrial or professional uses or is used in any type of electric vehicle   | Used for automotive starter, lighting or ignition power          |
| <b>Examples of batteries or applications</b>                | Single charge (primary) batteries: 65-75% of POM by weight, declining<br>Rechargeable batteries 25 – 40% of POM by weight, increasing; About 90% of rechargeable batteries are placed on the market in EEE | Back-up power supply for hospitals, airports; Connected to solar, renewable energy applications;<br>Lighting for outdoor public works (e.g. street maintenance) and mining;<br>Non-starter batteries in trains, trucks, machinery; Hybrid vehicles, e-bikes, wheelchairs, forklifts, golf carts | Starter batteries  |
| <b>Overall material value of end-of-life product stream</b> | <b>LOW</b> to negative except for a small fraction e.g. <b>Lead (2% - 3% of POM)</b> , typically small Cobalt containing lithium ion accumulators  | <b>HIGH</b><br><b>Lead batteries</b> make up <b>95%</b> of POM;<br>LOW (to negative) for remaining 5%   | <b>HIGH</b><br>(100% lead batteries)                             |
| <b>Key end-of life requirement</b>                          | Collection schemes and targets   | Landfill prohibition (no collection schemes <sup>36</sup> , no collection target)   | Landfill prohibition, Collection schemes, (no collection target) |

Note: All quantitative information in this table is based on reports from environment agencies, notably in FR<sup>37</sup>, DE, PL, as well as partial data from agencies or organisations in AT, BE, BG, CZ, DK, UK for the years 2007-2012.

<sup>36</sup> Directive 2006/66/EC: producers of industrial batteries shall ‘not refuse to take back waste industrial batteries’ from end-users

<sup>37</sup> France’s ADEME provides probably the most comprehensive and consistent analyses of batteries and waste batteries markets

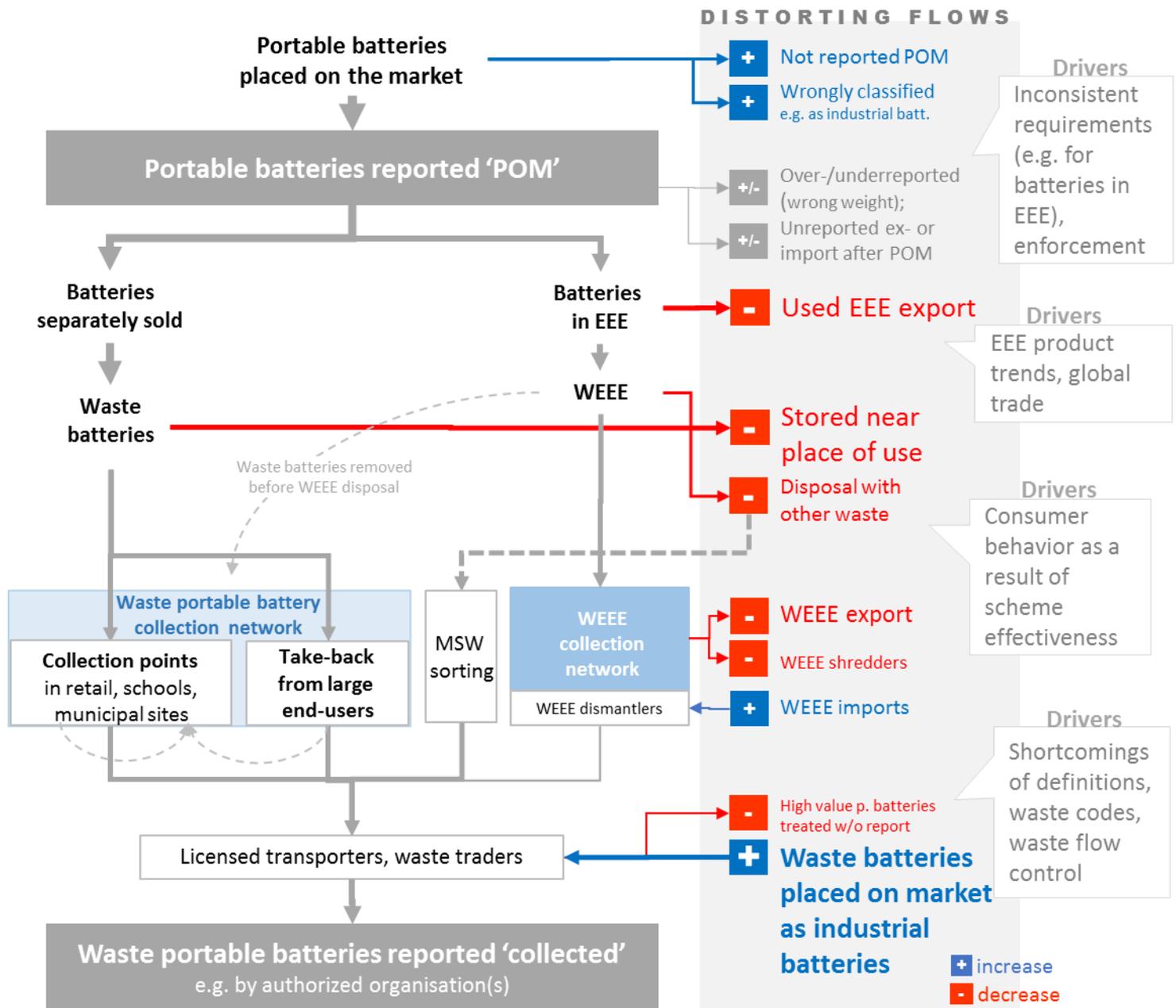
Though also used in other applications, automotive (starter) batteries are usually easy to distinguish, and there are mandatory deposit organisations in place in many countries to retrieve them.

However, a significant proportion of industrial batteries is difficult or impossible to distinguish from portable batteries at the collection stage, when most batteries will not be traceable back to the distribution channels or products they were put on the market in.

The challenge of correctly classifying collected batteries into portable and industrial categories is amplified by the following factors:

- The ample availability of waste batteries placed on the market as industrial batteries (by weight, their volume is around twice that of portable batteries)
- The higher material value of these batteries: around 95% of industrial batteries are lead acid batteries for which a natural market already exists.
- The lower collection costs of these batteries (by average weight, one industrial battery is 300 times heavier than a portable battery) and their general availability in more concentrated form at distributors or large aggregators.
- The absence of a collection target for industrial batteries leaves their producers with little incentive to have them returned, despite positive material value.
- The misclassification by producers when reporting POM statistics due to ineffective guidelines.
- The constant flux in the market place between battery-operated devices aimed at domestic and industrial users.

### Schematic view of battery flows and distorting effects

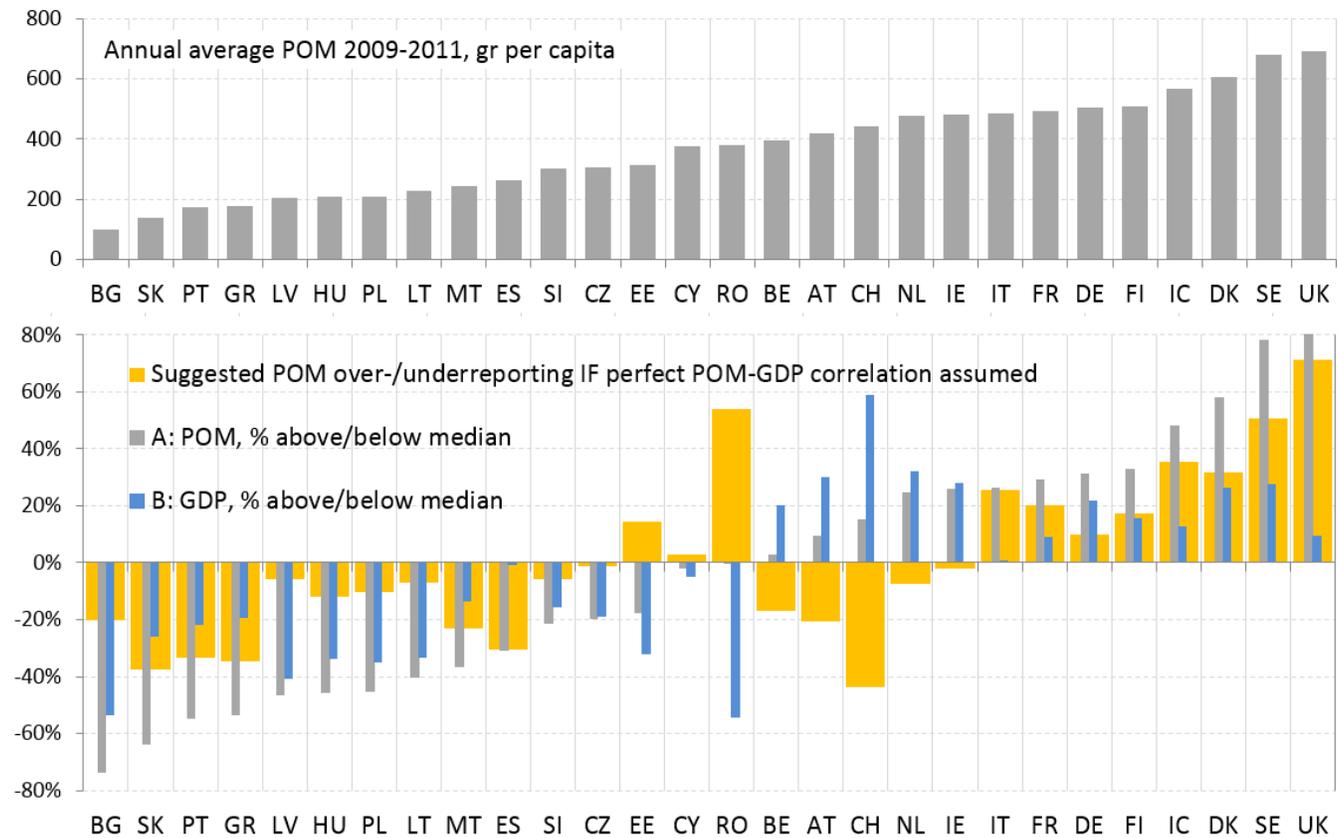


# Distortions in POM volumes

## How accurate are POM volumes?

On a per capita basis, the reported weight of portable batteries placed on the market ranges from about 80 g in Bulgaria to over 600 g in Denmark, Sweden and the UK (top chart below). To obtain a rough indicator of the plausibility of reported POM volumes, we assume that battery purchases are proportional to GDP<sup>38</sup> and compare the median deviation of a country's GDP with that of the reported battery POM.

Noticeable differences in per capita POM can be observed in neighbouring countries with similar consumption patterns. Some of the suggested under-reporting (second chart, orange bars negative) can be explained by the challenges of reporting batteries in EEE. This applies for example to Greece, Slovakia and possibly Switzerland. Apparent over-reporting in UK and Romania is probably in part related to a wider interpretation of portable batteries.



Bottom chart:

**Grey:** Annual portable batteries POM per capita, average for years 2009-11, % deviation from median

**Blue:** 2011 GDP per capita, % deviation from median

**Orange (red minus blue)** percentage of batteries under/ over-reported if GDP and POM correlated perfectly

<sup>38</sup> We do not use purchasing power (PP) adjusted GDP as the price levels of batteries and EEE (mostly imported) vary less than locally produced services or food stuffs.

## Varying interpretations of 'portable' battery

A significant proportion of industrial batteries is difficult or impossible to distinguish from portable batteries at the time of POM reporting. For example, a producer selling lithium ion or lead accumulators may declare them as industrial batteries if he expects that the majority of them will be used in electrical vehicles. Nevertheless they may find their way into consumer applications and be disposed of as portable batteries.

Some organisations have used weight-based thresholds for facilitating the distinction of portable and industrial batteries at the POM stage: Stibat (NL): portable battery < 1 kg; AFIS (GR) < 1.5 kg; Ecobatterien (LU) < 2 kg. In August 2013, UK authorities proposed a 3 kg threshold.

Such interpretations may explain some of the variations in for example the share of lead batteries in portable batteries placed on the market.<sup>39</sup>

## Estimates of batteries in EEE

Europe-wide, around 23,000 companies are registered with and report to the national battery registers.

Especially in small countries, these are mostly trading companies or self-importing retailers with no resources or capacity to handle detailed product specifications that include battery weight and chemistry, particularly if the batteries are integrated into EEE.<sup>40</sup> As a result, organisations in several countries have a very limited ability to collect data about the weight of batteries in EEE.

The same applies to countries where fees are charged on the basis of units or customs codes (which often goes together). Harmonised customs tariff codes<sup>41</sup> are used in countries with state fund models (MT, IC) and those applying eco-taxation as an enforcement instrument, as well as Norway where organisations assign billing to the customs authorities.

Additional challenges arise as the customs code does not allow distinguishing portable from other batteries.

In the absence of 'collected' (reported) data, Commission Decision 2008/763/EC allows Member States to base their calculation of POM volumes on 'statistically significant estimates based on collected data'. Detailed data from several countries would be needed to improve the accuracy of national assumptions underlying such estimates. However, these are not available.

With few exceptions, organisations in any model tend to resist too much voluntary transparency, and the introduction of competing organisation schemes has amplified the trend to reduce transparency.

To improve the basis for estimates and allow assessing their plausibility, an obligation to report separately POM of separately sold batteries and batteries sold in EEE could be introduced.

<sup>39</sup> Denmark, France, Germany 2-3%; Others vary: Greece 0%; Hungary 1%; Poland 3.4%, Czech Republic 14%, UK 15% 2010 - 8% 2012,

<sup>40</sup> Perchards' experience with packaging reporting suggests that if data are not known, there is a tendency to over-report.

<sup>41</sup> Harmonised Commodity Description and Coding System (HS) 8506 Primary Cells (6 subgroups); 8507 Lead-acid Accus (6 subgroups).

Note: Effect of the use of custom codes on POM volumes

WEEE POM vs batteries POM, effect of reporting by customs code



The use of customs codes means that batteries integrated into EEE remain unreported as the product containing the integrated battery falls under the tariff code of the EEE. This is suggested by the chart above: Batteries POM per capita should closely correlate with EEE POM in categories 2,3 and 4, as these categories contain or use most batteries. However, batteries POM remains below the trend line in countries (except LT) using customs codes to establish POM volumes.

## Free-riders and small producer exemptions

Free-riders do not appear to distort POM volumes significantly as market surveillance by competitors and EEE producer associations ensures a relatively high degree of compliance among large producers. Most remaining free-riders can be assumed to be small companies that change overall POM volumes very little, while contributing disproportionate administrative costs to the organisations and themselves. Ecotrel (LU) calculated in 2007 that 64% of its members contributed less than 2% of revenue. In the UK, 67% of the 1,507 registered portable producers contribute less than 1% of POM<sup>42</sup>.

<sup>42</sup> And therefore qualify as small producers that do not need to join a financing scheme.

## Other causes of POM distortions

---

### Uncertainty about who is the 'producer' or 'importer' in the single market

Producers need to establish criteria in their EPR organisations that determine which products will be reported in which country. Unless he is both an importer and a distributor to final end-users, it is hardly possible for a producer to know in which country his products will be eventually be sold to end users, let alone where his product will arise as waste. The criterion most often used is the invoicing address of the buyer. However, the delivery address for the products might be in another member state again. The location of the final user of the batteries or EEE becomes totally untraceable for the reporting producers if the buyer takes the batteries into another country (after the producer placed them on the market). Quite often there is no mechanism in place to report these batteries as exported, and thus having been taken off the market (e.g. UK). This may affect reported POM volumes and cause waste management fees for a product to be charged twice, particularly in small member states in the EURO zone.

### Import or export of batteries already placed on the market

While several countries have measures in place to account for EEE/batteries that are exported after having been placed on the market, in reality they are administratively difficult to fulfil if the EEE/batteries are not exported by the company that had placed them on the market in the first place, as a document trail needs to prove all steps in the process. For that reason, these measures are not often used.

### Late reporting obligation

In some countries the obligation to report battery volumes in EEE came into force late, for example Norway (end 2012) and countries in Eastern Europe. Thus, the current collection rates may be lower than they would have been if the previous years included the volumes of integrated batteries, unless previous year volumes are adjusted by estimates.

### Delayed producer awareness

In countries where the obligation to report POM volumes of batteries integrated into EEE had been in place for some years, many EEE producers tended to become aware of their battery obligations only after the transposition of the WEEE Directive (2006-9) or even of the Batteries Directive. For example, the number of registered battery producers in Germany tripled in 2010 even though the obligation had been in place since 1998. Similarly in France, the number of registered portable battery producers almost tripled between 2008 and 2011 while the obligation had been in place since 2001.

# Distortions in collection volumes

## Distortions resulting from varying interpretations of battery definitions

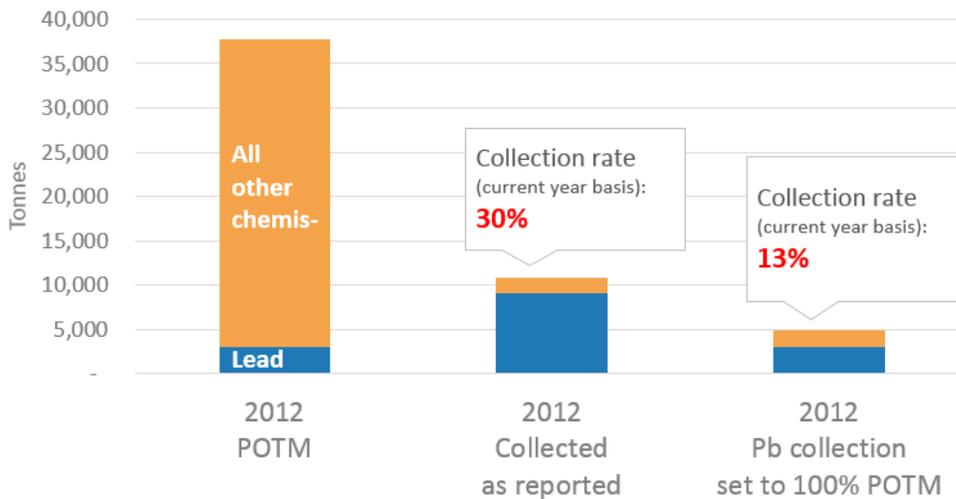
### Significance of distortions from lead batteries

Distortions are usually only detectable when chemistries fractions are reported after the treatment of waste portable batteries, if such reporting is required under national waste legislation. The Batteries Directive itself does not require the ‘recycling efficiencies’<sup>43</sup> to be broken down into the battery distinctions.

Only a few input/output reports for portable batteries provide sufficient detail for review: In France and Greece lead batteries were not counted in collected waste portable battery volumes, in other countries the isolated return rate for lead portable batteries is usually significantly higher than that of other chemistries but not implausible.

Evidence of implausible lead portable battery return rates was published in Poland where the return rate in 2011 was close to 400%<sup>44</sup>. Eliminating this effect brings Poland’s 2011 collection rate nearer to 25% than to the 35% reported. The effect on the collection rate would have been even more pronounced in the UK (though the 2012 return rate for portable lead batteries was 300%). Assuming a return rate of 100% for lead portable batteries brings the overall collection rate to 13%, the collection rate for non-lead acid batteries being 5%.

**UK: Effect on collection rate by elimination of implausible surplus of lead batteries from collection volume**



<sup>43</sup> Recycling efficiencies (65% lead-acid, 75% nickel-cadmium, 50% all other waste batteries) apply summarily to all batteries and are consistent with (and less detailed than) the EWC code classification.

<sup>44</sup> GIOS Reports

## Waste legislation not aligned with the ‘portable’ distinction

The Waste Framework Directive 2008/98/EC and the European Waste Catalogue (European List of Wastes) do not make a distinction between portable and industrial batteries. While collection, transport, sorting, storage and treatment of batteries is subject to licensing requirements, the waste categories<sup>45</sup> for which licences are issued do not help identify the waste batteries that should be included, or excluded, from the portable batteries’ collection rate. In short, the waste sector works on the basis of the EWC codes, and the legal basis and enforcement capacity for imposing a secondary layer of distinctions (portable, industrial and automotive) on the waste battery flow remains weak.

For organisations to separate waste battery collections into ‘portable’ and ‘industrial’ requires an additional process step that adds cost. Moreover, the risk of incorrect reporting is increased when waste batteries are not traceable to the point where they have been deposited by the end-user. This tends to be the case when collected waste batteries pass through one or several entities before being reported by a battery organisation.

The few organisations that disclose collection sources do not apply a common terminology. As a general rule, we assume that the risk of erroneous reporting increases with the share of waste batteries an organisation designates as ‘companies’ (which can comprise a large user known to the organisation as well as trading volumes of unknown origin) or ‘other’. Data publicly available or received from organisations on the basis of confidentiality for this study show a large variance of waste battery sources with designations that indicate trading and may not be traced back to the place of disposal, ranging from 0% to 65%, with an average of 17%. The percentage does not correlate with the age or model of a scheme.

## Distortions resulting from batteries in unreported WEEE and used EEE

A recent Commission staff working paper<sup>46</sup> notes that in a worst case scenario, WEEE illegally shipped out of the EU and WEEE separately collected but unreported and improperly treated ‘could be assumed to represent around 41% of WEEE arising’. Eurostat data released in October 2012 show that in each year between 2007 and 2010, 10-14% of the reported WEEE collection volume can be attributed neither to reuse nor to treatment (table below).

As the portable batteries collection rate methodology includes batteries in EEE and WEEE, the uncertainty about cross border flows of used EEE and WEEE compounds concerns about the relevance of the waste portable batteries collection rate as a measure of the performance of the battery collection scheme.

Data from the few battery organisations that require producers to indicate separately the volume of batteries placed on the market in EEE, suggest that batteries in EEE contribute around 20% to 30% of portable batteries placed on the market<sup>47</sup>. The share of reported waste batteries removed from WEEE is usually much lower. Due to prior trading, organisations are often not able or willing to identify the share of waste batteries removed from WEEE in total collection volume. Public and confidential data from organisations suggest the share of batteries removed from WEEE is on average 7% in the 19 countries investigated, and ranges from 1% to 20%<sup>48</sup>.

<sup>45</sup> European Waste Catalogue:

*Wastes not otherwise specified in the list:* 16 06 01\* lead batteries; 16 06 02\* Ni-Cd batteries; 16 06 03\* mercury-containing batteries; 16 06 04 alkaline batteries (except 16 06 03); 16 06 05 other batteries and accumulators; \* *hazardous*

*Municipal wastes:* 20 01 33\* batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries; 20 01 34 batteries and accumulators other than those mentioned in 20 01 33\* *hazardous*

<sup>46</sup> A Commissions staff working paper SWD(2013) 268 (impact assessment accompanying a proposal to strengthen inspections and enforcement of Regulation (EC) No 1013/2006 on shipments of waste, July 2013)

<sup>47</sup> Few comparable data are available on a country basis and the share of portable batteries POM volumes of portable batteries as a percentage of EEE POM show wide variations: On average, the batteries volume is 2.4% of EEE volume. In 2010 it ranged from 1% - 1.5% in SK, LU, PT, GR, BE to above 3% in SE, LT, EE.

<sup>48</sup> On the basis of individual systems, shares are much higher for a few systems.

### Exports of used EEE and 'illegal' exports of WEEE

The WEEE Directive impact assessment suggests that, according to various pieces of evidence, very large volumes of WEEE or used EEE are shipped out of the EU and therefore cannot be collected and recycled in the EU. Several investigations were made to detect such illegal shipments (UNU, Deutsche Umwelthilfe, Vanhouten and VROM). Due to the illegal nature of such shipments no data is available on overall volumes. A study in the UK showed that about 10% of WEEE transports were shipped illegally to non-OECD countries.

### Legitimate exports of WEEE for treatment

Some member states export a large part of collected WEEE for treatment to other member states, in 2010 notably Norway 31%, Denmark 24%, Italy 21%, Ireland 20% and Hungary 17%, according to Eurostat data. The batteries contained in these volumes may not always be counted in the member states where they were placed on the market, but instead in the member state in which they are treated, which distorts the battery collection rate in both countries.

### Un-recorded treatment

**Batteries shredded with WEEE without prior removal:** Though Annex II of the WEEE Directive (Recast Annex VII) requires batteries to be removed from WEEE prior to treatment, this is not always done in shredder treatment processes (and there seem to be few environmental reasons to do so). The effect of shredder treatment of small WEEE on the collection rate of batteries should be further investigated.

**Batteries removed from WEEE and treated without reporting:** Integrated accumulators often have positive material value and for that reason disappear at some stage of collection without being accounted for. This problem affects the reporting of all separately collected waste streams that contain expired products whose material value is higher than the cost of collection. Examples are IT, mobile phones and computers in the WEEE stream, or cardboard, aluminium and mono material plastics in packaging waste.

For reference only:

| <i>EEE and WEEE volumes 2010</i>                            | <i>All EEE categories</i> | <i>Categories with high battery share*</i> |
|---|---------------------------|--|
| EEE put on the market, tonnes                               | 9.6 million               | 3.3 million                                |
| WEEE collected, tonnes                                      | 3.6 million               | 1.6 million                                |
| ... of which re-used  | 2%                        | 0.3%                                       |
| ... of which treated in member state                        | 77%                       | 84%  |
| ... of which treated in other member state                  | 5%                        | 5%   |
| ... of which treated outside of EU                          | 3%                        | 3%   |
| <b>... of which not accounted as reuse and treatments**</b> | <b>14%</b>                | <b>9%</b>                                  |

Source: Analysis of Eurostat data 2010

\* Categories 2, 3, 4 (small household appliances, IT and telecommunications equipment, Consumer equipment)

\*\* Collection minus treatment minus re-use

## Market trends delaying or preventing waste generation

Belgian battery organisation Bebat has been in operation since 1996 and has achieved very high consumer participation (87%) and a dense collection network. Despite this, the collection rate has effectively hovered around 50% for the past 10 years.

By way of municipal solid waste (MSW) analysis, Bebat found that it collected 87% of batteries 'available for collection' in 2011. This number means that only 60% of batteries POM in Belgium become 'available for collection' there. Results of similar investigations by Dutch organisation Stibat translate into even lower rates (only around 42% of batteries placed on the market become available).

Thus at least 40% of batteries placed on the market are not available for collection in the same country. This is probably caused by hoarding of batteries by end-users and the waste flows mentioned in the section on [unreported waste batteries in WEEE](#), but may also be due to

- the **increasing share of rechargeable batteries**<sup>49</sup> which – due to their longer lives – become available for collection at a much later date than the primary batteries they replace.
- the increasing amount and fast replacement rates of **portable ICT devices** with rechargeable batteries which are **exported as second hand equipment** and will never become waste in the country where they were originally placed on the market.

Bebat argues that significantly increasing the collection rate would require disproportionate investments in marketing and logistics. For this reason, Bebat, in conjunction with EUCOBAT, would support a collection rate calculated on the basis of waste batteries available for collection ('waste batteries arising') rather than batteries 'placed on the market'.

<sup>49</sup> Bebat data show that – not taking into account lead acid batteries – the share of secondary batteries as a percentage of all batteries POM increased from 25% in 2005 to 36% in 2011.

## Conclusions

### Conclusions about battery definitions and distorting flows

The Directive has achieved its overarching objective that collection networks for all portable batteries are available - or are in the process of becoming available - in all member states and has triggered model transitions that harmonised the scope of national battery collection schemes and reduced distortions to competition in a number of countries.

The biggest remaining challenge is to ensure that national collection rates reflect the actual performance of the waste portable battery collection schemes. To avoid distortion of competition within the Community these challenges would be ideally addressed at EU level, notably by

- **clarifying the distinction between portable and industrial batteries** and
- **establishing a framework identifying waste batteries available for collection, respectively for reducing distortions of national collection rates resulting from battery flows that are currently not accounted for** such as volumes of batteries that leave or enter a country in used or refurbished EEE or WEEE, that are treated with unreported WEEE, as well as the effects of delayed waste generation due battery market trends.

Taking into account the limited feasibility of strict enforcement due to the low value and exposure of the waste batteries market compared to other waste streams<sup>50</sup>, a review of the Batteries Directive - scheduled after June 2016<sup>51</sup> - may further explore the options discussed on the next pages.

### Conclusions about national scheme performance

In countries where the scheme's progress in rolling out or expanding existing collection networks has slowed before optimal coverage was reached, three market conditions can be identified. All three can apply in one country to varying degrees:

| <b>Condition</b> | <b>Malfunctioning market</b>   | <b>Distorted market</b>  | <b>Functioning but unaccelerated</b>  |
|------------------|--|--|---|
| <b>Indicator</b> | Supply of non-portable batteries, Organisations without obligation to build collection network | Lack of transparency and consequent distrust   | Collection points, share of batteries from end-users does not increase  |
| <b>Cause</b>     | Unclear battery definition   | Organisations with no obligation to contribute to collection network; Organisations with equal obligation but unequal access to collection point hosts | No measurable requirements on communication measures, collection point density; Low probability of sanctions for not meeting collection targets |

Clarification of the battery definitions at EU level could largely remove the causes of malfunctioning and distorted markets. The challenges of un-accelerated markets require fine-tuning of obligations for actors involved in the national collection schemes. As in line with the principle of subsidiarity only '*basic principles for financing ... should be set at Community level*'<sup>52</sup>, the improvement of such obligations should be addressed at national level.

<sup>50</sup> A rough estimate suggests that the costs of battery organisations are around EUR 0.2 to 0.4 per residents and year. This represents 5% of the amount spent on WEEE and 1% of that spent on waste packaging. Financial aspects were not in the scope of this report.

<sup>51</sup> Article 23 requires the Commission to review after June 2016 i.a. the appropriateness of the minimum collection targets

<sup>52</sup> Batteries Directive Recitals 19 and 26

# Options for improvement

## A. Options to improve distinctions between portable and industrial batteries

### Option A1: Excluding lead batteries from the calculation methodology of the collection rate

Lead batteries contribute 95% to industrial batteries placed on the market but only 0% - 3% of portable batteries POM in most countries (DK, GR, FR, DE, PL – up to 15% in CZ, UK<sup>53</sup>). As lead batteries are the main cause of uncertainty about the present collection rates in many countries and have a positive material value at the end-of-life stage, the exclusion of lead batteries entirely from the calculation methodology of the portable battery collection rate would improve data reliability significantly.

### Option A2: Clarifying the term ‘portable battery’

To provide or harmonise national interpretations of the portable battery definitions to enable producers and collectors to distinguish between portable and industrial batteries, existing distinctions could be **extended by a weight criterion** (to define the term **‘can be handheld’**) as is done in some countries<sup>54</sup>. Furthermore, the term ‘electric vehicle’ in the industrial battery definition should be clarified<sup>55</sup> for example as regards electric bicycles, wheelchairs, hybrid vehicles, leisure crafts.

While the addition of a weight based criterion would improve data reliability, opponents of this option argue that it complicates collection: heavy batteries increasingly find their ways into consumer applications (e.g. in gardening equipment, lawn mowers, e-bikes, energy storage solutions, etc) and are typically returned via retailers or municipal collection points which also collect small portable batteries.

Application-based criteria to identify portable batteries (used in private households vs. used in industry) would not solve this problem as the party reporting POM may not know the application in which the battery will be used.

### Option A3: Requiring recycling efficiencies of portable batteries to be reported

Recycling efficiencies<sup>56</sup> are presently required to be reported jointly for all batteries. A legal requirement to report them by battery distinction (portable, industrial) would allow the collection target to be verified by assessing the plausibility of the return rates achieved by the three chemistries and would thus discourage portable battery schemes from collecting non-portable batteries.

### Option A4: Introducing a collection target for other batteries to limit their availability for collection

Assigning a collection target to industrial batteries could help deprive the portable battery market of waste industrial batteries<sup>57</sup>. The downside would be significant red tape and disproportionate enforcement costs. The long life cycles of the

<sup>53</sup> Where present guidance presumes batteries of a weight up to 4 kg as capable of being hand-carried and only batteries above 10kg as NOT hand-carriable.

<sup>54</sup> Stibat (NL): portable battery < 1 kg; AFIS (GR) < 1.5 kg; Ecobatterien (LU) < 2 kg. In August 2013, UK authorities proposed a 3 kg threshold which is estimated to reduce overall POM by 12%.

<sup>55</sup> Discussions in the UK on the cost impact for producers of introducing a weight threshold for portable batteries are ongoing. The Government (DEFRA) is expected to address concerns over ambiguities in the definition of the ‘hand-carryability’ of portable batteries, industrial batteries (and in this context the term ‘vehicle’ which these batteries power) in autumn 2013.

<sup>56</sup> Minimum recycling efficiencies for 3 battery chemistries (lead-acid, nickel-cadmium, all other batteries) are presently required to be reported jointly for all batteries without a breakdown into the ‘distinctions’ (portable, industrial, automotive starter) (

<sup>57</sup> A combined collection target for all batteries, or for industrial and portable batteries, would not ensure the collection of portable batteries, on a weight basis industrial batteries account for twice the volume, and because of this the collection of portable batteries is far more expensive. A collection target based on units could overcome this drawback for small batteries but is hardly feasible for collection reporting.

batteries would also raise IPR and thereby financial guarantee issues that would add complexity and potential for market distortions. A study into the types of industrial batteries particularly prone to be collected as waste portable batteries might identify specific industrial battery applications that may be suitable for a producer responsibility scheme.

## B. Options to improve measurement of actual scheme performance

### Option B1: Replacing POM with waste batteries ‘available for collection’<sup>58</sup>:

MSW analyses by Belgian organisation Bebat and Dutch organisation Stibat suggest that less than 60% of batteries placed on the market actually become available for collection in the same country, due *inter alia* to used EEE exports. Therefore, it is proposed to determine the collection rate as a percentage of ‘waste batteries available for collection’ rather than batteries ‘placed on the market’. As the amount of batteries ‘available for collection’ will vary between countries, a target based on ‘waste batteries available’ would allow a more realistic assessment of the performance of national collection operations.

Alternatively, member states could be given the choice of basing the calculation rate on either POM or ‘available for collection’ for collection volumes, whichever is higher, as provided for by WEEE Directive 2012/19/EU (Recast)<sup>59</sup>. Moreover, to take into account replacement purchases (and thus the probability of expired batteries actually being disposed of, i.e. becoming ‘available for collection’), collection volumes used for the calculation could be adjusted by a factor reflecting the economic cycle.

### Option B2: Variations of POM base years and current year collection volumes:

By the time the 45% target has to be reached in 2016, all countries will have fairly accurate and consistent POM data available for the past 5-6 years. To account for the trend towards rechargeable batteries with longer lifetimes, the POM base for later years could use 6 year POM averages to more accurately reflect the expiry of batteries.

## C. Options to reduce administrative burdens and distortions from batteries in (W)EEE

### Option C1: Excluding batteries in EEE from registration and reporting obligations

The necessity of including batteries in EEE under the collection target for portable batteries is not evident, as these batteries are typically disposed of in the WEEE and do not find their way into the collection points for separate batteries. The weight effect of replacement batteries on the two collection networks is neutral: If a battery in EEE is replaced and disposed of in the battery collection network before the EEE expires, the separately purchased replacement battery will be disposed of with the WEEE and add to the WEEE collection.

The exclusion of integrated batteries would remove one of the distorting waste flows - exported or imported used EEE.

Moreover, the exclusion of integrated batteries from registration and reporting obligations under the Batteries Directive would reduce the administrative burden of end-of-life compliance substantially (in particular also for SME EEE producers),

<sup>58</sup> Terms also used are waste batteries generation or arising, and referring to these waste batteries that are subject to a disposal action by an end-user

<sup>59</sup> From 2016: 45% of POM in preceding three years, from 2019: 65% of 3 year POM or 85% of WEEE generated (equivalent to arising, available for collection). By 2015, the Commission must have established a common methodology for calculating WEEE generation in each Member State

would avoid double charging, would enable 'giving effect' to (implement) the principle of producer responsibility for EEE, would prevent two collection targets being applied to parts of one product<sup>60</sup>.

**Producer responsibility and small EEE producers:** We estimate<sup>61</sup> that two thirds of the more than 80,000 companies included in WEEE registers across Europe are responsible for around 1% of EEE POM. The administrative burden of WEEE compliance is disproportionate for SMEs. Doubling these for incremental gains of the battery schemes is questionable at best. Moreover, many of these small companies deal with B2B equipment, for which many of the national transpositions allow individual compliance to reduce administrative burdens. That means these producers comply individually for WEEE but must join a battery scheme for battery compliance.

**Double charging:** With few exceptions<sup>62</sup>, batteries in EEE are subject to the same fees as separately sold batteries. This means producers of EEE with integrated batteries are double charged for collection (not recycling) which the Batteries Directive aims to avoid<sup>63</sup>: the integrated battery is disposed of at WEEE collection points, financed by the WEEE fee. By paying the same battery fee the producer also shares the costs of the battery collection network.

**Consistency of targets:** Subjecting batteries in EEE to the targets of the Batteries Directive means that two components of one product (battery and EEE) are subject to two different collection targets, one on the EEE, the other on the integrated battery.

|              | <i>WEEE</i>   | <i>Waste portable batteries</i>  |
|--------------|---|--|
| 2012 to 2015 | 4kg per capita target (B2C WEEE only) or - from 2014 - the average amount collected in the <i>preceding 3 years</i> - whichever is higher | 25% of the average weight placed on the market in <i>current and 2 preceding years</i> |
| From 2016    | 45% of average POM in the <i>preceding three years</i>  | 45% of the average weight placed on the market in <i>current and 2 preceding years</i> |
| From 2019    | 65% of average POM in the <i>preceding 3 years</i> or 85% of WEEE generated   |  |

### Option C2: Exempting small producers

67% of the 1,507 registered portable battery producers in the UK<sup>64</sup> contribute less than 1% of POM. The administrative burden on SMEs as well as organisations would be significantly reduced, but the impact on the schemes' functioning and the environment would have to be investigated.

<sup>60</sup> WEEE Directive 2002/96/EC itself avoided target overlaps by not applying to EEE that are part of a product which itself is not in the scope of the WEEE Directive such as vehicles (Directive 2002/96/EC Article 2.1: This Directive shall apply to EEE ... provided that the equipment concerned is not part of another type of equipment that does not fall within the scope of this Directive.).

<sup>61</sup> On the basis of Ecotrel (LU) finding in 2007 that 64% of its members contributed less than 2% of revenue

<sup>62</sup> Slovenia's Batteries Decree stipulates that producers of batteries integrated into EEE do not finance the separate collection of batteries. Swedish battery and WEEE system El Kretsen does not charge extra for built in batteries.

<sup>63</sup> Art. 16 requires Member States to not only ensure that producers finance any net costs arising from collection, treatment and recycling but also ensure avoidance of any double charging of producers.

<sup>64</sup> The UK is the only country which exempts small portable battery producers from the obligation to join and finance a system (but they still need to register).

## D. Options to improve or adjust the collection rate to national circumstances

---

### Option D1: Encouraging removal of batteries from MSW

Encouraging the sorting of MSW with a view to increasing the collection rate of recyclables, including batteries, could be an alternative to raising consumer awareness, especially in countries where awareness is very low or so high that additional investments in consumer awareness would not raise the collection rate. Also in regions where collection requires disproportionate logistics (as mentioned in the overarching objective of the Directive<sup>65</sup>), or again, where the expansion of the collection network has reached its limit.

### Option D2: Obligating treatment facilities to report volumes not traceable to an organisation

The problem of expired batteries with a high material value being treated without being reported could be addressed by requiring all parties to report waste battery volumes delivered to treatment facilities or exported for treatment, as proposed by the WEEE Recast Directive<sup>66</sup>. The correct reporting of these streams would be facilitated by adding a battery distinction detail to the existing European Waste Catalogue's battery codes to be recorded at the stage of waste battery consolidation.

### Option D3: Applying derogated targets for certain member states to align with WEEE Directive

WEEE Directive 2012/19/EU sets lower interim and delayed final collection targets for 10 member states<sup>67</sup>. It appears likely that most of these, as well as others including Cyprus, Estonia, Portugal, Spain and the UK), will find it difficult to reach the 45% batteries target in 2016.

---

<sup>65</sup> Art. 7: Member States shall, having regard to the environmental impact of transport, take necessary measures to maximise the separate collection of waste batteries and accumulators and to minimise the disposal of batteries and accumulators as mixed municipal waste in order to achieve a high level of recycling for all waste batteries and accumulators.

<sup>66</sup> Recast WEEE Directive 2012/19/EU obligates member states 'to collect or estimate' quantities of WEEE collected through all routes (but falls short of mentioning the parties that should supply the data.)

<sup>67</sup> Bulgaria, the Czech Republic, Latvia, Lithuania, Hungary, Malta, Poland, Romania, Slovakia and Slovenia must achieve at least 40% from 2016 (rather than 45%) and the final rate (65%/85%) only by 2021 (rather than 2019).

# COUNTRY ANALYSES

# AUSTRIA

## Key points

- The Austrian battery collection system has been built up since the early nineties. In 2008 it moved from a single system model to competing systems. Municipalities continue to play a key role in collection. The clearing house organises awareness creation measures effectively. POM and collection reporting requirements are less detailed than elsewhere.
- Since the mid-nineties, collection rates of 40-50% have been achieved.

## Regulatory parameters

### Overview

In 1989 Austrian industry set up UFB, a voluntary battery collection scheme, in anticipation of national battery legislation which soon followed with **Batteries Ordinance 514/1990** that included a take-back obligation. The Ordinance did not require producer registration and did not set any collection targets. In 2008, an amendment of the **Waste Management Law** strengthened the producer responsibility provisions on batteries and a new **Batteries Ordinance** closely aligned the producer responsibility obligations for batteries with those on WEEE already in place.

### Roles and responsibilities in waste portable battery collection

- **Local authorities** must take back WPBAs free of charge. From December 2008 producers must take back waste batteries on request if more than 300 kg collected.
- **Producers** must join a collective system. The obligation for WPBAs in the current year is proportionate to the average amount put on the market in the past 3 years.
- Approved **collective systems** must take back waste portable batteries from municipal collection points they have contracted or – if a municipality does not have an agreement with a system – on request from the clearing house. They may operate their own collection points.
- **Retailers** must take back WPBAs free of charge and return them to a system's collection point.
- EAK, the **clearing house** for WEEE, has also been assigned this role for batteries. It must collect funds from systems to compensate municipalities for the costs of collection infrastructure and communication.

### Requirements on systems

Systems do not have to be controlled by producers or have a non-profit objective but they must allow producers certain co-determination on pricing. Systems must

- prove a market share of at least 5% in a collection group, or at least 8% in all categories [WEEE systems: 20%]. This proof was to be delivered for the first time by 10 April 2010 for the year 2009
- take back all WBAs in one or several collection categories
- operate at least one take-back centre per district

- apply the same principles to all producers
- be financed in such a way that the expected costs in a year are covered by revenues in that year
- contractually ensure that participating producers have appropriate control as regards the generation of revenues. This includes access to information about the total amount of batteries put on the market by participants [WEEE systems were not subject to this requirement]
- agree with participants on how to take into account quantities of WBAs collected voluntarily by the participants.

Systems must report, annually by 10 April to the Ministry of Environment, a list of participants and quantities either put on the market or imported for own use and, by 10 September, an activity and financial report for the past year.

## Development of compliance systems

From 1989, Umweltforum Batterien (UFB) voluntarily organised the collection of portable batteries by providing retailers with collection boxes and return logistics, with financing from large battery manufacturers. The system took back batteries free of charge from 5,600 collection points at retailers and around 1,600 municipal collection points (or 1 per 1,000 inhabitants).

During the drafting of the 2008 Battery Ordinance, five or six collection systems for portable batteries were anticipated - the existing voluntary system (UFB) plus the five approved WEEE systems.

However, the 2008 Ordinance made retailers responsible for transporting collected batteries to collection points, thus taking over a key activity of UFB. This made UFB redundant (it ceased operations at the end of September 2008).

During August and September 2008 all WEEE systems were approved as battery systems:

- [UFH Elektroaltgeräte System Betreiber GmbH](#) established by manufacturers and importers of refrigerators in response to the Cooling Equipment Ordinance of 1993 which extended its activities to all WEEE categories in 2005.
- [ERA \(Elektro Recycling Austria GmbH\)](#), founded as a not-for-profit organisation by electronic retailers Conrad Electronic and Niedermeyer GmbH. Shareholdings are held by ERA Association (Verein) (49%), ARA AG (25.5%) and ARGEV (25.5%). ERA was the first system to be accredited, on 2 August 2005.
- [ERP \(European Recycling Platform\)](#) originating from a cooperation agreement between Braun, Electrolux, HP and Sony in December 2002 to set up the first pan-European take-back and compliance scheme for WEEE.
- [Interseroh Austria \(formally EVA GmbH\)](#), a subsidiary of the Interseroh group. It is also licensed as a recovery system for packaging from businesses only.

ERP initially had the largest market share of portable batteries placed on the market, but this declined to 21% in 2012 while ERA's and UFH's shares increased to 56% and 15% respectively.

Waste management company Saubermacher AG retains a key role in batteries management. It manages nationwide collection from retailers and also has contracts with 1,600 of Austria's 2,300 or so municipalities.

### The Clearing House - Clearing for over- and under-collection

Stipulated by the 2005 amendment to the Waste Act that transposed WEEE Directive 2002/96/EC, the Elektroaltgeräte-Koordinierungsstelle Austria GmbH (**EAK**) was founded as a not-for-profit organisation in May 2005, mainly by EEE retailers' associations. In July 2005, it was designated as the clearing house for WEEE systems by the Austrian Environment Agency (UBA). In September 2005, FEEI (the association of EEE producers) obtained a 25% share from existing shareholders. In 2008, EAK was assigned to act as clearing house for battery systems. The clearing house

- presents take-back requests to a system through an online platform from the approximately 5% of municipalities that do not have direct contracts with systems. Systems are free to select which requests they take up.
- collects funds from systems to compensate municipalities without direct contracts for container costs and possible costs of construction required for collection of waste batteries. This 'infrastructure lump sum' is paid annually and should finance the municipalities' amortisation costs of completed infrastructure measures. There are 2 options:
  - Fully fitted out: EUR 105 per annum; this requires installation of three drum containers of 120 litres and 2 of 220 litres on 3 sq m
  - Partially fitted out: EUR 67 per annum; this requires installation of one drum container of 120 litres on 2 sq m
- collects funds for nationally consistent communication campaigns to the public. In 2009, EUR 150 million was budgeted.

Take-back coordination has been operational since 1 December 2009.

An issue during parliamentary discussion was the control of the clearing house. Municipalities are legally obligated to take back portable batteries and WEEE from consumers. However, the legislation does not provide for their representation on the executive board of the clearing house (EAK) that had to be established by industry (municipalities only participate in EAK's working group on information campaigns). The municipalities' concerns that this ownership structure does not ensure legal and professional independence were rejected by the Government. Many of the waste management companies contracted by the collective WEEE systems are owned by municipalities.

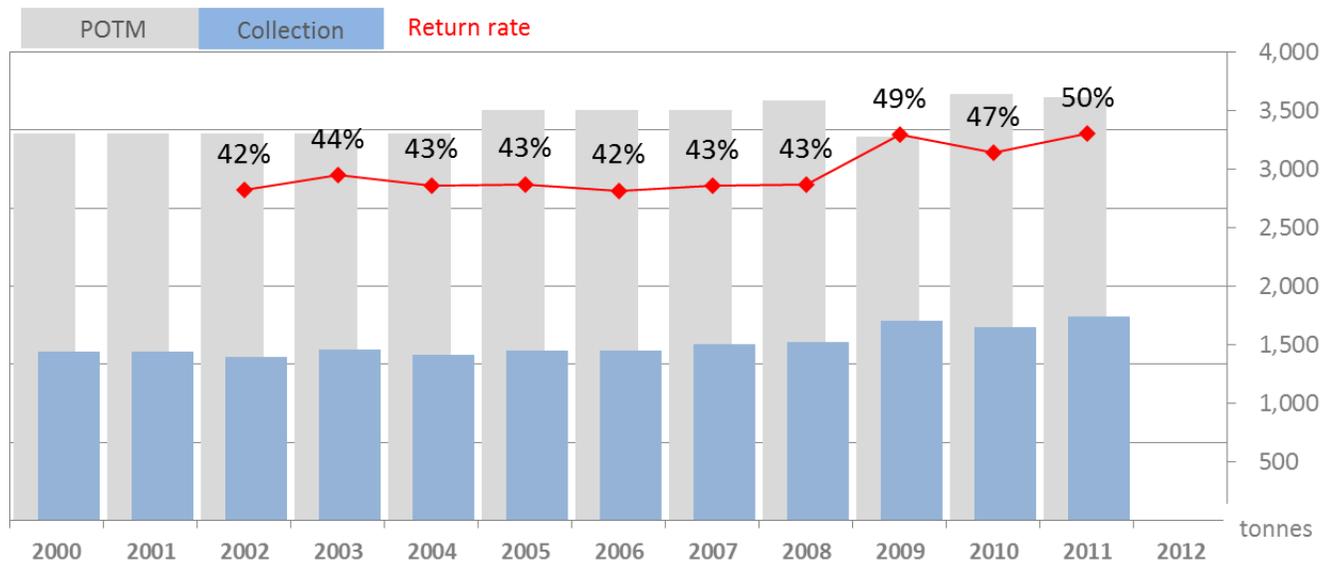
### Interface with WEEE systems

As the WEEE systems are also the battery systems, the coordination for collection infrastructure for batteries and small WEEE as well as the administration and contracting of collection partners benefits from economies of scale.

A note on individual compliance of battery producers: The amendment of the Waste Act rules out individual compliance for portable batteries. For a producer of B2B EEE with integrated portable batteries this means that his battery take-back obligation is based on market share and he must join a collective system, while he may comply individually with regard to his WEEE obligations and take back only WEEE arising from his products.

## Collection results

Since the mid-nineties, collection rates of 40-50% have been achieved.



## Drivers affecting the collection rates

### Availability of collection points and use of collection channels

There are about 23,000 waste portable battery collection points in Austria, or one per 380 residents:

Around 1,500 retailers are supplied with battery collection boxes on behalf of the battery systems by [Saubermacher AG](#) and full boxes are taken back regularly via a parcel service. These contribute about 25% of all collected waste portable batteries.

Around 2,000 municipal collection points contribute around 60% of all waste batteries. They take back not only batteries from end-users but also from around 20,000 retailers that are obligated to take back waste batteries but are not serviced by the systems. Schools do not play a significant role in collection.

The 2008 batteries legislation and subsequent scheme change left the shares of the different collection channels largely the same (in 2008, municipal collection points contributed 64% of batteries).

Number of collection points and share of collected batteries, estimate 2011:

| <b>Collection point host</b>  | <b>Number of collection points</b>                                | <b>Share of total waste battery collection</b> |
|-------------------------------|---|--|
| Retailers serviced by systems | 1,500   | 25%  |
| Municipalities                | 2,000 (supplied by i.a. 20,000 retailers not serviced by systems) | 60%  |
| Schools                       | 20  | 2%   |
| Companies                     |   | 8%   |
| WEEE dismantlers              |   | 5%   |

Source: Anonymous

### Consumer awareness creation

UFB, which ceased operations in September 2008, had provided waste battery collection bags to each of Austria's two million households and had run a public awareness campaign stressing that the bags should be returned to the retailer. UFB focused also on school collection competitions: In 2003, 356 schools participated, with cash prizes of up to EUR 7,000 available to those which collected most batteries.

Following the changes introduced by the 2008 Batteries Ordinance, EAK collects funds from producers via the waste battery and WEEE systems for nationally consistent communication: 5% of the collected funds are used for national campaigns, 95% are paid to municipalities which organise public awareness measures and distribute collection boxes.



Left to right: Ad by Tirol region (municipalities distribute these collection boxes to be used in households or shops and at municipal collection sites and offices); collection box of Vienna municipality, re-useable collection box of Bruck/Leitha district.

In 2011, EAK budgeted a total of EUR 85,000 (about EUR 0.01 per inhabitant) for both types of measures. The measures are organised in conjunction with WEEE measures for which EAK budgeted EUR 0.44 million in 2011 (about EUR 0.05 per inhabitant).

The national awareness creation materials consist of a **DVD and information materials for schools**, prepared and revised annually with the Ministry of education and distributed to schools and environmental advisors mainly by the waste management associations of the regions, as well as an **electronic information package** that provides publications of the regions or municipalities and media addressed at mayors and municipal staff with information and text modules for publication.

### Consumer awareness and disposal behaviour

A 2010 survey by Linzer Market Institut commissioned by EAK showed that 76% of Austrians are aware of the waste battery collection boxes at retailers and 58% use these regularly to dispose of waste batteries. Older citizens are more likely to dispose of waste batteries correctly: 70% of over 60 year-olds claimed to do so, compared to only 47% of 18 - 29 year-olds.

### Accuracy of reporting

Neither POM nor collection reports need to be broken down by chemistry which prevents a closer analysis of the battery data.

Only 5% of all collected waste batteries derived from WEEE in 2011. Assuming that 35% of all portable batteries are placed on the market in EEE, the return rate for integrated batteries is only 7%, while that of separately sold batteries is 70%. The low collection rate for integrated batteries can be explained by a number of factors:

- Integrated batteries with positive material value disappear at some stage of the collection process without being accounted for
- In addition to large WEEE dismantlers whose volumes of removed waste batteries are accounted for, there are about 10-20 smaller social enterprises that dismantle WEEE and usually deliver removed waste batteries to municipal collection points
- Consumers stockpile WEEE (with the batteries still inside) at home

# BELGIUM

## Key points

- Backed up by an eco-tax, single system BEBAT has been in operation since 1996 and has achieved a high consumer participation (87%). Municipalities and schools play a key role in collection.
- Collection rates of 40 – 60% achieved since the mid-nineties. BEBAT argues that it collects 87% of batteries 'available for collection' and that to increase the collection rate significantly disproportionate investments in marketing and logistics would be necessary.

## Regulatory parameters

### Overview

At a national level, several products, including batteries, were subject to an **Eco-Tax Law from 1993<sup>68</sup> to the end of 2012<sup>69</sup>**, but there was an exemption for any battery system that achieved certain collection targets that were calculated as the ratio of collected batteries to 'replacement' (separately sold) batteries<sup>70</sup> put on the market in the same year. The targets rose from 40% in 1996 to 75% in 2000, before being reduced to 60% for 2002 and rising to 65% in 2004 and beyond. From 2010, regional legislation put the collection target at 45%, and from 2012 at 50%, using the formula for calculating the collection rate in Batteries Directive 2006/66/EC.

Waste and Producer Responsibility legislation falls under the responsibility of the three regions: all three regions – Flemish, Walloon and Brussels Capital – introduced **producer responsibility decrees** between 1999 and 2002 that required producers to take-back certain batteries. By late 2010, all three Regions had amended their decrees to bring them into line with Batteries Directive 2006/66/EC.

The Regional Decrees are complemented by **Environmental Agreements** between each of the three regional governments and sector associations that stipulate operational details for the collective battery management system. The agreements – which have a duration of 3-5 years, renewable – confirm BEBAT as the system for portable batteries and – from 2011 – for industrial batteries.

<sup>68</sup> The **Eco-Tax Law of July 1993**, amended **2003**, establishes an excise tax on certain products and types of packaging deemed to cause environmental nuisance. These include batteries, taxed at a rate of EUR 0.5 per unit. The application of the Law proved impossible in practice and the imposition of the eco-tax was deferred until January 1996. The 1996 version extended the scope to rechargeable batteries and introduced the option of an exemption if the batteries were recovered through a collection and recycling system, even if there was no deposit. The recovery system had i.a. to be funded via a collection and recycling levy fixed by the state at FB 5 (EUR 0.1239) excl. VAT per battery, and had to reach collection rates of 40% in 1996 and 75% in 2000.

<sup>69</sup> The Finance Act of 27 December 2012 abolished the eco tax on batteries with effect from 1 January 2013.

<sup>70</sup> Replacement batteries are all batteries not built-in or shipped with an appliance.

## Roles and responsibilities in waste portable battery collection

- Up to the beginning of 2013, **producers** would have had to pay an eco-tax of EUR 0.5 per battery placed on the market unless they achieved a collection rate of 45% from 2010 and 50% in 2012 through an agreed collective or individual system (which was the case). They must take back batteries collected by distributors, municipalities and other final holders. From 2013, the national eco tax has been abolished. BEBAT's fees ('environmental contribution') remain subject to approval by each of the three regional authorities.
- **Retailers** and distributors must take back batteries free of charge from end-users.
- A **battery collection system** must be approved by the three regional Environment Agencies and must submit an annually updated waste, communications and financial plan. Members of BEBAT must show the fee they pay to BEBAT on invoices to distributors or retailers (but not to private end- users).
- **Municipalities** are not obligated to collect waste portable batteries (hence BEBAT must pay a fee for the use of the municipal facilities if municipalities do collect waste batteries).

## Requirements on systems

Systems must be open to all producers subject to the take-back obligation and operate on the basis of an approved waste management plan that must be submitted 6 months after signature of an Environmental Agreement between government and relevant industry sector. The plan must include a financial plan covering the duration of the agreement (5 years) and must be updated annually. The plan must describe i.a.

- measures for qualitative and quantitative waste prevention
- collection measures
- measures for the tracking of the waste stream
- awareness-creation measures
- financing of collection and recovery.

## Development of compliance systems

There is only one compliance system for batteries: in response to the 1993 eco-tax, producers, importers and distributors of batteries set up a fund (Fonds Pour La Collecte Des Piles a.s.b.l; BEBAT a.s.b.l.) in August 1995 to handle the collection of batteries themselves. **BEBAT** started operations in January 1996. Since 1999, BEBAT has financed operations through a flat, government ordained fee of EUR 0.1239 per battery placed on the market (a quarter of the eco tax amount). BEBAT requires producers to show the fee visibly on invoices to professionals, e.g. distributors or retailers. For reasons of consistency and simplicity, industry continues to prefer this forward financing model. The removal of the tax from January 2013 enables BEBAT to modify its fees to reflect actual waste management costs and to reduce its financial reserves which had accrued due to the government ordained fee (EUR 0.1239 per battery) having been significantly higher than actual operating costs.

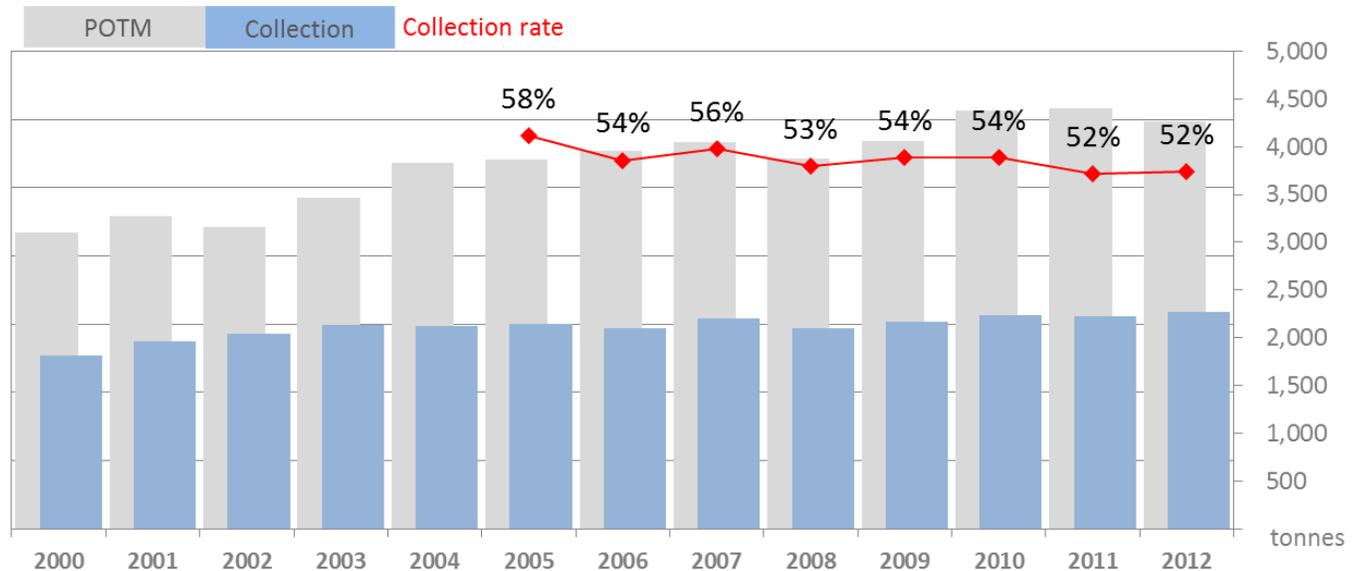
## Interface with WEEE systems

Producers of EEE with integrated batteries must register with and pay BEBAT directly. BEBAT takes back dismantled batteries from WEEE system Recupel free of charge.

## Collection results

Collection rates (using the methodology of Directive 2006/66/EC) of 40 to 60% have been achieved since the mid-nineties.

BEBAT estimates that the 2011 waste battery collection volume represents 87% of all waste batteries available for collection<sup>71</sup>. The estimate is based on a 2011 analysis of 5,000 household waste bags (40,000 kg) carried out by RDC/Intertek/Sita on behalf of BEBAT which found only one battery per 100 kg of household waste.



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.

<sup>71</sup> This translates into ratio POM / 'available for collection' of 1 : 0.6, with 40% of batteries placed on the market not available for collection

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

There are about 24,500 active<sup>72</sup> waste battery collection points in Belgium, or one per 450 residents. The average Belgian resident lives less than 400 m from a battery collection point.

Since 1996 BEBAT has been placing its collection containers in shops. About 600 municipal container parks also host BEBAT collection boxes and have an agreement for reimbursement with BEBAT. Schools play an important role in the collection system, contributing almost a quarter of all collected portable batteries.

In addition, two or three times a year BEBAT distributes to each of Belgium's 4.5 million households small collection boxes for storage and plastic bags for delivery of batteries to a collection point.

Since 2011, BEBAT has been approved as a system for industrial batteries and many of its collection points cover both portable and industrial batteries.

Number of collection points and share of collected batteries, 2012:

| <b>Collection point host</b> | <b>Number of collection points</b> | <b>Share of total waste battery collection</b> |
|------------------------------|------------------------------------|--|
| Retailers                    | 14,000                             | 16%  |
| Municipalities               | 600                                | 27%  |
| Schools                      | 7,000                              | 21%  |
| Companies                    | 3000                               | 32%  |
| WEEE dismantlers             | 5                                  | 4%   |

Source: BEBAT

### Awareness creation measures

BEAT uses TV, radio and internet media. While during the first 3 years of the system the percentage of population claiming to dispose of batteries separately increased quickly (from 46% in 1996 to 81% in 1999), maintaining consumer participation at a high level requires constant engagement.

BEAT concludes that while TV and radio build system awareness, the bags and boxes for collection at home are a great tool for persuading consumers not to throw waste batteries into the household waste bin but rather store them until a family member visits a collection point.

<sup>72</sup> Bebat has 24,500 active collection points, with at least one collection per year. In total there are 35,000 registered points

- **Collection boxes:** BEBAT brand identity has been updated for 2013. Easily recognisable collection boxes are distributed to collection points. Web application such as a collection point locator and software to facilitate the process of pick-up requests are currently being launched (see [BEBATman](#)).



Small collection boxes for storage (left) and plastic bags (right) for delivery of collected batteries to a collection point are distributed to every home in Belgium.



- **School campaigns:** BEBAT offers ‘points’ to schools based on volumes collected. Accumulated points are then exchangeable for various educational or sports equipment.



- **Villa Pila (above right):** BEBAT conducts educational tours for school children from 3<sup>rd</sup> – 6<sup>th</sup> grade through a building known as ‘Villa Pila’. Located in Tienen in a facility next to BEBATs offices, every year over 4,000 school children and 750 adults learn about the history of batteries, how they are made and recycled. The facility also houses a large sorting machine.

## Consumer awareness and disposal behaviour

A September 2012 survey commissioned by BEBAT found that

- 91% of the population were aware of the need for separate disposal of batteries (up from 84% in 2010),
- 84% claimed to dispose of batteries separately (2010: 82%). 16% admitted to throwing spent batteries into the dustbin (this figure was supported by the 2011 analysis of household waste bags, see [collection results](#)),
- awareness of BEBAT's brand was 74%, up from 56% in 2010.

Moreover, the survey found that the average household had a stock of 115 new, in use or used batteries (2010: 107 batteries per household).

## Accuracy of reporting

### POM

BEBA members must distinguish POM by primary and secondary batteries, chemistries and whether they are integrated into EEE or sold separately. The declarations of 1/3 of BEBAT members are audited each year. Most mistakes found have been minor. Scope for reporting errors is seen in the distinction between portable and industrial batteries and in accurately accounting for batteries integrated in EEE. Pre-2013 challenges also arose from scope inconsistencies between the Eco-tax Law and the Producer Responsibility Decrees<sup>73</sup>.

### Collection

Collected volumes are distinguished by the same criteria as POM. BEBAT's environmental agreement stipulates ISO17020 certification from collectors, battery sorting and treatment facilities from 2015.

Scope for reporting errors is seen in distinguishing waste portable and industrial batteries and accounting for waste batteries removed from WEEE: BEBAT notes that the collection rate of lithium-ion battery packs for mobile phones, laptops, tools and other electronic appliances remains below 10%, far less than that for primary batteries.

## Potential for improving collection rates

BEBAT intends to increase the collection rate of batteries removed from WEEE by carrying out campaigns in co-operation with WEEE system Recupel and WEEE-dismantlers. In addition, tighter legal requirements for retailers and other collection point hosts could contribute to increasing the visibility and density of collection points.

BEBAT argues that - given its already very high consumer participation (87%) and dense collection network – a significant increase in the collection rate would require disproportionate investments in marketing and logistics.

Maintaining the current collection rate is made more difficult by the increasing trend towards rechargeable batteries<sup>74</sup> whose much longer active life means they become available for collection at a much later date than primary batteries. Moreover, appliances containing these rechargeable batteries are frequently sold for re-use outside Belgium which ensures that the batteries never become waste in Belgium.

BEBAT therefore argues that in order to accurately reflect the collection rate, the rate should be calculated on the basis of waste batteries available for collection ('waste batteries arising') rather than batteries 'placed on market'.

<sup>73</sup> The Eco-tax Law exempted certain batteries (for example those in hearing aids and medical devices) which the Producer Responsibility Decrees included. BEBAT has covered these batteries since January 2007.

<sup>74</sup> Bebat data show that – not taking into account lead acid batteries – the share of secondary batteries as a percentage of all batteries POM increased from 25% in 2005 to 36% in 2011.

# BULGARIA

## Key points

- Though 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. Measures to reduce the number of compliance systems (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.
- Collection of waste portable batteries has increased rapidly, from 2g per capita in 2009 to 35 g per capita in 2012. The country's 2011 national battery collection target of 25% of POM was missed, but the 2012 target of 30% was achieved.
- Potential to raise the collection rate is envisaged through better enforcement of retailers' obligation to visibly display battery bins, and increased consumer awareness campaigns, particularly in rural areas.

## Regulatory parameters

### Overview

Batteries are subject to mandatory take-back legislation as well as product fee legislation:

From January 2006, the **Waste Batteries Ordinance** (published 15 July 2005) i.a. required producers to collect 3 g per capita of portable batteries in 2008. An amendment to the Ordinance (published 1 January 2009) set annual collection targets as % of POM (e.g. 5% in 2009, 12% in 2010, 25% in 2011, 30% in 2012). An further amendment (published 31 March 2011) established – for the first time – a public register of EEE, battery and packaging producers, to be run by the Executive Environment Agency (EEA), and introduced stricter control and enforcement procedures, including requirements for independent financial audits of reports from compliance organisations. In July 2012, a **new Waste Act** imposed stricter requirements on producer responsibility systems with the aim of limiting their numbers. A **new Waste Batteries Ordinance**, published in January 2013, no longer allows producers of integrated batteries to comply through WEEE systems from January 2013. A **draft amendment** of April 2013 requires the number of collection points of an approved system to be proportional to its market share.

As an enforcement instrument to the Producer Responsibility Ordinances, the **Product Fee Decree** (82/2006, replaced by 120/2008) has, since 2006, required producers and importers to pay a product fee to EMEPA, the Enterprise for Management of Environmental Protection Activities (formerly NEPF, National Environmental Protection Fund). In addition to the monthly reporting, importers and producers must submit a quarterly report on volumes placed on the market and the amount of product fee paid. Producers complying through a collective or individual organisation are exempted from paying the product fee but must fulfill the laborious reporting obligations. Should the compliance organisation's targets not be reached, the Ministry of Environment and Water may order them to pay the fee in arrears. Under-achievement of the collection target by up to 30% means that the organisation must pay the fee x 2 on the underachieved amount. Underachievement above 30% is fined with 100% of batteries placed on the market being subjected to the Product Fee.

## Roles and responsibilities in waste portable battery collection

- **Producers** have to meet annual collection targets (e.g. 5% of POM in 2009, 12% in 2010, 25% in 2011, 30% in 2012). They can transfer their waste battery collection obligation to a recovery organisation (system). Producers that do not join a compliance organisation or that comply individually must pay the Product Fee. The fee increased from EUR 2,050 per tonne of portable batteries put on the market in 2008 to EUR 3,100 in 2012.
- **Retailers** must take back, free of charge, batteries of the same type as they sell.
- **Compliance organisations** do not have to be controlled by producers. They must be commercially registered, must not distribute profits to shareholders and must operate according to an approved waste plan. Individual systems are subject to the same requirements.
- **Municipalities** must set up collection points (under the Waste Act); must ensure that all producers/compliance organisations have access; and must organise collection activities and storage in agreement with producers/compliance organisations.

## Requirements on systems

A 'Recovery organisation' (either collective or individual) must

- be a commercially registered entity
- not distribute profits to shareholders
- not allow founders to reserve pre-emptive rights for themselves
- treat members on a non-discriminatory basis
- provide a bank guarantee to the EEA: for battery systems this is LEV 100,000 (EUR 50,000) (Note: Packaging and WEEE systems have to provide bank guarantees to of LEV 1 million (~EUR 500,000))

However, there are no requirements regarding the ownership structure of organisations.

A scheme must present a waste management plan for approval by the Regional Inspectorate of Environment and Water, which has one month to reply. Permits for compliance organisations are valid for up to 5 years and can be renewed. The plan must include

- a financial plan including initial investment and operating costs
- a collection plan to achieve targets and including contracts with operators
- marketing/business development measures
- measures to meet collection and recycling targets
- measures taken on storage, pre-treatment, etc.
- measures taken in case of temporary interruption of collection
- planned information campaigns
- measures to reduce heavy metals
- measures taken to cope with negative market prices of recycled materials

Organisations enter into contracts with municipalities to fulfil their collection obligation.

## Development of compliance systems

### Market of compliance systems

Since 2006, battery producers have paid a fee to the Enterprise for Management of Environmental Protection Activities (EMEPA). In 2006 EMEPA collected EUR 1.64 million in product fees from batteries, which represented 11% of its total fee revenue (for comparison, WEEE = 32%). EMEPA invested 87% of the revenues in both years in waste management and waste reduction grants to municipalities. By 2010, product fees collected from batteries by EMEPA dropped to EUR 360,000, as approved WEEE and battery systems had become available as an attractive alternative to the Product Fee payment<sup>75</sup>.

In January 2009, [Eltechresource](#) the first compliance organisation specifically for batteries, was approved. From August 2009 seven further battery systems were approved, all linked to waste management companies, and by 2011 there were over 20 collective systems through which battery producers could comply: 13 WEEE compliance organisations (for producers of EEE with integrated batteries) and 7 battery systems.

The new Batteries Ordinance entering into force in January 2013 prohibited compliance for integrated batteries through the WEEE systems. Seven battery systems were approved under the new Ordinance at the beginning of 2013 for the 5 year period to 2018:

1. [Ecobattery](#) – which until 2012 operated under the name of largest WEEE system [Eltechresource](#) - is a subsidiary of Makmetal. Eltechresource began operations in late 2009 and by 2011 had achieved a market share of 67% of POM.
2. [Nord Recycling](#) (Nord Metals) had 62 members in 2011, with a market share of 9%.
3. [Recobat](#) had 12 members in 2011 and a total market share of 8% and
4. [UBA Recycling](#) backed by Rovotel Steel, had a market share of 3% in 2011

Other are [Nooro](#), [Transins Battery](#) and [Ecobulbattery](#) (linked to metal recycler Nadin Group).

### Market shares and clearing for over- and under-collection

Systems are granted annual exemptions from the product fee payment by Ministerial Order, retroactively around June for the previous year. These Orders confirm the volumes each system has placed on the market and collected in the past year and show the system's market share. Based on these data, a collection target (in tonnes) is set for the current year in the same document.

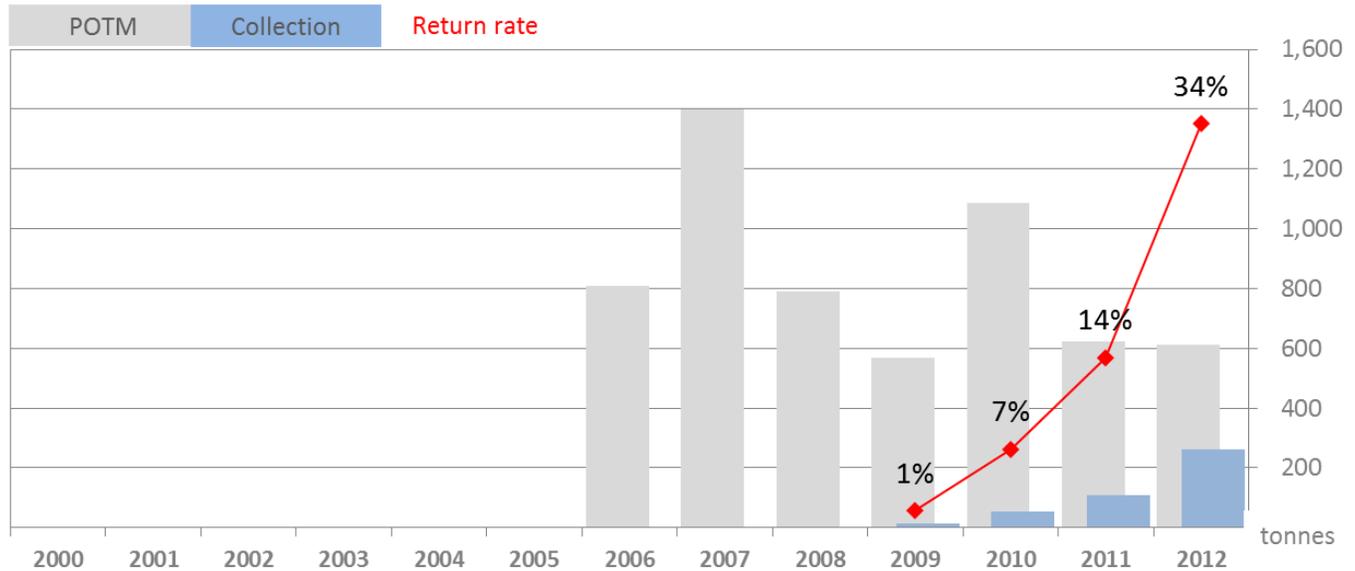
### Interface with WEEE systems

As the major battery systems are directly or indirectly controlled by the same waste management companies as the WEEE systems, there are synergies in collection and few barriers to reporting data flows.

<sup>75</sup> Systems charge producers a percentage of the product fee. Published prices are 50% to 60% of the product fee, which translates into about EUR 1,000 per tonne of portable batteries put on the market.

## Collection results

Data from the EEA register suggest that the collection of waste portable batteries has increased rapidly, from 2g per capita in 2009 to 35 g per capita in 2012. The country’s national battery collection target of 25% of POM in 2011 was missed, but the 2012 target of 30% was achieved.



Source: [EEA Register](#)

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

Based on data from some of the systems, we estimate that there are about 12,000 waste portable battery collection points in Bulgaria, or one per 610 residents.

| <i>Collection point host</i>  | <i>Number of collection points 2012</i> | <i>Share total waste battery collection</i> |
|-------------------------------|---|---|
| Retailers serviced by systems | ~10,000                                 | ~60%  |
| Municipalities                | ~100                                    |   |
| Schools                       | ~1,100                                  |   |
| Companies                     |   |   |
| WEEE dismantlers              |   |   |

Source: Own estimates based on incomplete system data

## Consumer awareness creation measures

### Legal requirements

The legislation provides for enforceable requirements as regards awareness creation measures: Systems must spend at least 3% of annual fee revenues on awareness creation measures, including campaigns organised by contracted municipalities. Retailers are required to publicise waste battery take-back on signs.

However, there is no central awareness creation mechanism due to strong competition, which according to the systems has a negative effect on awareness creation measures.

### Ecobattery

Ecobattery has been running year-round, nationwide battery collection information campaigns, targeting all age groups. The campaigns use print media (flyers in mailboxes, brochures for schools, fairytales for little children), web banners, radio programmes, outdoor posters and in-store flyers and posters. TV advertising is not used for cost reasons. Ecobattery notes that the effectiveness of all media remains quite high as consumer awareness is raised from a low base, but also that battery collection is the 'last concern of a normal household'.

- **Collection boxes:** EcoBattery has distributed different sized durable collection boxes to retailers and other collection points.



- **Posters, books and flyers:** EcoBattery distributes printed material around schools, collection points and residential areas to boost awareness.



### Nord Recycling

Nord Recycling launched an educational campaign entitled 'Do not dispose of hazardous waste – it is harmful' in mid-2012 in cooperation with the Ministry of Environment. A superhero named 'Ekoman' was created for the campaign. [Ekomanthemed events](#) demonstrate proper collection, separation and storage of hazardous waste, including batteries.



### Consumer awareness and disposal behaviour

No surveys have been carried out yet. Due to competitive pressure, battery systems are unlikely to conduct individual surveys unless assigned to do so by the Government.

### Accuracy of reporting

#### POM reporting

Producers must report batteries POM by chemistry. There is no requirement to distinguish between separately sold and integrated batteries.

POM data have fluctuated very strongly: Prior to 2011, the Executive Environment Agency (EEA) collected data from customs authorities which showed that the amount of portable batteries placed on the market dropped from 190 g per capita in 2007 to 78 g in 2009 before increasing back to 149 g per capita in 2010. However, the 2011/12 data – now sourced directly from producers – show only about 85g per capita which is lower than in countries with comparable GDP per capita.

The recent low values may be due to free-riders (the Government has taken some enforcement actions against free-riders but a lot still needs to be done) and missing or underreported weights of batteries in EEE: importers are often not aware of the weight of batteries in EEE. It is likely that it will only be properly accounted for once reports from a large number of EEE importers have been audited.

#### Collection data

The data from the [EEA register](#) (used in this report) are not aligned with the sum of the performance of each system – as confirmed by [Ministerial Orders](#) every year: while in 2011 the register data show a collection rate of 17% (current year basis), the sum of the confirmed collection volume of all systems results in a 33% ratio.

Systems must report collected volumes by chemistry which can be a challenge, especially when exported waste batteries are sent for treatment in facilities without adequate sorting capacity.

### **Potential for improving collection rates**

Potential for improving the collection rate is seen foremost in better enforcement of retailers' obligation to visibly display battery bins and increasing the minimum spending requirement for consumer awareness campaigns, or alternatively requiring (TV) media to provide free advertising space to increase consumer awareness, particularly in rural areas.

# CYPRUS

## Key points

- Separate collection of waste batteries is at an early stage. The single system, AFIS, only began collection in late 2009 and collection facilities at municipalities 'green points' have been delayed and are yet to become available.
- Collection increased from 7 g per capita in 2009 to about 40 g in 2011 and remained at this level in 2012, resulting in a collection rate of about 12%.
- Stronger involvement of the central government and local authorities in collection ('green points') and awareness creation (e.g. by way of legal requirement) could potentially improve the collection rate.

## Regulatory parameters

### Overview

The Solid and Hazardous Waste Management (Batteries and Accumulators) Regulations 2009 were published on 20 March 2009 and came into force on the same day. They were to be complemented by two Decrees, one on registration and one on reporting. However, these Decrees have not yet been published as they required another revision of the 2011 Waste Act which was amended in February 2012 to align the requirements for WEEE and battery systems with those for the packaging system, GDC.

### Roles and responsibilities in waste portable battery collection

- **Producers** are responsible for financing waste battery management, including public collection infrastructure, but they may transfer their legal take-back obligation to a collective system. The market share obligation was calculated for the first time for 2009.
- **Collective systems** must be approved by the Ministry of Agriculture (MOA), must be owned by producers and must be not-for-profit organisations. They must provide a financial guarantee and operations must cover the whole country.
- **Municipalities** are not obligated to collect; they currently have no role except for the provision of space for 'green points' that are (yet) to be established by the Ministry of Interior and which include battery collection points.
- **Retailers** are required to take back spent batteries and may return them to wholesalers; there are no de minimis exemptions.

### Requirements on systems

Several systems operating in parallel is legally possible. Systems must

- have a permit from MoA
- be owned by producers
- be not-for-profit organisations
- submit a financial guarantee
- cover the whole country

Permission is granted for 6 years. The fees the system charges to producers are subject to government approval.

## Development of compliance systems

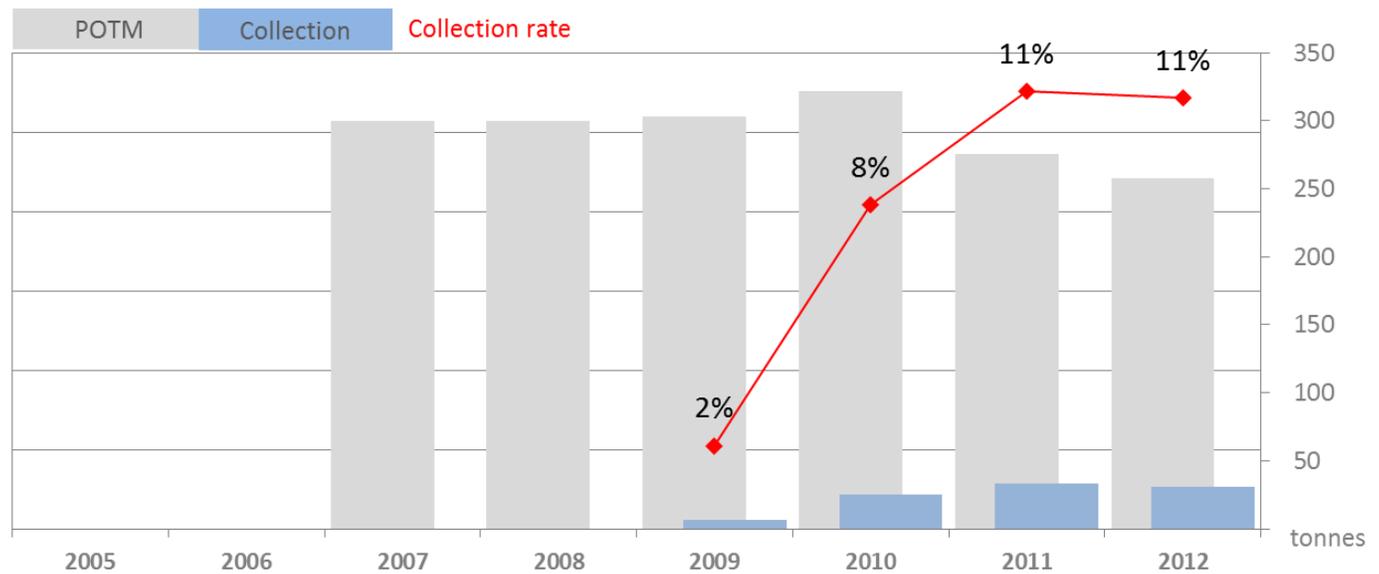
In November 2007 AFIS, an association of battery importers, commissioned Green Dot Cyprus to operate a battery take-back system. Green Dot Cyprus submitted a business plan for approval to MOA in early March 2008 and battery system **AFIS** received its approval one year later, on 30 March 2009. A producer complying through AFIS automatically becomes a member of the system. Producers can alternatively choose to become shareholders, which gives them the extra right to become members of the Board of Directors if chosen at an Annual General Meeting of the shareholders. AFIS began charging waste battery management fees from 1 May 2009.

As there is only one system, clearing is not required. The Clearing House function would, if required, be assigned to the register managed by MOA.

## Interface with WEEE systems

Battery system AFIS is managed by Green Dot Cyprus, which also manages the country's only WEEE system, Electrocyclosis.

## Collection results



## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

There are currently about 2,300 waste portable battery collection points in Cyprus, or one per 390 residents.

AFIS collection began as scheduled in June 2009 with the distribution of 250 bins in public and private buildings throughout the Island. By the end of 2012 there were about 2,000 collection containers (end 2011: 1,500) in schools, retailers and supermarkets, municipal and public areas and NGOs.

Only about a fifth of the collected battery volume derives from municipal collection points. This number can be expected to increase once the Ministry of Interior has established 'green points' in municipalities in which certain waste streams including batteries will be separately collected.

Number of collection points and share of collected batteries, 2012:

| Collection point host | Number of collection points | Share total waste battery collection |
|-----------------------|-----------------------------|--------------------------------------|
| Retailers and similar | 855*                        | 25%                                  |
| Municipalities        | 343                         | 20%                                  |
| Schools               | 608                         | 11%                                  |
| Companies             |                             | 34%                                  |
| WEEE dismantlers      |                             | 5%                                   |

Source: AFIS \* of which 410 banks, hotels, and similar

### Consumer awareness

#### Awareness creation measures

While there is no minimum spending requirement, the fact that AFIS operates as a single system allows adequate spending on consistent consumer awareness measures through all media channels, including TV:

- **Collection boxes** are designed to be eye-catching and informative.



- **Billboards:** AFIS Cyprus billboard campaign as of April 2013.
- **Television commercials:** A new television commercial running from March 2013 explains to viewers the need to separate and recycle batteries.



- **Advertising & printed media:** AFIS Cyprus distributes flyers and brochures to retailers and other collection points. During the 2012 Christmas season, ornaments made from recycled paper were distributed in shopping malls and in various magazines.



- **Events:** As of 2013, 4 'Smart' cars are carrying advertisements for AFIS. The messages say 'Together for a positive change'. Various educational events are held periodically in public places such as shopping malls.



- **Social media and software:** AFIS Cyprus communicates through and actively updates their Facebook page. A [Facebook App](#) was released allowing users to play an educational game.

### Consumer awareness and disposal behaviour

No surveys have been carried out yet.

### Accuracy of reporting

Given that all 'producers' are importers of EEE and batteries often without detailed specification of the batteries imported, POM is reported in battery units in different weight groups (up to 5 g, 6-30 g, etc.). There are no requirements to report by chemistry or other criteria. About 15% of POM declarations to AFIS are audited by external auditors each year. There have been a few enforcement actions by authorities with regards to free-riders.

AFIS reports collection volumes to the Government by chemistry.

### Potential for improving collection rates

Potential for improving the collection rate is seen mainly in stronger involvement of municipalities and the central government in awareness creation e.g. through legal requirement to participate in campaigns. In addition, there could be clearer requirements on retailers to improve the visibility of collection bins.

# CZECH REPUBLIC

## Key points

- Ecobat was the single battery system from 2003 to 2009 when, under legislation transposing batteries Directive 2006/66/EC, REMA Battery – related to WEEE system REMA - was approved as a second battery collection system.
- In 2012 a collection rate of around 29% was achieved. The rate had increased gradually from 5% in 2005 to 16% in 2010.

## Regulatory parameters

### Overview

Legislation and compliance regarding batteries and accumulators are addressed in **Waste Act 185/2001** whose Article 38 introduces mandatory take-back of waste portable batteries from 1 January 2003. Producers had to organise take-back on their own account, or enter into a contract to delegate this obligation to another legal entity or natural person or use the municipal waste collection service and municipal sorting facilities on the basis of a written agreement with the municipality.

The Ministry of Environment had planned to include the transposition of Batteries Directive 2006/66/EC in a comprehensive review of the Waste Act. A first draft, released in February 2008, met with strong protests from many stakeholder groups including the Czech Portable Battery Association and retailers who were opposed to taking back batteries at small retailers, such as filling stations and tobacco shops. The final Act heeds this protest by only subjecting certain types of shop to the take-back obligation).

To speed up transposition of the Batteries Directive, the Ministry separated the amendment of the Waste Act's chapter on batteries from the other planned amendments and revised it thoroughly. **Act 297/2009 amending the batteries section of the Waste Act** entered into force on 19 September 2009. In May 2010, **Decree 170/2010** provided detailed requirements for battery waste management.

### Roles and responsibilities in waste portable battery collection

- Since 19 March 2010 **producers** have had to ensure free take-back of waste batteries by setting up collection points in municipalities with at least 1,500 inhabitants and in which their batteries are sold, as well as on the premises of obligated retailers. Collection, recovery and disposal obligations can be transferred to a **collective system**.
- **Retailers** that either have a sales area above 200 m<sup>2</sup> or fall under one of 14 retail categories [e.g. EEE, watches, etc. but not petrol stations] must, from 19 March 2010, take back waste batteries free of charge and must inform customers about the location of collection points. Collected batteries must be transferred to an entity authorised for processing waste batteries. Wholesalers have no obligation to take back waste batteries.
- **Municipalities** are not required to collect but can request producers to set up collection points.
- **Collective systems** must be approved by the Ministry of Environment, and be owned by producers as a joint stock company or limited liability company where one single shareholder may not hold more than 33%. Individual systems are subject to the same requirements as collective systems, including on collection point density, and in addition they must provide a financial guarantee for 5 years after having placed batteries on the market.

## Requirements on systems

A collective system must

- be approved by the Ministry of Environment (approvals valid for 5 years, extendable)
- be a joint stock company or limited company owned by producers
- not have a single shareholder that holds more than 33%
- distribute any profit among shareholders
- only perform activities related to waste batteries
- present a waste management plan including contracts with waste handlers and municipalities
- be open to all producers of all EEE on equal terms
- explain financing methods<sup>76</sup>

Moreover, the operator of a collective system may not engage in the business of its members.

## Development of compliance systems

In response to the Waste Act 2001, six of the eight members of the Czech Portable Battery Association (CPBA)<sup>77</sup> founded **ECOBAT** in 2002. Ecobat's operations at the time were based on a voluntary agreement signed on 13 December 2001 between CPBA and the Ministry of Environment, which specified the establishment of a general collection system with a collection target of 120 tonnes in 2002 and 1,000 tonnes (100g per capita) in 2006 (both missed) and a recycling target of 10% and 50% respectively.

Ecobat remained the only organisation to provide a collective take-back system until in December 2009, when under the 2009 Waste Act the Ministry of Environment approved Ecobat and a second battery compliance system, **REMA Battery**, the sister organisation of WEEE system REMA, which itself was set up by importers of IT and consumer AV equipment<sup>78</sup> in February 2005.

According to Ecobat, its share of POM and collection is 93%, with REMA Battery responsible for the remainder. Ecobat has about 680 members, REMA about 330.

## Market shares and clearing for over- and under-collection

The Czech Republic is one of the few eastern European countries without a product fee penalty payment mechanism for underachievement of the collection targets. However, a clearing mechanism may not be necessary as there are only two systems that can agree on clearing for over and under-collection bi-laterally.

## Interface with WEEE systems

ECOBAT receives batteries removed from WEEE by WEEE systems Asekol, Elektrowin and Retela, while REMA receives the batteries removed from WEEE collected by its sister WEEE organisation.

<sup>76</sup> §31g of the Waste Act requires a financial guarantee only from individually or jointly complying producers

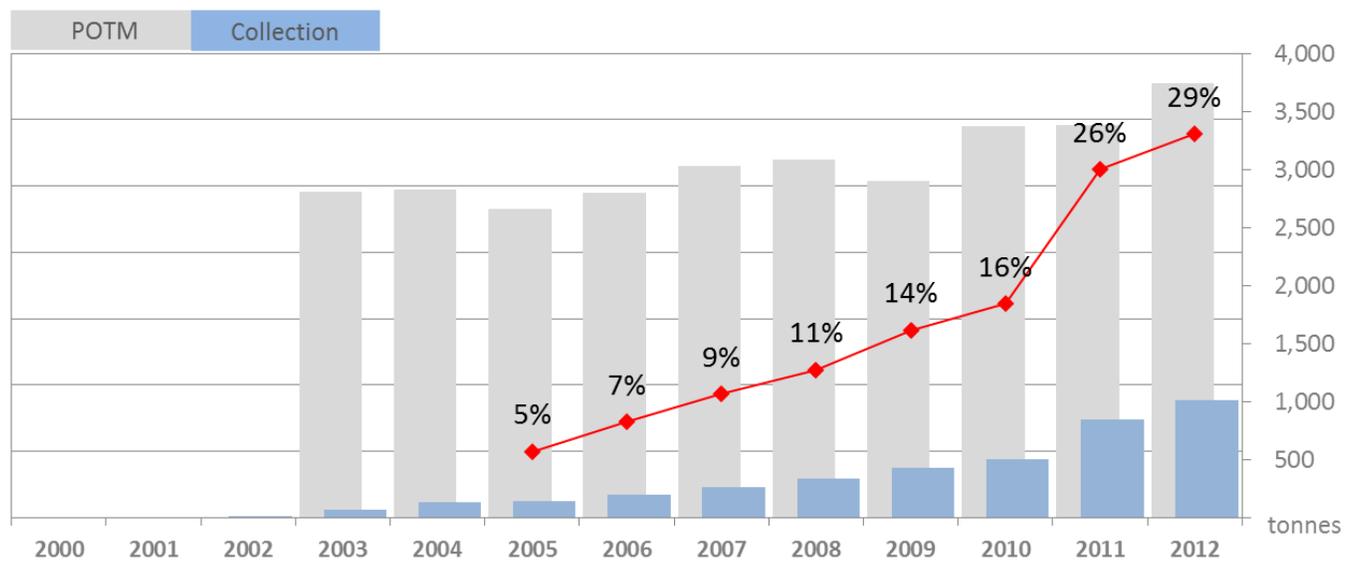
<sup>77</sup> CPBA was founded by eight companies in 1999 with the objective of preparing for the introduction of EU battery legislation (in 2005, CPBA members were Slaný CZ, EMOS, Energizer CZ, Gillette, Panasonic, Sanyo Energy, Sony, Varta). On a related note: In February 2002 EPBA launched the REBA initiative, based in Poland, to bring about synergies in start-up costs for battery collection and recycling in the Czech Republic, Hungary and Poland. However, in 2003 REBA decided to limit its geographical scope to Poland as legislation in the three countries was too different – Poland has binding recovery and recycling targets, the Czech Republic has no targets and Hungary was still developing its legislation. Also, Poland's recovery and recycling targets are so ambitious in relation to the existing collection infrastructure that REBA wanted to focus its resources there.

<sup>78</sup> eD'system, Konsigna Handel, AT Computers, AAC Czech, EDS, SOFTRONIC Praha, LEVI INTERNATIONAL

As there is no clearing mechanism between WEEE systems<sup>79</sup>, imbalances from WEEE collection might be passed on to batteries (Asekol data suggest a collection/POM ratio of 64%, far above the average of around 30%).

## Collection results

The data used here cover only Ecobat up to 2009 and for later years assume that the share of REMA Battery, the other battery system, is 10% (based on REMA's share of collected WEEE). This suggests that in 2012 a collection rate of 29% was achieved.



## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

There are about 16,910 waste portable battery collection points in Czech Republic, or about one per 620 residents.

Number of collection points and share of collected batteries, 2012:

| Collection point host         | Number of collection points | Share total waste battery collection |
|-------------------------------|-----------------------------|--------------------------------------|
| Retailers serviced by systems | 7,078                       | 26%                                  |
| Municipalities                | 4,436                       | 11%                                  |
| Schools                       | 3,386                       | 14%                                  |
| Companies                     | 1,599                       | 39%                                  |
| WEEE dismantlers              | 33                          | 9%                                   |

Source: Ecobat

<sup>79</sup> Six WEEE systems had prepared to compete but in December 2005 the Ministry of Environment selected only one system for each category of historical WEEE (however, the Ministry did allow several systems for new WEEE). In practice, the Ministry's decision was ignored: the unapproved systems collected about 20% of all WEEE and sued the Ministry of Environment, challenging the 'one-system' clause on competition grounds. In August 2010 – after lengthy legal battles – the Supreme Administrative Court ended the dispute by finding procedural faults in the Ministry's system selection process.

## Consumer awareness creation

### ECOBAT

Ecobat runs a full range of awareness creation measures:

- **Collection boxes:** ECOBAT has released multiple [collection box designs](#). A collection box for households, entitled '[Ecocheese](#)', was launched in spring 2011. It comes in 4 different colours (pink, green, blue and aqua/teal) and contains holes of different sizes for various batteries. They can be ordered free of charge online and once full, pick-up can be requested.



- **School programmes & events:** Under ECOBAT's 'school recycling programme', schools can compete for points based on volumes collected. Over 3,000 schools participate. Additionally, educational events tour around participating schools and public areas, where a large frog and what appears to be a hedgehog, conduct fun games and recycling activities.



## REMA

Due to its origin as a WEEE system, REMA can be assumed to derive most batteries from WEEE dismantlers. The design of its battery collection boxes is simpler.



## Consumer awareness and disposal behaviour

No survey results have been released.

## Accuracy of reporting

The POM volumes lost due to free-riders are unlikely to be significant: After ECOBAT signed agreements with WEEE systems Asekol, Elektrowin and Retela to represent their members (who had previously escaped the battery take-back obligations) Ecobat's membership increased from 135 in 2008 to 660 in 2011.

POM reports and re-processing reports must be broken down by chemistries, which allows the Government to conduct detailed plausibility checks of the reported data.

# DENMARK

## Key points

---

- From the mid-nineties, a municipal collection system for NiCd batteries was financed by producers. Since September 2009, municipalities have been responsible for collection of all portable batteries (financed by a tax on producers of DKK 2,750 (EUR 370) per tonne put on the market) while two battery systems take back waste batteries from municipalities and from voluntarily-collecting retailers and other organisations. Systems also finance and organise public awareness creation measures.
- In 2011 a collection rate of 47% was achieved. Over 90% of waste batteries derive from municipal collection points. Retailers are not obligated to take back waste batteries.

## Regulatory parameters

---

### Overview

The **Environmental Protection Act of 1991** i.a. required manufacturers and importers to maximise product life and recyclability and empowered the Environment Minister to make agreements with industry sectors on take-back arrangements: In the same year, the Ministry of Environment made a voluntary agreement with the association of importers and retailers of rechargeable batteries with the aim of achieving a collection rate of 75% for NiCd batteries. When this target was not reached (a collection rate of only 35% was achieved), the voluntary agreement was terminated and Amendment Act 397 of 1996 on lead and nickel-cadmium accumulators imposed a tax on producers and importers of DKK 6 (EUR 0.80) per cell (built together button cells or flat packs) and DKK 36 Dkr (EUR 4.80) for battery packs (though at least DKK 6 per cell). Approved collecting enterprises were paid DKK 150,000 (EUR 20,000) per tonne collected and treated.

**Amendment Act 509 of 2008** transposed key provisions of Batteries Directive 2006/66/EC, by i.a. requiring manufacturers and importers of portable batteries *to fund the municipal collection* of waste portable batteries through a tax of DKK 2,750 (EUR 370) per tonne of portable batteries put on the market from January 2009. Several Ordinances were introduced to regulate details of waste batteries management. An **amendment to the Environmental Protection Act** of December 2011 doubles the tax paid by producers for municipal collection of waste portable batteries from DKK 2.7 to DKK 6 per kg (EUR 804 per tonne) from 1 January 2012. The Government deemed the increase necessary to reflect municipalities' actual battery collection costs (about EUR 1,800 per tonne collected) and to recoup, by 2015, the losses that municipalities incurred in 2009/10 due to the insufficient level of tax. (In 2010, producers were taxed EUR 1.1 million to pay for collection by the municipalities, while the latter claim their actual collection costs were EUR 2.8 million.)

### Roles and responsibilities in waste portable battery collection

- **Municipalities** must establish easily accessible collection facilities and register these with the clearing house, DPA system.
- **Producers** must finance the municipal collection of waste portable batteries through a tax of about EUR 370 per tonne put on the market payable from January 2009. In addition they must finance – individually or collectively – the take-back and treatment of WBAs from municipal collection points. Individually-collected amounts can be deducted from the collective obligation. They must also finance information campaigns with an information value equivalent to the amount they place on the market.
- **Collective systems** can assume the legal take-back obligation of producers. If they fail to meet the obligations, responsibility falls back onto individual producers. Systems should offer the same conditions to all producers.
- **Retailers and distributors** may take back batteries and if they do so it must be free of charge.
- **DPA-System** (Danish Producer Responsibility System, known as WEEE-System until 2009) acts as **clearing house** and allocates pick-up of waste batteries from municipal collection to collective systems based on market share and geographical criteria (mainly population covered and density of collection points).

### Requirements on systems

Collective systems are mentioned in the legislation in the context of producers' ability to transfer obligations. The only legal requirements on systems are that they are registered with DPA-System and that they offer the same conditions to all producers. If a collective system fails to meet the obligations, responsibility falls back onto individual producers.

For individual systems, no requirements are laid down in legislation. DPA-System guidance recommends that producers of portable batteries join a collective system due to the extensive administration, logistics and communication requirements.

## Development of compliance systems

Prior to 2009 only producers of lead and nickel-cadmium accumulators paid a tax on batteries while municipalities managed the collected batteries themselves. Since 2009, producers of all portable batteries have been subject to the tax. In addition, they join one of the three WEEE systems to take back waste batteries collected by municipalities:

- **Elretur**, founded in 2005 as a not-for-profit WEEE system by industry association Dansk Industri, consumer electronics organisation BFE, the association of manufacturers and importers of household appliances FEHA and three other industry associations. Each of these provides a member of Elretur's board of directors, with six others elected from the member companies. Operations: Elretur began operations in April 2006. It relies on a network of 380 municipal WEEE collection points.
- **ERP Denmark** (formerly **NERA** - Nordic Electronic Recycling Association) was initiated by ERP members and recycler Stena Technoworld. In June 2008 Nera became part of the ERP network. Members: for WEEE: Sony, Westheimer, Hewlett-Packard Nordisk Film, Sony Ericsson, Elgiganten, Canon, Proctor & Gamble, MNP and Dell. By September 2008 about 10 companies had registered.
- **RENE AG** (formerly RE-DK) set up as RE-DK in early April 2006 by German-based RENE AG and H J Hansen Elektromiljø A/S whose take-back operations are handled by ERP.

Elretur is the largest system with a market share of around 70%. The smallest, RENE, outsources take-back operations to ERP. In 2009, Stena Miljø took back waste batteries from all of Denmark's administrative districts<sup>80</sup>, in 2 of them on behalf of ERP, in the rest on behalf of Elretur.

## Market shares and clearing for over- and under-collection

The **DPA-System** matches collective and individual systems with municipal collection points, taking into account market shares of the systems and geographical criteria. It is then the collective systems' responsibility to inform municipalities about which contractors will operate each collection point per fraction.

DPA-System was mandated by the 2005 Environment Act as the register and clearing house for WEEE, and from January 2009 also for batteries and packaging. Its seven board members are industry representatives<sup>81</sup> appointed by the Minister for the Environment.

DPA-System matches collective and individual systems with municipal collection points, taking into account market shares of the systems per collection group (WEEE collection groups as well as batteries) and geographic criteria. The matching is adjusted annually for over- and under-collection<sup>82</sup>. The first battery allocation ran from 1 September 2009 to 31 May 2010. During this period only, all systems used the same collector (Stena Miljø).

Up to the end of 2009, Elretur collected more than its market share required. DPA-System's allocation mechanism started to correct the imbalance from 2010. We estimate that by the end of 2010 the cumulative balance vis-a-vis ERP was around 9,000 tonnes (about 12% of total WEEE collection per year).

<sup>80</sup> Note: Since September 2009, the three collective systems have contracted five waste management companies to take back B2C WEEE from the collection points of Denmark's 99 administrative districts: **HJ Hansen** (collection fraction 1, 2); **Stena Technoworld**; **Stena Miljø** (100% of lamps and batteries); **DCR Miljø** (fraction 3 and 4) and **Averhoff** (fraction 3 and 4).

<sup>81</sup> One each from Confederation of Danish Industries (DI), Danish Chamber of Commerce, Battery Association, Danish Car Importers Association, VELTEK and FABA, Association of Manufacturers and Importers of Domestic Electrical Appliances (FEHA)

<sup>82</sup> **DPA Guidance** of July 2010, updated October 2011, on the allocation scheme notes that DPA-System allocates collection sites from neighbouring municipalities to producers (respectively WEEE systems) for each collection group. As market shares of producers the systems represent vary, several systems may serve the same municipal collection point. The guidance includes formulas for adjustments to take account of errors in previous years' reporting or deficient registrations.

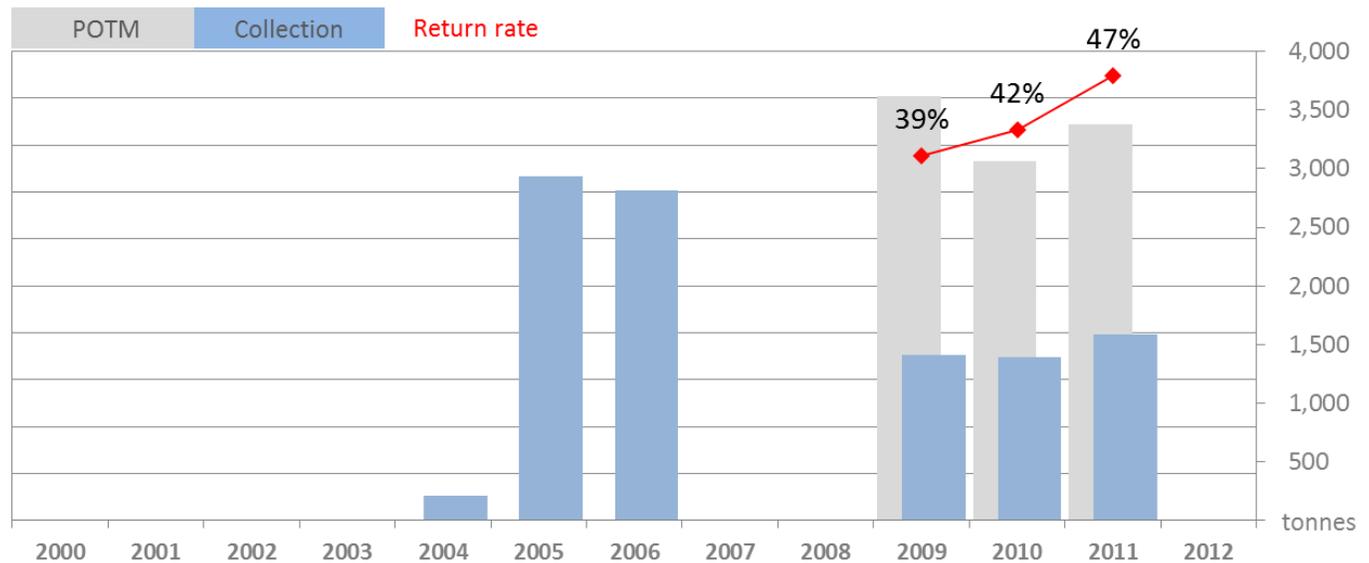
**DPA-System's costs** of about EUR 550,000 – 750,000 per year are covered by fees paid by obligated producers based on the amount they place on the market (producers pay about EUR 9 per tonne of portable batteries put on the market, B2C EEE producers about EUR 4 per tonne).

### Interface with WEEE systems

The clearing mechanism above can use collected waste portable batteries to adjust for any over- or under-collection that may result from imbalances of batteries removed from WEEE.

## Collection results

In 2011 a collection rate of 47% was achieved. The municipal collection system for NiCd batteries had achieved collection rates of 48-79% for these batteries in 1997 - 2001.



Source 2009-2011 data: [DPA system](#)

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

There are about 400 municipal collection points in Denmark or one per 14,000 residents, where waste portable batteries are collected alongside other problematic or bulky waste. These collection points contribute about 91% to the collected waste battery volume. The remainder are taken back by the battery systems from voluntary collection points at retailers or other companies.

Number of collection points and share of collected batteries, 2011:

| <b>Collection point host</b>  | <b>Number of collection points</b> | <b>Share total waste battery collection</b> |
|-------------------------------|------------------------------------|---|
| Retailers serviced by systems |                                    | 8%  |
| Municipalities                | 398*                               | 91%   |
| Schools                       |                                    | n.a.  |
| Companies                     |                                    | included in above                           |
| WEEE dismantlers              |                                    | Unclear                                     |

Source: DPA

\* Registered with DPA

## Consumer awareness creation

### Supporting legal requirements

Amendment Act 509 of 2008 requires producers of portable batteries to finance information campaigns with an information value equivalent to the amount they place on the market:

- less than 1 tonne: organise public awareness campaigns of an information value corresponding to at least A4 leaflets provided through the retailer
- From 1 to 10 tonnes: conduct public information campaigns of a value equivalent to an A3 advertisement in a national newspaper or similar once a year.
- Over 10 tonnes: conduct information campaigns of equivalent value to a half page advertisement in a national newspaper or similar for each 10 tonnes marketed.

The EPA may waive the above if several producers marketing at least 1,000 tonnes conduct a joint campaign that the EPA considers equivalent. However, this has not happened and the systems run campaign separately:

### Elretur

- [Farewell battery](#) site allows end-users to find the nearest battery collection point.
- **School quiz campaign [Batterikampagnen](#):** Elretur runs nation-wide educational campaigns in schools with the help of sponsorship. Students are educated on how to use batteries, what they contain and why they must be recycled. Classes can take part in an online web-based quiz [Remix your batteries](#). Prizes are awarded monthly. Classes answering correctly participate in the draw for which the first prize is DKR 8,000 (EUR 1,075), the second movie tickets for the whole class. The teachers' staffroom of the school with most classes answering correctly is also rewarded (e.g. with a coffee machine or sweets).



### ERP Denmark

ERP Denmark is organising a battery campaign and events in collaboration with YMCA scouts using [facebook](#) as the primary communication channel. On [Batteriindsamling](#), EPR Denmark i.a. provides information about collection points in Denmark.



### Accuracy of reporting

Clearing house DPA-system prepares detailed annual statistics for each waste stream it oversees. Portable battery POM data are broken down by chemistry. However, a breakdown by chemistry is only available combined for all battery types.

In its 2011 report DPA notes in '**Definitions and issues affecting data quality**' that it 'has been a general problem to secure data quality' from both producers and municipal collection sites. DPA-system therefore continuously implements measures to improve data quality, including linking the registration and reporting system to the Central Business Register (CVR) and conducting regular comparisons of DPA's register with CVR data. A notification system informs all relevant players automatically about deadlines and defective reports.

Despite this, DPA notes that issues affecting statistics remain: As regards POM data, in particular the unit-to-weight conversion factors that a system applied until 2010 caused fluctuations of the reported weight volumes. With regards to municipal collection data, there is concern about late updating of registered collection sites and volumes collected.

The requirement for producers to report to tax authority SKAT – which shares its data annually with DPA - also helps to verify POM reports. DPA notes that 'it has turned out that some producers have registered for producer responsibility with DPA-system, but have not reported data to SKAT' or vice versa and that the double reporting may lead to poorer data quality. This may explain the fact that 'portable batteries are the only type of batteries not having seen an increase in quantities placed on the market'. [The high percentage of button cells in portable batteries POM (30% vs. below 1% elsewhere) suggests challenges with the 2011 POM report].

# ESTONIA

## Key points

- A separate collection system for portable batteries has been in place since the end of the 1990s. 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 WBAs. However, there were no compliance systems available until 2009, when two WEEE management systems - EES-Ringlus and Elektroonikaromu - were approved as waste battery systems.
- A collection rate of 18% was reached in 2011, increasing to close to 27% in 2012.
- The collection rate could potentially be improved by a central coordination of or measurable requirements on awareness creation measures and collection campaigns by the competing schemes.

## Regulatory parameters

### Overview

Producers have been legally responsible for WBAs since May 2004. However, there were no compliance systems available until 2009. On 14 August 2008 Estonia published a set of **Regulations** transposing Batteries Directive 2006/66/EC. The new regulations complemented the producer responsibility legislation for batteries that was already in place. Notably, the regulations require battery producers to organise (individually or jointly) nationwide media campaigns, at least once a year, to raise public awareness of the need for separate battery collection by 1 January 2009 and requires retailers to display signs (at least A4 size) identifying collection points. Although retailers were required to inform consumers under the previous legislation, this had not been put into practice.

### Roles and responsibilities in waste portable battery collection

- **Producers** responsible for collection and treatment of waste portable batteries (WBAs) including those on the market before 1 May 2004 and – from July 2010 – must supply retailers with battery collection boxes.
- **Collective systems** must have an approved waste plan.
- **Retailers** must collect any WPBAs free of charge – independently of whether a new battery is purchased or not – in containers to be provided by producers. They may return collected WBPAs to **wholesalers** or producers. [note: Retailers must take back WEEE on a 1:1 basis and - if there is no return facility within a radius of 10 km - without selling new EEE.]
- **Municipalities** are not obligated to collect, but may rent their collection infrastructure to producers (who put containers there) on a non-discriminatory basis.
- There is no **Clearing House**. Producers are now encouraged to trade over- and under-collected amounts and turn to the courts if they cannot reach agreement. The systems' **market share** was to be calculated for the first time in 2011

### Requirements on systems

The same requirements as for WEEE systems and other 'products of concern' apply. Systems must

- be not-for-profit
- have at least 2 shareholders that are obligated producers

- provide membership for producers on transparent and equal terms
- be financed by producers who have transferred their obligations
- purchase services based on free competition
- make data related to waste collection and recovery available to the Ministry of Environment
- establish at least one collection point in each of the 15 counties

## Development of compliance systems

The two WEEE management systems EES-Ringlus and Elektroonikaromu were approved as waste battery systems:

- **EES-Ringlus** – set up by three Estonian industry associations, ITL (Association of Estonian Information Technology and Telecommunications Companies), the Union of Traders and CECED Estonia – in May 2004 with the aim of forming a WEEE compliance organisation. In 2009 *Nine* of EES-Ringlus' 99 members requested the take-back of batteries, corresponding to an estimated 80% of the market share in portable batteries, and waste battery collection started on 26 Sept 2008.
- **Elektroonikaromu** - set up as a not-for-profit WEEE system by two producers (the legally required minimum for WEEE systems) in August 2005. By April 2006 it had 15 EEE importers or producers as clients. It shares its director with Eesti Pakendiringlus which was set up in May 2004 as a packaging compliance organisation. It is also associated with a tyre collection and recycling organisation. Elektroonikaromu has collected batteries through WEEE collection points since 2005 and at retailers since spring 2008.

## Market shares and clearing for over- and under-collection

The 2004 WEEE Collection Regulation did not specify collection targets. Hence a clearing house would be necessary to ensure that systems collected WEEE and batteries according to their market share. However, the Ministry made it clear in 2006 that it would not act as a clearing house but would leave it up to the systems to find a solution to adjust for over- and under-collection or revert to a court for arbitration.

Despite the lack of targets, there has been strong competition for collection of WEEE because a February 2007 amendment of the Waste Act stipulated that a system which collects more than its share is to be compensated by the other systems.

*In 2007* Elektroonikaromu estimated that its share of products placed on the market was about 10% while its share of WEEE collected through collective systems was about 40%. However, it did not benefit from the over-collected amounts because it failed to obtain validation for them from the register.

EES-Ringlus has been strongly advocating trading on a monthly basis of quantities collected according to five collection categories (used elsewhere in Europe). This would allow treatment and recovery standards to be controlled. It also believes that the current system distorts the market: municipal collection points are often outsourced to waste management companies (for example Eesti Keskkonnateenused, Ragn-Sells, Kesto etc.) who offer collected WEEE to the highest bidder, irrespective of WEEE share obligations.

## Interface with WEEE systems

Both battery systems are also WEEE systems.

## Collection results

A collection rate of 18% was reached in 2011, increasing to close to 27% in 2012. POM of portable batteries is about 400 g per capita, higher than in Latvia, Lithuania and Poland (about 260 g per capita).



Source: MoE

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

There are about 1,800 waste portable battery collection points in Estonia, or one per 750 residents:

Municipal collection points and retailers contribute around 40% each.

Number of collection points and share of collected batteries, estimate 2012:

| Collection point host | Number of collection points | Share of total waste battery collection |
|-----------------------|-----------------------------|---|
| Retailers             | 1,500                       | 45%                                     |
| Municipalities        | 100 (EES Ringlus)           | 40%                                     |
| Schools               | 160 (EES Ringlus)           | 3%                                      |
| Companies             |                             | 5%                                      |
| WEEE dismantlers      |                             | 6%                                      |

Source: estimate based on partial data from systems

## Consumer awareness creation

### Supporting legal requirements:

Battery producers must organise (individually or jointly) nationwide media campaigns, at least once a year, to raise public awareness of the need for separate battery collection. Retailers must display signs (at least A4 size) identifying the collection points for WEEE.

However, there is no mechanism to ensure nationwide coordination of consumer awareness measures between the systems, which is seen as affecting consumer behaviour negatively and gives rise to unfair competition.

### EES Ringlus

- **Collection boxes and in-store promotion:** Boxes are provided together with stickers for floors/walls. Awareness campaigns are conducted in larger shops.



### Elektronikaromu

- **Collection containers:**



### Consumer awareness and disposal behaviour

EES Ringlus, in cooperation with Tallinn University of Applied Sciences, investigates public awareness on WEEE and waste batteries regularly. A 2012 [survey](#) of 1,300 people focusing only on batteries showed i.a. that

- 82% of respondents were aware of free in store return possibility for waste batteries (2011: 66%)
- 60% of respondents claimed to have returned waste batteries (2009: 52%)
- 42% admitted to having disposed of waste batteries with mixed household waste (2010: 57%).

### Accuracy of reporting

Producers must report POM volumes by battery type as well as whether they are chargeable or non-rechargeable battery, but not by chemistry, as producers are exclusively importers with little information on chemistries.

There have been some enforcement actions by authorities regarding free-riders but no audits of submitted reports.

Reporting requirements for collected batteries are more detailed and break down primary and secondary batteries as well as chemistries.

### Potential for improving collection rates

Potential for improving the collection rate is seen foremost in

- improving the effectiveness of battery awareness campaigns by creating a level playing field for systems by e.g. introducing a measurable minimum spending requirement for battery awareness campaigns or establishing a coordination body
- improving effectiveness of battery collection by establishing a central body coordinating collection efforts by the systems
- enforcement or incentives for retailers to improve the visibility of collection boxes.

# FINLAND

## Key points

- Though producer responsibility for batteries containing mercury, cadmium and lead has existed since 2004, take-back systems were set up only under legislation transposing Batteries Directive 2006/66/EC. Since 2009, two producer controlled organisations, Recser and ERP, have been approved as battery systems. Recser alone manages waste battery collection and awareness campaigns whose costs are shared between the systems according to market share.
- In 2011, a collection rate of 35% was achieved.
- The retailer take-back obligation plays an important role as municipalities have no obligation or right to collect waste batteries. Explicit requirements on retailers to improve the visibility of collection boxes could help improve collection. Stricter enforcement against free-riders would generate more funds for awareness campaigns.

## Regulatory parameters

### Overview

Though producer responsibility for batteries containing mercury, cadmium and lead has existed since 2004, no take-back systems were set up under the previous legislation. Batteries Directive 2006/66/EC was transposed through a **2008 amendment to the Waste Act** that subjects batteries to producer responsibility obligations from 1 May 2008, and an **Ordinance on Batteries** stipulating substance restrictions, labelling, registration and reporting requirements from 26 September 2008. A new **Waste Act, 646/2011**, in force since May 2012, most notably addresses the 'ownership of wastes' subject to producer responsibility, by not allowing parties other than producers to manage these wastes unless they do so in collaboration with producers.

### Roles and responsibilities in waste portable battery collection

- **Producers** are responsible for collection and treatment according to market share.
- **Retailers** must take back batteries from end-users free of charge without obligation of purchase. Wholesalers are not obligated to take back WBAs.
- **Collective systems** must be approved by the Pirkanmaa Centre for Economic Development, Transport and the Environment and must offer a nationwide collection network. [Collective systems will buy services from municipal collection points and build up a collection network at retailers]. From May 2012, systems must be wholly controlled by producers and must have the means to finance operations for at least six months.
- There is no **clearing house** but the Government may require certain systems to cooperate to ensure the overall functioning of the collection infrastructure.
- **Municipalities** have no right and no obligation to collect products subject to producer responsibility but some allow systems to place containers at municipal collection sites.

## Requirements on systems

Producers may transfer their waste management obligation to an approved and registered **collective system**. A system must be

- wholly controlled by producers
- take equal account of other economic actors when procuring services related to re-use and waste management of products.
- have the means to finance operations for at least six months (no upper limit is set for reserves)
- submit financial and operational plans annually to Pirkanmaa.

The Government may require certain systems to cooperate to ensure among other things the overall functioning of the collection infrastructure.

## Development of compliance systems

About 500 producers comply through two collective systems, Recser and ERP, but Recser alone manages the waste battery collection operation for both systems.

During the run-up to the registration deadline in September 2008, retailers strongly supported a single collective system for batteries, while many EEE producers wanted to have one access point for WEEE and battery compliance. This led the three collective WEEE systems to discuss a compromise joint operational system. However, no agreement was reached.

WEEE systems grouped under service company Elker<sup>83</sup> set up battery system Recser (approved shortly before the registration deadline on 25 September 2008). Serty, another WEEE system, withdrew its application to run a battery system and in October 2008 joined Recser as a shareholder.

WEEE system ERP Finland (formerly NERA), received approval as a battery system in June 2009, after ERP had agreed that Recser would remain operationally responsible for the take-back of all batteries collected by retailers. ERP's battery system thus mainly manages waste batteries built into WEEE that are collected at ERP's WEEE collection points.

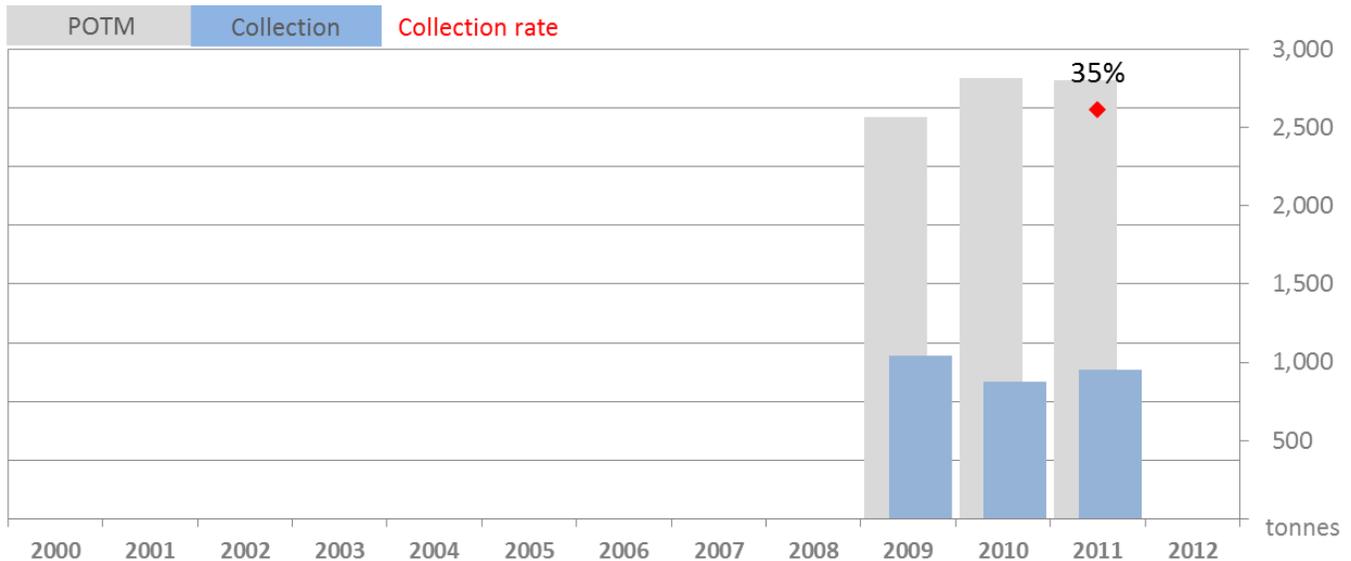
## Interface with WEEE systems

All approved battery systems are linked to WEEE systems which ensures good quality POM data to calculate the market share, according to which Recser's costs of battery collection and information measures are shared.

<sup>83</sup> Elker Oy is a service company for WEEE systems SELT Association, ICT –Producer Co-Operative and Flip Association

## Collection results

In 2011, a collection rate of 35% was achieved. In 2010, Recser reported collection on behalf of its own and ERP's members of 867 tonnes (160 g per capita), or 31% of batteries placed on the market in that year. Before producer responsibility legislation the collection rate had been approximately 15 %.



## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

There are about 12,000 waste portable battery collection points for private end-users in Finland, or one for about every 460 residents.

[Kierratys](#), a nationwide database of collection sites maintained by Solid Waste Association JLY with input from all municipal waste facilities and producer responsibility systems, allows consumers to find locations of collection sites and the types of wastes accepted there.

About half of waste batteries are collected through small collection boxes, the other half via large collection containers in companies, WEEE dismantlers and at some municipal collection sites.

Number of collection points and share of collected batteries, 2012:

| Collection point host |   | Number of collection points | Share total waste battery collection |
|-----------------------|---|-----------------------------|--------------------------------------|
| Retailers             | Users of Recser's collection boxes            | 12,000                      | 46%                                  |
| Schools               |   |                             |                                      |
| Municipalities        | Users of Recser's large collection containers | 200                         | 54%                                  |
| Companies             |   |                             |                                      |
| WEEE dismantlers      |   |                             |                                      |

Source: Recser

## Consumer awareness

### Awareness creation measures

All collection and consumer awareness measures are carried out by Recser. Costs are divided between the two systems according to market share. Recser's own campaigns have used print and social media. A major 'hazardous waste campaign' in cooperation with municipal waste & water treatment companies used all media including radio and TV.

- Consistent collection box design:** Recser's red battery collection boxes, supplied free of charge to over 12,000 retail outlets<sup>84</sup> nationwide, contribute significantly to the awareness of the waste battery collection: By early 2009 (after less than 1 year in operation) 'most' Finns were aware of the possibility of returning batteries to retailers. (By contrast, less than half knew that WEEE could be returned to retailers).



- Small but dangerous - hazardous waste campaign:** From March to December 2012, the public awareness campaign titled '**Small but dangerous - Problem waste is now hazardous waste**' was carried out in cooperation with municipal waste & water treatment companies JLY, Vesilaitosyhdistys, HSY and lead-acid battery recycler Akkukierratys Pb, using all media channels including TV. It provided information on various types of hazardous wastes (including batteries) and drop-off locations.



- Social media and competitions:** Recser maintains a [Facebook presence](#) through which it provides information on battery recycling and organises competitions and draws. In 2011, Recser produced a video to inform consumers about safe recycling of batteries. The video recommends that consumers cover all terminals on waste batteries, in particular lithium batteries, with masking tape to prevent fire hazards before disposing of them in Recser collection boxes (viewable on [youtube](#)).



Paristot kiertoön

<sup>84</sup> Full boxes (30 kg) are picked up within 7 days of request from the retailer

### Accuracy of reporting

Pursuit of **free-riders** is mostly initiated by the systems themselves: In spring 2011 WEEE systems SELT, FLIP, SERTY, RECSEK and Akkukierrätys informed about 2,500 potential free-riders of their WEEE and waste battery obligations. The campaign resulted in 'some' new registrations. In autumn 2011, the campaign was repeated but now supported by authorities and the results were much better, yielding over 50 new registrations.

POM and collection data are reported only by chemistry. Recser has the option for audits but has not yet carried them out. As elsewhere, the distinction between waste portable and waste industrial batteries is a challenge, especially as there is no producer organisation for industrial batteries.

### Potential for improving collection rates

The retailer take-back obligation plays an important role as municipalities have no obligation or right to collect waste batteries. Explicit requirements on retailers to improve the visibility of collection boxes could help improve collection.

According to Recser, free-riding remains a problem. Stricter enforcement against free-riders would generate more funds for awareness campaigns.

# FRANCE

## Key points

---

- 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 systems, by 2012, only two producer-controlled battery systems remained.
- Environment agency ADEME closely monitors the waste battery systems and treatment facilities.
- In 2011, a collection rate of about 36% was achieved.
- The collection rate could potentially be increased by a higher density of collection points and additional requirements on retailers to increase the awareness of and accessibility to collection boxes.

## Regulatory parameters

---

### Overview

**Decree 374 of 1999** required producers to take back batteries collected by distributors, municipalities and other final holders, through a collective or individual system from January 2001. Environment agency ADEME has closely monitored waste battery systems and treatment facilities since then. **Decree 1139** of September 2009 transposed Batteries Directive 2006/66/EC. The new Decree closely aligned registration, reporting and system requirements with those of WEEE Decree 829/2005.

### Roles and responsibilities in waste portable battery collection

- **Producers** of PBAs to finance take-back of waste batteries collected by retailers, municipalities and economic operators (third parties who may collect batteries with the approval of the Ministry) in proportion to their market share, through an approved collective or individual system.
- Approved **collective systems** must take back waste batteries from distributors, municipalities and other holders nationwide and inform end-users. Conditions for **individual systems** are identical to those for collective systems.
- Systems must achieve **collection targets** of 33% in 2010, increasing by 2% annually to 45% in 2016.
- **Retailers** must take back batteries free of charge and without obligation to purchase in signposted and easily accessible containers at point of sale (POS), and must inform end-users about this take-back facility.
- **Municipalities** are encouraged but not obligated to collect waste batteries.

## Requirements on systems

All compliance systems, individual or collective, must be approved by Ministerial Decree for a maximum of 6 years. A system must meet detailed requirements which are stipulated in its approval. The detailed requirements (approval [annex](#)) for the two existing collective systems are identical. Systems are notably required to

- achieve the **collection target** of 33% in 2010, increasing by 2% annually to 45% in 2016
- **take back nationwide** waste batteries collected by any distributor, any local authority or any other holder who so requests
- **contractually agree** with retailers and local authorities on the conditions for take-back (minimum quantities taken back, financial compensation for sorting by retailer, etc.)
- develop **consumer information** for POS with retailers and provide local authorities with consumer information tools free of charge
- **report** collection to ADEME by 1 March for the past calendar year, by region and by collection source (retail, municipal, others)
- charge producers **differentiated fees** depending on the degree of hazardousness of batteries placed on the market
- assign collection points contributing 4% of the volume they collect to a **'balancing' area** from which an under-collecting system may temporarily collect
- set aside 0.3% of revenues for national awareness campaigns organised by the government. The funds can be called upon at any time during the approval period.

## Development of compliance systems

### Market of compliance systems

Following the **1999 Batteries Decree**, a number of compliance systems were approved:

- **Screlec** (*Société de Collecte et de Recyclage des Equipements Electriques et Electroniques*) was created in September 2001 through the amalgamation of battery recovery organisations SCRA<sup>85</sup> and FIBAT<sup>86</sup> when the major hypermarkets – who claimed their own battery brands had a market share of 30% – insisted that there should be just one organisation for battery collection.
- When Screlec planned to expand its scope to WEEE in 2003, battery manufacturers (including VARTA, Energizer and Duracell) disagreed and left Screlec to found **Corepile**, which was approved in July 2003 and began setting up a collection network in Carrefour hypermarkets and 500 municipalities.
- Major retailers (including Auchan, Boulanger, Cora, Darty, Décathlon, Fnac Surcouf, Intermarché, E Leclerc, Leroy Merlin, Match) left Corepile to set up **individual systems**, as they saw that they were able to collect waste batteries at lower cost than the collective systems. However, during the preparation of the 2009 Decree, retailers (re-)joined Corepile in 2008 (Castorama, Décathlon, E Leclerc and Hager) and 2010 (Intermarché).

Under the **2009 Batteries Decree** the following systems are operating:

- collective battery systems **Screlec** and **Corepile** were approved for the 2010-2015 period.
- an individual system by **Mobivia Group**, a vehicle maintenance and parts firm, was approved retroactively from 2010 in 2011 (the system is small, collecting 1.3 tonnes in 2011). An application by specialist battery retailer **1001 piles** was not approved.

<sup>85</sup> Set up by producers of rechargeable batteries in 1999

<sup>86</sup> Set up by battery manufacturers and retailers

### Market shares and clearing for over- and under-collection

Batteries Decree 1139/2009 stipulates that the obligation to finance waste batteries is fulfilled pro-rata to new batteries placed on the market. This has been a challenge, as the two collective systems achieve different collection rates due to the nature of their membership. While both systems are active throughout the national territory<sup>87</sup>, Corepile – supported by all major retail chains<sup>88</sup> and therefore able to access batteries collected in stores – continues to achieve a higher rate than Scredlec, which is mainly supported by EEE manufacturers<sup>89</sup>.

In 2008 and 2009 therefore, Corepile ceded 200 and 130 tonnes respectively of waste batteries to Scredlec (or about 2% and 1.3% of total waste batteries collected in France). Since 2010, each system has had to assign collection points contributing 4% of the volume of waste batteries collected to a ‘balancing’ area from which the other system may temporarily collect in case of imbalances.

| Market share POTM    | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|----------------------|------|------|------|------|------|------|------|
| COREPILE             | 58%  | 57%  | 59%  | 59%  | 66%  | 66%  | 66%  |
| Scredlec             | 12%  | 15%  | 19%  | 24%  | 25%  | 30%  | 34%  |
| RETAILER SYSTEMS     | 29%  | 27%  | 22%  | 17%  | 9%   | 4%   | 0%   |
| Systems return rates |      |      |      |      |      |      |      |
| COREPILE             | 50%  | 59%  | 59%  | 68%  | 68%  | 66%  | 69%  |
| Scredlec             | 12%  | 14%  | 14%  | 18%  | 24%  | 27%  | 31%  |
| RETAILER SYSTEMS     | 38%  | 27%  | 27%  | 14%  | 9%   | 7%   | 0%   |

### Interface with WEEE systems

Producers of EEE with integrated batteries must report batteries POM directly to the battery systems.

As the battery collection infrastructure had been in place before the WEEE systems began operations in late 2007 and Scredlec and Corepile agreed to take-back waste batteries removed from the WEEE systems, the WEEE systems did not apply for approval as battery systems and Procter and Gamble (Duracell remained) a member of Corepile.

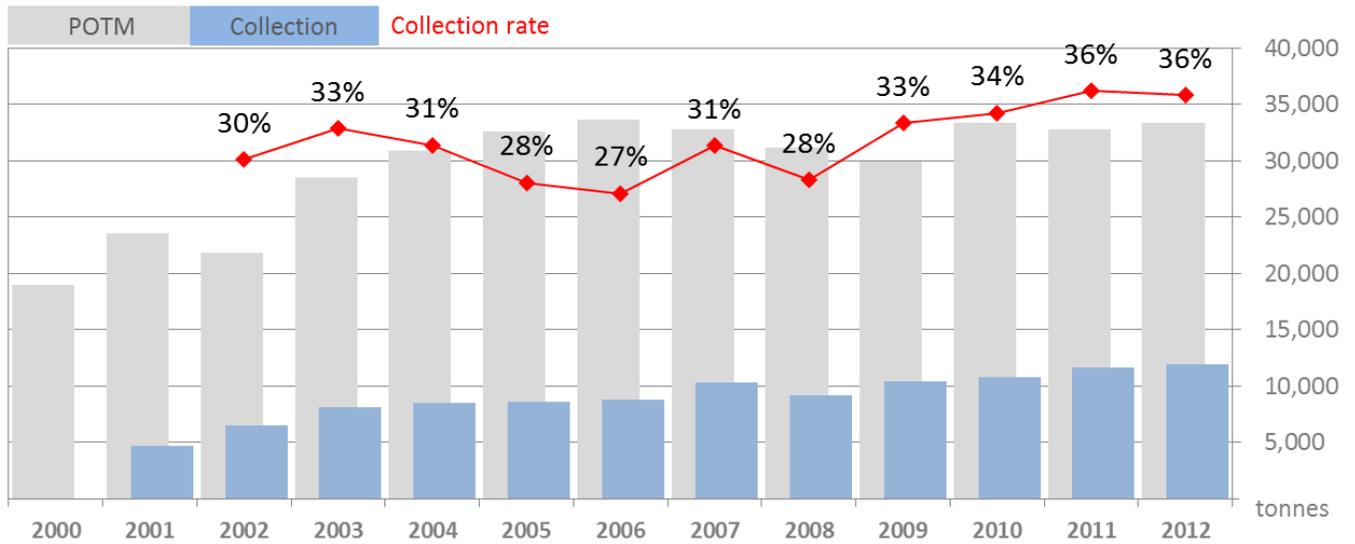
<sup>87</sup> Coverage of the French overseas ‘départements’ (DOMs) is assigned to systems by ADEME: Since 2010 Scredlec has been made responsible for Guyana and Martinique, and Corepile for Reunion, Guadeloupe and Mayotte. Before that, Corepile had been active since 2007 and there were a number of local systems.

<sup>88</sup> Corepile members (aside from battery producers Energizer, Gillette, Duracell and Varta) are Carrefour, Wurth, Norma, Auchan, Castorama, Decathlon, E.Leclerc, Conforama, Intermarché, La Redoute

<sup>89</sup> Scredlec members include BSH, Electrolux, Epson, Fujitsu, Panasonic, Philips, Sony, Toshiba, LG, Samsung, Apple

## Collection results

Collection increased steadily from around 123 g per capita in 2005 to 178 g in 2011, corresponding to an overall collection rate of about 36%. The POM rate in terms of weight has been stable since 2005 at around 530 g per capita.



Source: ADEME, except: own estimate of collection volume 2012 (system data only partially available)

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

In 2011 the systems collected batteries from around 45,000 collection points (2012, over 50,000). While the number of collection points have more than doubled since 2005<sup>90</sup>, their density remained comparatively low at one collection point per 1,400 residents. The recent increases in the number of collection points show diminishing returns per collection point: In 2005 an average 400 kg were collected per collection point, in 2011 230 kg.

In 2011, 41% of waste batteries derived from collection at retailers. The share of waste batteries from municipal collection sites has declined to 30% (2010: 34%) as the systems increase collection points at retailers.

Number of collection points and share of collected batteries, estimate 2011:

| <i>Collection point host</i> | <i>Number of collection points</i> | <i>Share of total waste battery collection</i> |
|------------------------------|------------------------------------|--|
| Retailers                    | 36,769                             | 41% (2010: 34%)                                |
| Municipalities               | 4,784                              | 30% (2010: 34%)                                |
| Schools                      | [1,500]                            | Included in above                              |
| 'Others' incl. Companies     | [2,300]                            | 28%  |
| WEEE dismantlers             |                                    | Included in companies                          |

Source: ADEME, unless market [estimate]

Note the number of collection points provided by various actors do not line up

### Consumer awareness creation

Through the project FIR P&A, Corepile and Screlec created an identity for the waste battery chain in 2011 that allows the two systems to conduct some awareness creation measures jointly: The [FIR P&A](#) website allows consumers to find the nearest battery collection point (of either system) by inputting their postcode. In 2010, Corepile and Screlec prepared an educational video on the collection and treatment of batteries.



The two systems spend about EUR 0.02 per inhabitant annually on awareness creation (or EUR 100 per tonne of waste batteries collected).

<sup>90</sup> From 21,200 in 2005 to 45,400 in 2010.

**Corepile**

- **Collection boxes:** For smaller collection point hosts, Corepile distributes various small collection boxes including an efficiently designed box where the stand remains when the plastic collection container is replaced. Hosts are encouraged to return full boxes to larger collection sites at municipal sites or hypermarkets. If a small collection point host collects over 90 kg per year or has over 4 returns, larger containers are supplied (blue on right).



- **Collection boxes for households:** By the end of 2007, Corepile had distributed 14 million small collection boxes to more than half of all French households. Also in 2007, Screlec began distributing small boxes to households under its mini-batribox programme. By 2010, 0.5 million had been distributed.
- **TV, radio, print and public relations:** Corepile activities have been widely featured on mass media ([list](#)).
- **Online:** Corepile’s [main website](#) provides family and children’s sections where information is provided in an easy to understand fashion and web-based games can be played ([online quiz](#)). Another website, entitled ‘[FaceDePile](#)’, was launched in 2008, containing videos, information and more.



- **Events:** In 2007, Corepile put graphic advertisements on a bus and parked it in various locations for public awareness and collection events.



### Screlec

- **Collection boxes:** Screlec distributes a suite of collection boxes: Large stores are supplied with boxes holding 15-20 kg of batteries; smaller outlets, especially pharmacists and tobacconists, with 2-5 kg boxes, and containers holding 20-90 kg distributed to large chains. Local authority collection centres (déchetteries) have been equipped with 90 kg containers.



- **Batribox campaign:** ‘Batribox’ is a public awareness campaign targeting children and families. Its launch was accompanied with a [website](#) to provide informative videos, online web-based games and quizzes, surveys and to help families and children easily navigate Screlec’s website. The campaign provides schools with ‘Batribox School packs’, which contain a collection box, flyers, posters, DVDs etc.



## Consumer awareness and disposal behaviour

According to ADEME studies in 2009 and 2010, 81% of the population claim to dispose of waste batteries separately.

A 2011 study<sup>91</sup> on behalf of Screlec found that

- 87% of respondents claimed to dispose of batteries correctly (59% at retailers, 17% at municipal sites, 7% at work, 3% at town halls and 1% at schools).
- 6% stored expired batteries at home and did not dispose of them.
- 7% admitted to disposing of spent batteries in the household waste bin.

Moreover, 66% of respondents were aware that retailers of batteries must collect spent batteries but 61% believed that retail collection points were not properly advertised outside the shop and that consumers must look inside, 48% believed collection boxes were always too full, 30% believed collection boxes were poorly maintained. 85% of respondents believed collection points within supermarkets to be the most practical.

## Accuracy of reporting

ADEME oversees the actors in the batteries and waste batteries 'chain'. Since 2001, it has published detailed annual reports about the companies involved and POM, collection and treatment volumes of all battery types. ADEME operates the [register of battery producers](#) which is tightly integrated with the WEEE register and is the successor to ADEME's Batteries Observatory.

## POM

**Audits:** Systems must ensure that at least 15% of the annual POM volume they declare derives from audited producers. Large producers are typically audited to limit costs.

**Battery type identification:** Producers must report POM by chemistry. The error rate is estimated to be high as staff making the declaration often do not know the chemistry nor can they distinguish the different battery types. For example, the number of industrial batteries POM fell from 16.4 million to 8 million in 2009 mainly due to a large producer having declared portable batteries as industrial batteries in 2009.

**Free-riders:** There has been little enforcement by authorities and latecomers were not required to retroactively report or finance waste batteries. However, despite the volumes not captured from free-riders, the compliance rate is estimated to be quite high as

- registration as a battery producer was facilitated by the fact that ADEME made adding battery registration and reporting very user friendly on a **single register site for WEEE and batteries**. Thus the number of registered portable battery producers has almost tripled since 2007. Many producers of EEE with integrated batteries had 'escaped' batteries compliance until they were required to register as EEE producers.
- sector associations are key stakeholders in the WEEE systems and provide **industry self-enforcement** in their sector.
- as over 95% of batteries are usually put on the market by only 30% of producers, any additional registrations are likely to have only a marginal effect on POM and collection rates.

<sup>91</sup> Les Français et le déstockage des piles et batteries usages - Résultats d'ensemble, Mars 2011

## Collection

**Lead batteries:** ADEME's 2011 report shows zero collection of portable lead batteries, despite lead acid batteries contributing 2% to portable battery POM volumes.

**Unaccounted waste batteries disposed of in WEEE:** Batteries integrated into EEE account for around 20%-30% of batteries POM by weight. However, in the past few years the collection rate for integrated batteries has been around only 10%<sup>92</sup>, far below that for all batteries (34% in 2010) and the return rate of WEEE (33% in 2010). The low rate is probably caused by incorrect or missing reporting from WEEE dismantlers.

## Potential for improving collection rates

Collection could potentially be increased by

- a higher number of collection points: Compared to collection point densities of one per 500 residents elsewhere, the collection point density in France remains low (one per 1,400 residents).
- additional requirements on or incentives for collection point hosts to increase the 'quality' (in terms of generating awareness) and accessibility of collection boxes, such as advertising the take-back option outside the shop and ensuring that collection boxes are kept in a location easily visible to consumers.

---

<sup>92</sup> Screlec received only 611 tonnes of waste batteries from WEEE dismantlers in 2010, corresponding to a collection rate of only about 8%, while the collection rate for WEEE was 30%. Corepile did not publish the amount of batteries received from EEE dismantlers.

# GERMANY

## Key points

- Since 1988 industry operated a voluntary system collecting only ‘environmentally hazardous’ batteries. In response to the 1998 Batteries Ordinance producer system GRS was established whose special role as the ‘joint’ system was confirmed under the 2009 Batteries Act. In addition, three other portable battery system are operating.
- The collection rate has increased gradually from 37% in 2005 to 42% in 2010 and has since remained near this level.
- Improved monitoring of WEEE flows may increase the return rate of integrated batteries.

## Regulatory parameters

### Overview

Following a 1997 European Court of Justice ruling that Germany was in breach of its Treaty obligations, a **Batteries Ordinance** was finally adopted in April 1998 and came into force on 1 October 1998. The Ordinance’s scope went further than Batteries Directive 91/157/EC in that most of its requirements applied to all batteries: Slightly different obligations were applied to Batteries inside the scope of the Directive (‘batteries containing hazardous substances’) and those outside of its scope (‘other batteries’). Key requirements were:

- **End-users** must dispose of ALL batteries separately from household waste.
- **Producers and distributors** may place batteries on the market only if arrangements are made for consumers to return them. They must take back spent batteries from distributors and from local authority collections free of charge.
- **Collective system:** The Ordinance expected manufacturers to set up a ‘joint return system’ to take back all types of battery. The system was to be financed on the basis of a producer’s market share in the past year only.
- **Individual system:** However, producers had the option of notifying the Länder that they intended to remain outside the ‘joint return system’. In this case they had to take back only the types and brands of batteries which they sold but had to achieve the same collection rate as the ‘joint return system’ within two years.
- **Distributors** had to take back waste batteries and return them to a producers’ return systems. Retailers had to take back spent batteries free of charge from end-users in-store or close to the point of sale (e.g. containers on their car park). The take-back obligation was limited to the types of batteries sold by the retailer. To protect small specialist retailers such as jewellers or mobile phone stores, the quantity which must be accepted was limited to an amount final end-users typically dispose of.
- **Local authorities** were similarly obliged to accept, free of charge, waste batteries from consumers or operators of small businesses in stationary or mobile hazardous household waste collection facilities and to make them available free of charge to producers’ return systems.

A July 2007 working document of a Batteries Ordinance to transpose Batteries Directive 2006/66/EC followed the existing Batteries Ordinance closely while adding i.a. requirements for a central register to be set up and operated by producers. Industry rejected this responsibility arguing that such a register - based on an ordinance rather than an act (the WEEE

register is based on an Act) - lacked governmental powers. Eventually, the draft ordinance was converted into an act and the responsibility for the register and enforcement assigned to federal environment agency UBA.

The **German Batteries Act (Batteriegesetz) of June 2009** closely transposes Directive 2006/66/EC while maintaining existing take-back structures by continuing to mandate a single 'joint' system while leaving the option for individual systems in place. **An amendment to the Act** in February 2012 i.a. introduced a binding interim collection target of 40% for the 2014 calendar year.

### Roles and responsibilities in waste portable battery collection

- **Producers** 'fulfil their obligation by setting up and participating in the 'joint' system. Producers that do not participate in this system must set up individual systems. Producers register with UBA to 'indicate their market participation' while volumes are reported to the systems.
- The **'joint system' (GRS)** must provide collection containers to retailers and take back WPBA from them and from municipal collection points.
- Approved **individual systems** must offer to take back WBAs free of charge from all distributors and municipal collection points *[to limit the attractiveness of 'cherry pick' collection points]*.
- Each system must reach **collection targets** of 35% in calendar years 2012 and 2013, and 40% in 2014 and 2015.
- **Retailers** must take back batteries (except those built into EEE) free of charge even if no new battery is purchased. Retailers must hand over WBAs to the joint system (GRS). However, they may hand the collected WBAs to individual systems provided they do this for a period of at least one year and after giving three months' notice to GRS. **Distance sellers** must take back batteries at the distribution centre warehouse. They can inform customers about the take-back option with the consignment of goods.
- **WEEE dismantlers** must make waste batteries removed from WEEE available to the joint system.
- **Municipalities** may, but no longer must, collect batteries separately from consumers and small businesses. They must hand over WBAs to the joint system (GRS). However, they may hand the collected WBAs to individual systems provided they do this for a period of at least one year and after giving three months' notice to GRS.

### Requirements on systems

The **collective ('joint') System** must

- be not-for-profit
- be open to all manufacturers on the same terms
- provide, free of charge, containers to municipal collection points and retailers
- put out contracts to competitive tender for a maximum of 5 years
- disclose detailed costs<sup>93</sup> to authorities
- be financed by producers according to market share (by weight and battery type) in past two years (except for 2008, where only the year 2008 counts).
- report by 30 April for past year to Länder authorities and to UBA on the weight of batteries put on the market, collected and treated, prices paid for collection and take-back, by system and battery type and publish the information – except about finances – on its website.
- keep documentation for 5 years.

<sup>93</sup> 'Costs of collection, sorting, recycling and disposal of collected waste portable batteries, including overheads, subdivided by chemical system and classification'

The collective system may invoice free-riders for waste batteries it collects from them.

#### An 'individual' system

- must be approved by UBA or the environment agency of a Land (region) designated by UBA. If an application is not acknowledged within 3 months, the system is considered to be approved<sup>94</sup>.
- may be set up by one or several producers
- must offer to take back WBAs free of charge from all distributors and municipal collection points
- may only be approved if it meets the collection targets<sup>95</sup>.
- is subject to the same reporting requirements as the 'joint' system but does not have to disclose cost of collection, sorting and treatment (as the joint system does).

## Development of compliance systems

In response to the 1998 Batteries Ordinance, the battery industry<sup>96</sup> had established 'joint' or collective system GRS in June 1998. The GRS system was an upgrade of a previous system, operating since 1988, which collected only 'environmentally hazardous' batteries.

In addition, about 10 individual or joint systems had been approved by the Länder in which the producer was established, the largest being VfW Rebat. Others were operated by Bosch Power Tools (which had been joined by 15 producers representing over 20 brands and 8,000 specialised dealers), watch retailers and producers of promotional gifts.

The smaller individual systems found it increasingly difficult to match the collection rate achieved by the joint system.

Following the 2009 Batteries Act and its collection target of 35% applicable to each system, about 2,800 registered producers comply through 4 systems:

- Stiftung Gemeinsames Rücknahmesystem Batterien ([GRS](#) - Foundation for the Joint Return System for Batteries) was officially designated as the 'joint producer system' by the Ministry for Economy and Technology in December 2009. It represents over 90% of registered producers.
- [CCR Rebat](#) (formerly VfW Rebat), set up in 1998 by waste management service provider VfW (Vereinigung für Wertstoffrecycling AG) and approved under the Batteries' Act 2009 by the Bavarian environment agency. It is held by [Reverse Logistics Group](#) who acquired waste service company VfW and reverse logistics, data and clearing services specialist CCR in 2007. The group offers battery, packaging and WEEE logistics and compliance in several member states and represents about 9% of registered battery producers in Germany.
- [ERP Germany](#), the national entity of the European Recycling Platform, was approved as battery system in February 2010 by the environment agency in North Rhine Westphalia. Its 13 battery producer customers (2010) include Procter & Gamble (Duracell).
- [ÖcoReCell](#), founded by engineering office 'IFA-Ingenieurgesellschaft für Abfallwirtschaft und Umweltlogistik mbH' whose 19 customers include Sony Computer Entertainment Deutschland GmbH and BOSCH+SOHN GmbH u. Co. KG

<sup>94</sup> Producer-specific collection schemes may also be approved retroactively subject to the conditions necessary to ensure ongoing compliance with the recycling requirements

<sup>95</sup> The draft of the Act had left the provision of the previous Battery Ordinance in place that required individual systems to achieve at least the same collection rates as the joint system

<sup>96</sup> The founders included Duracell, Panasonic, Philips, Ralston Energy Systems, Saft-Nife, Sanyo Energy, Sony, Varta and ZVEI (the electrical and electronics manufacturers association). Recyclers have not been included in the Foundation to ensure competition among recyclers.

### Market shares and clearing for over- and under-collection

Systems must reach the collection targets. There is no mechanism to adjust for over- and under-collection, or to define what actions would be taken if collections targets are not achieved.

While the ‘individual’ systems (ERP and CCR Rebat) underperform GRS, all systems report having reached the 2012 collection target.

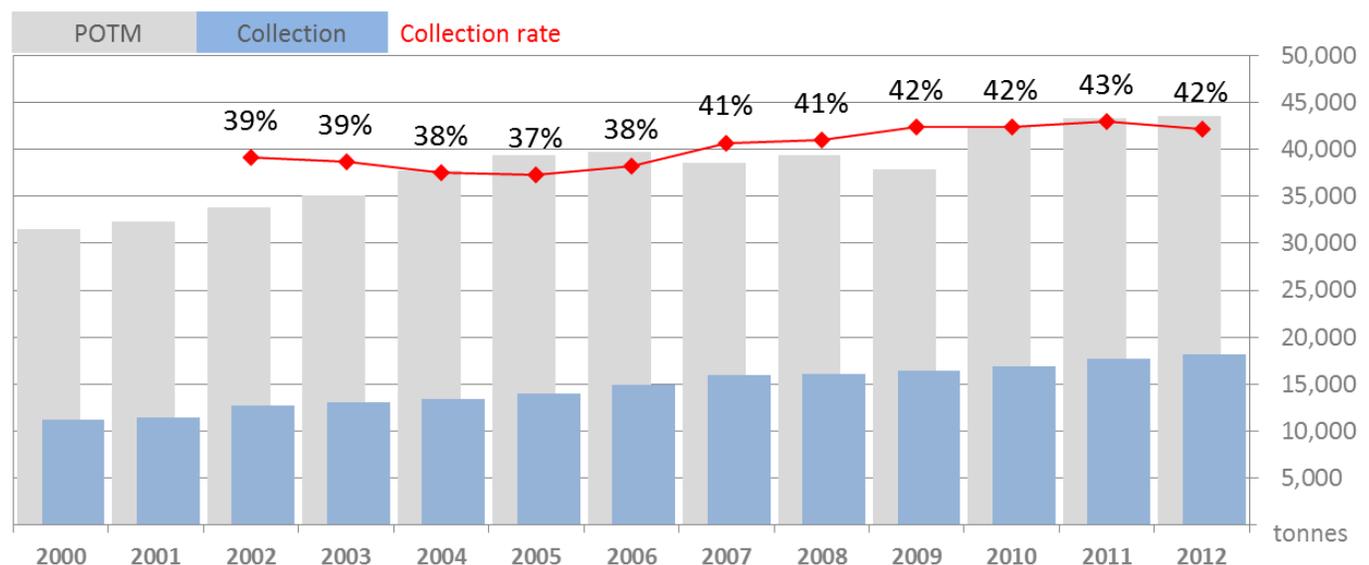
| <i>Share of POM volumes</i>       | <b>2000</b> | <b>2005</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> |
|-----------------------------------|-------------|-------------|-------------|-------------|-------------|
| GRS                               | 93%         | 88%         | 80%         | 76%         | 76%         |
| CCR Rebat                         | 7%          | 12%         | 15%         | 20%         | 20%         |
| ERP                               |             |             | 5%          | 4%          | 4%          |
| Örecell                           |             |             | 0.04%       | 0.3%        | 0.4%        |
| <i>Share of collected volumes</i> | <b>2000</b> | <b>2005</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> |
| GRS                               | 83%         | 88%         | 86%         | 83%         | 80%         |
| CCR Rebat                         | 17%         | 12%         | 12%         | 14%         | 16%         |
| ERP                               |             |             | 1.8%        | 2.6%        | 4.0%        |
| ÖcoReCell                         |             |             | 0.1%        | 0.1%        | 0.3%        |

### Interface with WEEE systems

The German WEEE Act does not recognise WEEE systems and hence there is no interface with the Battery systems. However, WEEE dismantlers are legally required to make waste batteries removed from WEEE available to the joint system.

### Collection results

The collection rate increased gradually from 37% in 2005 to 42% in 2010 and has since remained near this level.



Source: Systems' reports

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

**GRS** services about 170,000 GRS waste portable battery collection points in Germany, or about one per 480 residents.

Almost half of all waste batteries are collected at retailers, close to 30% are taken back from companies and private sector collectors and around a quarter are collected at municipal collection points (¾ in fixed containers, the rest through mobile collections). The shares of collection sources have not significantly changed in recent years.

**Safety of collection:** In view of the fast growing use of Lithium batteries and the safety risks involved in their storage (fire hazard), German battery system GRS is in the process of changing its collection infrastructure to include separate collection points for 'high-energy batteries'. Starting 2013, GRS has set up new 'qualified return points' for high-energy batteries<sup>97</sup>, including lithium batteries used in ITC equipment, power tools, and in more recent applications such as security technology, power generation and transportation systems. The new collection points will be operated by municipal authorities, specialist retailers and trade outlets and require significant investment by GRS that will 'inevitably' have an effect on compliance costs for lithium batteries. For end-users nothing should change (they can still return their batteries as usual). The change follows a major research project that GRS carried out with Bifa Environmental Institute.

**CCR Rebat** collects waste batteries at around 5,500 collection points from 20,000 business end-users. **ERP's** 2012 report to UBA notes that collection infrastructure could be expanded especially at public collection points.

Number of collection points and share of collected batteries, 2012, GRS only:

| <i>Collection point host</i>  | <i>Number of collection points</i> | <i>Share total waste battery collection</i> |
|-------------------------------|------------------------------------|---|
| Retailers serviced by systems | 140,000                            | 48%   |
| Municipalities                | 1,000                              | 23%   |
| Schools                       |                                    |   |
| Companies                     | 30,000                             | 29%   |
| WEEE dismantlers              |                                    | Included in above                           |

Source: GRS

### Awareness creation measures

#### Supporting legal requirements

Producers, or their collective system (GRS) must inform consumers about potential hazards to health and the environment, etc. If campaigns are conducted that do not lead to distortion of competition, **individual systems may be required** to participate in the financing according to their market share.

**Distributors** must inform customers, near the take-back point, (which must be in the main sales area) about the possibility to return WPBAs free of charge. Distance sellers must provide this information in their respective sales media and include it with the shipped goods.

<sup>97</sup> GRS groups waste batteries into three safety categories: Conventional, high-energy and damaged high-energy waste portable batteries.

GRS

GRS has aimed to continuously raise collection rates with consumer-oriented PR activities stressing the need for separate collection of batteries and drawing attention to the collection facilities available. The measures have changed over the years, depending on the target groups.

- Over 675,000 of GRS' **green collection boxes** (5 kg and 10 kg, plastic and cardboard) are regularly distributed to over 140,000 trade outlets. In addition, 70,000 60 or 120 litre plastic collection drums are sent to over 1,000 municipal collection points and 30,000 business / private sector collectors. Distribution of boxes and drums is free of charge. Pick-up is administered by a call centre.



- The 2012/13 **educational initiative Inspector Energy** ([Facebook page](#)) under the motto 'Batterien – da steckt mehr drin' (There is more in batteries) is designed for 5-7 year old children. Kindergartens or other institutions can book performances in which basic concepts of electricity are explained in a playful, experimental manner and include a puppet theatre. The performances are conducted by teaching and scientific staff of **ilbk** (Institute for innovative education). Almost 100 Inspector Energy performances took place in 2012 and over 40 in the first half of 2013, mainly in rural areas with below average collection rates. The initiative also includes a school competition around the topic energy and electric mobility which i.a. touches on bicycle batteries.



- From 2003 the BATT-X-PRESS information tour bus visited between 50 and 200 cities annually.



- Past measures included TV ads and radio campaigns. In 2009, GRS estimates that its campaigns made 282 million contacts (3.5 contacts per inhabitant).
- Videos from or about GRS ([links](#))

### CCR Rebat

- Rebat services mainly large end-users. Collection boxes for smaller collection point hosts follow the design used by Rebat in other countries.



### ERP

- **Collection box** and large volume drum: ERP's 2012 report to UBA notes that collection in December 2012 increased by 56% over December 2011 and that collection infrastructure could be expanded, especially at public collection points.



### Consumer awareness and disposal behaviour

No studies have been publicly released.

### Accuracy of reporting

Systems must annually reports to the environment agencies POM and collection volumes broken down into detailed chemistries, primary and secondary batteries and battery types. Notably, this information must also be published on their website, which provides a basis for self-control and trust between the systems.

Environment agencies may require these reports to be audited by an independent party. There have been no enforcement measures by authorities.

We estimate the effects of problematic waste battery streams that distort the collection to be comparatively small:

**Industrial batteries:** GRS operates a separate take-back system for industrial batteries (mostly drive batteries from electric vehicles such as forklifts, etc) with 3,000 collection points. In 2011, GRS set up a separate collection system for ‘industrial’ batteries from electric bicycles<sup>98</sup> with a weight of over 500 g in cooperation with the association of the two-wheeled vehicles industry (Zweirad-Industrie-Verband). While bicycle batteries of lead or NiMH with a weight of less than 500g may be deposited in collection containers for portable batteries, lithium bicycle batteries with a higher weight are collected in specific containers designated for industrial batteries only, as required by hazardous waste transport requirements.

**Lead acid:** Over all systems, the return rate for portable lead acid batteries is 100%<sup>99</sup>. However, as their share of POM is small (overall 2.7% of POM), removing lead acids from the equation lowers the collection rate for all other battery chemistries by only 1%.

GRS 2012 control report shows a return rate of 53% for primary batteries and of 24% for secondary batteries:

| <b>GRS 2012</b>   | <b>% of POM</b> | <b>% of Collection</b> | <b>Return rate (current year)</b> |
|-------------------|-----------------|------------------------|-----------------------------------|
| Primary batteries | 69%             | 83%                    | 53%                               |
| Secondary         | 31%             | 17%                    | 24%                               |
| • Lead            | 3%              | 6%                     | 87%                               |
| • Ni-Cd           | 3%              | 6%                     | 84%                               |
| • NiMH            | 6%              | 3%                     | 23%                               |
| • Li              | 19%             | 2%                     | 5%                                |

### Potential for improving collection rates

The return rate of waste batteries from WEEE, though not clearly identifiable, is estimated to be low. Improved monitoring of WEEE flows may increase the return rate of integrated batteries.

<sup>98</sup> Bicycle batteries fall under the definition of ‘industrial battery’ in Batteries Directive 2066/66/EC: Article 3, point 6: (6) ‘industrial battery ... means any battery or accumulator designed for exclusively industrial or professional uses or *used in any type of electric vehicle*

<sup>99</sup> The ratio collected to placed on the market lead acid battery volumes in 2012 was 0.87 for GRS, 30 for ERP and 2.8 for Rebat

## GREECE

### Key points

- A Presidential Decree of 2004 required producers to set up battery systems and achieve a collection rate of 30% by 2006. In response, AFIS, the only collective system for batteries, was established by battery importers as a non-profit company. A new Decree transposed Batteries Directive 2006/66/EC in 2010. It initiated a register of battery producers and allowed producers of batteries integrated in EEE to comply through the WEEE system, which meant that the weight of batteries placed on the market in EEE was no longer reported from 2011.
- AFIS achieved a collection rate of 36% in 2012. While the tonnage collected since 2010 has changed little, POM volumes have fallen by 30% since then due to the economic crisis.
- Measures to improve the collection rate may include tighter enforcement on free-riders to increase available funding, improved cooperation with the WEEE system to account for more waste batteries removed from WEEE and incentives for municipalities to contribute to collection or awareness creation measures.

### Regulatory parameters

#### Overview

**Presidential Decree 115/2004** on ‘Measures, Conditions and Programme for the Alternative Management of Spent Batteries & Accumulators’ aimed to establish an alternative management system for spent batteries as laid out in Law 2939/2001. Producers were to set up or participate in schemes for alternative management of the waste batteries related to their activities, while municipalities were obliged to set up schemes for the alternative management of waste batteries arising with municipal waste and to co-operate with the above schemes. By the end of 2006, a minimum of 30% by weight put on the market of all spent batteries was to be collected. A new **Ministerial Order<sup>100</sup> of October 2010** transposing the provisions of Batteries Directive 2006/66/EC shifted the responsibility to set up collection schemes entirely to producers and required EOAN, the National Recycling Organisation, to set up a register of producers (not just approved systems) by 10 April 2011. It included simplified requirements for producers of EEE with integrated batteries.

#### Roles and responsibilities in waste portable battery collection

- **Producers** must comply through an approved individual or collective battery management system. Producers of EEE with integrated batteries may comply through their approved WEEE system if it has an agreement with a battery system (currently producers do not report weight or units of batteries integrated into EEE). The Ministry may exempt small producers if this does not significantly impact on the collective system.
- Approved **waste battery management systems** must be not-for-profit organisations and must organise collection.
- **Retailers** are not obligated to take back batteries **unless assigned to do so by a system**.
- **Municipalities** are not required to collect batteries but must provide public space to the system for collection if required to do so.

<sup>100</sup> Ministerial Edict 41624.2057.E103.2010

## Requirements on systems

**Collective systems** must be not-for-profit and are subject to approval and permission from EOAN. Approval of individual and collective systems (to be granted the 'Certificate of Alternative Management') must be renewed every three years. Approval fees are: EUR 5,000 for individual systems; EUR 10,000 for nationwide collective systems; and EUR 3,000 for geographically limited collective systems. Requirements for individual systems are annexed to the Decree.

Approval criteria for **individual systems** are similar to those for collective systems.

## Development of compliance systems

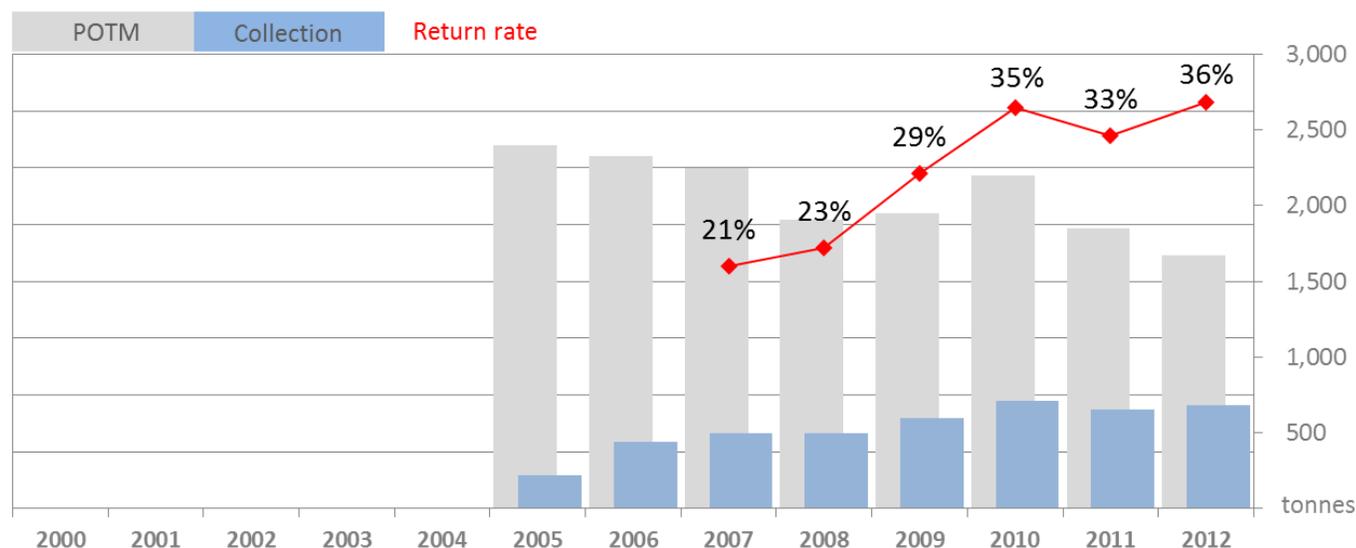
**AFIS**, the only collective system for PBAs, was established by battery importers in 2004 as a non-profit, public limited<sup>101</sup> company. It was approved by the Ministry in 2004 to operate a nationwide collection system and began operations in 2005. The establishment of AFIS was preceded by a pilot project, 'DIASBAT', which ran from 2003 to 2005 and was led by GERMANOS S.A., an electronics retailer.

### Interface with WEEE systems

AFIS has an informal agreement with Electrocycle to take back all waste batteries from WEEE dismantlers. Neither party pays the other. By mid-2012 the number of AFIS' participants had halved to 96 (2010: 180) due to a) the simplified requirement of the 2010 Ministerial Decree that allowed importers of EEE with integrated batteries to comply through their WEEE system and b) the economic crisis that forced many importers to close.

## Collection results

The collection rate reached 36% in 2012. While in terms of tonnage collection has changed little since 2010, the high collection rate is also helped by a 30% decline of volumes POM since 2010 due to the economic crisis. Collection on the Greek Islands contributed about 10% to the total volume collected (the share of population on the islands is about 12%).



Source: AFIS

<sup>101</sup> Greek Societe Anonyme (Anonymi Etaireia)

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

There are about 60,000 waste portable battery collection points in Greece, or one per 182 residents. AFIS places collection bins at easily accessible sites including municipalities, schools, supermarkets, shops, public institutions, hospitals, military units, private companies, banks and department stores. AFIS notes that the collection volume and the number of collection points increased from 2006 to late 2010 but have slowed down since 2011 due to the general economic conditions and closure of shops.

Almost half of collected waste batteries derive from collection points at retailers, one third directly from companies. Collection points at municipal sites and schools contribute 9% and 8% respectively.

Number of collection points and share of collected batteries in 2012:

| <i>Collection point host</i>  | <i>Number of collection points</i> | <i>Share of total waste battery collection</i> |
|-------------------------------|------------------------------------|--|
| Retailers serviced by systems | 20,700                             | <b>48.5%</b>                                   |
| Municipalities                | 9,600                              | 9%   |
| Schools                       | 13,800                             | 8%   |
| Companies                     | 14,400                             | 33%  |
| WEEE dismantlers              |                                    | 1.5%   |

Source: AFIS

### Consumer awareness creation

AFIS has run various campaigns since 2005. The ‘**Recycle your batteries – let the earth breathe**’ (2005-2008) and ‘**Recycling is life**’ (2009/11) campaigns employed TV, print and radio media ([TV commercials](#)) and targeted all age groups.

AFIS’ 2012 campaign ‘**Recycle with just one move**’ aimed to achieve an 80% recognition rate of the AFIS programme and to prompt end-users to dispose of lithium batteries which are often stored at home. The primary target group was children aged 6-18, the secondary target group parents interested in environmental issues. Due to AFIS’ falling fee revenue in the economic crisis, the 2012 campaign did not use TV but focused on social media to promote online games, events and raffles. AFIS notes that in the course of the campaign many regional TV and radio stations asked for promotional messages and aired them free-of-charge. The campaign reached almost 1.9 million unique users and received 8,500 Facebook ‘likes’. Total costs were about EUR 0.02 per capita.

- **Collection boxes:** AFIS uses tall eye-level containers to attract attention. The containers, bearing the AFIS, logo, telephone and fax numbers, and the message "Battery Recycling" in Greek and English, can be ordered via the AFIS website. The 60,000 collection points are serviced by 10 logistics companies who are paid per number of points visited, independently of the volumes of batteries taken back.



- **Information brochures:** To raise awareness about the programme, AFIS has so far distributed about 3.4 million leaflets to schools, shops, banks, municipalities, supermarkets etc.



- **CD-ROM for schools:** Together with collection boxes, schools receive a comprehensive information package for students on CD-ROM. There are separate packages for primary and secondary students.
- **Information Day:** Information workshops are held in municipalities, schools and other organisations to inform about and promote battery recycling.

- **Social/internet media:** AFIS operates a [Facebook page](#) where it provides collection and recycling information and updates viewers on competitions, upcoming events, public awareness campaigns etc.



Source: AFIS 2012 Progress report

### Accuracy of reporting

AFIS POM reporting is broken down into primary and secondary batteries but not by chemistry. As most waste batteries are sorted by recyclers outside Greece, collection reports are not broken down into chemistries either.

**Battery type distinction:** All batteries up to 1.5 kg are considered to be portable batteries as other battery type definitions do not allow for clear distinction. This may mean that batteries declared as industrial batteries elsewhere are accounted for in the portable batteries volume in Greece.

**Batteries integrated into EEE:** Under the simplified requirement of the 2010 Ministerial Order, producers of EEE do not have to report integrated batteries (EEE producers claim that - with the exception of laptops - they do not have the means to provide details for batteries in EEE). As a result AFIS has to make an assumption about the weight of batteries in EEE and it is currently estimated that the weight of batteries incorporated in EEE is 10% of the total portable batteries market. Compared to other countries, this is rather low (Switzerland: 17%, Belgium 39%).

On the other hand, the percentage of waste batteries AFIS derives from WEEE dismantlers is also very low (1% - 2%), compared to other countries (5% - 15%). Reasons for the low return rate of integrated batteries are probably

- WEEE dismantlers selling waste batteries with valuable chemistries directly to battery recyclers without the intervention of AFIS.
- WEEE being shredded without battery removal.

AFIS estimates the amount of free-riders at 3%-5%. There have been no **enforcement actions** by authorities as regards POM or collection reporting.

### Potential for improving collection rates

Measures to improve the collection rate may include

- tighter enforcement of free-riders to increase available funding
- improved cooperation with WEEE system to account for more waste batteries removed from WEEE
- incentives for municipalities to contribute to collection or awareness creation measures.

# HUNGARY

## Key points

- 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 producers systems, 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 battery scheme as it is when it replaced producer compliance systems for most other waste streams with state controlled coordination from 2012.
- With a collection rate of 24% in 2011, the 25% target for 2012 target is likely to be exceeded.
- Waste battery collection may benefit from coordination between the systems with regard to awareness and collection campaigns. However, such coordination does not seem likely given the significantly different strategies of the schemes.

## Regulatory parameters

### Overview

Since 2000, the **Product Fee Act** has applied to accumulators, but not to single charge batteries, independently of whether they qualify as portable, industrial or vehicle batteries. Since 2005, the product fee has been set at around EUR 600 per tonne put on the market (a separate fee of about EUR 3,800 per tonne applied to mobile phone accumulators until January 2010). Batteries Directive 2006/66/EC was transposed through **Government Decree 181 (take-back) of July 2008**, covering all batteries, and Ministerial Decree 21/2008 on treatment. A collection target of 18% was set for 2008, increasing gradually to 45% in 2016. Penalties for failing to comply with the Decrees were extended and increased in September 2009. A new Product Fee Act, published in July 2011, replaced private-sector recovery organisations for WEEE, packaging and other products with a state-owned, not-for-profit National Waste Management Agency from January 2012. The waste battery systems (RE'LEM, Re-Bat and CCR Rebat) were among the few compliance systems<sup>102</sup> not affected by the nationalisation and remain responsible for the management of waste portable batteries.

### Roles and responsibilities in waste portable battery collection

- **Producers** must take back batteries and accumulators collected by distributors, municipalities and other final holders through a collective or individual system. They must achieve collection targets that increase annually from 18% in 2008 to 45% in 2016<sup>103</sup>.
- **Collective systems** (called co-ordination organisations) must be set up by producers and are subject to permit and other requirements. Systems must limit their activities to batteries (which prevented WEEE systems from acting for batteries).
- **Individual compliance** requires a permit and, for batteries but not for accumulators, a financial guarantee of HUF 1 million (~EUR 3,700) per tonne of batteries put on the market.

<sup>102</sup> Systems for expired lamps, medicines and contaminated packaging material (e.g. pesticides) are also not affected by nationalisation

<sup>103</sup> On a side note: Independently of these targets, producers of starter batteries must collect 95% of batteries put on the market to qualify for an exemption from the product fee. As this has not been achieved, producers currently pay the full product fee.

- **Retailers** must take back batteries free of charge from 1 July 2009. Until that date take-back only on basis of agreement with producer. Retailers may return batteries to wholesalers.
- **Municipalities** may collect but are not obliged to do so.
- Producers to achieve (interim) **collection targets** (in 2008 and 2009, target based on quantity put on market in current year, in 2010, based on average of current and previous year):

| Year         | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|--------------|------|------|------|------|------|------|------|------|------|
| Coll. Target | 18%  | 19%  | 21%  | 23%  | 25%  | 30%  | 35%  | 40%  | 45%  |

### Requirements on systems

**Collective systems** ('co-ordination organisations' or, from 2013 'broker' organisations) must

- be established by producers as non-profit organisations
- have a minimum share capital of HUF 20 million (~EUR 75K) rising to HUF 30 million (~EUR 110K) by 2010
- be registered with the National Inspectorate for Environment, Nature and Water.
- limit their activities to batteries.

Individual systems must

- have a permit from the National Inspectorate for Environment, Nature and Water
- provide a financial guarantee of HUF 1 million per tonne (~EUR 3,700) of batteries put on the market in the previous year. The guarantee can be provided through insurance, bank guarantee or blocked bank account. The guarantee is not required if the batteries are subject to the product fee (batteries for mobile phones and other accumulators) which an individually complying producer must pay but may reclaim if targets are met.

### Development of compliance systems

Three systems have been operational since 2005/6, with around 250 – 300 producer members between them:

- **RE'LEM Nonprofit Kft**, established by Energizer Hungary, Gillette Group Hungary (now Proctor and Gamble) and VARTA Hungary, received its license in August 2005. It started taking back portable batteries on 22 August 2005. It has around 180 members, including HP, Philips, Matsushita, SONY and SAMSUNG.
- **Re-bat Nonprofit Kft**, established in 2005 by ATC-TRADE Corporation, one of the largest battery importers, Re-Bat has grown to around 30 members including Ikea, Lidl, Penny, Hitachi, Metabo, Canon, TDK, Maxell
- **CCR Rebat Nonprofit Kft** (formerly Akku-Hulladek). Reverse Logistics Group CCR took over Akku Hulladek at the end of 2007. Akku Hulladek had begun to take back batteries in 2006. It has about 20 member companies, including medium-sized Hungarian companies and subsidiaries of international companies.

### Market shares and clearing for over- and under-collection

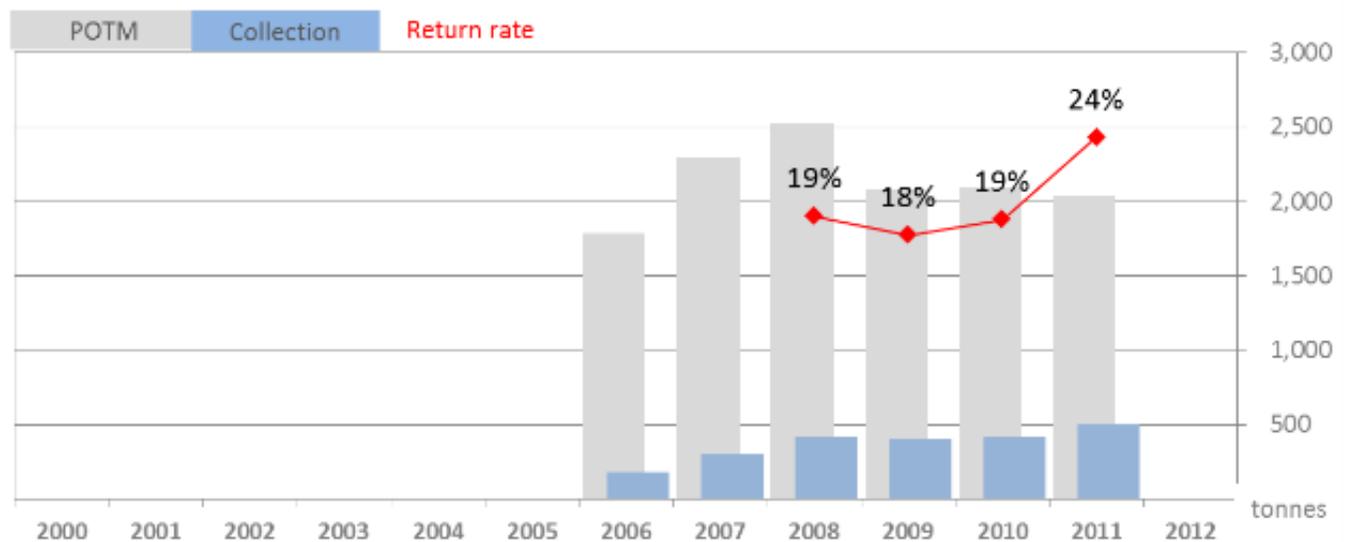
According to RE'LEM, its market share which has for years been between 65% and 70%, increased to 76% in 2012. As the systems need to individually achieve the collection target, there is no need for clearing for over- and under-collection between them.

## Interface with WEEE systems

There has been little coordination between battery and WEEE systems (and from 2013 with the National Waste Management Agency OHÜ). Battery systems co-ordinate with the WEEE dismantlers directly to take over all removed batteries.

## Collection results

The national collection targets<sup>104</sup>, from 7% in 2005, 18% in 2009 to 23% in 2011, have consistently been met or slightly exceeded and the 25% target for 2012 target is on track to be met. System RE'LEM already achieved a collection rate of 30% in 2012.



## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

There are about 39,000 waste portable battery collection points in Hungary, or one per 270 residents. 31,000 are serviced by RE'LEM which appears to have a presence in each community, followed by Re-bat with around 6,500.

For RE'LEM and Re-bat, collections in schools appear to contribute over half of the collected battery volumes.

Number of collection points and share of collected batteries, estimate 2012:

| <b>Collection point host</b>  | <b>Number of collection points</b> | <b>Share of total waste battery collection</b> |
|-------------------------------|------------------------------------|--|
| Retailers serviced by systems | 25,000                             | 25%  |
| Municipalities                | 400                                | 5%   |
| Schools                       | 7,000                              | 60%  |
| Companies                     | 5,000                              | 10%  |
| WEEE dismantlers              |                                    |  |

Source: Own estimate based on partial system data

<sup>104</sup> In 2008 and 2009, target based on quantity put on market in current year, in 2010, based on average of current and previous year.

## Consumer awareness creation

### Legal requirement

Producers must fund joint or individual public information campaigns using mass media such as newspapers and TV at least twice per year. Measurable criteria are not provided.

### RE'LEM

- **Collection boxes:** Different sized collection boxes from 12 to 80 litres are available in standout colours. New boxes and pick up of full boxes can be ordered free-of-charge through RE'LEM's website. [FoReGo](#) Ltd is RELEM's exclusive partner in operating the waste batteries collection. End-users can find RE'LEM collection points [here](#).



- **'Pontvelem'** ('Score with me') **School contests** have been running continuously since September 2011, with over 3,000 schools taking part. The contests are organised together with Energizer and allow schools to collect points based on the volume of batteries they collect. The contests' dates, terms, prizes and updates on the contestants and results are announced on a website and [Facebook](#).



### CCR-Rebat

- **Collection boxes:** REBAT collection boxes are distributed with accompanying posters.



- **Public awareness campaigns:** In 2009, a collaboration between CCR Rebat and mobile service provider Vodafone, launched a public awareness campaign at the Budapest Zoo. Collection points were setup at multiple locations within the zoo for the collection of cell phones and batteries.

- 

#### Re-bat (ATC)

- **Collection points:** End-users can identify the nearest collection point [here](#).

### Consumer awareness and disposal behaviour

No surveys have been released.

### Accuracy of reporting

POM and collection **reports** must be broken down into primary and secondary batteries. Secondary batteries must be further broken down into certain chemistries (alkaline, NiCd, rechargeable button cells). A report from the Ministry of Rural Development shows the following shares and return rates for 2009. The overall collection rate based on current year is 21%. Removing lead acid batteries from both POM and collection results in a rate of 19%.

| 2009                                 | Share of POM | Share of collection | Return rate |
|--------------------------------------|--------------|---------------------|-------------|
| Lead acid accumulators               | 1%           | 5%                  | 79%         |
| High-capacity alkaline accumulators  | 0%           | 0%                  | 0%          |
| Small capacity alkaline accumulators | 13%          | 6%                  | 9%          |
| of which Ni-Cd                       | 1%           | 3%                  | 59%         |
| Button cells                         | 0%           | 0%                  | 0%          |
| Other batteries                      | 85%          | 90%                 | 21%         |

**Enforcement:** The product fee system ensures a high compliance rate among producers. There have been enforcement actions by authorities regarding free-riders and faulty POM reporting.

### Potential for improving collection rates

The collection rate may be improved through measures in the following areas:

- **Contribution of municipalities:** Coordination between the systems to create incentives for municipalities to collect batteries separately and engage in awareness creation could potentially raise collection at municipal collection sites which currently contribute only around 5% to waste battery collection volumes.

- **Requirement on minimum awareness spending or coordination between systems:** Price competition between the systems is high and the legal requirement for producers to fund two information campaigns annually is soft enough to cause systems to limit marketing spending significantly. Waste battery collection may benefit from a tighter legal requirement or mandated coordination between the systems with regard to awareness and collection campaigns. In addition, a shared collection point locator could improve convenience for end-users.
- **Retailers' obligations** regarding the visibility of collection boxes could be strengthened.

## ICELAND

### Key points

- Iceland's **1999 Regulation on Batteries** imposed eco-fees on batteries, to be charged by customs on 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 2066/66/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.
- A collection rate of 27% was achieved in 2010 and 2011.
- Implementation of the retailer take-back obligation would increase the comparatively low collection point density and increase the collection rate.

### Regulatory parameters for compliance systems

As a signatory to the EEA agreement, Iceland must transpose EU waste legislation. Iceland's **1999 Regulation on Batteries** (No. 946/1999) imposed eco-fees, charged by customs on import of hazardous batteries, to fund the separate collection of hazardous wastes, including waste batteries, by the government's Icelandic Recycling Fund. Preparations to transpose Batteries Directive 2066/66/EC began in 2010 and resulted in **an amendment to the Waste Act** (No. 58/2011) and a **2011 Batteries Regulation** (No. 1020/2011). The amendments extended the scope of batteries covered and maintained the existing financing and collection mechanisms, while introducing the labelling requirements, substance prohibitions and collection targets of the EU Directive. There are still regulatory gaps regarding e.g. producer registration which are expected to be closed in 2013.

It should be noted that in 2008 the WEEE Directive was implemented through competing producer systems without the involvement of the Icelandic Recycling Fund. This approach proved to be ineffective<sup>105</sup> and – supported by industry – draft legislation of March 2013 proposes that WEEE management should now be fully funded and organised by the Icelandic Recycling Fund as the most cost effective implementation option.

### Roles and responsibilities in waste portable battery collection

- **Producers** are required to register with the Environment Agency (Umhverfisstofnun). However the register has not yet been established, there is no deadline and reporting obligations for producers have yet to be defined. Batteries placed on the market incorporated in EEE are not currently subject to registration obligations but further regulation may change this.
- **Producers and importers** must finance the treatment and the collection of waste batteries through payments to the Icelandic Recycling Fund and must inform the public about municipal waste battery collection.
- **Retailers** must take back waste batteries free of charge.
- The **Icelandic Recycling Fund** must ensure that collection targets are met and the **Environment Agency** must maintain the register of producers (detailed reporting requirements have yet to be set).

<sup>105</sup> Due to disagreements between systems about a clearing between systems and an alleged high number of free-riders due to customs authorities not being involved in the fee charging mechanism

- **Municipalities** must collect waste batteries from residents and provide guidance on the location of the collection points.
- Licenced (at IRF) **waste service providers** must take back waste batteries from municipalities and retailers free of charge and claim expenses from the Icelandic Recycling Fund against proof of processing or disposal. Processing may be carried out abroad. There is as yet no disposal ban for waste portable batteries.

### Requirements on systems

n.a.

### Development of compliance systems

The Fund is fed by a fee on all batteries, charged by the Customs Authority on import. The Fund's fees are set to cover the actual cost of current waste battery management and not to build reserves: in 2011 fees were about EUR 300 per tonne of batteries placed on the market, while the Fund paid out to four waste management companies an average of EUR 1,200 per tonne of batteries collected (the collection/POM ratio has been around 25%). The Fund's fees have remained the same since 2009, but a 15% increase is expected in 2013.

### Clearing for over- and under-collection

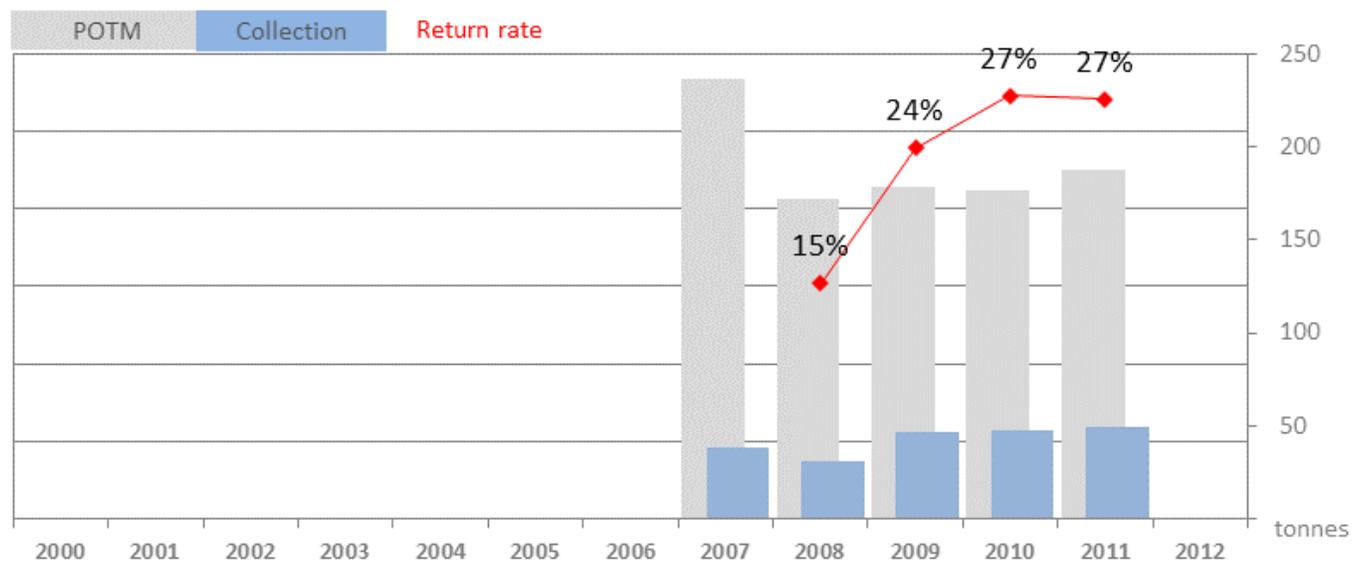
n.a.

### Interface with WEEE systems

Batteries in EEE are captured.

### Collection results

A collection rate of 27% was achieved in 2010 and 2011.



Source: Icelandic Recycling Fund

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

There are about 470 waste portable battery collection points in Iceland, or one per 700 residents.

The around 70 obligated municipalities contribute over 60% of waste portable battery collection, obligated retailers over 20% and schools about 8%. The collected batteries are subsequently picked up by waste service providers who process them and claim expenses from the Recycling Fund.

Number of collection points and share of collected batteries, estimate 2012:

| <b>Collection point host</b>  | <b>Number of collection points</b> | <b>Share of total waste battery collection</b> |
|-------------------------------|------------------------------------|--|
| Retailers serviced by systems | 150                                | 22%  |
| Municipalities                | 70                                 | 62%  |
| Schools                       | 150                                | 8%   |
| Companies                     | 100                                | 4%   |
| WEEE dismantlers              | 3                                  | 4%   |

Source: Own estimates

### Consumer awareness measures

Collection boxes from a 2007 initiative by the Recycling Fund and hazardous waste collector [EFNAMOTTAKAN hf.](#)



### Consumer awareness and disposal behaviour

No surveys released.

### Data accuracy

Given that POM does not take into account batteries in EEE, it is quite high at 590 g per capita.

### Potential for improving collection rates

Implementation of the retailer take-back obligation would increase the comparatively low collection point density and increase the collection rate.

# IRELAND

## Key points

- Though producer responsibility for WBAs has existed since 2004, no compliance system was set up until September 2008, when the two Irish WEEE systems were also approved as the only two battery systems (three years after their approval as WEEE systems).
- The collection rate increased quickly: in 2011, three years after the start of the scheme, a collection rate of 28% was achieved.
- Improved transparency requirements to create trust between systems could be a basis for coordinating nationwide communication. Stricter reporting requirements for collectors to avoid potential loss of portable batteries to treatment outside of the systems.

## Regulatory parameters

### Overview

Legislation stipulating producer responsibility for WBAs had existed since 2004, but no compliance system had been set up prior to 2008. With the publication of the **Waste Batteries Regulations in July 2008**, Ireland became the fourth member state to complete transposition of Batteries Directive 2006/66/EC. Making ‘enforcement of the regulations ... a key priority’<sup>106</sup>, the comprehensive Regulations (68 pages - 25,000 words) go beyond those of any other end-of-life producer responsibility legislation in any member state.

### Roles and responsibilities in waste portable battery collection

#### Retailers (distributors)

- must take back WPBAs free of charge from consumers at ‘conveniently located appropriate facilities’ at all reasonable times, at all sales outlets, even if no new battery is purchased. However, the retailer is not required to take back leaking batteries or quantities in excess of 5kg of WPBAs from any one person at one time. Retailers are prohibited from offering any discount on batteries to avoid the take-back obligations
- must not transfer WBAs – except those integrated into EEE – to any party except the producer (or a collector acting on behalf of the producer) or an approved body; if registered in their local authority’s register of distributors, the retailer may also deposit the collected waste at a civic amenity facility.
- must register by 15 September 2008 with their local authority’s register of distributors, unless a) they are already registered as EEE distributors; or b) they store less than 250 kg of WPBAs; or c) they are registered with a compliance scheme representing retailers (which both collective schemes do). The distributor registration must also be renewed annually by 31 January.
- Distance sellers must place a visible and legible notice on their website, voice telephony services or other media from 16 September 2008 indicating that they will take back WBAs free of charge in Ireland and giving address details of the take-back location

#### Local authorities

- must establish a register of distributors within their functional area by 1 September 2008.
- may designate any workplace, educational establishment or facility owned by an entity with not-for-profit status (CHY code) as a collection point or intermediate storage point, subject to the agreement of the management.

<sup>106</sup> Quote by John Gormley, Environment Minister from May 2007 to February 2011 and former Chairman of the Green Party

- must ensure that retailers offer free take-back, only distribute EEE and batteries from bona fide registered producers and dispose of them in accordance with the Regulations.

**Producers or Compliance schemes** acting on their behalf take back waste portable batteries from collection points on demand once a minimum 50kg of waste batteries are ready for collection. Take-back must take place no later than 20 working days after the request from the operator of a collection point. Compliance systems issue a *certificate* to producers confirming membership which exempts the producer from registering with and reporting to the Registration Body directly, and from keeping records and informing consumers.

If a producer complies through an **individual system**, the producer must display signs at point of sale (POS) stating that an approved waste plan (including financial details) is available on request. If the producer does not take-back collected batteries within 20 working days of a request, the collection point host may manage WBAs themselves and charge producers the actual management costs (including administrative, logistical and storage costs) plus an agency fee not exceeding 10% of the total.

### Requirements on systems

**Collective systems** are subject to approval by the Ministry of Environment. While they are not subject to requirements regarding their ownership or business objective, they

- may not be closed systems for a limited number of producers or cover a limited geographical area only or cover only selected battery types;
- must disclose financial accounts to the Environment Ministry;
- must propose to the Ministry how they will build and maintain a contingency reserve;
- must give the Ministry details on how they intend to co-operate with other approved bodies and individual producers; and
- must demonstrate how they will determine and verify battery waste management targets and standards.

## Development of compliance systems

Though producer responsibility for WBAs has existed since 2004, no compliance system was set up until September 2008, when the two Irish WEEE systems were also approved as the only two battery systems (three years after their approval as WEEE systems). An application by a waste management company for approval of a third battery system was under preparation but eventually not submitted.

During the transposition of the WEEE Directive, the government initially foresaw a single system with a visible fee financing it to build up collection infrastructure quickly. However, it eventually approved ERP Ireland as a second system along with WEEE Ireland.

The two systems operate in different geographical areas. Both act as registration schemes for battery retailers in their respective areas (which frees retailers from the administrative burden of having to register annually with local authorities). Both schemes have supplied collection boxes to registered retailers since September 2008.

Around 550 producers currently comply through the two schemes. There are no individual systems for portable batteries.

- [WEEE Ireland](#) was set up by ICT, consumer electronics and household appliance manufacturers (including Apple, IBM, Microsoft, Dell, Siemens, Neff, Nordmende, Sanyo, JVC, Panasonic, Sharp, Philips and Whirlpool). It was approved by the Government on 4 August 2005. The joining fee for battery producers with a turnover of under EUR 250,000 per annum is EUR 600. In addition, there is an annual management fee of EUR 400. Discounts are provided to smaller producers.
- [ERP Ireland](#) was also approved on 4 August 2005. The national ERP systems account for about 15% of the European WEEE market. ERP Ireland charges an annual fee of EUR 500, but no joining fee. It has around 75 members. Battery registration is free for existing WEEE members.

## Market shares and clearing for over- and under-collection

To avoid duplication, each system was given responsibility for WEEE in different Irish counties and Dublin city districts. Both systems were originally allocated areas representing an equal share of the population, with equal average distances from reprocessors, but in May 2006 WEEE Ireland's share was increased to 80% of the population to reflect its actual share of WEEE put on the market. From 2010, ERP's share increased to 28% when it took over all collection in Westmeath and Leitrim.

## Interface with WEEE systems

The WEEE systems also act as waste battery systems.

## Collection results

The collection rate increased quickly. In 2011, three years after the start of the systems, a collection rate of 28% was achieved.



## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

We estimate that there are an estimated 6,500 waste portable battery collection points in Ireland, or about one per 720 residents.

Number of collection points and share of collected batteries, 2012 estimate:

| Collection point host         | Number of collection points | Share of total waste battery collection |
|-------------------------------|-----------------------------|---|
| Retailers serviced by systems | 5,500                       | 30%                                     |
| Municipalities                | 300                         | 30%                                     |
| Schools                       | 700                         | 5%                                      |
| Companies                     |                             | 10%                                     |
| WEEE dismantlers              |                             | 20%                                     |
| Other                         |                             | 5%                                      |

Source: Own estimates

## Awareness creation measures

### Supporting legal requirements:

The Batteries Regulations spell out **retailers' obligations regarding the visibility** of the take-back option in great detail. Distributors must display in store a sign of at least A4 size, font Times New Roman 20pt, black on white, 1.25 line spacing, that says: *"FREE RECYCLING - WASTE MANAGEMENT ACT 1996: Waste Electrical and Electronic Equipment (WEEE) is taken back free of charge in this store on a one-for-one, like-for-like basis. Waste batteries including rechargeable batteries (of a type sold here) are taken back free of charge in this store. You are not obliged to make any purchase when returning old batteries here. Each local authority must also accept household WEEE and small batteries free of charge at its recycling*

facilities. All WEEE and waste batteries must be recycled and should not be placed in your waste disposal or recycling bins. Make sure you always recycle all your old electrical goods and batteries.”

Moreover, any **advertisement of batteries** must include the text “Waste batteries must never be placed in your waste disposal or recycling bins. There is a bin for small batteries in your local store. Battery recycling is free”.

### Joint activities

‘[Batteries back](#)’, the waste battery collection point location finder, is maintained by both systems.

### WEEE Ireland

- **Collection boxes for retail:** WEEE Ireland offers distinctive blue box for 5 kg of batteries made of flame retardant corrugated plastics. A larger green battery drum was discontinued due i.a. to potential fire risk arising from larger containers in schools and at retailers. To generate awareness among retailers, a pilot battery merchandising programme was launched in December 2009 to distribute collection boxes and compliance packs to retailers and inform them of their obligations, complemented by advertisements placed in trade magazines to raise awareness among the battery distribution and retail sectors. WEEE Ireland provides a pick-up service (through contractors) for 10 or more battery boxes (50kgs) from retailers, schools and other collection points.



Drum, discontinued

- **Collection boxes for households:** In early 2010, WEEE Ireland launched the ‘**My Battery Recycling Box**’ campaign, which effectively distributed collection containers amongst households and offices. The launch of the campaign featured a photo-call with Irish boxing hero Katie Taylor at the National Stadium of Dublin where people were encouraged to ‘**box clever**’. The event was featured in numerous newspapers and publications. From May to September 2010, 95,000 of these boxes were distributed to households.



Cardboard desktop box for households

- **Charity, seasonal and sponsoring events:** A battery collection event launched in 2011 involved the Children’s Sunshine Hospital and Laura Lynn House (a children’s hospice). Returned batteries generate a financial contribution to the charity on consumers’ behalf. In late 2011, the Minister for the Environment (Phil Hogan), in

collaboration with WEEE Ireland and ERP, launched a Halloween themed nation-wide battery take-back campaign. In 2011, WEEE Ireland sponsored a series of RTÉ television shows ‘Room to Improve’, about home renovations.



- **Schools and education:** In partnership with [Rehab Recycle](#), WEEE Ireland has been developing a pilot project to raise awareness of WEEE and batteries in schools. Presentations are held promoting the benefits of WEEE and battery recycling and schools are given ‘school packs’ containing flyers, posters and other materials. Since April 2006, over 500 Primary schools have been visited.
- **Internet & Social media:** In 2012 WEEE Ireland revamped its website and launched [RecycleFree](#) as a more end-user/consumer focused website.



### ERP Ireland

- **Collection boxes:** ERP distributes bright red battery collection boxes and awareness material (posters, flyers etc.) to retailers and other organisations. ERP reports 3,500 collection points across the 8 regions in which it operates in retail outlets and other authorised collection points. To allow for ‘greener battery collection’ ERP suggests collection points should wait until they have collected at least 80kgs of WBAs before requesting take back or – should this be a problem – to take the WBAs to a local civic amenity site.



- **Campaigns:** ERP Ireland organises around 10 campaigns annually to promote WEEE and battery collection. Most campaigns target schools.
  - A December 2008 campaign ‘Dreaming of a Green Christmas’ concluded the 2008 programme of 68 open days when the public could return WEEE. The campaign was repeated in 2009, this time with 24 open days.

- In March 2009 ERP launched the campaign ‘**Be Free** ...of your electrical waste and used batteries’ in cooperation with retailers to promote recycling events.
- In September 2011, ERP sponsored a fashion event named ‘**Junk Kouture**’ in which designers competed to rework WEEE and batteries and other used materials and craft them into high-end couture fashion for both men or women. The event re-ran again in 2012 and will also run in 2013.
- In October 2011, ERP launched the ‘**It’s SCARY the amount of batteries that don’t get recycled!**’ over Halloween, targeting children.
- During the 2012 holiday season, ERP, in association with numerous County Councils around Ireland, announced the launch of its ‘**Christmas Appeal**’ campaign - aimed at encouraging people to have a Merry Green Christmas and recycle their batteries.



**Consumer awareness and disposal behaviour**

No surveys have been released.

### Accuracy of reporting

**POM:** According to WEEE Ireland, challenges regarding POM reports are inaccurate reporting through misplacing of decimal points and also the inability to distinguish unambiguously between portable and industrial batteries. Moreover, potential reporting inaccuracies are suspected regarding batteries placed on the market in EEE.

**Free-riders:** Enforcement of the WEEE Regulations (and subsequently also the Batteries Regulations) in Ireland has been among the strictest of all member states: As early as 2005, EPA inspectors began checking compliance of exhibitors at trade exhibitions, working closely with the Customs and VAT authorities. Nationwide checks on retailers (in their function as importers) were carried out for several months each year from 2006 to 2008. From 2010 to 2011, the EPA carried out roughly 80 inspections of EEE producers (40 targeting potential non-registration and 40 verifying B2B producer data), 20 inspections on distance battery sellers, more than 600 inspections on distributors and around 50 RoHS-related inspections. The Irish EPA has completed over ten successful prosecutions.

**Collection:** WEEE Ireland recently conducted research on the distinction between waste portable and industrial batteries (especially lead acid batteries). Results may become available before yearend 2013. Waste portable batteries potentially not accounted for are suspected to occur as a result of exports of WEEE and lead acid battery by collectors and mobile phone (batteries) collection by charities.

### Potential for improving collection rates

The collection rate may be improved through measures in the following areas:

- Increasing transparency to create trust between systems as basis for coordinating nationwide communication, for example by making information publicly available on the type and number of collection containers used and clearer funding requirements for systems.
- Stricter reporting requirements for collectors to avoid potential loss of portable batteries and treatment outside of the systems.

# ITALY

## Key points

- Decree 188/2008 transposing Batteries Directive 2006/66/EC entered into force on 18 December 2008. About 2,500 battery producers currently comply through 13 systems for portable batteries of which all except COBAT originate from WEEE systems. The coordination centre CDCNPA, which acts as interface between all systems and collectors including municipalities, became operational in late 2012.
- Coordination Centre data show that in 2012, the third year after the take-back obligation came into force, a collection rate of 27% was reached. Despite the late start of the coordination centre, collection rates on a current year basis were already above 20% in 2010 and 2011.
- The legal framework, with its requirement for systems to join the coordination centre, provides a level playing field for the different actors and a platform for coordinated awareness creation. Time is now needed to increase consumer awareness and disposal behaviour and improve control of material flows.

## Regulatory parameters for compliance systems

### Overview

**Decree 188/2008** transposing Batteries Directive 2006/66/EC entered into force on 18 December 2008. The Decree provides for multiple compliance systems to be set up [earlier drafts named the national lead acid battery consortium COBAT as the single compliance system for all battery types] and replaces permit requirements for systems with a self-regulatory approach that is implemented through the compulsory participation of systems in a Coordination Centre. An **amendment to the Decree**, in force from April 2011, strengthens the role of the Coordination Centre and allows systems to use municipal facilities for battery collection under a framework agreement with ANCI (Association of the Municipalities).

### Roles and responsibilities in waste portable battery collection

- **Producers** or third parties acting on their behalf must organise and finance collection and treatment either individually or collectively.
- **Collective systems** must provide the same conditions for all producers and all municipalities under an agreement with ANCI.
- All systems and individually complying producers must join a single, government approved **Coordination Centre**. The Centre optimises the activities of the systems to ensure homogeneous geographical coverage and uniform operating conditions and gathers collection and treatment data for transmission to the government. The Coordination Centre will set criteria for allocating costs among producers, taking into account the types and characteristics of batteries, the collection rate, the geographical location of collection points, and the value of metals derived from recycling.
- **Municipalities** may collect batteries, but are not obliged to do so.
- **Distributors** of batteries must take back batteries from the public free of charge.

### Requirements on systems

Collective systems are not subject to approval or disclosure requirements vis-à-vis the authorities but must:

- Register with their chamber of commerce

- Join the Coordination Centre and ensure that all parties and municipalities can participate according to the same conditions, including entities importing batteries from countries outside the EU.

## Development of compliance systems

About 2,500 battery producers (all types) currently comply through 13 systems for portable batteries ([list](#)) of which all except COBAT originate from WEEE systems.

Since 1988, the COBAT battery system had dominated battery waste management in Italy. COBAT was established as a national consortium for lead batteries only, but had since built up collection networks for all battery types which would enable it to act as a national system for portable batteries. In September 2008 President Berlusconi approved a draft Decree-Law transposing Batteries Directive 2006/66/EC to that effect, naming COBAT as the single compliance system for portable batteries. However, the Competition Authority and Confindustria, the umbrella organisation of Italian Industry (and ANIE, the EEE producers' federation) objected and Environment Minister Prestigiacomo eventually implemented a multiple compliance system approach in the Waste Batteries Decree.

### Interface with municipalities

The dispute then continued as its focus shifted to the control of the Coordination Centre. Like the Italian WEEE Decree, the Batteries Decree requires all collective battery systems and individually complying producers to join and finance a SINGLE Coordination Centre to ensure homogenous battery collection throughout Italy.

On 23 December 2008, five days after the Battery Decree entered into force, a Coordination Centre for Batteries and Accumulators (**CdCPA**), initiated by Syracuse-based WEEE system RAECYCLE and supported by COBAT, was established. Three months later, ANIE – which had initiated the Coordination Centre for WEEE – announced the constitution of a second Coordination Centre for Batteries and Accumulators (**CCNPA**). ANIE's CCNPA claimed to have the support of over 90% of portable battery producers (including DURACELL, ENERGIZER, PANASONIC, BEGHELLI, SONY, VARTA and PHILIPS).

Both Centres worked independently, coordinating the systems' battery take-back operations in the same regions. It took until June 2011 for the two competing, unapproved Coordination Centres to agree to unite.

In November 2012, a new National Coordination Centre for Batteries and Accumulators (**CDCNPA**) signed an [agreement](#) with the National Association of Italian Municipalities (ANCI). The agreement is required for the Government's approval of the Coordination Centre, and i.a. requires collection centres to register with CDCNPA, and defines the operational parameters for take-back and the compensation paid to municipalities for waste battery collection (minimum EUR 70 per tonne). CDCNPA's take-back coordination of waste batteries collected at municipal collection points, retail outlets and WEEE treatment facilities began in July 2012 and has been fully operational since late 2012.

### Market shares and clearing for over- and under-collection

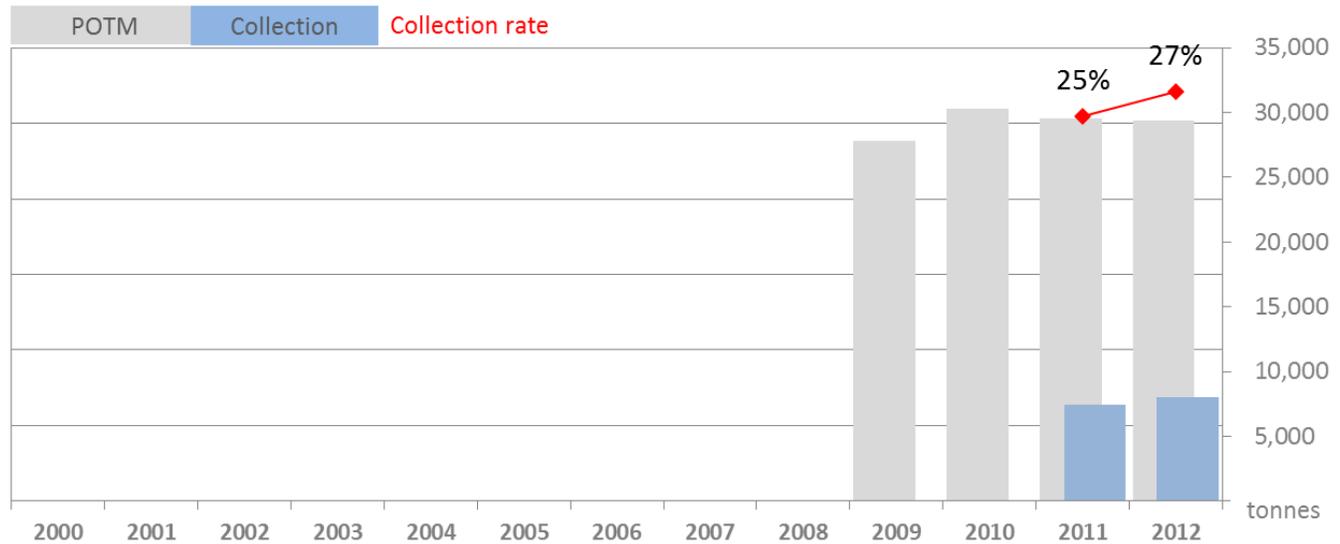
Coordination centre CDCNPA assigns pick-up requests from waste battery collection points to systems and individual producers on the basis of geographical areas, taking into account the systems' market shares.

### Interface with WEEE systems

Waste batteries arising at WEEE dismantlers are also subject to CDCNPA coordination. Moreover, all larger battery systems except COBAT are also WEEE systems. As such, the possibility of deliberate leakage of waste batteries from dismantlers is considered low.

## Collection results

Coordination Centre data show that a collection rate of 27% was reached in 2012, the third year after the take-back obligation came into force. Despite the late start of the coordination centre, collection rates on a current year basis were already above 20% in 2010 and 2011.



Source: CDCNPA

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

The following entities may register waste battery collection points with CDCNPA: Municipal collection centres, retailers, WEEE treatment facilities and large battery users (with minimum waste batteries arising of 400 kg per year from e.g. hospitals, universities, airports, but not companies involved in waste management).

By late 2012, about 2,000 waste portable battery collection points were directly *registered* with the CDCNPA, or one per 30,000 residents. However, this number does not reflect the amount of actual collection points available to end-users as it does not include all municipal collection points nor those at retailers who submit the waste batteries they collect to municipal collection points.

85% of collected batteries derived from municipal collection points in 2012. Despite the comparatively high share of waste batteries from WEEE treatment facilities, CDCNPA notes that many WEEE facilities remain unregistered with CDCNPA.

Number of collection points and share of collected batteries, estimate 2012:

| <b>Collection point host</b>  | <b>Number of collection points</b> | <b>Share of total waste battery collection</b> |
|-------------------------------|------------------------------------|--|
| Retailers serviced by systems | 854                                | 1%   |
| Municipalities                | 1,111                              | 85%  |
| Schools                       | 0                                  | 0%   |
| Companies                     | 3                                  | 1%   |
| WEEE dismantlers              | 31                                 | 13%  |

Source: CDCNPA

## Awareness creation measures

### Supporting legal requirements

Retailers must put signs at the point of sale informing customers about the free return of spent batteries and the dangers to health and environment of wrongly disposed-of waste batteries.

Producers of PBAs responsible for informing consumers 'throughout the system'. CDCNPA should coordinate consumer awareness measures.

### Measures by the systems

Coordinated awareness measures are being gradually rolled out as the Coordination Centre starts operations. Currently there are initiatives by each system.

- **Remedia:** Remedia provides collection boxes to retailers and is engaged in social network initiatives such as Facebook, Twitter and YouTube.



- **ERP** distributes collection boxes and holds province-wide competitions between schools to boost public awareness.



- Various recyclers and municipal waste service providers supply battery collection boxes of varying designs on behalf of systems:

Ecoemme and Auesse



LeoDaVinci



Consulprogett



Rimondi Paolo



**Consumer awareness and disposal behaviour**

No surveys have been conducted yet.

**Accuracy of reporting**

Producers report **POM** volumes broken down into chemistries (see table below and according to whether they are primary and secondary batteries. It is not possible to distinguish battery volumes integrated into EEE.

| <b>Primary</b> | <b>Secondary</b>     |
|----------------|----------------------|
| Zinc - carbon  | Lead acid            |
| Zinc chloride  | Nickel – Cadmium     |
| Alkaline       | Nickel–metal hydride |
| Lithium        | Lithium              |
| Zinc-air       |                      |
| Silver - zinc  |                      |
| Other          |                      |

**Collection reporting:** CDCNPA notes that there are not enough codes in the European Waste Catalogue to distinguish portable and industrial or automotive batteries: WEEE dismantlers must provide collection reports separated into five EWC

codes<sup>107</sup>. Collection reports from Municipalities and from commercial sites are provided by only 2 EWC codes[2]<sup>108</sup>. Both sets do not allow distinguishing between portable and industrial or automotive batteries.)

**Enforcement:** Italian law provides for enforcement measures with regards to the failure to register in the registration producers' register. No enforcement measures have been carried out yet.

### Potential for improving collection rates

The legal framework with its requirement for systems to join the coordination centre provides a level playing field for the different actors and a platform for coordinated awareness creation. Time is now needed to increase consumer awareness and disposal behaviour as well as to improve control of material flows.

---

<sup>107</sup> [16 Wastes not otherwise specified in the list] 16 06 01\* lead batteries; 16 06 02\* Ni-Cd batteries; 16 06 03\* mercury-containing batteries; 16 06 04 alkaline batteries (except 16 06 03); 16 06 05 other batteries and accumulators; \* hazardous

<sup>108</sup> [20 Municipal wastes] 20 01 33\* batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries; 20 01 34 batteries and accumulators other than those mentioned in 20 01 33\* hazardous

# LATVIA

## Key points

- A separate collection system 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 also to batteries in EEE. Producers could be exempted from the tax by achieving collection targets. In 2006 five WEEE systems were approved as battery systems. Legislation transposing Batteries Directive 2006/66/EC came into force in May 2011. The Government currently lists 15 waste management companies and producer controlled systems as battery systems, of which BAO is the largest.
- A collection rate on a current year basis of 27% was achieved in 2012.
- Collection volumes might be increased by improved coordination among the systems with regards to ensuring a high density of collection points and creating economies of scale for awareness creation measures. In addition, retailers could be incentivised to display collection boxes visibly.

## Regulatory parameters

### Overview

The **Natural Resources Tax (NRT) Act** has applied to separately sold batteries since 1 July 2006. Producers could be exempted from the tax by achieving collection targets of 15% - 25% for primary batteries and 60%-80% for accumulators. Since 2010, the target has been 25% for all battery types. Batteries Directive 2006/66/EC was transposed through an **amendment of the Waste Management Act in 2008** and a number of **Cabinet of Ministers regulations**. Regulations on registration of battery producers did not come into force until May 2011. After a long awaited amendment, the NRT Act applied the tax to batteries integrated into appliances (including imported second-hand equipment) from 1 January 2011. A Regulation specifying requirements for battery collection and treatment as well as reporting procedures followed in July 2011.

### Roles and responsibilities in waste portable battery collection

- Since 1 July 2006 **producers** have been responsible for financing collection and treatment of batteries. They have three compliance options: Setting up an individual system, joining a battery management system or paying the Natural Resources Tax. The NRT is payable on 100% of batteries put on the market at a rate of around EUR 6,900 per tonne for portable batteries and EUR 2,600 (2010) for NiCd accumulators. To be exempt from the NRT, a producer had to reach minimum collection targets of 25% for all battery types in 2011.
- Approved **waste battery management systems** must collect in all 10 administrative household waste management regions<sup>109</sup>.
- **Retailers** are obligated to take back waste batteries free of charge even if no new battery is purchased. Wholesalers are not obligated to take back waste batteries from retailers. There are no de minimis exemptions.
- **Local authorities** are not obligated to collect. (delete underline)

<sup>109</sup> Latvia's 2009 administrative reform turned 26 districts into 110 municipalities and 9 republican cities. However, the national waste management plan divides these 119 entities into 10 'household waste management regions', based on the available landfills each of which should only serve the waste management region in which it is located.

## Requirements on systems

Waste battery management systems must collect in all 10 regions, have an approved waste management plan and sign an agreement with the Ministry of Environment. There are no requirements on the parties controlling systems.

## Development of compliance systems

A separate collection system for all types of household batteries was introduced in summer 2001. It was managed by hazardous waste management company **BAO**, which set up collection boxes for used batteries in supermarkets, photo shops and collection stations for sorted waste across the country. Collection was free of charge for consumers.

In accordance with Cabinet of Ministers Regulation No. 117/2002, producers and importers of batteries had to take back batteries. However, the first battery management systems were not set up until summer 2006, when all five WEEE systems (except the system for lamps) were approved as battery systems.

As a background to the development of the battery systems, here is a brief summary of the development of the WEEE systems: until late 2005 the planning of WEEE organisations was hampered by uncertainty over the role of the Natural Resources Tax Act in financing historical waste. This situation continued until the regulation defining exemptions from the tax was issued in May 2006. As the WEEE Regulation does not mention collective systems of producers, but refers instead to WEEE management organisations without reference to the controlling parties, the Ministry of Environment signed memoranda of understanding with Eko Gaisma (Ecolight), packaging organisation Green Dot Latvia (LZP), and Latvia Green Electronics (LZE), a collective system set up by LETERA in November 2005. This provided these organisations with the certainty needed to prepare their business plans and start customer recruitment. The systems received Ministry of Environment approval two days before the NRT legislation came into effect in June 2006.

By August 2013, over 500 battery producers had registered, up from 210 two years earlier. The increase is mainly a result of the NRT now also applying to batteries integrated into EEE. Most of the registered producers comply through three organisations: ZALĀ JOSTA (Green Belt), Green Dot Latvia (LZP) and Latvia Green Electronics (LZE). The Ministry of Environment [lists](#) 15 organisations – both waste management companies and producer controlled systems - that may act as compliance organisations for producers.

- **ZALĀ JOSTA** (Green Belt) was founded by a group of waste management companies in 2002 as a packaging recovery organisation and subsequently expanded to WEEE, batteries, tyres and oils. Through its partner BAO, Zala Josta has collected batteries and accumulators since 1 July 2006. About 50 battery importers are members. **BAO** was established in 1996 as a specialist hazardous waste management company.
- **Green Dot Latvia** (LZP): The packaging compliance organisation LZP (Latvijas Zalais Punkts), was set up in January 2000. LZP also covers other goods potentially harmful to the environment, such as oils and tyres. It has about 200 members for battery compliance (and around 1,000 for packaging and 300 for WEEE). Batteries have been taken back since 1 July 2006.
- **Latvia Green Electronics** (LZE) was set up in November 2004 by **LETERA**, the Latvian Electrical Engineering and Electronic Industry Association and LDTA, the Latvian Computer Technologies Association. It has 105 battery members.

## Market shares and clearing for over- and under-collection

As systems have to reach collection targets individually, there is a limited need for clearing for over- and under -collection.

## Interface with WEEE systems

13 of the 15 battery systems also act as WEEE systems and this creates synergies in collection coordination and reporting between the two waste streams.

## Collection results

A collection rate on a current year basis of 27% was achieved in 2012.



Source: Unofficial data from system

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

Based on partial data from systems, we estimate there are around 6,000 waste portable battery collection points in Latvia, or one per 370 residents.

Collection points at retailers contribute an estimated 2/3 of all collected waste batteries, followed by schools and WEEE dismantlers. Municipal collection points play a minor role.

Number of collection points and share of collected batteries, estimate 2012:

| Collection point host         | Number of collection points | Share of total waste battery collection |
|-------------------------------|-----------------------------|---|
| Retailers serviced by systems |                             | 60%                                     |
| Municipalities                |                             |   |
| Schools                       | No data                     | No data                                 |
| Companies                     |                             |   |
| WEEE dismantlers              |                             |   |

## Awareness creation

### Supporting legal requirements

Systems must conduct four campaigns per year.

### ZAĻĀ JOSTA (Green Belt) / BAO

- **Collection boxes:** Over 3,000 collection boxes distributed to schools, offices and retailers for portable batteries and small accumulators e.g. mobile phones, including 'ECO PACK' battery collection boxes (picture).



- **Campaigns:** The coverage of all separately collected wastes allows BAO and other waste management companies to conduct broad awareness creation measures, educating end-users and especially children and students about waste separation in general. Campaigns targeted at younger age groups include school collection competitions, an educational film, entitled '[Better way](#)' (explaining the harmful effects of batteries on the environment and what to do with them in 15 minutes) and an [online game](#)



## LZE

- **Collection boxes:** LZE has developed collection containers designed to stand out. The boxes are branded under as **Eleco**, a trade mark used also by and introduced on request of waste collection companies. The containers show a freephone number for consumers to obtain further information. Each cylinder has a capacity of 30 kg. 10 kg laminated cardboard collection boxes are also available.



- **School campaigns:** In the first quarter of 2012 LZE launched the ‘student excursions to battery recycling plants’ campaign where classes from various schools visited battery recycling plants to learn about the importance of recycling batteries. The campaign targeted children and young people up to 20 years and used predominantly web-based advertising.

## Consumer awareness and disposal behaviour

No surveys available.

## Accuracy of reporting

**Reporting:** There are 2 reporting systems 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 system 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.

**Enforcement:** Systems must audit at least 15% from POM. The Government has carried out enforcement actions against free-riders and erroneous reporting. Errors are most likely in the reporting of batteries integrated in EEE.

## Potential for improving collection rates

While the natural resource tax creates an incentive for systems to achieve their targets, collection volumes might be increased by requiring battery systems to increase density of collection points, in conjunction with enforcement of retailers’ obligation to display collection boxes visibly. Moreover, coordination among the systems with regard to consumer awareness measures would probably greatly improve their effectiveness.

# LITHUANIA

## Key points

- Since 2003, producers have had to pay a natural resource tax (NRT) on batteries. From 2008, producers could avoid the tax if they achieved collection targets by buying recycling notes from recyclers or through collective systems. 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 systems.
- A collection rate of 48% was reported in 2011. On a current year basis, the collection rate was 54% in 2011, below the national target of 80% which meant the NRT had to be partially paid<sup>110</sup>. The new 2012 collection target of 25% was exceeded.
- Both the product tax and the producer responsibility regulations are very complex, inconsistent and subject to frequent changes. A better alignment of the two could significantly simplify compliance and contribute to more robust data flows.

## Regulatory parameters for compliance systems

### Overview

Unlike EEE, all batteries have been subject to an **environmental tax (NRT)** in conjunction with a collection target since 2003. From 2006 to 2011 the collection target was 80% of batteries placed on the market, and the 25% target of the Directive only applied from 2012. Since 2007, the tax has been LTL 500 (EUR 145) per tonne, charged on 80% of the batteries put on the market minus the amount of waste batteries collected as shown on recovery notes purchased by producers from waste management companies or collected by a collective system.

Batteries Directive 2006/66/EC was transposed through an **amendment of the Waste Act in June 2008** and implementing orders. The key change introduced by the amendment was the introduction of collective compliance systems as one of the three compliance options. However, due to the low tax rate, producers preferred to pay the tax rather than support systems' investments in collection infrastructure. The government therefore increased the tax from 2012.

### Roles and responsibilities in waste portable battery collection

- **Producers** must achieve collection targets<sup>111</sup>, set up a collection network and inform consumers about separate collection. They have the following compliance options:
  - a) Until end 2012: buying a guarantee note (recovery note) issued by a waste management company;
  - b) Legally available since 26 September 2008 only: Membership of a licenced collective producer organisation or individually;
  - c) Paying the NRT (natural resource tax). Since 2007, the fee has been LTL 500 (EUR 145) per tonne on all types of batteries. The tax is charged on 80% of batteries put on the market minus – if applicable – the amount of waste batteries collected as shown on recovery notes purchased from waste management companies or – since 26 September 2008 – the amount of waste batteries collected by a collective system.

<sup>110</sup> More specifically, the 80% target has always been reached for rechargeable batteries. For primary batteries, the 80% target was never achieved, but the 25% target in 2012 was achieved.

<sup>111</sup> Governmental Resolution No 1643 of 2002 set collection targets from 2003 onwards. From 2006 to 2011 the target was 80% of batteries placed on the market. The transposition legislation introduces the 25% target of the Directive only in 2012.

- **Municipalities** are not required to set up collection points for waste batteries, but are required to take them back if consumers bring them to any municipal collection point.
- **Retailers** must take back waste batteries free of charge.

### Requirements on systems

**Collective systems** established by producers must be licensed. I.a. a system

- may only conduct activities necessary for the fulfilment of the producers' obligations; and
- must be licensed (which is subject to approval of its operational waste management plan, financial plan and plan on information to users);
- must offer collection according to population density criteria (which translate into at least 3,000 collection points nationwide).<sup>112</sup>

### Development of compliance systems

Until 2011, the NRT was lower than the cost of setting up and running a take-back system, so it was the preferred compliance choice for producers: in 2012, the effective tax rate (nominal tax x collection targets) for portable batteries increased from about EUR 116 to EUR 724 per tonne placed on the market and by 2016 it will have increased to EUR 1,300 per tonne.

Individual compliance typically requires purchasing guarantee (or recycling) notes directly from recyclers. This service is offered by about 10 waste management companies. Only a few offer nationwide collection, notably:

- **EMP Recycling** dominates the waste management market. Established in Lithuania in March 1999, EMP operates purchasing, collection, recycling and sale of secondary raw materials. EMP is active in the three Baltic States, Poland and Sweden.
- **Zalvaris**, originally a scrap metal dealer, operates the Government's battery collection programme and also sells recovery notes to battery producers.

As regards collective compliance, two collective organisations compete for producers' funding:

- **EEPA Collective system:** EEPA received a licence for the take-back of batteries in December 2009. It had been approved as a WEEE system since May 2006. Its founders include EEPA (the Association of Manufacturers and Importers of EEE, itself set up by 7 members of the INFOBALT association). Its 320 members include national branches of Whirlpool and Electrolux. EEPA cooperates with **NETA**, the National Association of Electronic Retailers.
- **GIA System** (Gamintojų ir Importuotojų Asociacija, Association of Producers and Importers, formerly Biosistema): According to the Ministry, GIA has been licensed for the take-back of batteries since February 2008.

In anticipation of the tax increase, producers joined WEEE/battery systems GIA and EEPA and the share of batteries placed on the market by their members increased from 30% in 2009 to over 80% in 2011.

<sup>112</sup> **Order D1-386** part IV specifies at least 1 collection point per 800 inhabitants in major cities, at least 1 point per 1000 inhabitants in other cities, and also 1 point in villages below 1000 inhabitants Footnote should be on next page

## Market shares and clearing for over- and under-collection

As systems have to achieve collection targets individually, there is a limited need for clearing for over- and under-collection.

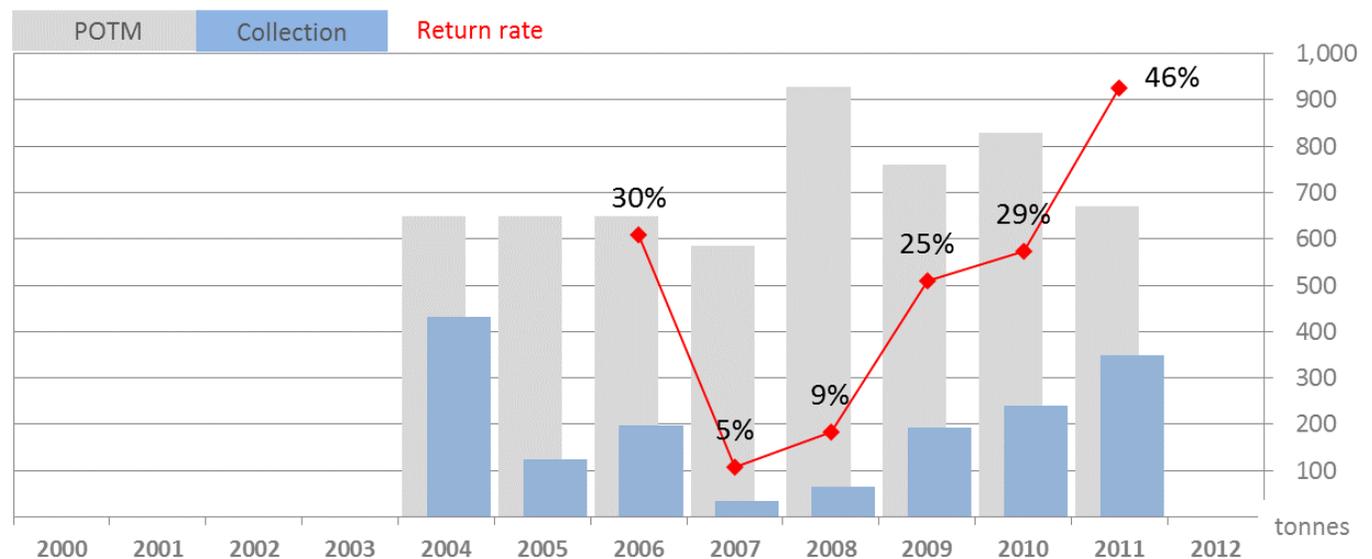
## Interface with WEEE systems

The main battery organisations also collect WEEE (except GIA from 2013) thus creating synergies in collection coordination and reporting between the two waste streams.

## Collection results

A collection rate of 46% was reached in 2011. This high rate was supported by a falling POM (from 249 g per capita in 2010 to 206 g in 2011) and a strong increase in collection, from 72 g per capita in 2010 to 108 g in 2011.

On a current year basis, the overall collection rate was 52% in 2011, below the 80% collection target. However, the target applies to each battery chemistry and was (and has always been) reached for rechargeable batteries. For primary batteries, the target had never been achieved until it was lowered to 25% in 2012.



Source: MoE 2009 – 2011 data; before 2009: MoE<sup>113</sup> and various sources

<sup>113</sup> The Ministry of Environment attributes the wide fluctuation of collection data to changes in the reporting system.

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

Based on partial data from systems, we estimate that there are around 9,000 waste portable battery collection points in Lithuania, or one per 360 residents. Partial data from systems suggest that most waste batteries are collected through retail outlets.

Number of collection points and share of collected batteries, estimate 2011: Put whole table on same page

| Collection point host         | Number of collection points | Share of total waste battery collection |
|-------------------------------|-----------------------------|---|
| Retailers serviced by systems | 6,000                       |   |
| Municipalities                | 200                         |   |
| Schools                       | 1,000                       | No data                                 |
| Companies                     | 1,900                       |   |
| WEEE dismantlers              | 30                          |   |

Source: Own estimates based on partial system data

### Awareness creation measures

#### Supporting legal requirements:

Requirements regarding public awareness and education measures<sup>114</sup> for products subject to producer responsibility obligations go into far greater detail than those of the EU Directive. Producers must i.a. carry out a certain number of measures such as placing mandatory information on websites and in promotional publications at the point of sale.

#### EEPA-Žalvaris

Since 2012 EEPA and Žalvaris have established a joint collection network under the name EEPA-Žalvaris

- Collection boxes:** Black battery shaped containers and buckets are placed in supermarkets, schools and post offices. In 2012, EPA distributed collection boxes to about 6,000 locations (up from 4,000 in 2011), almost all of them at points of sale in EEPA members' stores, such as Topo Centras home appliance stores, Maxima, Iki and NORFA. EEPA-Žalvaris places easily recognisable black and orange battery collection boxes in retailers' stores, supermarkets, offices, post offices etc.



<sup>114</sup> Detailed in Order [D1-554/2012](#)

## GIA

- **Collection boxes:** GIA distributes buckets as collection boxes. They are accompanied by educational posters and flyers.



## Consumer awareness and disposal behaviour

No surveys have been released.

## Accuracy of reporting

The reporting accuracy suffers from non-alignment of the reporting requirements for the producer responsibility and NRT legislation:

- Under the producer responsibility legislation<sup>115</sup>, portable batteries POM reports must be broken down into 11 chemistries<sup>116</sup>. Collection reports are taken from the NRT reporting which does not allow distinguishing by battery type.
- The NRT law requires POM and collection reporting by some European waste codes<sup>117</sup> (on a per unit basis except for primary batteries), without distinguishing battery types (portable, etc.).

Battery reporting for both systems relies largely on the latter distinctions as the NRT is the overriding legislation.

## Potential for improving collection rates

Both the product tax and the producer responsibility regulations are very complex, inconsistent and subject to frequent changes. A better alignment of the two could significantly simplify compliance and contribute to more robust data flows.

<sup>115</sup> Detailed requirements in Annex 7 of the Order on reporting [D1-209/2009](#) (amended 2010 and 2012)

<sup>116</sup> Alkaline manganese, zinc carbon, lithium oxide, zinc air, silver oxide, nickel cadmium, nickel metal hydride, lithium, sealed lead-acid, mercury, other

<sup>117</sup> Product tax law [IX-720](#): nickel-cadmium (8507.30), nickel-iron (8507.40), lead-acid (8507.10, 8507.20), Primary cells (8506.30)

# LUXEMBOURG

## Key points

- The 1994 Waste Management and Prevention Law, which has subsequently been 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 system. Producer controlled battery system 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 2012, a collection rate of 69% was achieved. The coverage of all types of hazardous or problematic wastes under the SuperDrecksKëscht programme improve visibility and create synergies in collection infrastructure.

## Regulatory parameters for compliance systems

### Overview

The **1994 Waste Management and Prevention Law** introduced a household waste category for ‘problematic refuse’ needing special treatment, which included batteries and accumulators. Local public authorities were made responsible for the management of ‘problematic wastes’ arising from households and the private sector, as long as quantities generated by the latter are comparable to those of households. The **2008 Law on Batteries and Waste Batteries**, in force from 26 September 2009, preserved the existing battery collection infrastructure and, by amending the Waste Prevention and Management Law, makes the Customs Authority responsible for enforcement. The Batteries Law was initially drafted as a Regulation (in July 2007) but the State Council found that a regulation provided an insufficient legal basis for effective enforcement measures.

### Roles and responsibilities in waste portable battery collection

- From 2010, **producers** are responsible for financing net costs of collection, treatment and recycling, and public information campaigns. The Batteries law requires that the existing **public collection infrastructure** (under the SuperDrecksKëscht programme) must be used. However, producers may set up alternative or complementary collection systems as long as they guarantee the same geographical coverage and collection frequency as the existing public infrastructure. The Minister may order producers to use the public system if collection falls below pre-regulation level.
- All **retailers and distributors** must take back batteries free of charge and can hand them over to public collection points.
- The **collection targets** are as per Directive 2006/66/EC (25% by 26 September 2012, 45% by 26 September 2016). The party responsible for achieving them is not defined.

## Requirements on systems

**Collective systems** must be approved by the Ministry of Environment for a maximum of 5 years. They must have the sole purpose of assuming producers' obligations, be open to all producers and present annual financial accounts & budgets to the Ministry.

The conditions for **individual systems** are identical to those for collective systems: Producers must provide information as required in a waste plan and report annually to the Ministry on implementation progress. An individual system must in addition guarantee the same geographical coverage and the same frequency of collection as a collective system.

## Development of compliance systems

Producer system Ecobatterien finances collection operations carried out under the SuperDrecksKëscht fir Bïirger (Super Bins for Citizens) battery collection programme.

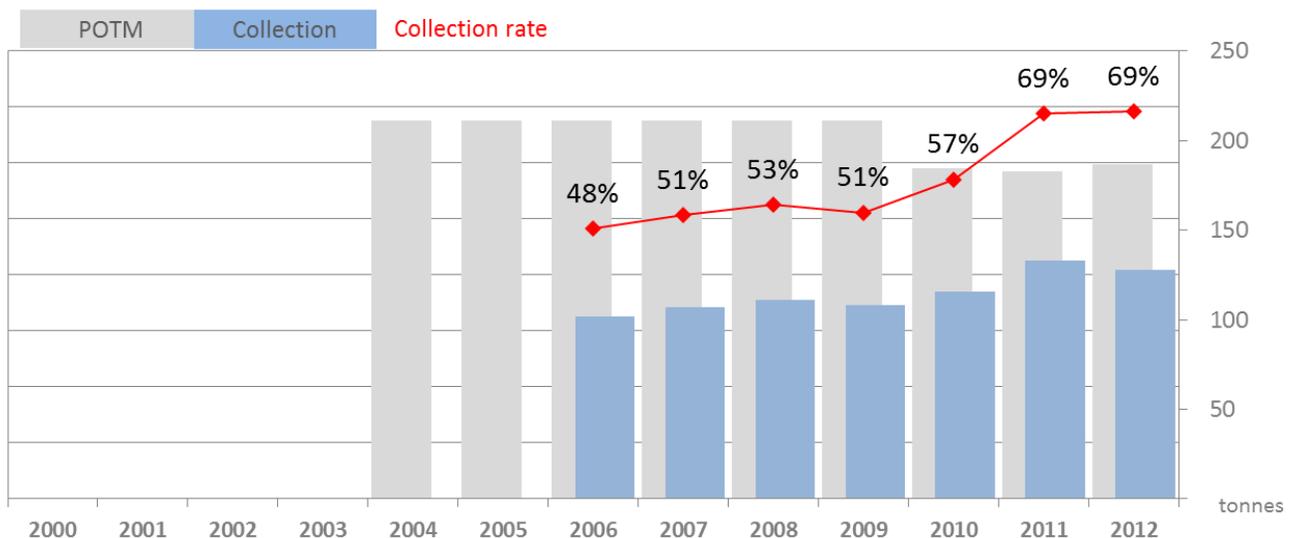
- Launched as a pilot project for the collection of 'problematic' (usually hazardous) household waste in 1985, [SuperDrecksKëscht](#) has expanded in parallel to the growing list of household wastes classified as problematic and operates Luxembourg's waste battery collection from private households. SuperDrecksKëscht activities also include advising and training local authorities and companies (SuperDrecksKëscht fir Betriber), creating consumer awareness and financing waste management projects.
- [Ecobatterien](#) was set up as a not-for-profit organisation in October 2009 by Ecotrel, the collective WEEE system, and three business associations (Luxembourg Trade Confederation, the Federation of Craftsmen and the Business Federation of Luxembourg). It has about 500 members. Ecobatterien also covers industrial and vehicle batteries. Around 40 producers of B2B EEE with integrated portable batteries have approved individual take-back systems for batteries in place.

## Interface with WEEE systems

Ecobatterien shares office staff and space with the Ecotrel collective WEEE system. Ecotrel was set up by 43 members of the Confederation of Commerce and the Federation of Craftsmen as a not-for-profit organisation in 2004.

## Collection results

Ecobatterien reports a collection rate of 69% in 2012. Since 2006, a collection rate of over 48% has been achieved.



Source: 2010-12: Ecobatterien

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

There are about 640 portable battery collection points in Luxembourg, or one per 800 residents (including points at retailers).

Over 40% of waste batteries are collected at municipal collection sites<sup>118</sup> for ‘problematic substances’ and 15% during mobile collections which take place three times a year in each communal district. Number of collection points and share of collected batteries, estimate 2012:

| <i>Collection point host</i>      | <i>Number of collection points</i> | <i>Share of total waste battery collection</i> |
|-----------------------------------|------------------------------------|--|
| Retailers serviced by systems     | 250                                | 8%   |
| Municipal collection points       | 20                                 | 43%  |
| Schools                           | 150                                | 4%   |
| Companies                         | 100                                | 25%  |
| WEEE dismantlers                  | 1                                  | 5%   |
| Other – mobile coll. 3 times p.a. | 115                                | 15%  |

Source: Based on data from Ecobatterien

### Awareness creation measures

#### Ecobatterien / SuperDrecksKëscht

The coverage of all types of hazardous or problematic wastes under the SuperDrecksKëscht programme improves visibility and create synergies in collection infrastructure. A [directory](#) on its website shows return possibility for all types of wastes covered for professional as well as private users.

- Collection:** Images below show a municipal collection sites for ‘problematic substances’ and mobile collections from communal districts (an initiative launched in 2003 in cooperation with various business organisations<sup>119</sup>). Small collection boxes are distributed to shops and petrol stations, while for larger quantities about 250 30-litre PE drums have been installed in highly frequented areas in supermarkets, DIY stores and schools.



- SuperDrecksKëscht organises various **educational campaigns**. Worthy of special note is ‘[Clever Akafen](#)’ (clever shopping) which promotes the purchase of rechargeable batteries for several applications to reduce the amount of waste batteries.

<sup>118</sup> Operated by a number of private companies including Lamesch (Bettembourg), Horsch Entsorgung GmbH (Luxembourg), Espaclux s.a. (Koerich) offers collection, transport and recovery or disposal of all kinds of household and industrial wastes, Nouveaux Etablissements Liébaert and Polygone Ltd.

<sup>119</sup> Chamber of Commerce, the Federation of Craftsman and the Federation of retailers

### Consumer awareness and disposal behaviour

No surveys have been released.

### Accuracy of reporting

**POM:** The Batteries Law does not stipulate that POM reporting must be broken down into chemistries. Ecobatterien uses the Batbase reporting software which allows reporting by chemistry and can automatically add battery weights if a producer specifies the battery classification, which prevents weighing errors by individual producers. In its first year, Ecobatterien published a list of the average number and types of batteries contained in EEE to simplify reporting for producers, which in Luxembourg are almost exclusively importers with limited resources or access to master data. Subsequently, producers had to declare the actual weight of batteries included in EEE. POM volumes are audited.

The Customs Authority and the Administration of the Environment are jointly responsible for enforcement. Enforcement actions have been carried out against free-riders.

**Collection:** Ecobatterien records collected volumes by chemistry, primary/secondary and other criteria. To avoid ambiguities, all waste batteries under 2 kg are recorded as portable batteries, and those above 2 kg as industrial or automotive batteries.

### Potential for improving collection rates

The system could be further optimised by clearer requirements on retailers to increase the density of collection points and on collectors to improve the ability to monitor waste battery material flows.

# MALTA

## Key points

- Since September 2004 **the Eco-Contribution Act** has applied an eco-contribution to batteries, but not batteries integrated into EEE. **Regulations of 2008** provide for exemptions from the tax for members of an approved battery system but have not yet come into force. **Regulations** transposing Batteries Directive 2006/66/EC came into force in May 2010. However, no battery systems have been approved yet. Since 2003, Government controlled and financed **WasteServ** has organised the separate collection of portable batteries.
- According to MEPA, a portable battery collection rate of 20% was reached in 2012. POM volumes are comparatively low.
- Due to its island status and small population, Malta faces challenges that are different from other countries regarding producer responsibility implementation. Most notably, the low volumes of the different waste streams would hardly justify the overheads that a separate producer responsibility system for each waste stream would incur, let alone competing systems. The continuing impossibility of fulfilling the requirements under the producer responsibility regulations (both for batteries and WEEE) and the legal uncertainty that this entails could be ended by a clear decision either for an improved eco-taxation model only or an EPR model that provides for realistic exemptions from the tax. However, it remains unclear to what extent the Government truly wishes to involve producers of WEEE and batteries in waste management. While it reiterates that it does not intend *'to use WasteServ as a barrier to private enterprise involvement in waste management services ... but to act as an operator of last resort [for services the private sector does not provide]'*<sup>120</sup>, a clear schedule for exempting producers of WEEE and batteries from the eco-contribution has yet to appear.

## Regulatory parameters

### Overview

The **2002 Batteries and Accumulators Regulations** required entities producing or importing batteries to be licensed. In January 2003, the Government established WasteServ Malta Ltd to operate waste management systems for all waste streams, including batteries. Since September 2004 **the Eco-Contribution Act** has applied an eco-contribution to primary batteries (currently EUR 0.06 per unit) and accumulators (below 35 g EUR 0.06 per unit, above EUR 1.63). The eco-contribution is charged by customs code<sup>121</sup> and does not apply to batteries integrated into EEE. **Regulations of February 2008** that provide for exemptions from the tax for members of an approved battery scheme have not yet come into force. The **Waste Management (Waste Batteries and Accumulators) Regulations** transposing the Directive's producer responsibility provisions<sup>122</sup> which entered into force on 30 May 2010, apply independently of the eco-contribution to all batteries, whether integrated into EEE or imported separately. Registration of producers has yet to commence.

### Roles and responsibilities in waste portable battery collection

- From 30 May 2010, **producers** or third parties acting on their behalf should have financed the management of waste batteries by using existing collection systems or setting up new ones. Small producers may be exempted from the financing obligation.

<sup>120</sup> [A Solid Waste Management Strategy For The Maltese Islands](#), December 2010

<sup>121</sup> HS Code numbers 8506 (exemptions for batteries for hearing aids, cochlear implants and cardiac pacemakers) and 8507

<sup>122</sup> A Legal Notice of October 2007 transposed the labelling and the substance limitations of Directive 2006/66/EC

- **Collection systems** are subject to permit requirements. They may be run in conjunction with WEEE systems. Systems must not only allow all economic operators to participate (as required by the Directive) but also all competent public authorities. Systems must be designed to avoid barriers to trade or distortions of competition.
- **Retailers** must take back spent batteries free of charge when supplying new batteries.
- **Municipalities** have no obligations with regard to waste batteries.
- **Collection targets** increase annually by 5%, from 25% in 2012 to 45% in 2016 (but shall be calculated for the first time for the fifth full calendar year after entry into force of the Regulations (2016)). The responsibility for reaching the collection target is not defined.

### Requirements on systems

**Collection systems** must be approved by the Malta Environment and Planning Authority (MEPA). Systems shall enable end-users to discard waste batteries free of charge at accessible collection points [which are not themselves subject to registration or permit requirements]. Systems may be run in conjunction with WEEE systems and must be designed to avoid barriers to trade or distortions of competition. Notably, a system must allow the participation of competent public authorities. There are no requirements regarding legal form or ownership of a system.

An **individual system** must be approved by MEPA. Approvals must specify enforceable implementation details and be published in the Official Gazette.

### Development of compliance systems

In 1994, a battery collection service was introduced by the Waste Management Strategy Implementation Department (WMSID) of the Ministry for Resources and Infrastructure (which has been reorganised into the current Ministry of Environment). Special bins were provided (on request) by the Department to retail outlets for customers to dispose of their used batteries.

Since 2003, Government controlled and financed [WasteServ](#) has organised the separate collection of portable batteries, financed by the Government in part with revenue from the eco-contribution.

The non-implementation of the Batteries Regulation 2010 should be seen in the context of the experience of the earlier (2007) WEEE Regulations: While two WEEE systems were licensed in 2008, their members were never granted an exemption from the eco-contribution on EEE, and at the end of 2009 the last licence expired. While the Government reasoned that the expiry was due to the systems' (and therefore producers') failure to start operations, producers argued that the exemption should precede operations in order to avoid being charged twice (i.e. fees for the system and the eco-contribution).

In the light of this stalemate, the Batteries Regulation was not received with much enthusiasm in 2010, though the two packaging schemes, GreenPak and Green MT, indicated some interest.

It remains unclear to what extent the Government truly wishes to involve producers of WEEE and batteries in waste management. While the government reiterates that it does not intend 'to use WasteServ as a barrier to private enterprise involvement in waste management services ... but to act as an operator of last resort [for services the private sector does not provide]<sup>123</sup>, a clear schedule for exempting producers of WEEE and batteries from the eco-contribution has yet to appear.

<sup>123</sup> [A Solid Waste Management Strategy For The Maltese Islands](#), December 2010

Producers, for their part, see such an exemption as a pre-condition to starting collection operations as otherwise they would be paying double for the waste management of their products.

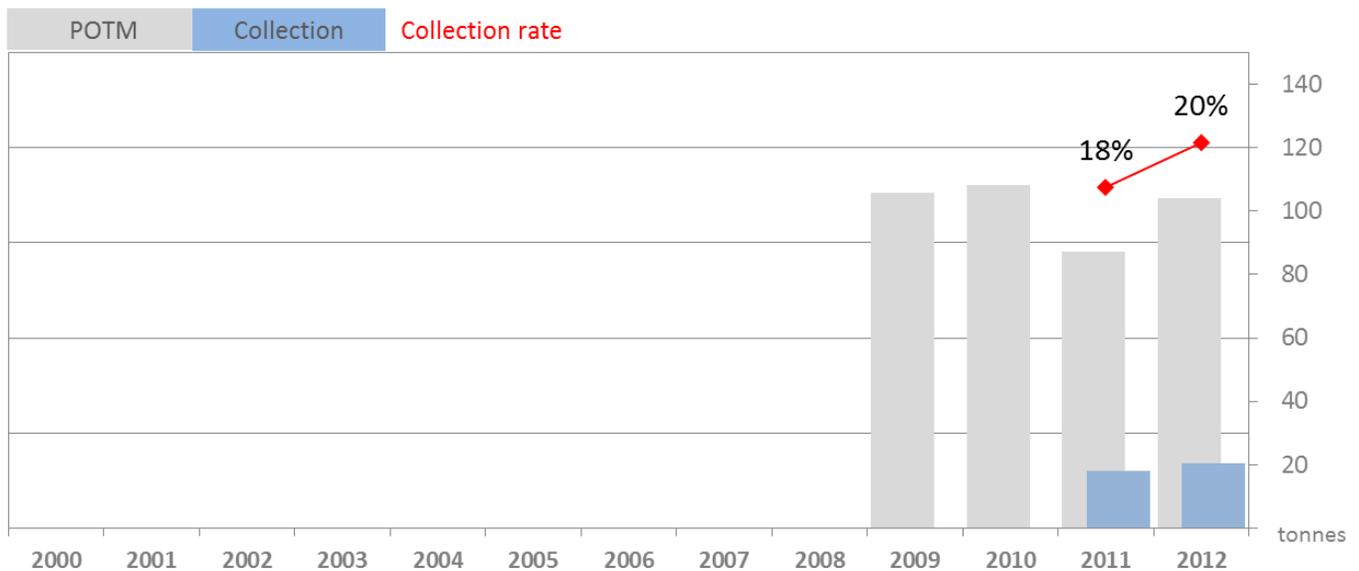
### Interface with WEEE systems

There are presently no approved WEEE systems in Malta.

### Collection results

According to MEPA, a portable battery collection rate of 20% was reached in 2012:

- On a per capita basis, POM of portable batteries in Malta is low (about 250 g per capita), compared to other countries (Cyprus 2010 400 g, Italy 2012: 480g, Ireland 505g.).
- Data provided by MEPA show around 50 g of waste portable batteries collected. Data from the National Statistics Office show that civic amenities sites alone collected about 38 g per capita of batteries in 2009, 88 g in 2010 and 45 g in 2011. However, these volumes may contain not only portable batteries.



Source: MEPA

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

There are about 900 waste portable battery collection points in Malta, or one per 480 residents.

WasteServ's schools programme is responsible for about half of all collected batteries. Retailers that collect batteries typically return them to a WasteServ municipal collection centre.

Number of collection points and share of collected batteries, estimate 2011:

| <i>Collection point host</i> | <i>Number of collection points</i> | <i>Share of total waste battery collection</i> |
|------------------------------|------------------------------------|--|
| Retailers                    | 724                                | 0%   |
| Municipalities               | 5                                  | 10%  |
| Schools                      | 146                                | 50%  |
| Companies                    |                                    | 40%  |
| WEEE dismantlers             | 4                                  | 0.02%  |

Source: MEPA

### Awareness creation

#### WasteServ

- **Collection containers:** Batteries are collected under WasteServ's programme for domestic hazardous waste. WasteServ has distributed waste battery containers to local councils, schools, shops etc. from which batteries are regularly collected, sorted and stored for export. Waste batteries can also be taken directly to Civic Amenity sites.
- **Campaigns:** In 2009, WasteServ launched the 'Battery Busters' campaign to create awareness of waste battery collection. The campaign, run each scholastic year from January to March, is essentially a competition between schools with the winner being the school collecting the largest amount of batteries. A draw among participants is also organised to incentivise school children to participate. The 2010 campaign resulted in 9 tonnes of used batteries being collected (2009: 5.2 tonnes). The campaign is fronted by [Batterina](#), a female battery-collecting robot, and sponsored by FIMBank.



### Accuracy of reporting

**POM:** Scope and reporting requirements of the Eco-contribution (only separately sold batteries, per unit basis) and producer responsibility legislation (all batteries, on weight basis) are not aligned. Under the latter, producer registration and reporting obligations apply independently of whether or not a battery or EEE is subject to the Eco-contribution. **POM** reports must distinguish between chemistries and primary/secondary batteries.

Authorities can assess **collection** volumes by adding collection of WasteServ and other battery collectors and exporters.

### Potential for improving collection rates

Due to its island status and small population, Malta faces challenges different from other countries regarding producer responsibility implementation. Most notably, the low volumes of the different waste streams would hardly justify the overheads that a separate producer responsibility system for each waste stream incurs, let alone competing systems.

The continuing impossibility of fulfilling the requirements under the producer responsibility regulations (both for batteries and WEEE) and the legal uncertainty that this entails could be ended by a clear decision for an improved eco-taxation model only or an EPR model that provides for realistic exemptions from the tax.

## NETHERLANDS

### Key points

- 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 (Stitching Batterijen, or Stibat) set up a collective system to take back waste batteries. In 2008, a **Batteries Regulation** transposed Directive 2006/66/EC and obliged retailers to take back batteries, and producers to reach the 25% collection target in 2012.
- In 2011, Stibat achieved a collection rate of 42%. Despite extensive communication, the collection rate has remained around that level for several years, which illustrates the challenge of reaching the 45% collection target.

### Regulatory parameters

#### Overview

In 1988 the Dutch Government's **Memorandum on the Prevention and Recycling of Waste** set a target of separately collecting 100% of batteries by 2000. Industry explained in its **1992 Batteries Implementation Plan** how it planned to achieve this target, using the existing local authority collection infrastructure, while the government maintained pressure by threatening a deposit system on batteries.

The Government's **Batteries Recovery Decision of 1995** held manufacturers and importers of batteries weighing 1kg or less responsible for collecting 80% of waste batteries by 1996 and 90% by 1999 through approved waste plan(s). If these targets were not achieved, batteries would be subject to a mandatory deposit system. In 1995, the Government agreed to industry's implementation plan, to be put into effect through the Batteries Foundation (Stibat). Although the targets were not met, the deposit system was not activated and the 2003 Stibat approval called for a collection rate of 80% in 2008, now based on waste batteries 'available for collection'<sup>124</sup>.

In 2008, a new **Batteries Regulation** and several Decisions transposed Directive 2006/66/EC. The Regulation required all retailers to take back batteries and held producers responsible for achieving the 25% collection target in 2012. In May 2009, battery system Stibat's waste plan under the new legislation was approved.

#### Roles and responsibilities in waste portable battery collection

- **Producers** to put in place a collection scheme, either individually or collectively, and be responsible for consumer awareness measures. In practice, they must comply through collective system Stibat and are free to show Stibat's fees on their invoices<sup>125</sup>.
- Producers may contract **municipalities**, who are not obligated to collect.

<sup>124</sup> The sum of waste batteries collected and waste batteries disposed of in general household waste as arrived at by sampling. Waste batteries 'arising' were assumed to be under 50% of POM, suggesting over half of expired batteries were being hoarded by end-users.

|                                  | 2002  | 2003  | 2004  | 2005  | 2006  | 2007  | 2008  |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Waste batteries arising (tonnes) | 2,849 | 2,852 | 3,139 | 3,281 | 3,435 | 3,494 | 3,587 |
| % of batteries POM               | 47%   | 40%   | 41%   | 41%   | 42%   | 42%   | 41%   |

Source: Stibat Annual Report 2008

<sup>125</sup> Before 2009 Stibat's fees were shown on invoices

- Since 2009, **retailers** have had to take back batteries free of charge and may return them to wholesalers. There are no de minimis exemptions.
- Approved **collective systems** will assume the obligations of their producer members and must take back waste batteries from municipalities and through their own collection networks.
- **Individual systems** are subject to the same requirements as collective systems.

### Requirements on systems

Producers must have a waste plan approved by Environment Agency Agentschap NL (formerly SenterNovem) which applies for an indefinite period of time. The waste plan for an individual or collective system must include details of

- measures taken to ensure compliance with the ‘prohibitions’ (restricted substances) and the labelling obligations
- the financing model
- measures taken to ensure take-back if a producer ceases to put batteries on the market
- the measuring and monitoring system.

### Development of compliance systems

The Battery Foundation (Stichting Batterijen, or **Stibat**) remains the only collective system for portable batteries. Stibat also manages industrial batteries. For automotive batteries it cooperates with system Auto Recycling Netherlands (**ARN**).

All producers of portable batteries comply through the Stibat plan. A few producers of industrial batteries comply through individual plans.

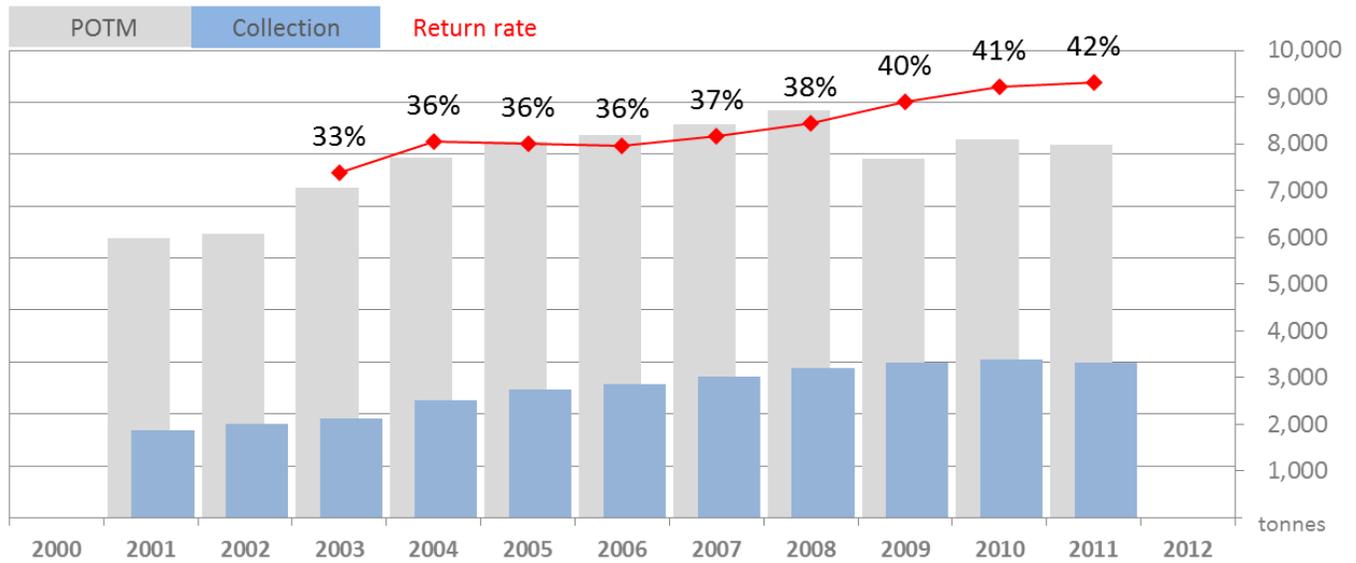
### Interface with WEEE systems

The collective WEEE systems **NVMP** (now Wecycle) and **ICT Milieu** (established after Stibat) require their members that place EEE containing batteries on the market to join Stibat before they join a WEEE system.

## Collection results

In 2011, Stibat achieved a collection rate of 42% which, it estimates, corresponds to 85% of waste batteries available for collection<sup>124</sup>.

Volumes of portable batteries put on the market decreased from a peak of 530 g per capita in 2008 to about 480 g in 2011. At the same time, the number of batteries sold increased from 371 million in 2008 to 393 million in 2011, reflecting the weight reduction per battery unit. Per capita collection increased gradually from 155 g in 2004 to nearly 200 g in 2011.



Source: Stibat annual reports

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

In 2011, there were about 22,000 waste portable battery collection points in the Netherlands, or one per 750 residents, serviced by a free pick-up service. This figure is based on the number of collection points at retailers and schools, operated by Stibat, and excludes collection points at municipal container parks and other collection points.

**Retailers 30-32%:** Stibat provides collection boxes to around 17,300 retail outlets, up from around 11,000 in 2007. This strong increase followed the 2008 Regulations that made retailers responsible for taking back waste batteries from September 2008, followed by Stibat's agreement with retail associations RND, which represents the majority of the retailers in The Netherlands and UNETO-VNI, which has 5,500 electrical installation firms and retailers as members. Of all batteries collected by retailers in 2011, 55% originated from food retailers, 15% from telecoms shops, 11% from EEE retailers and 10% from other non-food retail. Drugstores and filling stations contributed only 2% and 1%, respectively.

**Schools 5-6%:** 4,870 out of about 5,000 primary schools are serviced by Stibat, not least due to the attractive incentive campaigns and educational activities aimed at this group.

**Waste collectors 60%:** Waste firms operating the Municipal Small Chemical Waste (KCA) System on behalf of municipalities collect waste batteries in 'bring' containers and small chemical waste boxes. Retailers may also transport collected batteries to the KCA depots free of charge<sup>126</sup>. Municipal collection sites contribute an estimated 45% of all collected waste batteries. These batteries are all delivered to the central warehouse and sorting centre in Lelystad contracted by Stibat. While Stibat does not finance the KCA collection, its financing begins from the KCA system onwards and includes undertaking promotional activities to encourage consumers to return spent batteries.

Number of collection points and share of collected batteries, estimate 2012:

| <i>Collection point host</i> | <i>Number of collection points</i> | <i>Share of total waste battery collection</i> |
|------------------------------|------------------------------------|--|
| Retailers                    | 17,200                             | 32%  |
| Municipalities               |                                    | 45%  |
| Schools                      | 4,800                              | 5%   |
| Companies                    |                                    | 18%  |
| WEEE dismantlers             | 12                                 | Included in companies                          |

Source: Own estimate based on data from Stibat reports

### Consumer awareness creation

For nearly 15 years Stibat has continuously implemented well planned and extensive collection and communication strategies. As a result, the collection rate steadily increased over the years to 42% but has remained at that level for several years now. Probably better than any other country, the Dutch experience thus illustrates the challenge of achieving the 45% collection target.

Stibat's communication strategy has shifted away from TV and radio towards more effective internet and social media: From 2007 Stibat cut communication costs to 40% of previous years, as TV and print commercials were used only sporadically. In 2008 only radio commercials and online media were deployed.

Key elements affecting communication:

<sup>126</sup> Note: The 1995 Batteries Recovery Decision required that, for all batteries outside the scope of Batteries Directive 91/157/EC, the KCA (small chemical waste) logo should be shown on the packaging or on leaflets if incorporated into appliances. [Checks in 1999 revealed a compliance rate of 80% and led to fines.]

- **Win Campaign** prize draw for each returned collection bag, supported by a viral campaign: The **‘Empty Batteries – Hand them in and win’** campaign allows end-users returning at least 10 batteries in a collection bag with their name and address on it to participate in a draw. Each month 51 winners are drawn. The first prize is EUR 2,000 in travel vouchers, with other prizes worth about EUR 50. Users visiting the campaign site are encouraged to send the link to friends. The campaign continues the viral email campaign ‘tell a friend’ which included the same draw mechanism, and collected about 350,000 email addresses annually.

The number of bags returned increased from 1.8 million in 2006 to more than 2.2 million in 2010.



- **Campaign aimed at primary school children:** To inform children about the usefulness and necessity of recycling batteries, Stibat’s **Batteryworld** provides information, teaching materials and educational games for primary school students. Moreover, for each kilo of waste batteries collected, a school earns points that can be exchanged for toys, skipping ropes, scooters, computer games, DVD players and musical instruments. The incentive package below also applies to schools.



- **Social media:** Stibat’s **Facebook page** provides more information on additional competitions and notifies the winners. Educational videos on YouTube provide information on the hazardous nature of batteries and how and why they should be recycled.



- **Collection boxes and return stations:** In February 2012 Stibat started a pilot together with WEEE system Wecycle for the combined collection of batteries and low-energy light bulbs (mainly in Food retail) and small electrical appliances<sup>127</sup> (mainly in D-I-Y retail). This project will be evaluated during 2013.



### Consumer awareness and disposal behaviour

Stibat surveys show that while over 90% of respondents consider battery disposal very important, only 75% claim to always or mostly return batteries to proper disposal channels. The number has declined from a peak of 80% in 2007/8.

| % of respondents                | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---------------------------------|------|------|------|------|------|------|
| battery disposal very important | 90   | 92   | 92   | 92   | 93   | 91   |
| Always/mostly return batteries  | 78   | 80   | 80   | 79   | 80   | 75   |

### Accuracy of reporting

**POM reports:** The 2008 Batteries regulation requires Stibat members to report the weight and chemical composition of batteries, which is done through the web-based reporting platform [myBatbase](#). The system was developed by Belgian battery system Bebat and contains a library of all known batteries. Members only need to select the battery placed on the market, thus avoiding errors that can arise when reporting on weight and chemical composition.

**Audits:** Before 2009, members whose annual contribution exceeded EUR 11,000 (excl. VAT) had to submit an audit by an independent third party. Since 2009, any Stibat member may be subject to an audit. Stibat selects 40 to 50 members annually based on size or suspected reporting errors.

**Free-riders:** Suspected free-riders are contacted by Stibat with a copy to the Inspection. VROM (now Ministry of Infrastructure and Environment) explained in 2008 that it chose a 'waste plan' requirement rather than registering individual producers because registration (with a national register) would result in more **free-riders**, while waste plans are mostly fulfilled collectively and companies provide a control for each other.

**Collection reports:** Collection can be tightly monitored as waste batteries are usually sorted in Stibat's contracted sorting centre in Lelystad. The total collection volume is the sum of these sorted batteries plus an additional 2-3% of waste batteries reported from battery recyclers in Europe receiving waste batteries directly from Dutch companies that bypass Stibat.

Stibat does not publicly disclose collection results broken down into chemistries.

<sup>127</sup> Stibat's support for another joint program, Jekko (which distributed collection boxes to be used in households for small devices, batteries, light bulbs and printer cartridges) was stopped as it did not increase battery collection volumes. Rather, the program cannibalised other battery collection channels while having higher costs than these channels.

### Potential for improving collection rates

The density of Stibat collection points is around one per 750 residents (excluding collection points at municipal container parks) and has increased strongly and steadily since the retailer take-back obligation came into force in 2009. A further increase might improve convenience for end-users to return waste batteries, however this is not proven.

# NORWAY

## Key points

- Since July 2000, **Regulations on Waste Recycling** imposed take-back and reporting obligations on producers of lead-acid, industrial nickel cadmium and rechargeable batteries only. An **amendment of October 2012** transposed the producer responsibility provisions of Directive 2006/66/EC. The transposition notably distinguishes between compliance options and requirements for separately sold batteries and batteries integrated into EEE.
- Since 1999, **Rebatt AS** has been the only collective system for separately sold portable batteries. It shares its management with and operates collection under the name of **Batteriretur**, which has been the system for automotive lead-acid batteries since 1993. **Producers of batteries integrated into EEE** comply through one of five competing WEEE systems.
- The collection rate up to the end of 2012 is subject to uncertainties about POM volumes. We estimate that Batteriretur's collection rate increased to around 38% in 2012, up from 26% in 2011. Taking into account batteries in EEE, our estimate for the overall portable battery collection rate is 39%, up from 32% in 2011.
- Tighter enforcement of the retailers' take-back obligations could help to increase the density of collection points at retailers which we assume remains quite low. Waste reporting could be improved by obligating treatment facilities to report batteries received to authorities.

## Regulatory parameters

### Overview

As a signatory to the EEA agreement, Norway is required to transpose EU waste legislation. **Product regulations of 1990** applied only to batteries containing hazardous substances and were amended in October 2012 to transpose the single market requirements of Directive 2006/66/EC. Since July 2000, **Regulations on Waste Recycling** imposed take-back and reporting obligations on producers only for lead-acid, industrial nickel cadmium and rechargeable batteries. An **amendment of October 2012** transposed the producer responsibility provisions of Directive 2006/66/EC. The amendment includes an extension of the take-back obligations to all waste batteries, and sets a collection target of 30% for separately sold portable batteries placed on the market in the previous year.

### Roles and responsibilities in waste portable battery collection

- **Producers of separately sold batteries** must comply through a battery compliance system approved by the Climate and Pollution Agency (KLIF) [there is no provision for individual compliance].
- Approved **waste battery systems** must ensure the establishment of a [nationwide<sup>128</sup>] take-back system. They must take back waste batteries collected by retailers free of charge and inform end-users i.a. about free return options.
- An approved system must achieve a **collection target** of 30% of the weight of batteries its members put on the market in the previous year [no annual increase as KLIF argues that it would like to see actual collection rates before setting a higher target].
- **Retailers** must take back batteries of the types they sell free of charge. They are not obligated to return collected batteries to systems.

<sup>128</sup> In all areas into which members sell batteries

- **Local authorities** are not required to provide separate waste battery collection.
- **Producers of batteries integrated into EEE** that are members of an approved WEEE system do not need to join an approved waste battery system. Approved **WEEE systems** must ensure removal of waste batteries from WEEE. They are not subject to a collection target for batteries.

### Requirements on systems

Approval requirements for all producer responsibility systems are comparatively light and authorities' intervention capacity limited. For example, there are no requirements regarding their ownership, legal form, profit objective or financial disclosure.

**Waste batteries systems ('return companies')** must be approved by KLIF. They must demonstrate that they can fulfil the requirements of the regulations (collection coverage, allowing all producers and importers to participate on equal terms, etc.). Mandatory reporting is limited to POM and collection-related data such as volumes and further processing.

Approved **WEEE systems** are subject to the same battery *reporting* obligations to KLIF as waste battery systems.

### Development of compliance systems

The only collective system approved for portable batteries is **Rebatt AS**, which shares its management with AS **Batteriretur**. Both operate under the Batteriretur name. Rebatt was set up in 1999 by large retailers affected by the waste batteries take-back obligation. Batteriretur AS was set up in 1993 to assume producer responsibility obligations for automotive lead-acid batteries, and in 1997 it also started collecting Ni-Cd batteries.

Around 4,700 producers of **EEE with integrated batteries** comply through five approved WEEE systems: Elretur (B2C EEE); Renas (B2B EEE) and, since 2011, ERP Norway, Elsirk (formerly Ragn-Sells Elektronikåtervinning) and Eurovironment. In late 2011, Elretur acquired Eurovironment from Veolia, which means that over 90% of WEEE collection is currently managed by producer-controlled systems.

While KLIF has to operate the EEE producer register as there are multiple WEEE systems, REBATT's position as the single battery system allowed KLIF to avoid the costs of operating a national register of battery producers.

It should be noted that the first compliance system for *industrial batteries* is currently in the process of being established within the Rebatt/Batteriretur framework.

### Clearing for over- and under-collection/ interface with WEEE systems

As EEE producers do not need to join and finance the approved battery system<sup>129</sup>, the battery system and the WEEE systems have distinct producer memberships. Moreover, WEEE systems covering batteries integrated into EEE are not subject to battery collection targets. Thus, there is no need for an interface between the battery and WEEE systems.

<sup>129</sup> Batteries that are placed on the market integrated into EEE are typically not disposed of in the portable batteries collection channel but together with WEEE.

## Collection results

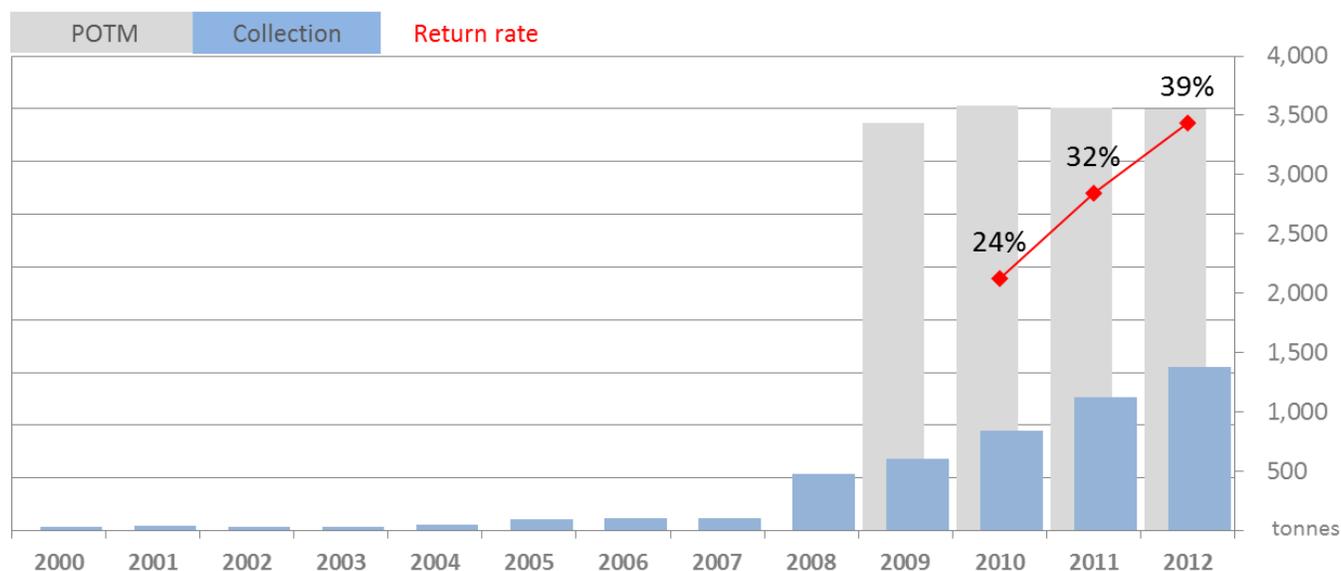
The collection rate up to the end of 2012 is subject to uncertainties about volumes placed on the market. We estimate that Batteriretur's collection rate increased to around 38% in 2012, up from 26% in 2011. Taking into account batteries in EEE, our estimate for the overall portable battery collection rate is 39%, up from 32% in 2011.

According to KLIF, in 2010 around 1,500 tonnes (309 g per capita) of **separately sold** portable batteries were placed on the market and 282 tonnes (57 g per capita) were collected, a collection rate of about 20%.

With regard to **batteries in EEE**, the legal requirements to report POM weights only came into force from October 2012. Thus no POM data exists for the years before 2013. We estimate POM of batteries in EEE at around 400 g per capita, using the assumption that the weight of *all* portable batteries placed on the market under the Batteries Directive is 2% of the weight of EEE POM under the WEEE Directive (other countries: usually 2% to 3%). This approach is complicated by Norway's 14 EEE categories that exceed those of the WEEE Directive. Our model therefore uses only the weight of the first 11 Norwegian EEE categories that largely correspond to the 10 categories of the WEEE Directive<sup>130</sup>.

Since 2008, KLIF's WEEE Register [EE-registeret](#) has reported in its exemplary detailed annual reports, 23 material fractions of collected WEEE<sup>131</sup>: in 2011, 675 tonnes (137 g per capita) of **batteries** were reported to have been **removed from collected WEEE**, up from 94 g per capita in 2010. Waste batteries removed from WEEE exceeded the amount of separately collected portable batteries by 250% in 2008. Though the ratio declined to 112% in 2012, it remains the highest of any country (in most countries the share of batteries deriving from WEEE is 10%-20% of all waste portable batteries).

### Batteriretur plus WEEE systems – estimate:

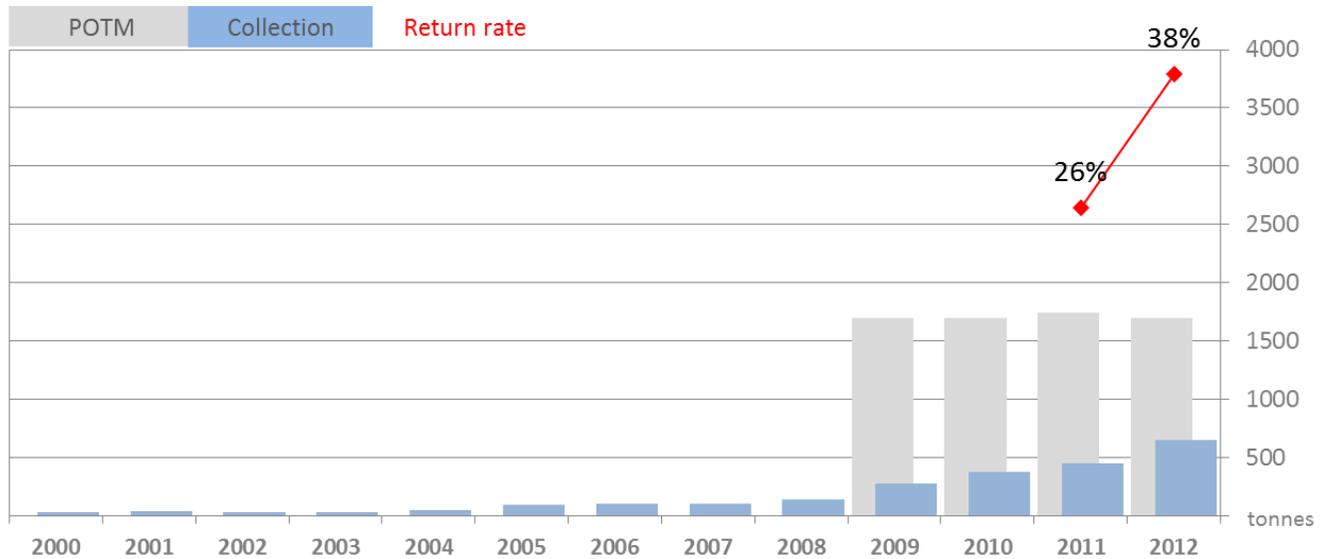


Source: Collection data: Batteriretur plus – from 2008 – EEE registeret; POM estimates based on estimates described above

<sup>130</sup> About 37 kg of EEE per capita are placed on the market in the first 11 Norwegian categories, suggesting the highest EEE POM in Europe after Sweden (2007: 31 kg, 2010: 25 kg per capita).

<sup>131</sup> As regards batteries, it identifies two fractions: 1) 'External batteries' are 'all batteries that can be removed from WEEE without special tools and internal batteries that are hazardous waste, except those that are mounted to printed circuit boards' and 2) Batteries other than those previously mentioned. In 2012, the first battery fraction amounted to 688 tonnes (up from 326 in 2008), the second battery fraction came to 49 tonnes (up from 20 in 2006). The combined fractions make up around 0.6% of WEEE treated.

Batteriretur only



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

### Drivers affecting the collection rate

#### Availability of collection points and use of collection channels

There are about 5,750 waste portable battery collection points in Norway, or one per 870 residents.

Number of collection points and share of collected batteries, estimate 2012:

| <b>Collection point host</b>  | <b>Number of collection points</b> | <b>Share of total waste battery collection</b> |
|-------------------------------|------------------------------------|--|
| Retailers serviced by systems | 5000                               | 5%   |
| Municipalities                | 428                                | 10%  |
| Schools                       | -                                  | -  |
| Companies                     | 300                                | 80%  |
| WEEE dismantlers              | 10                                 | 5%   |

Source:

## Consumer awareness creation

### Batteriretur

- **Collection boxes** can be ordered from Batteriretur by retailers, companies or institutions and returned by mail when full (postage paid by Batteriretur). The dark green collection box reminds users to keep rechargeable batteries separate. On the right, containers for larger volumes.



- **School collection competition:** The 2013 'Battery hunt' collection competition was organised by children's environmental organisation [Miljøagentene](#), retailer [Clas Ohlson](#), Varta Battery and Batteriretur for the first time in February and March 2013 for a duration of 5 weeks. Any 4<sup>th</sup> grade class in Norway could participate. The class achieving the highest *per student* collection weight won a laptop for each student. The campaign allowed only primary batteries to be collected<sup>132</sup>. Students could return collected batteries to Clas Ohlson outlets directly or via post (collection boxes included paid return postage). Classes could update the status of their collection volumes online, thus maintaining their interest for the duration of the competition. Competition materials consist of collection boxes for batteries and posters for the classroom.

The winning class collected 114 kg of waste batteries per student, nearly 900 times the average per capita collection in 2012. The entire competition yielded over 48 tonnes (7.5% of the 2012 collection volume).



<sup>132</sup> AA, AAA, AAAA, C, D, 9V, 4.5V and button cell batteries

## Consumer awareness and disposal behaviour

No surveys have been released.

## Accuracy of reporting

**POM reporting integrated batteries:** The legal requirement to report POM weights of all battery types only came into force in October 2012.

**POM reporting separately sold batteries:** As practiced by several WEEE systems in Norway, Rebatt's fees to producers are calculated on import and invoiced by the customs authority. This is not legally mandated but based on a service agreement with the authority. [Customs](#) and Excise tax authorities charge Rebatt members a single fee of around EUR 0.78 per unit on imported batteries under HS codes 85.06 (primary batteries) and 85.07 (accumulators). Non-members are charged around EUR 1 per kg. Customs also publish a list of Rebatt and Batteriretur members. As customs charge per unit, we assume that declared battery weights are often estimates, as customs officials and the importers' agents involved in the weight declarations may not know the accurate weight of the imported batteries.

**Collection reporting:** Only approved WEEE and battery systems are required to report collection and treatment volumes. Batteriretur reports collection directly to the government's statistics office through IT system 'The Batteriregister' (licence from the control authorities, [Datatilsynet](#)). By contrast, collectors and treatment facilities themselves have no obligations to report and there are concerns about (valuable) waste batteries disappearing without being reported to the systems. In this context, the soon to be available compliance system for industrial batteries will help in the monitoring of all battery flows.

42% of WEEE was exported for treatment in 2011 (down from 58% in 2007).

**POM audits and enforcement:** There is little information available regarding separately sold batteries. With regard to EEE (and batteries in EEE), producer compliance can be assumed to be relatively high. Since 2006, enforcement actions by the KLIF-managed register of EEE producers has led to almost 4,000 new producer registrations and by mid-2009, five 'free-riding' importers of EEE had to pay a total of EUR 300,000 in fines and back-dated fees. With regard to WEEE collection, past disagreements between the WEEE systems and KLIF suggest there is room for improvement in the tracking of waste material flows<sup>133</sup>.

## Potential for improving collection rates

We assume the density of collection points at retailers remains quite low and could be increased with the help of tighter enforcement of the retailers' take-back obligations.

Waste reporting could be improved by obliging treatment facilities to report batteries received to authorities.

---

<sup>133</sup> In 2009/10, WEEE systems stopped collection several times because of mistrust of the other systems' data. A 2010 audit of the systems by KLIF found most systems' reporting deviated substantially from legal requirements. In June 2009, six containers of illegally-shipped WEEE were returned by Dutch authorities to a sub-contractor of Ragn Sells Elektronikåtervinning which subsequently changed its name to Elsirk.

## POLAND

### Key points

- Since 2002, the Act on Entrepreneurs' Obligations has required producers to individually achieve collection targets and pay a product fee if the targets are not met. The Batteries and Accumulators Act of 2009, transposing Directive 2006/66/EC, introduced the take-back obligation for retailers (with floor space above 25m<sup>2</sup>) and left the collection target / product fee mechanism in place. Notably, the Act does not define or regulate compliance organisations ('systems') and battery collectors. An estimated 50 organisations currently provide battery compliance services for producers. These include battery system REBA, set up in 2003, as well as entities set up by some of the 8 approved WEEE systems and some of the 20 packaging compliance organisations.
- Data from Environmental Inspectorate GIOS show that the collection rate increased from 29% in 2010 to 43% in 2011. However, this number is contested as it i.a. includes a disproportionate amount of waste lead acid batteries.
- The collection rate could potentially be improved by centralised coordination of awareness creation and collection measures by the competing systems. However, this is not possible under the current Batteries Act. Moreover, tighter enforcement of retailers' obligation to visibly and consistently offer battery bins would increase consumer confidence in the system. While enforcement has been comparatively strong, more monitoring is needed to ensure plausible waste battery flows.

### Regulatory parameters for compliance systems

#### Legislative background

Batteries are subject to mandatory take-back legislation as well as product fee legislation: Since 2002, **the Act on Entrepreneurs' Obligations** has required producers and importers of batteries<sup>134</sup> to achieve recycling targets, and product fees have been applied if these targets were not achieved.

The **Batteries and Accumulators Act of 2009** transposed the take-back obligations of Directive 2006/66/EC and repealed a previous Ordinance. The product fee required under the Act on Entrepreneurs' Obligations remains in place. The Batteries Act is complemented by over 20 implementing orders, including one of March 2012 setting criteria for the allocation of grants for public awareness campaigns.

A new **Waste Management Act**<sup>135</sup> of January 2013 radically changes the management of municipal solid waste which may have a major impact on the operations of the current producer responsibility organisations: The new Act i.a. requires municipalities to provide collection points for certain waste products including WEEE and waste batteries from July 2013 and makes them responsible for the disposal of such wastes. By the deadline, about 60 % of all the 2,600 Polish municipalities have launched tenders or already signed agreements with waste management suppliers. It appears that so far a majority of municipalities decided to continue the waste battery collection system in public offices, schools and retail outlets which are operated by the current producer responsibility organisations.

<sup>134</sup> As well as to cooling equipment, packaging, lubricating oils and tyres

<sup>135</sup> Act on Waste, O.J. 21/2013. The Act i.a. amends the Act on Maintaining Cleanness and Order in Municipalities, O.J 152/2011, item 897

## Roles and responsibilities in waste portable battery collection

- **Producers** are individually responsible for meeting annual **collection targets** (18% in 2010, 22% in 2011 and 25% in 2012. Thereafter increasing 5% annually to reach 45% in 2016). To meet the target, they must conclude an agreement with a waste battery ‘collector’ and a battery treatment facility. Producers that do not meet the collection targets are subject to the product fee of PLN 9 per kg (~EUR 2,040 per tonne) on the difference between the collection target and the actual collection volume.
- Unlike the WEEE Act, the Batteries Act does not define or regulate **compliance organisations**<sup>136</sup> and – again unlike for WEEE collectors – there is no registration or licensing requirement for waste battery collectors. *[In practice, battery collectors provide compliance organisation-like services to producers, such as administrative support for reporting and organising public awareness campaigns, without taking over their legal obligations.]*
- Since 12 September 2009 battery **retailers** with a sales area over 25m<sup>2</sup> have had to offer take-back and must hand over collected waste batteries to wholesalers or collectors.
- From July 2013, **municipalities** are obliged to collect waste batteries.
- Waste battery **treatment facilities** must be registered and licensed and are responsible for reaching the recycling efficiency targets<sup>137</sup>.

## Requirements on systems

Producers’ compliance organisations are not regulated or defined in the Act.

## Development of compliance systems

In response to the Act on Entrepreneurs’ Obligations, large battery producers<sup>138</sup> set up not-for-profit battery compliance organisation **REBA** in January 2003 and a number of smaller battery systems followed. As collection targets were not always reached<sup>139</sup>, the product fees had to be paid to the National Fund for Environmental Protection (**NFEP**)<sup>140</sup>.

As the 2009 Batteries Act does not recognise collective organisations, the battery systems assumed the role of battery collectors and have contracts with at least one of 23 registered treatment facilities.

About 1,800 battery producers currently use the administrative support of an estimated 50 ‘collectors’, including battery system REBA and entities set up by some of the 8 approved WEEE compliance organisations (the WEEE organisations themselves are restricted to fulfilling WEEE obligations only) and some of the 20 packaging compliance organisations.

In terms of batteries placed on the market, REBA had a market share of 31% in 2011. In terms of membership numbers, the 3 largest ‘collectors’ were **CCR**, **Biosystem** and **Auraeko**.

## Market shares and clearing for over- and under-collection

There is no need for clearing as the collection target applies to individual producers.

<sup>136</sup> The producer responsibility obligations for batteries in the 2008 Batteries Act are diametrically opposed to those introduced for WEEE three years earlier: while collective WEEE systems are tightly regulated and play a key role in WEEE management, the batteries legislation does not allow battery producers to transfer their obligations to a third party but requires producers to comply individually and does not envisage collective systems at all.

<sup>137</sup> From September 2011, however the first report will be required for 2014 as set in the Commission Regulation 493/2012/EC.

<sup>138</sup> Current shareholders are Energizer Group Poland, GP Battery Poland, Spectrum Brands Poland, Panasonic Energy Europe

<sup>139</sup> REBA reported that 2006 was the first year in which it met recycling and recovery targets. It was also met in 2007 and 2008.

<sup>140</sup> We estimate NFEP’s cumulative revenues from battery producers by the end of 2007 at PLN 12.6 million (EUR 2.87 million). 2011 and 2012 saw no product fee revenue from batteries as all producers reported to have reached the targets.

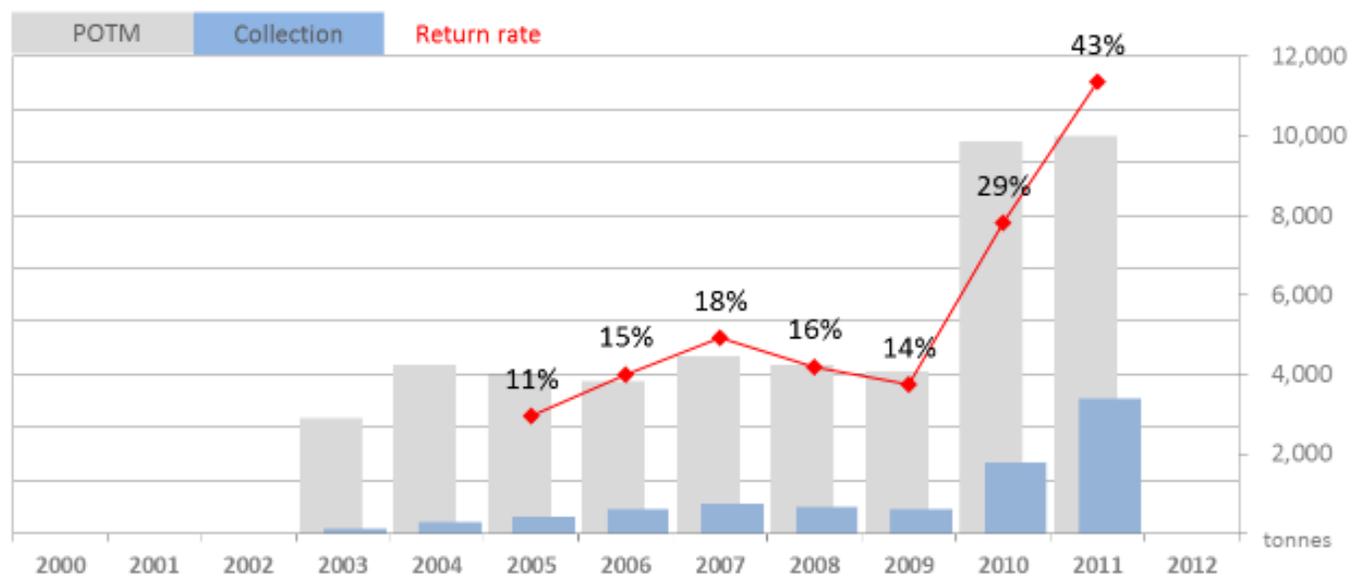
## Interface with WEEE systems

WEEE system **ElectroEko**, (with a share of about 50% of EEE POM) does not offer battery compliance and refers its members to REBA. Most other major battery compliance service providers - except for REBA - are linked to WEEE compliance organisations and as such have access to batteries removed from WEEE.

## Collection results

GIOS volume data show that the collection rate increased from 29% in 2010 to 43% in 2011. However, this figure is contested as it includes a disproportionate amount of waste lead acid batteries (see [here](#)).

Due to the lack of collection infrastructure and low public awareness, collection of waste portable batteries increased slowly: collection hovered between 10 g and 20 g per capita between 2004 and 2009. In 2009, with a collection target of 18%, REBA collected 598 tonnes of portable batteries, representing a collection rate of approximately 19%.



Source: 2010/2011 data GIOS report; earlier data REBA collection only

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

We estimate about 35,000 static waste portable battery collection points in Poland, or one per 1,100 residents. Collection events and mobile collections also play an important role.

With the exception of REBA, few data are available about collection sources and points. REBA collects 80% of its waste batteries from schools which host around 40% of its over 27,000 collection points. The remaining volumes derive in approximately equal parts from retail, industry users and sorting centres of municipal solid waste<sup>141</sup>.

Number of collection points and share of collected batteries, 2012 estimate:

| <i>Collection point host</i>  | <i>Number of collection points</i> | <i>Share of total waste battery collection</i> |
|-------------------------------|------------------------------------|--|
| Retailers serviced by systems | 20,000                             | 8%   |
| Municipalities*               | 750                                | 17%  |
| Schools                       | 11,000                             | 43%  |
| Companies                     | 5,000                              | 32%  |
| WEEE dismantlers              |                                    | 1%   |

Source: Own estimates based on partial data of systems

\* Of which around 3% from separate collection and 14% from sorting centres of municipal solid waste

## Consumer awareness

### Supporting legal requirements

- **Producers** must spend a minimum of 0.1% of turnover from batteries to raise public awareness on collection of waste batteries, either by organising campaigns themselves or by paying an equivalent amount to the environment agency of the province in which they are based. [Note: Under the WEEE Act, EEE producers or WEEE systems must invest 5% of revenues.]
- **Retailers** of batteries with a sales area above 25m<sup>2</sup> must provide containers for waste batteries in a prominent location and inform about waste batteries.
- Since August 2012, a new **school curriculum** has included education about waste management for primary and high school students, including the need to separate wastes and for the special handling of spent batteries, fluorescent lamps and expired medicines.

<sup>141</sup> Material recovery facilities (MRF)

## REBA

From 1 April 2013 Reba no longer provides a collection point locator but refers people to the website of the Regional Environmental Protection Agencies (example of the [Warsaw office](#) with downloadable [educational information](#) and downloadable list of over 4,000 [collection points](#)).

- **Collection boxes and retailer awareness:** REBA collects batteries from around 14,000 collection points at retailers. REBA provides easily recognisable bright green collection containers with accompanying posters and flyers. Information booths are regularly set up in supermarkets and malls to raise awareness.



- **School campaigns:** Collection containers are also located in nearly 10,000 schools, kindergartens and educational institutions. REBA notes that the intensity of its collection system in schools cannibalises retail collection, as return through its retail collection points remains low (below 3 kg per year per point per year). Awareness programmes for students include competitions such as art contests and collection competitions. Points are awarded in respect of volumes collected. Points can then be exchanged for prizes ([REBA school programme](#)).



- **Public events:** In 2011, Reba set up a booth at the Earth Day fair in several cities, providing collection services, educational games and competitions and informing children and families of the need to recycle used batteries.



### ERP Polska

- **Awareness and collection events:** ERP Poland periodically sets up collection booths in public places, offering battery collection and information on recycling.



- **Campaigns:** In 2011, ERP Poland took part in an Ecological Picnic along with other collective systems, recycling companies and municipalities, setting up a collection booth and providing entertainment and education for attendees. In 2012, on Women's Day, ERP Poland established booths in town centres, where tulips were given in exchange for used batteries. On Valentine's Day 2011, ERP Poland launched a campaign entitled 'I love Recycling' where collection points were established in pre-schools and sweets were given in exchange for used batteries.



- **Internet & social media:** ERP Poland operates a [Facebook page](#). Additionally, ERP Poland has uploaded various [educational videos](#) onto YouTube.



## Biosystem

- **Collection points:** Biosystem places collection boxes in retail chains such as Rossmann drugstores. 440 Tesco stores were supplied with special containers (right-hand image) that collect three wastes in separate compartments: cables, CDs and DVDs (red); waste batteries (orange); and toner (blue).



- **Educational campaigns:** In 2011, Biosystem organised educational programmes and a competition for schools in cooperation with Tesco. Schools can order educational materials ([here](#))



## Consumer awareness and disposal behaviour

No surveys have been released.

## Accuracy of reporting

**POM** reports must be broken down by chemistry only. GIOS audits about 15-20 producers annually.

**Collected** volumes are reported before sorting to identify whether producers have achieved collection targets. Recyclers then report waste battery volumes in accordance with the European waste catalogue codes (16 06 01; 16 06 02; 16 06 04/05).

**Enforcement** activities have been frequent and systematic compared to those in other countries:

- In 2010, GIOS inspected a total of 77 registered entities (5% of the total number of entities registered) including 67 battery producers and 10 processing plants. 11 of the 67 producers were found to have committed violations, mainly incorrect labelling of batteries, failure to conduct public awareness campaigns and not printing registration numbers on documents. GIOS responded with orders for further audits, issuing of instructions and in one case a small fine.
- In 2011, GIOS inspected 105 registered entities: 90 battery producers and 15 waste battery processing plants. Of the producers inspected, 44% were found to be in violation of the Batteries Act, including for failing to conduct

public awareness campaigns, not printing registration numbers on documents, the absence of contracts with collection companies and deficiencies in reporting and a lack of records. 57 companies were instructed to eliminate irregularities, 32 further inspections were ordered, 18 companies were fined a total of PLN 3,900 (EUR 930) and 12 were referred for further prosecution.

However, while the framework for control mechanisms exists, practical limitations such as understaffing appear to prevent GIOS from improving the accuracy of collection data.

For example, it is clear that a **disproportionate share of portable lead acid waste batteries** was reported in 2010 and 2011 which has not yet been followed up. In an article in 'Recykling', battery system REBA points out that 39% (34 g per capita) of portable batteries collected in 2011 were lead acid batteries. At the same time, only 9 g of portable lead batteries were reported to have been placed on the market. This suggests that a large number of portable lead acid batteries were placed on the market as industrial batteries (for example for emergency lighting systems). Without the collected lead fraction, the collection rate on a current year basis in 2010 and 2011 is estimated at 12% and 21% (rather than 18% and 34%), missing the national collection targets (18% and 22% for 2010 and 2011 respectively).

### Potential for improving collection rates

**Systems (collectors):** The collection rate could potentially be improved by a centralised coordination of awareness creation measures and collection campaigns by the competing systems. However, this is impossible under the current legislation, which does not recognise systems.

**Retail:** Anecdotal evidence suggests that collection containers at retail stores come and go, leaving end-users who have made the effort to return batteries frustrated at not finding the container they had previously used. Tighter enforcement of the retailers' obligation to visibly and consistently display battery bins would increase consumer confidence in the system.

While **enforcement** actions have been taken, more monitoring is needed to ensure plausible waste battery flows.

Finally, to further increase the recovery of batteries, sorting facilities of municipal solid waste could be encouraged to introduce more efficient battery sorters to remove waste batteries from the municipal solid waste stream.

# PORTUGAL

## Key points

- 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 system **Ecopilhas** was set up in 2002. Under the 2009 **Batteries Decree Law** transposing Batteries Directive 2006/66/EC, the two WEEE systems AMB3e and ERP Portugal were licenced as battery systems in addition to Ecopilhas in March 2010. Systems are tightly regulated. Each must achieve collection targets, increasing annually from 25% in 2010 to 45% in 2015. Municipalities remain responsible for collecting waste batteries and must be compensated by the systems for their services.
- From 2008 to 2011 the collection rate increased from 23% to about 31%, supported in part by declining sales due to the economic crisis.
- A framework agreement or common interface between systems and municipalities that would facilitate the coordination of collection and awareness creation measures.

## Regulatory parameters

### Overview

**Decree-Law 62/2001** required manufacturers and importers to collect waste batteries and accumulators 'capable of collection and treatment by existing systems or those subsequently created for this purpose' without charge to the end-user, and to reimburse municipalities for the costs of collecting batteries from households. A licensed recovery organisation, to which producers could transfer this obligation, had to be in operation by July 2001.

**Decree-Law 6/2009** transposed Batteries Directive 2006/66/EC.

### Roles and responsibilities in waste portable battery collection

- From September 2009 **producers** are required to manage waste batteries through a collective or individual system. The obligation must be legally transferred to a system for a minimum of 2 years.
- **Systems** must provide easily accessible collection points, including at municipal collection centres and retailers, and may not sign exclusive contracts with waste management companies. They must spend 2% of revenues on R&D and at least 5% on information campaigns. The systems' recycling fees are part of the licence agreement and may not be changed without government approval.
- Systems must achieve **collection targets**, increasing annually from 25% in 2010 to 45% in 2015.

| <i>Collection target as % POM*</i> | <b>2009</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> |
|------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| AMB3e and ERP                      | 5           | 25          | 27          | 31          | 36          | 41          | 45          |
| Ecopilhas                          | 15          | 25          | 27          | 31          | 36          | 41          | 45          |

*\* as defined in the licence of each system*

- **Retailers** must take back waste batteries even when no new battery is purchased, and must set up collection containers at point of sale.
- **Municipalities** must collect waste batteries, and are subsequently compensated by the systems according to the amounts collected.

## Requirements on systems

**Systems** are very tightly regulated. They must

- be established as not-for-profit organisations by producers or other entities active in waste management;
- be licensed by environment agency APA on the basis of a waste and financial plan;
- cover the whole territory;
- be financed through fees based on quantities placed on the market, composition and treatment. Fees must be approved by APA and revisions are only possible up to 30 September each year;
- assume obligations of the producer by written contract that includes forecasting quantities placed on the market by type of battery and reporting monitoring activities to ensure compliance.

## Development of compliance systems

In response to the 2001 Decree on Batteries, battery producers and importers<sup>142</sup> and electronics industry association [AGEFE](#)<sup>143</sup> set up a not-for-profit organisation, [Ecopilhas](#), in 2002. A Statutory Commission for the Management of Batteries and Accumulators (CAPA) oversaw the operation of the system. CAPA was chaired by a representative of the Environment Ministry and its members were drawn from other relevant ministries, the National Association of Portuguese Local Authorities, affected trade associations and recovery organisations and Regional Governments.

Under the 2009 Decree Law, three organisations were licenced as battery systems in March 2010: [Ecopilhas](#), plus WEEE systems [AMB3e](#)<sup>144</sup> and [ERP Portugal](#). The licences are valid until 31 December 2015. About 900 battery producers comply through all systems, over 2/3 through Ecopilhas. As regards the market share by volume, Ecopilhas should collect between 70 and 80% of all waste batteries, the shares of Amb3e and ERP Portugal are not known<sup>145</sup>.

Municipalities remain responsible for collecting waste batteries, and systems should supply them with collection containers and compensate them for their service under a contract. Ecopilhas used to pay municipalities EUR 46.65 per tonne of waste batteries taken back. Current rates are not known.

Conditions of the other systems have not been made public. No framework agreement or common interface between systems and municipalities exists to ensure that obligations are fulfilled nationwide in a harmonised manner.

## Clearing for over- and under-collection

Clearing is not required as the collection targets are defined in the licence of each system.

## Interface with WEEE systems

Most producers of separately sold batteries have joined Ecopilhas, while producers of batteries integrated into WEEE comply for batteries through their WEEE systems. The systems are subject to the same battery collection targets, despite the different nature of the systems' membership (and the fact that return rates for batteries integrated into EEE should reflect WEEE return rates).

<sup>142</sup> Cegasa - Comércio de Pilhas, Energizer, S.A., Procter & Gamble Portugal, Higiene e Saúde, S.A., Sony Portugal, Lda., Varta Geratebatterie GmbH

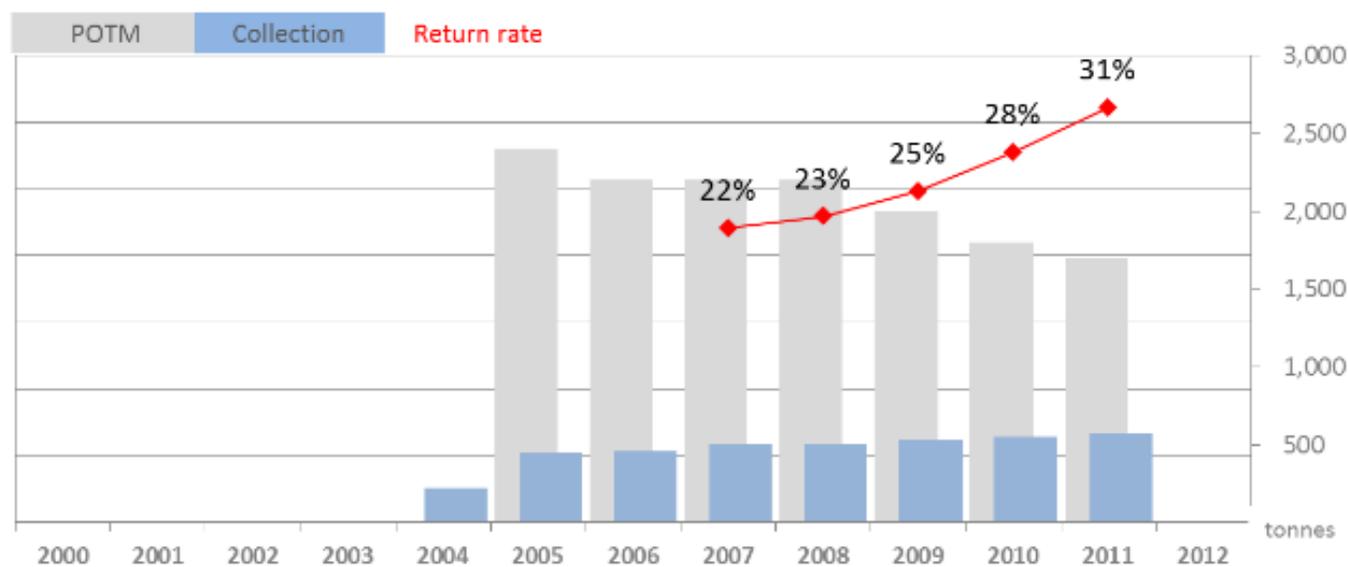
<sup>143</sup> Associação Empresarial dos Sectores Eléctrico, Electrodoméstico, Fotográfico e Electrónico

<sup>144</sup> AMB3E was founded by 56 members, including the local offices of Bosch, Candy Hoover, LG, Miele, Philips, Samsung, Sanyo and Whirlpool, supported by 60 associations

<sup>145</sup> As regards WEEE, the systems' 2006 licences define the market share for the 5-year duration of the licence: AMB3e should collect 79% and ERP 21% of WEEE. APA's 2011 urban waste report (published in March 2013) shows that the actual shares are very close to this, with Amb3E's 78% and ERP's 22%. The report notes that 7.2% of WEEE was collected by the systems directly, and the rest through municipalities. There were 2,000 WEEE collection points for end-users nationwide.

## Collection results

We estimate that the collection rate increased from 23% to about 31% between 2008 and 2011. While collection increased by 20%, POM decreased by a third due to the economic crisis during the same period. 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 the claimed collection rates of Ecopilhas<sup>146</sup>.



Source: Own estimates

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

We estimate a total of around 19,500<sup>147</sup> collection points for portable batteries in Portugal, or one per 540 residents.

[APA's](#) 2011 urban waste report says that the separate collection network for waste portable batteries is based on municipal waste collection services (which are legally obligated to collect waste batteries). Other collection points are installed by the battery systems at retailers, schools, hospitals and other entities. APA says that, of the 454.6 tons of waste batteries collected, 41% derived from the systems' own collection and the remainder from municipalities' collection<sup>148</sup>.

Number of collection points and share of collected batteries, 2012 own estimates:

| Collection point host         | Number of collection points | Share of total waste battery collection |
|-------------------------------|-----------------------------|---|
| Retailers serviced by systems |                             | 30%                                     |
| Municipalities                |                             | 25%                                     |
| Schools                       | No data                     | No data                                 |
| Companies                     |                             |   |
| WEEE dismantlers              |                             |   |

<sup>146</sup> Ecopilhas prefers to announce its collection results in units of batteries collected. This number increased from 8 million in 2004 to 16 million in 2005 and 20 million in 2009, and appears to have remained at that level.

<sup>147</sup> Based on an estimated 17,000 Ecopilhas collection points and 2,500 WEEE/battery collection points by AMB3e and ERP Portugal.

<sup>148</sup> Another APA report, the [2011 Environmental Declaration](#) notes that in 2011, the waste from Alkaline batteries (EWC 20 01 34) reported to waste register SIRAPA was 0.5 kg in 2010 and 1.3 kg in 2011, presumably per capita.

## Consumer awareness creation

### Supporting legal requirements

Systems must spend no less than 5% of revenues on information campaigns.

### Ecopilhas

- **Retailer awareness & collection boxes:** Ecopilhas distributes easily recognisable red and green collection boxes to retailers, bundled with flyers explaining their obligations.



- **School collection boxes and campaigns:** In late 2012, Ecopilhas re-launched the campaign 'Pilhão vai à Escola', which placed battery collection bins in a number of schools. Schools are awarded points for volumes collected. Prizes are awarded for best collection result per student and the school with the highest total collection volume. In similar campaigns in 2008 and 2010, around 1,500 collection boxes in schools were distributed. A [Facebook](#) page complements activities for younger target groups.



- **Charity campaigns** use various media, including Radio.

In late 2012 Ecopilhas launched a nationwide campaign in cooperation with the Portuguese Institute of Oncology. As in previous campaigns, Ecopilhas' main collection partner was supermarket chain LIDL. Over 4 million batteries were collected, allowing Ecopilhas to contribute a donation to the fight against cancer ([details](#)).

In 2011, Ecopilhas, together with Pingo Doce supermarket, donated 10,000 litres of milk to nineteen social and charitable institutions.



## ERP Portugal

- **School campaigns:** Since 2007, the project projeto Geração Depositário has distributed educational materials and collection boxes for small WEEE, lamps and batteries to participating schools. Schools can also participate in games and creative activities, applying the philosophy that 'children are excellent at influencing the behaviour of adults today and both should know how to behave in the future'. The communication is based around a WEEE team led by Capitão Fluxo (Captain Flow).

The campaign collaborates with the national '[Eco Escolas](#)' programme, an environmental education programme started in 1996 by the European Blue Flag Association ([ABAE](#)) and the Ministry of Education. Around 1500 schools and 230 municipalities currently participate.



*School collection box for small WEEE and batteries. Batteries are to be deposited in the small slit to the right of the yellow arrow*



### Amb3E

Amb3E focuses on the collection of WEEE, notably through ‘Ponto Electrão’ outdoor containers which are provided to municipal and other collection points. In its 2011 Urban waste report (published in March 2013), APA lists outreach and communication activities AMB3E conducted in 2012 jointly for WEEE and battery collection, including 134 lectures in schools.

According to its annual report, Amb3E collected 21 tonnes of portable batteries in 2012. Batteries are stored until sufficient volumes for economical treatment are collected.



### Consumer awareness and disposal behaviour

In February 2009 Ecopilhas reported results of a survey focusing on its brand recognition which found that

- between 2006 and 2009 awareness of the need to dispose of batteries separately increased from 77% to 79%
- 88% of respondents remembered seeing the Ecopilhas pilhão collection boxes (2008: 77%)
- 54% recalled Ecopilhas campaigns

### Data accuracy

**POM** data collection is difficult as there are two approved registers for battery producers, Ecopilhas and ANREE (used by ERP and AMB3E)<sup>149</sup>.

Systems report **collection** volumes by EWC codes 20 01 33, 16 06 03. [IGAOT](#) (Inspectorate of the Environment) is responsible for enforcement measures.

### Potential for improving collection rates

Clearing is *prima facie* not required as the collection targets are defined in each system’s licence. However, as municipalities remain responsible for collecting waste batteries and systems should supply them with collection containers and compensate them for their services under a contract, a framework agreement or common interface between systems and municipalities could facilitate fulfilling these obligations.

<sup>149</sup> Environment agency APA provides reporting [guidance](#) for various products but batteries.

# ROMANIA

## Key points

- Though a Decree transposed Batteries Directive 2006/66/EC already in 2008 and producers had to be registered since July 2009, subsidiary legislation on licensing requirements for systems were delayed until November 2011 and the first battery system was only approved in April 2012. Currently the five battery systems are operating.
- The progress of awareness creation and battery collection activities has been impressive. However, due to the late start no collection data are available yet.

## Regulatory parameters for compliance systems

### Overview

**Decree No 1132/2008** transposed Batteries Directive 2006/66/EC and was complemented by ministerial orders in July and October 2009 which defined registration and reporting procedures for producers. However, Joint **Order 2743/2011** of the Environment and Economy Ministers – which specifies licensing requirements for systems – was delayed until November 2011 due to stakeholder concerns, and the committee to approve the systems was only appointed in February 2012. An Order providing procedural details for the cancellation of a battery system’s licence followed in September 2012.

### Roles and responsibilities in waste portable battery collection

- **Producers** must set up systems to achieve the collection targets of the Directive.
- Authorised **systems** must allow end-users to deposit waste batteries free of charge and require **retailers** to collect from end-users without their having to make a purchase. Battery systems may be run in conjunction with **WEEE systems**.
- **Collection points** are not subject to registration or permitting requirements.
- **Municipalities** are not obligated to collect waste batteries.

### Requirements on systems

Provisions of Order 2743 of 21 November 2011 on the licensing of battery systems specify a license period of 3 years and license fees of LEI 10,000 (~EUR 2,250) for collective systems and LEI 3,500 (~EUR 790) for individually-complying producers. Systems seeking or reapplying for authorisation with environment agency NEPA must:

- provide a viable operating plan for achieving the collection targets on a national level
- take back any types of waste batteries offered by collectors
- accept applications from any producer
- not discriminate between contracted producers and shareholders
- inform the approval commission of any changes of fees
- conduct educational and awareness campaigns as well as relevant studies
- provide the approval commission with an activity report by 28 February each year for the previous year, listing contracted parties (producers, collectors, sorting facilities, recyclers), data on waste streams managed, financial information, an independent financial audit, minutes of board meetings and (where necessary) outline reasons why targets have not been achieved

- reinvest profits or any excess of revenues over costs
- maintain a minimum equity of LEI 100,000 (~EUR 22,500) throughout the duration of the operating license.

## Development of compliance systems

### Market of collection systems

In response to the Batteries Decree of 2008, some of the six authorised WEEE systems and the Romanian Portable Battery Association<sup>150</sup> considered setting up battery systems. However, due to the absence of an Order on system approvals, no applications were filed until late 2011. A new organization, RECOBAT Plus became the first approved battery system in April 2012. Currently the following systems are active:

- **ECOTIC BAT** Ltd, an independent entity established by ICT producer-controlled WEEE system **ECOTIC**, was approved on 11 September 2012 for portable and industrial batteries. WEEE system ECOTIC was established in April 2006 by members of IT industry association APDETIC.
- **SNRB**, the 'National System for the Recycling of Batteries' founded by battery importers in 2008, was approved on the same day for portable batteries only. It partners with WEEE system **Environ Association**, founded by retailers and importers, whose members include LG. In August 2008 Environ had more than 1,000 WEEE collection points managed by municipalities and partner shops.
- **RoRec**, founded by CECED Romania in 2007. RoRec launched a waste battery collection, recycling and awareness programme in October 2009 and received its first battery member, Tuborg Romania, in February 2010. By December 2010 RoRec had installed more than 630 collection containers.
- **RECOBAT Plus**, founded in 2010 by professionals from the IT sector and related to WEEE system **Ecopoint** (approved 2011, but currently not listed as an authorised WEEE system).
- **CCR Rebat**, operated by the Romanian subsidiary of the German-based Reverse Logistics GmbH which operates portable battery compliance schemes in Austria, Germany and the UK.

The systems contract over 160 waste management companies authorised to handle portable batteries.

### Interface with WEEE systems

The largest WEEE systems - Ecotic, RoRec and Environ - are controlled by producers or retailers. It can be assumed that their sister battery systems have the largest market share for batteries.

### Market shares and clearing for over- and under-collection

Due to the WEEE collection target, a clearing mechanism for WEEE is not required. Collection targets for batteries apply only in 2012 and 2016. It is not clear how systems intend to clear in the remaining years, if required.

<sup>150</sup> The Romanian Portable Battery Association (RPBA) was established in July 2005 by nine companies (Germanos Telecom Romania S.A., Varta Rayocan Remington Romania, Advance Photo International, Sprinter 2000, Telezimex, Global Logistics Systems, Footmark Romania, Seca Distribution, Consumer Product Network) to assist the government to help implement Batteries Directive 91/157/EEC. Since September 2006 Philips, Vitacom and Master Pro have joined the RPBA.

## Collection results

About 380 g per capita of batteries were imported into Romania in 2011. Data on waste battery collection are not yet available.



## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

No data.

## Awareness creation measures

### SNRB

- **Collection boxes:** Green cardboard collection boxes are distributed amongst retailers, supermarkets, schools etc.



- **Public awareness campaigns:** Between October 2011 and June 2012, SNRB, in cooperation with the ministries of education and environment, ran a national awareness campaign on the importance of recycling WEEE and batteries. The campaign, entitled '**Baterel!**', targeted student (primary and secondary school) and teachers. The campaign featured competitions between schools where points would be rewarded for collection and exchanged for prizes. Information materials (posters, flyers etc.) were also distributed, as documented also on SNRB's [Facebook](#) page.

In 2010, SNRB ran an awareness campaign in the city of Iasi to promote the new collection infrastructure in publically accessible locations around the city and in schools (right image).



Ecotic

- **Collection boxes:** Ecotic standard collection box follows the silhouette of Ecotic’s logo. Larger containers use several formats, including for mixed collection of lamps and batteries (right image).



- **Public awareness campaigns:** From March to June 2013, Ecotic and the Environmental Protection Agency are running a campaign in Brasov County schools. The campaign titled ‘Be an example! Separate used batteries’, targets school students of all levels and teacher alike and involves 131 participating schools. The campaign provides schools and teacher with educational materials for spreading awareness on battery recycling amongst students. The campaign also includes a competition, where schools will compete for the largest volumes of waste batteries collected with prizes to be won.

From February-May 2013, a public awareness campaign, titled ‘Guerrilla Green’ has been launched in 6 cities across Romania: Bacau, Ploiesti, Iasi, Focsani, Buzau and Bucharest. During the course of the campaign, a large green caravan will make stops in different locations in each city – its purpose is to spread awareness of the need to recycle batteries and aluminium cans. The campaign is supported by the Ministry of Environment, the Ministry of Education, ANPM (the Romanian producer register) and Alucro (aluminium can recycler).

Ecotic maintains a [Facebook](#) page where it updates views on news and events.



### CCR Rebat

- **Collection boxes:** CCR Rebat offers collection boxes, bundled with informational material, for free to retailers and municipalities.



### RoRec

- **Collection boxes:** RoRec highly visible range of collection boxes for small WEEE, lamps and batteries.



### Accuracy of reporting

Both POM and collection reports must be broken down by battery type and – for portable batteries – 14 chemistries. It is questionable how accurately these requirements can be met.

**Enforcement** of the producers' obligations has been carried out by the National Consumer Protection Authority: In November 2010 it published results of a compliance check with the Batteries Decree. Of 620 entities checked, 443 (71%) were not compliant. 211 entities were fined a total of LEI 760,000 (EUR 180,000) and the marketing of 213 products had to be temporarily stopped. Violations included failure to identify the producer on batteries and failure to provide information in Romanian (140), failure to display the crossed-out wheeled bin symbol and / or heavy metal content (19) and failure to show the registration number on company documents. Free-riding is limited by the requirement for producers to display their batteries registration number on all commercial documents.

### Potential for improving collection rates

Implementation is at a very early stage.

# SLOVAKIA

## Key points

- Since 2001, the Product Fee Act has 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 is 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 systems for municipalities, financed by local taxes and the Recycling Fund. The producer responsibility provisions of Batteries Directive 2006/66/EC have not yet been transposed. However, some of the 16 currently approved WEEE systems provide battery collection services to producers to reduce the product fee payments for their members. All collected batteries must be delivered to Mach Trade or Elektrorecycling who operate the only approved battery treatment facilities in Slovakia.
- Preliminary Government data indicate that a collection rate of 71% was achieved in 2012, up from 56% in 2011 and 33% in 2010. This exceptionally high collection rate is supported by comparatively low POM volumes and a high share of waste batteries deriving from WEEE.
- A planned new Waste Act should make a clear decision between either an effective eco-fund or an extended producer responsibility model. The latter was suggested by the Minister in May 2013.

## Regulatory parameters for compliance systems

### Overview

From 2002, the non-state Recycling Fund set up pursuant to **Waste Act no. 223/2001**, supports the financing of the management of selected waste streams, including batteries. Producers of separately sold batteries pay a fee according to weight of batteries placed on the market. Producers of EEE with integrated batteries pay fees for EEE only, but should report the weight and volumes of integrated batteries to the Fund.

In September 2009, Batteries Directive 2006/66/EC was partly transposed through **Waste Act Amendment 386/2009**, with the single market provisions of the Directive entering into force on 1 November 2009. However, the Act does not shift organisational responsibilities to battery producers and does not mention collective systems. In late 2010, the Commission sent Slovakia a 'Reasoned Opinion', the first step towards infringement proceedings, for not having correctly transposed the WEEE and Batteries Directives.

Drafting of a **new Waste Act** began in early 2011 but failed to get through parliament in June 2012 due to massive disagreements over the draft's failure to prevent waste management companies from operating collective systems and vice versa. On 5 May 2013 Environment Minister Peter Ziga introduced the broad outlines for a completely new Waste Act which would notably abolish the Recycling Fund and introduce authorisation requirements for collective systems. As a general rule, collective WEEE and battery organisations would operate on the principle of collective administrative and financial responsibility. Authorisation would only be granted to organisations established by producers and importers. No private ownership or personal links to the government, waste collectors or recyclers would be permitted<sup>151</sup>.

<sup>151</sup> Currently there are 18 'collective' WEEE organisations in Slovakia, with most of them linked to or owned by collectors and recyclers, while some producer-controlled systems operate collection and treatment facilities.

## Roles and responsibilities in waste portable battery collection

- **Municipalities** must set up collection points and allow access to **approved economic operators** that run battery collection systems financed by the **Recycling Fund**.
- **Producers of separately sold batteries** must pay the Recycling Fund fee on 100% of batteries placed on the market at a rate of EUR 6,310 per tonne, less the amount of batteries collected by producers themselves or on their behalf.
- **Producers of batteries integrated into EEE** must finance treatment of integrated batteries that result from their WEEE take-back obligations through the options available in the WEEE legislation.
- **Retailers** must take back batteries free of charge. Wholesalers are not obligated to take back waste batteries.
- The legislation does not mention **collective systems** for batteries and does not name the party obligated to achieve the 25% and 45% **collection targets**.

## Requirements on systems

There are as yet no legal provisions to establish collective battery systems.

## Development of compliance systems

Waste management companies **Mach Trade** (through related company **INSA** Ltd) and **Elektrorecycling** are two of four companies mandated to operate battery collection systems for municipalities. These activities are financed by local taxes and the Recycling Fund, which had revenues from battery producers of around EUR 0.7 million in 2010.

The **Recycling Fund** was set up on the basis of Waste Act 223/2001 in July 2001 as a non-state special-purpose fund. 11 of its board members represent industry associations, three represent ministries and three municipalities. The 7 members of the supervisory board are appointed by the Environment Ministry (3), the Finance Ministry (1) and industry associations (3). The fund is fed by product fees paid by manufacturers and importers of certain end-of-life products and packaging types. Since 2002, the fund has spent around EUR 7 million in subsidies for the waste management of batteries of all types, with the main beneficiary being the MACH TRADE Group for recycling and AKU TRANS for logistics of waste batteries.

Some of the 16 currently approved **WEEE systems** charge EEE producers separately for integrated batteries. Some also take back batteries from retail members. All collected batteries must be delivered to Mach Trade or Elektrorecycling who operate the only approved battery treatment facilities in Slovakia. Major WEEE systems are:

- **SEWA** (Slovak Electronic Waste Agency), founded in April 2005 by ADAT (Asociácia dovozcov audiovizuálnej techniky) and ITAS (Slovak IT Association). Collected batteries are sent to MACH TRADE .
- **Asekol** was incorporated in Slovakia on 19 July 2010 and founded by Czech WEEE system Asekol and Slovakian online wholesaler Fast Plus.
- **Natur Elektro** is a subsidiary of Natur-Pack, a collective system for packaging waste set up in 2006.

## Clearing for over- and under-collection

Not applicable due to producers' obligations to the Recycling Fund.

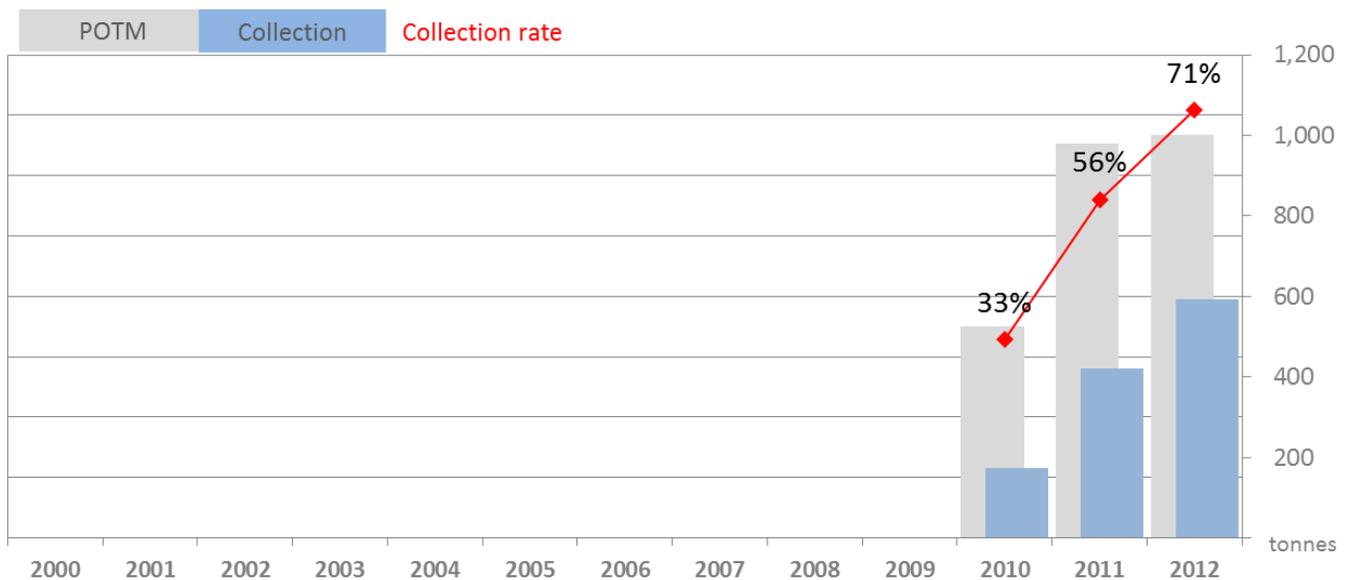
## Interface with WEEE systems

The 16-plus WEEE systems must send batteries removed from WEEE to one of the two approved battery treatment facilities.

## Collection results

Preliminary Government data suggest that a collection rate of 71% was achieved in 2012, up from 56% in 2011 and 33% in 2010. This exceptionally high rate is supported by

- comparatively low POM volumes (about 190 g per capita<sup>152</sup>) which suggests that batteries in EEE are not fully captured and
- a high share of waste batteries deriving from WEEE, driven by the WEEE systems that reported battery collection rates upwards of 100% in 2011 (thus ensuring reduced product fee payments for producers).



Source: Preliminary data from Ministry of Environment

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

We could not obtain information about the number of waste portable battery collection points in Slovakia.

Number of collection points and share of collected batteries, estimate 2011:

| <b>Collection point host</b>  | <b>Number of collection points</b> | <b>Share of total waste battery collection %</b> |
|-------------------------------|------------------------------------|--|
| Retailers serviced by systems |                                    |  |
| Municipalities                |                                    |  |
| Schools                       | No data                            | No data  |
| Companies                     |                                    |  |
| WEEE dismantlers              |                                    |  |

<sup>152</sup> For comparison: Czech Republic 350 g per capita in 2012



## Asekol

- **Collection boxes** for both small WEEE and batteries.



## Consumer awareness and disposal behaviour

No surveys have been released.

## Accuracy of reporting

**POM** reporting requirements under the Recycling Fund follow the chemistries of the EWC codes. Batteries with a weight of up to 1 kg are considered portable, those above 1 kg are regarded as industrial batteries. POM volumes are subject to potential errors due to missing or incorrect reporting of batteries integrated into EEE.

**Collection data:** no info

## Potential for improving collection rates

The legal framework for the application of extended producer responsibility is not currently in place. A new Waste Act should clearly decide on either an effective fund or a extended producer responsibility model. The latter was suggested by the Minister in May 2013.

# SLOVENIA

## Key points

- 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 comply through their WEEE management plan. Three WEEE systems, ZEOS, Interseroh and Slopak offer 'joint' battery management plans that were approved in November 2009.
- A collection rate of 27% was achieved in 2011.
- Potential for improving collection rates lies primarily in increasing the density and visibility of collection points by imposing more specific requirements on retailers and municipalities.

## Regulatory parameters

### Overview

Since 2003 municipalities have been obliged to separately collect hazardous wastes including batteries, and to finance collection infrastructure. A **Decree of July 2008** transposed Batteries Directive 2006/66/EC and required producers of separately sold batteries to comply with the take-back obligation through approved waste management plans. This was replaced by a **Decree in January 2010** which i.a. postponed the deadline for submitting the plans to the end of March 2010 and extended the plan requirement to industrial batteries.

### Roles and responsibilities in waste portable battery collection

- **Producers of separately sold batteries** must finance management of waste batteries. They must achieve the 25% and 45% collection targets in 2012 and 2016 respectively. They must comply through an individual or joint waste management plan and cannot transfer their legal obligations to a third party.
- **Producers of batteries integrated into EEE** do not need to finance the waste management of separately collected batteries but also need to comply through an approved batteries waste management plan.
- **Systems** (referred to as 'holders of joint waste management plans') have administrative obligations only.
- **Municipalities** must collect dangerous waste, including waste batteries, from households. They must finance the collection infrastructure themselves.
- **Retailers** must take back batteries free of charge without obligation to purchase.

The market share of collected WBAs was calculated by the Environment Agency for the first time in June 2010 for the year 2009. POM data was available from the customs authority from January 2009.

### Requirements on systems

A 'holder of a joint batteries management plan' must report to the Ministry.

## Development of compliance systems

Around 250 battery producers comply through three joint battery management plans, approved in November 2009 and held by two WEEE systems and the Green Dot packaging systems:

- **ZEOS**, founded on 20 July 2005 by several large EEE producers, including Gorenje and BSH. Its share of the market is around 55%<sup>153</sup>. ZEOS began battery collection during 2010 from retail chains Mercator, Big Bang, Merkur, OMV and Telekom.
- **Interseroh**, the Slovenian subsidiary of the German waste management provider, was approved in December 2004 as a system for B2B packaging, and in mid-2007 as a system for B2C and B2B WEEE. It's market share is about 45%.
- **Slopak**, the packaging compliance organisation, represents a very small market share of battery producers.

## Clearing for over- and under-collection

Collection targets apply to each producer. No clearing required.

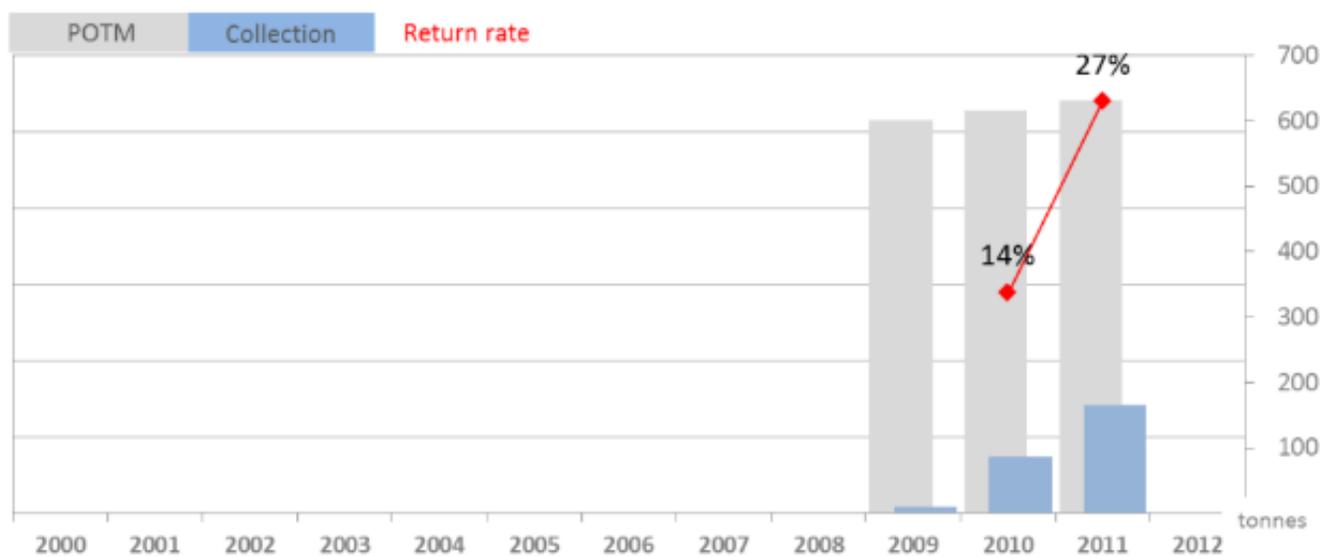
## Interface with WEEE systems

All systems offer both joint WEEE and waste batteries waste management plans.

## Collection results

A collection rate of 27% was achieved in 2011. Collection through the approved battery waste management plans increased quickly from 5 g per capita in 2009 to 81 g in 2011.

In 2006 municipalities collected around 50 g per capita of alkaline and 110 g of other waste batteries, including lead accumulators.



Source: MoE, ZEOS

<sup>153</sup> In 2010 ZEOS collected about 22 g per capita and Interseroh an estimated 15 g per capita.

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

There are an estimated 3,000 waste portable battery collection points in Slovenia, or one per 700 residents:

Number of collection points and share of collected batteries, estimate 2012:

| <i>Collection point host</i>  | <i>Number of collection points</i> | <i>Share of total waste battery collection (ZEOS only)</i> |
|-------------------------------|------------------------------------|--|
| Retailers serviced by systems | 2,500                              | 32%  |
| Municipalities                | 100                                | 8%   |
| Schools                       | 400                                | 19%  |
| Companies                     |                                    | 33%  |
| WEEE dismantlers              |                                    | 3%   |

Source: No of collection points: own estimate; Share of waste batteries: ZEOS

### Consumer awareness creation

#### Supporting legal requirements

Producers/systems must provide details of communication measures in their waste management plans. There are no legal requirements regarding minimum spending for awareness creation.

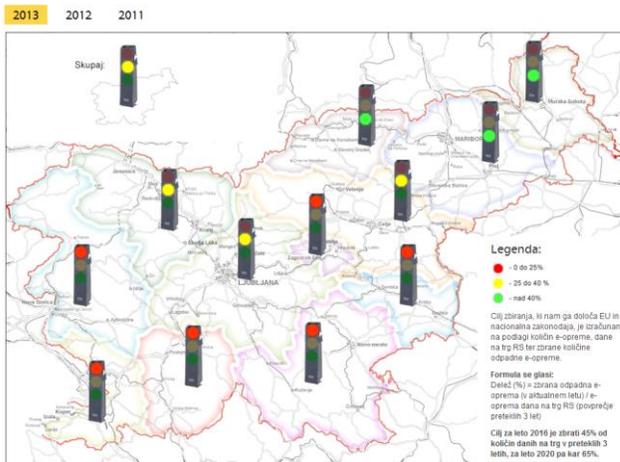
#### ZEOS

- **Collection boxes:** In addition to cardboard collection boxes, larger containers are available for small WEEE, lamps and batteries in consistent shapes.



- **Campaigns:** ZEOS' campaign [LIFE](#) is organised in collaboration with Life+ to promote awareness of WEEE and battery collection. The campaign runs from October 2011 to September 2013 and is aimed at up to 20 year-olds using all media except TV. Competitions and educational events are organised for schools.

A special feature of the campaign is the 'E-Transformer' truck ([YouTube](#)) in which recycling of e-waste is explained. Schools can book visits of the E-Transformer. Another feature increasing the competitive spirit of those participating in the campaign is a map of Slovenia which shows each region's progress in reaching the collection targets for WEEE by way of traffic lights in the form of ZEOS collection containers ([here](#)).



Interseroh

- Collection containers in different formats ([more info](#))



## Consumer awareness and disposal behaviour

No surveys have been released.

## Accuracy of reporting

### Free-riders

**POM** reports must be broken down into primary and secondary batteries and chemistries. As batteries in EEE are reported under different waste plans, free-riders can also be clearly distinguished. Nevertheless, challenges are seen in accounting for them separately as most producers are importers with limited information on detailed product specifications. The customs authority plays a key role in **enforcement** as it identifies importers and charges an ‘environmental tax’ on imports, which – at about only EUR 8 per tonne of portable batteries placed on the market – finances the operations of the Ministry’s battery producer register, but not recycling.

**Collection** reports under the battery waste plans must distinguish between primary and secondary batteries but not chemistries. As elsewhere, the distinction between waste portable and waste industrial batteries is a challenge. There has been no enforcement action by authorities yet.

## Potential for improving collection rates

The density and visibility of collection points could be increased by more specific requirements on retailers and municipalities.

As municipalities are obligated to collect waste batteries and finance the collection themselves, incentives or targets for municipalities to maximize collection could increase collection rate.

Moreover, the monitoring of waste battery material flows could be facilitated by additional requirements for collectors, such as regular sampling of the mixed municipal.

# SPAIN

## Key points

---

- 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 systems operating on their territory. Decentralisation of authority slowed the implementation of producer compliance systems and complicates waste flow monitoring. Though the legal framework for simplified requirements has been in place since 2012, these have yet to be fully implemented through an amendment to the Batteries Decree.
- Producers comply through battery system Ecopilas, set up in 2000 by electronics association Asimelec. WEEE systems, notably ERP, have also offered compliance services since 2009.
- The systems' reports suggest that a collection rate of 30% was achieved in 2011.
- Until reliable collection data are available from a single authority, trust between industry stakeholders will remain low and will undermine effective industry self-coordination.

## Regulatory parameters

---

### Overview

**Royal Decree 45/1996** held Autonomous Communities and local authorities 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 the 19 Autonomous Communities responsible for authorising compliance systems. Decentralisation of authority created severe challenges for the implementation of national compliance systems, for example by complicating the aggregation of reliable waste collection data on the national level. A **March 2010 amendment to the Batteries Decree** partly solved this issue by requiring collective systems to report collection data to a central register as well as to the Autonomous Communities.

The **2011 Framework Waste Management Law** established a much needed national Coordination Committee on Waste which brings together members of the 19 Autonomous Communities to implement waste policies more effectively. A **May 2012 amendment** to the new waste law greatly simplified authorisation requirements for collective systems by making the authorisation in their home region valid for the entire national territory. However, these simplified requirements have yet to be implemented through an amendment to the Batteries Decree.

## Roles and responsibilities in waste portable battery collection

- A **national network of collection points** distributed according to population density must accept waste batteries free of charge from consumers and may share collection points with WEEE systems. Collection points do not need to be authorised.
- **Local authorities** may organise temporary storage and transport to treatment centres (public management systems for batteries).
- **Producers** are at least responsible for waste batteries from temporary storage onward<sup>154</sup>. They can comply by participating in a public or collective management system<sup>155</sup> and must finance public information campaigns approved by the Autonomous Communities.
- **Collective systems** must be approved as integrated management systems by each Autonomous Community in which they operate. (An amendment to the Batteries Decree will make the authorisation in the home region of a system valid for the entire national territory).
- On a national level the **collection targets** (25% by end 2011, 45% by end 2015, deviating from the Directive) are not directly applied to producers, but the Autonomous Communities must control and report achievement of collection targets to a central authority and may require producers to reach higher targets.
- **Retailers** must take back batteries free of charge only if a new battery is purchased.

## Requirements on systems

Systems are subject to strict authorisation and monitoring requirements. However, as each of Spain's 19 Autonomous Communities is charged with these tasks, their implementation varies. Authorisations are valid for up to 5 years, renewable, and require systems to i.a.

- have a non-profit character;
- enter into agreements with the municipalities or governments of Autonomous Communities which define conditions for collection, storage and treatment;
- describe their financing mechanism and control mechanisms for operation and data verification, as well as procedures of data collection and validation;
- guarantee solvency, e.g. through a report from a financial institution, proof of insurance against professional risk, presentation of annual accounts or other documentation considered sufficient by the Autonomous Community;
- be audited annually by an independent party to monitor the degree of fulfilment of the obligations if stipulated by regulations of the Autonomous Communities.

<sup>154</sup> Collection, storage and transport must be free for the 'holder' or end-user. The definition of 'holder' does not include municipalities. Producers are therefore not required to fully finance public collection systems.

<sup>155</sup> Producers of portable batteries may not comply through an individual system (though producers of industrial or automotive batteries may do so)

## Development of compliance systems

Not-for-profit company [Ecopilas](#) was set up in 2000 by electronics association Asimelec. It represents producers placing on the market about 75% of all separately sold portable batteries. Since 2012, it has been part of ASIMELEC's 'Recyclia' platform that unites three WEEE systems Tragamovil, ECOASIMELEC and Ecofimatica.

Since 2009, three other WEEE systems have also offered compliance services to producers: [ERP](#), [EcoRAEE](#) and [Ecolec](#). ERP – whose members include Duracell – claims a share of about 25% of batteries collected. EcoRAEE and Ecolec only manage waste batteries removed from WEEE they collect.

### Interface with WEEE systems

The remaining WEEE systems ([ECOTIC](#), [ECOLUM](#), [Ecoasimelec](#), [Ecofimatica](#), [Tragamovil](#)) have agreements with Ecopilas, whereby the WEEE systems' members become members of Ecopilas, but all administration is handled through the WEEE systems.

### Clearing for over- and under-collection

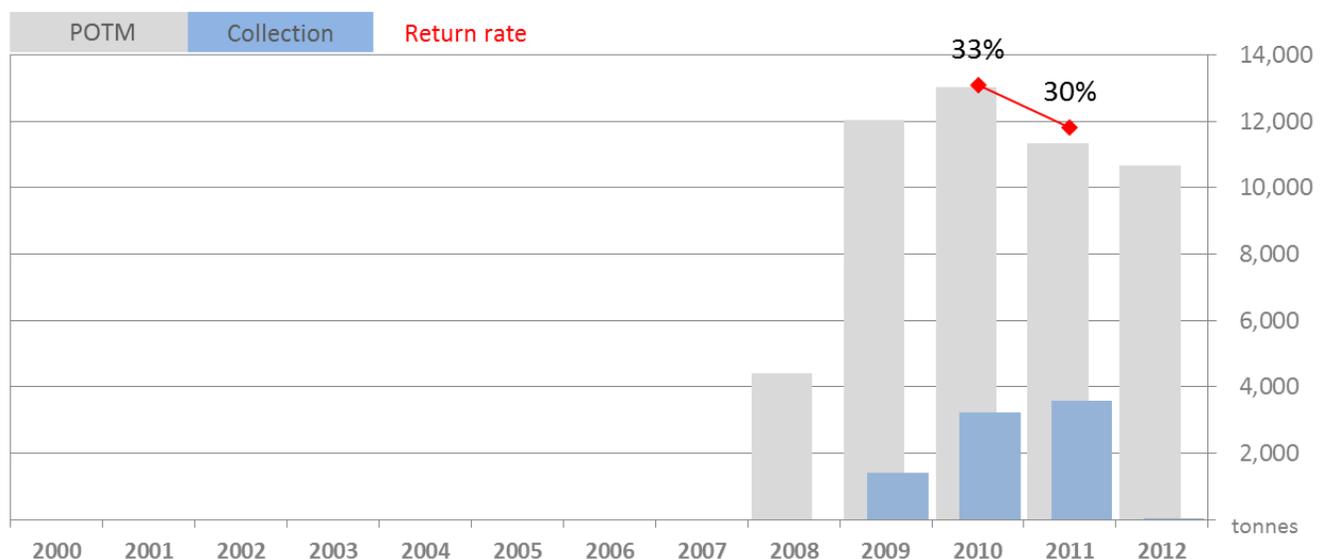
To improve the effectiveness of informational and educational measures and coordinate collection, Ecopilas, with ERP, constituted a voluntary coordination center [OfiPilas](#) in 2011. OfiPilas offers end-users a [collection point locator](#). For participating municipalities, the site offers a management tool for coordinating collection and transportation. OfiPilas does not seem to have been widely used. It may follow the pattern of the voluntary WEEE clearing house [OFIRAEE](#) which was set up in 2007 by the largest WEEE system and whose wider adoption by other systems only began in 2011/2.

## Collection results

Officially confirmed national collection data are not available. The systems' reports suggest that a collection rate of 30% was reached in 2011.

Batteries placed on the market fell from about 282 g per capita in 2010 to 244 g in 2011 in the wake of the worsening economic crisis. The systems' reports indicate that their collection rate increased from 31 g per capita in 2009 to 82 g in 2011.

Ecopilas has [announced](#) that it collected 34% of POM in 2012, up from 29% in 2011.



## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

We estimate that there are close to 28,000 waste portable battery collection points in Spain, or one per 1,700 residents.

**Ecopilas'** network of collection points grew from about 16,000 in June 2012<sup>156</sup> to 21,000 in 2013, largely due to its collaboration with WEEE systems under the Recyclia platform. In addition, it takes back waste batteries from 2,700 municipal collection points. About 1.3 million 'mini-collection containers' have been distributed to Spanish households as a collection and educational tool.

ERP and other systems have not released their respective numbers.

Number of collection points and share of collected batteries, estimate 2012:

| <i>Collection point host</i>  | <i>Number of collection points</i> | <i>Share of total waste battery collection</i> |
|-------------------------------|------------------------------------|--|
| Retailers serviced by systems | 20,000                             | Not available                                  |
| Municipalities                | 3,000                              |  |
| Schools                       | 2,500                              |  |
| Companies                     |                                    |  |
| WEEE dismantlers              |                                    |  |

Source: Own estimate based on partial system data

<sup>156</sup> Earlier data: Ecopilas collection points increased from around 4,000 in March 2009 to 12,000 in October 2010. At that time Ecopilas had been approved in 9 of the 19 Autonomous Communities. Most containers were located in Catalonia, Madrid, Valencia and Andalusia.

## Consumer awareness creation

### Supporting legal requirements

- **Public authorities and systems** must provide consumers with the information specified in the EU Directive.
- **Distributors** must inform consumers about the possibility of returning batteries
- **Producers** must inform consumers or end-users that waste management costs are included in the sale price but may not show these costs separately on invoices to end-users

### Ecopilas

- **Collection boxes:** Collection containers are available as 20 kg cardboard boxes, 25 kg polycarbonate canisters and 40 kg plastic cylinders. Drums and containers are also available for industrial batteries ([link](#)). Collection boxes are accompanied by informational material.



- **'School of Recycling' campaign:** The 'School of Recycling' is a mobile 120 square meter classroom in a truck equipped with audiovisual materials explaining the importance of recycling WEEE and batteries, designed to stimulate the curiosity and imagination of 10-14 year old students. The schools campaign is accompanied by training for teachers. Since its launch in late 2011, the campaign has reached over 40,000 students and 1,400 teachers from ten Autonomous Communities. The campaign is organised by the Recyclia WEEE system in collaboration with regional authorities.



- **Sponsoring:** In 2013, Ecopilas sponsored riders in the Tour of Spain cycle race, 'La Vuelta'. The team wore green shirts bearing the Ecopilas logos.



- **Social media:** Ecopilas on [Facebook](#).

## ERP Spain

- **Collection boxes:** Various formats are used.



- **Public awareness campaigns:** ERP Spain, together with Lorca municipality, launched a one-day batteries awareness campaign in December 2012. The campaign consisted of collection and information booths set up in public places such as shopping malls, to educate the public on battery recycling and to collect obsolete batteries.



## Consumer awareness and disposal behaviour

No surveys have been released.

## Accuracy of reporting

**POM:** The central government's [register of battery producers](#) provides for data on EEE and battery volumes placed on the market that allow the systems to calculate their market share of batteries. However, the market shares claimed by the systems do not appear to fully add up.

**Enforcement:** The mandatory requirement that battery producers show the recycling fee paid to a system for each unit on the sales invoice to distributors<sup>157</sup> should have facilitated enforcement. In practice this provision seems to have been rarely enforced. As regards WEEE, enforcement activities have been almost exclusively initiated by the WEEE systems<sup>158</sup>: by

<sup>157</sup> The fee must NOT be shown on the invoice issued to end-users.

<sup>158</sup> In October 2006, WEEE system ECOLEC and a number of producer associations set up ORPAEE (the Observatory of the Registry of EEE Producers). ORPAEE estimated that EUR 15 million of visible WEEE fees were fraudulently kept by retailers and unregistered producers, out of an estimated total of EUR 180 million charged. In early 2008, ECOTIC launched its own monitoring campaign and reported over 100 non-complying producers to the authorities in several Autonomous Communities. 2009 monitoring activities focused on distance sellers selling to Spanish end-users from other member states.

February 2007, about 500 potential free-riders had been notified to the authorities. The Ministry of Industry and the Autonomous Communities of Madrid, Catalonia and Murcia have notified affected producers and fined some of them.

**Collection** data are less certain: WEEE and battery systems' collection operations often predated authorisation in an Autonomous Community. For these collection volumes, there is thus no official verification and the systems have found it difficult to agree on the WEEE volumes they claim to have collected. The same can be assumed to apply to collected waste batteries. While the Autonomous Communities must report volumes to the Central Government, the submission of these data appears subject to significant time lags.

### Potential for improving collection rates

Reliable collection data from a single authority would provide the basis for trust between industry stakeholders that in turn could lead to more effective industry coordination measures between the systems.

## SWEDEN

### Key points

- Following the **1997 Batteries Order**, all of Sweden's 290 municipalities had to set up their own battery collection systems while producers of certain hazardous batteries financed these systems 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. They fulfill their obligation through WEEE system El-Kretsen. In 2012, El-Kretsen received 70% from the municipal collection points. Notably, retailers are not obliged to take back waste batteries.
- In 2010 a collection rate of around 41% was achieved. Although collection has increased since then, later collection rates remain unclear as POM data have not been released.
- While Swedish consumers appear to be largely familiar with disposing of batteries at municipal collection points, a higher density of collection points, for example by obligating certain retailers to take back waste batteries or better coordination between the systems for battery and WEEE collection, could improve return convenience and potentially increase collection volumes.

### Regulatory parameters

The **1997 Batteries Order** made municipalities responsible for waste battery collection and financed these activities through a fee paid by battery producers into a **recycling fund** managed by the Swedish Environmental Protection Authority (SNV). **Ordinance 2008:834** transposed Batteries Directive 2006/66/EC, repealed the 1997 Order<sup>159</sup> and de facto passed responsibility for collection to producers from January 2009. However, SNV did not issue guidance on collection systems or on information requirements, as required by the new Ordinance, until September 2009. A **Draft Waste Plan 2012-2017** includes a proposal to investigate the possibility of introducing economic instruments on mercury-containing batteries, similar to those still in place for sealed nickel-cadmium batteries.

### Roles and responsibilities in waste portable battery collection

- **Producers** must take back waste batteries by establishing one or several collection systems. Small producers (e.g. those placing on the market less than 50 kg of non-hazardous batteries) are exempt from the take-back (but not the reporting) obligations.
- **Municipalities** are no longer responsible for collection but must enable and consult with producers to establish adequate collection points.
- **Retailers** have no take-back obligation.
- Collection **systems** must ensure appropriately located collection points, taking into account expected end-users of batteries, population density and other circumstances, and must agree with municipalities on the use of municipal collection systems. WEEE systems are considered appropriate systems for batteries included in WEEE.

<sup>159</sup> Batteries Ordinance 2008:834 maintains recycling fund fees only on cadmium batteries (less than 0.002% cadmium allowed). At about EUR 30,000 per tonne, the fee is intended to discourage the use of these batteries.

- There is a **collection target** (on the basis of the current year POM) of 65% by 2012 and 75% by 2016, far above the 45% required by the Batteries Directive. The responsibility for achieving the target is not defined.

### Requirements on systems

The Swedish statutes do not define collective or battery systems and while SNV's remit covers producers, it does not extend to collection systems for waste from households so there are no approved systems. However, SNV is in a continuous dialogue with the systems to evaluate and adjust their operations, a practice SNV refers to as 'Development by Dialogue'.

### Development of compliance systems

In response to the 1997 Batteries Order, the Swedish Environmental Protection Authority (SNV) created the initiative [Batteriinsamlingen](#) (Battery Collection) in 1997 in cooperation with the predecessor of the Swedish Association of Local Authorities and Regions ([SKL](#)), waste management association [Avfall Sverige](#) and the battery producer association [Batteriföreningen](#): Sweden's 290 municipalities had each set up their own battery collection systems while producers of certain hazardous batteries financed these systems through fees paid into a recycling fund managed by SNV.

Following the 2008 Battery Ordinance, WEEE system [El-Kretsen](#) assigned to take back batteries collected by the [Batteriinsamlingen](#) initiative. Around 800 battery producers comply through El-Kretsen (set up in 2001 by 21 trade associations). Battery fees are only charged on separately sold batteries. Integrated batteries are covered by the WEEE fee, thus ensuring that producers of integrated batteries do not pay twice for collection.

In addition, some of the 200 **individual producer systems** for B2B EEE also cover integrated batteries. These individual systems do not require separate approval for batteries as the Ordinance considers WEEE systems to be appropriate systems for batteries included in WEEE.

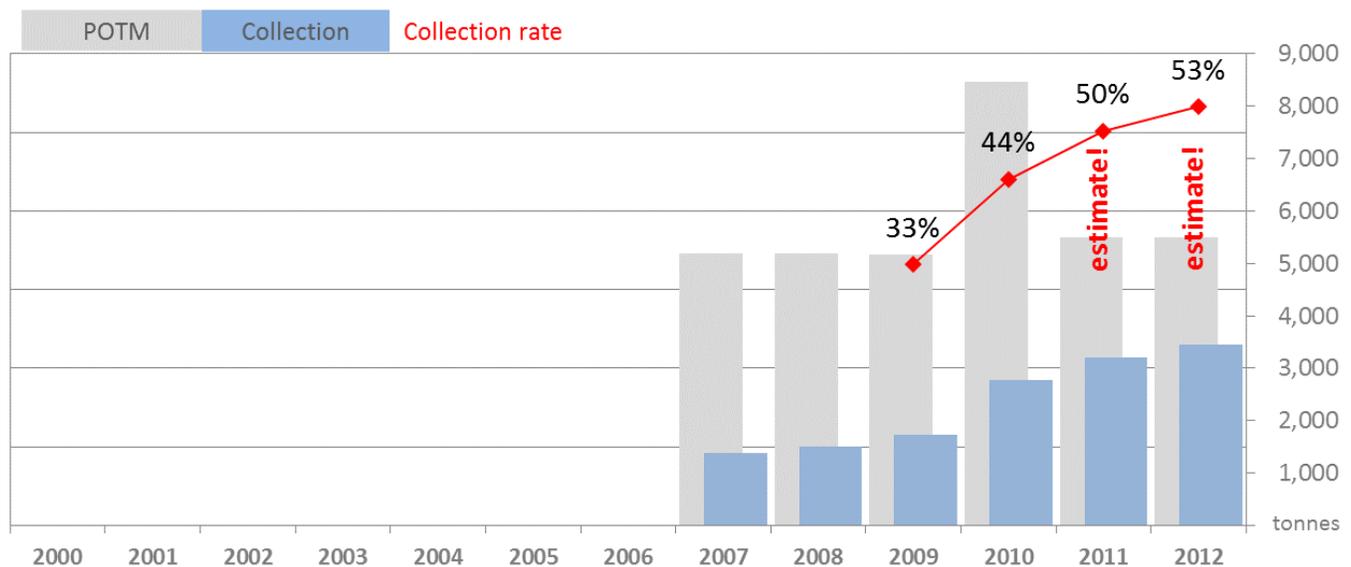
### Interface with WEEE systems

El-Kretsen retains its status as a quasi-single WEEE (and thus battery) system. Although a second WEEE system (EAF - Elektronikåtervinning förening) was set up in 2007, the clearing between the systems appears to have been agreed privately between themselves by 2010. SNV considers the clearing process to be a bilateral affair between the two systems and does not provide POM or collection data.

## Collection results

In 2010 a collection rate of around 41% was achieved. In 2012, a world record of 365 g of waste portable batteries were collected in Sweden.

The 2011 and 2012 collection rates remain unclear as POM data have not been confirmed: From 2009 to 2010, POM leapt from 558 g per capita to 908 g, by far the highest per capita rate of any country. This was mainly caused by a 340% increase in lithium based batteries. Whether this was a one-time occurrence or the result of previous under-reporting remains unclear. In the graph below, we assume that 2011 and 2012 POM returned to about the 2009 level, which results in a collection rate on the basis of current year POM of around 63%, just below the 65% national target.



Source: Estimates based on data from SNV and El Kretsen; POM 2011/12 own estimates

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

There are around 10,000<sup>160</sup> waste portable battery collection points in Sweden, or about one per 970 residents.

Number of collection points and share of collected batteries, estimate 2012:

| Collection point host | Number of collection points | Share of total waste battery collection |
|-----------------------|-----------------------------|---|
| Retailers             | 6,000                       | 10%                                     |
| Municipalities        | 2,379                       | 70%                                     |
| Schools               | 0                           | 0                                       |
| Companies             |                             | 5%                                      |
| WEEE dismantlers      |                             | 15%                                     |

Source: El Kretsen

<sup>160</sup> El Kretsen Annual report 2011

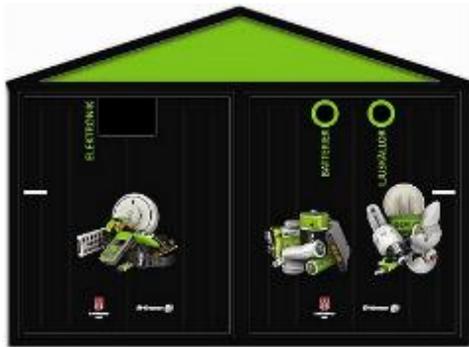
## Consumer awareness measures

### Supporting legal requirements

Producers are responsible for awareness creation measures; if appropriate the information is to be provided through the municipalities.

### El-Kretsen / Batterinsamlingen

- Collection boxes:** 70% of batteries are collected by municipalities in non-branded containers. In early 2013, El-Kretsen launched a pilot project to collect small WEEE, lamps and batteries into one container with sections for each fraction. In one area of Stockholm, El-Kretsen is also conducting a campaign which distributes paper collection bags for re-usable batteries to households. Full bags are returned to a mobile collection truck that tours the area periodically. The bags contain information on different options for disposal, including the option of subscribing to an SMS service which sends reminders when the truck is close to their address.



- Public awareness campaigns:** With the support of municipalities, El-Kretsen, regularly conducts collections which are publicised by newspaper/magazine advertisements and posters on display in public areas. El-Kretsen and lead battery system [BlyBatteriRetur](#) cooperate under the brand '[Batteri Insamlingen](#)' to strengthen their public awareness campaigns. The organisation's main function is to conduct public awareness campaigns and events. In 2010 El-Kretsen launched a battery collection competition between 7 colleges/universities.



- **Social media:** El-Kretsen has developed apps for mobile phones (available for both android and iPhone platforms) that give details of recycling points within the vicinity, their opening hours and also useful facts, fun trivia and games. Educational videos are provided through [YouTube](#).



### Consumer awareness and disposal behaviour

Environment agency SNV has been monitoring public attitudes to the collection of batteries over the last decade:

- Consumer awareness of the need to avoid disposing of batteries with household waste increased to 74% in 2010 from 64% in 2008 (for WEEE, awareness is only 34%). Awareness of waste battery information campaigns remained at 51%.
- In the same year, 74% of municipalities indicated that there was a need for more information about the collection systems for WEEE and waste batteries. Only 12% considered the information they got from the system adequate, with large cities being the most dissatisfied.

### Accuracy of reporting

**POM** must be reported by chemistries.

- **Batteries included in EEE** are identified and not subject to separate fees. Audits of POM reports are carried out by El Kretsen.
- **Lead acid:** Producers of industrial batteries weighing less than 3 kg must de facto join El-Kretsen<sup>161</sup>. El-Kretsen can thus ensure that lead acid batteries are properly classified as industrial or portable batteries.

**Collection** volumes must be reported by chemistries only. The low share of batteries removed from WEEE suggests that there are reporting errors or that valuable batteries are being treated outside the El Kretsen system.

**Enforcement** actions against free-riders and incorrect reporting have been taken by the authorities. A 2012 Order on environmental Fines (2012:259) introduces a fine of SEK 10,000 (EUR 1,195) for late reporting of EEE/WEEE and batteries – independent of the volumes to be reported.

### Potential for improving collection rates

While Swedish consumers appear to be largely familiar with disposing of batteries at municipal collection points, a higher density of collection points – for example by obligating certain retailers to take back waste batteries or by better coordination between the systems for battery and WEEE collection – could improve return convenience and potentially increase collection volumes.

<sup>161</sup> Producers of industrial batteries above that weight can join Blybatteriretur or comply individually.

# SWITZERLAND

## Key points

- 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. Since 2001, the Government-appointed battery system INOBAT has been authorised to grant producers exemptions from the financing obligation. INOBAT mainly collects waste batteries from voluntary municipal collection points and obligated retailers. Producers of batteries in EEE do not need to join INOBAT and comply through the two voluntary WEEE systems who report battery volumes to INOBAT.
- A collection rate above 60% has been achieved since 2000. However, this high rate is supported by comparatively low POM volumes.
- The comparatively low collection point density could be improved by tighter coordination of collection with the WEEE systems and an obligation on municipalities to collect batteries.

## Regulatory parameters

### Overview

Switzerland is not a member of the EU or the EEA. Legal requirements for the take-back of batteries have been in force since 1986 and voluntary financing by producers began in 1991. The **April 2001 Ordinance** on the reduction of risks in dealing with certain particularly dangerous substances, preparations and articles (ORRChem) made the fee mandatory for portable batteries. Since July 2006 the fee has also applied to lead batteries weighing less than 5kg. A **2010 revision of the Ordinance**, in force from February 2011, aligned the Ordinance with Batteries Directive 2006/66/EC and extended reporting and financing obligations to all battery types and weights. An appointed private organisation (INOBAT) collects producers' data and is authorised to grant exemptions from the financial obligation.

### Roles and responsibilities in waste portable battery collection

- **Producers of separately sold batteries** (or sector organisations including the 2 Swiss WEEE systems) must report volumes put on the market to the government-designated organisation INOBAT and pay the Advance Recycling Fee (ARF). The amount of the fee is set by legislation<sup>162</sup> at (currently) CHF 3.20 (EUR 2.6) per kg for portable batteries and CHF 1 (EUR 0.8) per unit for lead batteries (though the actually charged fee for different battery sizes and chemistries varies).
- **Producers of batteries integrated into EEE** comply through voluntary WEEE systems SWICO and SENS. The ARF does not apply to batteries built into equipment (SWICO and SENS' fees include any costs of battery recycling).
- **INOBAT** has again been designated by the Government to manage the ARF for the period 2011-2015. To increase collection, INOBAT may spend up to 25% on information campaigns (before 2011: up to 15%). The price INOBAT must pay to the only **recycler**, BATREC, is also set by the Government, at CHF 4,000<sup>163</sup> (EUR 3,252) per tonne.

<sup>162</sup> Ordinance on the Amount of the Advance Recycling Fee, 1999, revised 2011

<sup>163</sup> Before 2013: CHF 4,400

- **Retailers** (distributors) of batteries must take back waste batteries from consumers and hand them to INOBAT.
- **Municipalities** are not obligated to collect [but do so in practice].

### Requirements on systems

Environment agency BAFU assigns ONE appropriate private entity to raise and administer the ARF (INOBAT). This entity may not be commercially involved with the production, import, sale or treatment of batteries. Its operating contract is for a maximum of 5 years and its main focus is to regulate the administrative expenses of the organisation.

### Development of compliance systems

Since 1986 there has been a statutory requirement for manufacturers and distributors to collect all types of battery free of charge. This was originally intended to prevent mercury emissions from waste incinerators, and battery waste was exported to a special landfill site in East Germany. In 1991, Swiss battery treatment facility BATREC became operational to allow the recovery of metals, and the export of spent batteries was banned.

In 1991, a private organisation, BESO (Batterieentsorgungs-Selbsthilfeorganisation), was set up to manage collection and processing. Its members were manufacturers and importers of batteries and products using batteries, large distributors and the department stores association. BESO decided to introduce an 'Advance Recycling Fee' (ARF) to finance its activities. There was no regulatory framework underpinning this fee, so it was 'voluntary'. From April 2001 it became mandatory for certain batteries containing hazardous substances to secure the increased funding needs of the local recyclers.

In 2001 BESO was renamed **INOBAT** (Interessenorganisation Batterieentsorgung) and its statutes were amended to enable it to administer the ARF on behalf of the Government. Its mandate was extended for a second five year period, from 1 January 2006 to 31 December 2010 and for a third five year period (to end of 2015) in April 2011.

550 producers are obliged to pay the ARF report to INOBAT. 136 of them are INOBAT members.

### Clearing for over- and under-collection

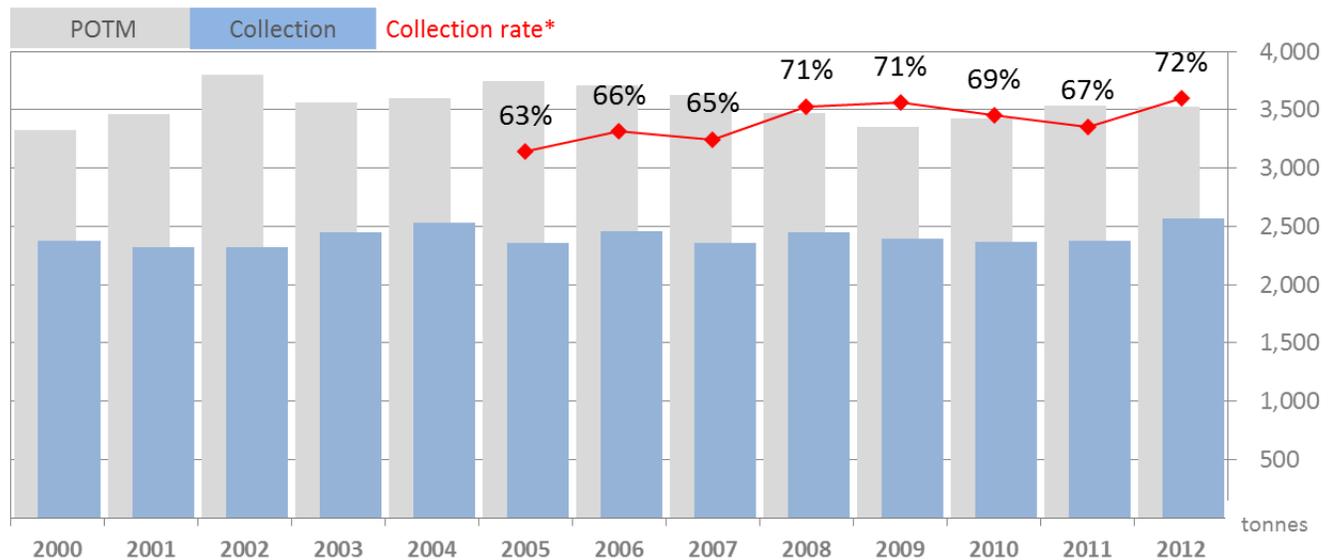
Not required as there is only one system.

### Interface with WEEE systems

Producers of EEE with integrated batteries need not join INOBAT if they are members of sector organisations (e.g. SWICO and SENS) that themselves have an agreement with INOBAT.

## Collection results

A collection rate\* above 60% has been achieved every year since 2000. However, the high collection rate is supported by comparatively low POM volumes.



Source: Inobat

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

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

There are about 12,000 waste portable battery collection points in Switzerland, or one per 660 population.

In 2012, about 25% of INOBAT's collection volumes derived from 11,000 obligated retailers, about 25% from companies and WEEE dismantlers and about 50% from voluntary collection by municipalities and other entities (2010: 65%). INOBAT notes that the 2012 collection volume was probably higher, but voluntary collectors, including municipalities, are holding back collected batteries to benefit from INOBAT's revised compensation structure, which pays out more per kg the more waste batteries are returned. This would cause some municipalities to store batteries for up to 2 years<sup>164</sup>.

Number of collection points and share of collected batteries, estimates 2012:

| Collection point host   | Number of collection points | Share of total waste battery collection |
|---|-----------------------------|---|
| Retailers and voluntary collection centres serviced by INOBAT | 11,000                      | 25%                                     |
| Municipalities  | 1,000                       | 50%                                     |
| Schools   | 0                           | 0%                                      |
| Companies   |                             | 20%                                     |
| WEEE dismantlers  |                             | 5%                                      |

Source: Own estimates derived from INOBAT data

<sup>164</sup> Up to 2010, INOBAT picked up batteries from collection points for free once 50 kg had been collected. Small retailers who did not reach this volume had to return batteries by mail.

## Consumer awareness creation

### Supporting legal requirements

**Retailers** must clearly indicate at POS that

- spent batteries must be returned to a sales point or to a designated collection point;
- the sales point takes back spent batteries;
- there is a fee on batteries which finances their collection and treatment.

A requirement for advertisements of batteries to mention the return obligation was lifted in 2012.

### INOBAT

- **Collection boxes:** Inobat operates on [online shop](#) where collection point hosts can order collection and promotional materials such as posters and stickers. Most items except for plastic drums are free.



Box, bags and drum for in store collection



Postage paid shipping box for collected batteries / Hazardous good transport drum / Sticker

- **Campaigns:** To achieve the 80% collection target, for which no deadline has been set, INOBAT has been intensifying awareness-creation campaigns aimed at both end-users, in particular younger people (15-35) identified as ‘heavy users’, and retailers. INOBAT notes that – after a certain delay – campaigns lead to a temporary increase of 5% in collection and must be continually repeated to prevent rates from falling. INOBAT campaigns always use humour:
  - **‘Battery-Man’,** 2012 to 2015: The iconic ironic **‘Battery-Man’** character is at the centre of the campaign. Battery-Man visits mostly smaller municipalities (below 10,000 inhabitants) throughout Switzerland on a tour bus. The aim of the campaign is raise awareness among the general public and especially among high school students. The campaign is supported by humorous videos ([YouTube](#)) depicting Battery-Man in his efforts to promote battery recycling and a [Facebook](#) page (with quite a following).
  - **‘Keine Ausreden’** (No excuses), 2008 – 2011, featured a game for mobile phones that was downloaded 300,000 times.
  - **‘Unpassend’** (inappropriate), 2002 - 2007 ([link](#))



- **Schools:** With support from the Federal Office for the Environment, INOBAT develops and regularly revises learning modules with educators about the lifecycle of batteries, with emphasis on recycling.

### Consumer awareness and disposal behaviour

In late 2008, the Federal Office for the Environment commissioned INOBAT to carry out a two-year survey (2009/2010) which found that 65% of the population considered it very important to dispose of waste batteries correctly.

INOBAT later noted that that 98% of Swiss are aware of the need to separately dispose of batteries, while 90% claim to dispose of batteries separately. However, 30 million batteries, or 25% of the around 120 million separately sold batteries reported to be placed on the market, still end up in regular household waste, according to INOBAT estimates.

### Accuracy of reporting

**POM** reports of separately- sold batteries to INOBAT are broken down into seven chemistries. Batteries in EEE are reported to the WEEE system and are not broken down by chemistry. The WEEE systems pass weight data on to INOBAT.

**Free-riders:** The legal obligation for producers of separately sold batteries ensures a high degree of compliance. While the financing aspect of separately sold batteries is strictly regulated, this is not the case for WEEE (and integrated batteries): WEEE systems operate on a voluntary basis without a mandatory financing mechanism. Though a take-back obligation exists for EEE producers, there are no legal obligations to report volumes placed on the market to a central authority. In 2010 and 2011, the weight of batteries placed on the market in EEE was about 17% of total POM, which is comparatively low (data from other countries suggest 30% to 40% of all batteries are placed on the market in EEE). This may explain the relatively low per capita volume of batteries placed on the market (450 g) in Switzerland (Denmark, France, Germany, Ireland and UK all have rates above 500 g per capita).

**Collection** reports must be equally split into separate chemistries. Monitoring can be done effectively, as essentially all batteries are treated at BATREC in Switzerland.

### Potential for improving collection rates

The relatively low collection point density could be improved by tighter coordination of collection with the WEEE systems and an obligation on municipalities to collect batteries.

## UK

### Key points

- The **Waste Batteries and Accumulators Regulations** of April 2009 require only 'large' producers (POM > 1 tonne) to finance waste battery management, and only retailers selling more than 32 kilos of batteries annually are required to take back waste batteries. Producers comply through approved Battery Compliance Schemes (BCS) which must achieve collection targets increasing by 5% points annually from 25% in 2012 to 45% in 2016. BCS are free to choose how they collect batteries but must 'co-operate' to ensure that waste batteries are picked up from local authorities and obligated retailers. About 450 'large' producers currently comply through the five approved schemes: BatteryBack, Valpak, Budget Pack, ERP UK and Repic eBatt.
- In 2012, the third 'compliance period', the battery collection rate reached 27%. However, the rate is disputed as portable lead acid batteries contributed a disproportionate amount to collection. Removing lead batteries from the calculation shows a collection rate for all other battery chemistries of 5-6%.
- The easy availability of lead-acid batteries prevents the systems from implementing awareness creation and collection programmes as it makes them uneconomical. Collection of non-lead portable batteries could be increased by clearer definitions, stricter enforcement or increasing market transparency to enable producers to make an informed choice when selecting a system. Alternatively, the issue could be addressed by restricting the right of each system to choose how it collects batteries, namely by mandatory participation of systems in a central coordination or measurable requirements regarding awareness creation and collection point density.

### Regulatory parameters for compliance systems

The **Batteries and Accumulators Regulations** S.I. 2164/2008 transposed the placing on the market provisions (hazardous substance restrictions, removability of batteries from WEEE and labelling) of Batteries Directive 2006/66/EC. The **Waste Batteries and Accumulators Regulations** of April 2009 (S.I. 890/2009) introduced the producer responsibility provisions. The first compliance period (of one year) began on 1 January 2010. Prior to these regulations, producers were not responsible for the management of waste batteries.

### Roles and responsibilities in waste portable battery collection

- **Large producers** (POM > 1 tonne) must join a Battery Compliance Scheme (BCS) through which they must finance collection, treatment, recycling, information for consumers, the monitoring of the environment agencies and the compliance scheme's service fees. Small producers only have registration and reporting obligations and are not required to join a BCS.
- **Battery Compliance schemes** 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. BCS' can contract direct with local authorities or distributors or must respond to their requests. BCS' must provide information to end-users about collection facilities etc.
- Each BCS must achieve **collection targets** which increase by 5% annually from 25% in 2012 to 45% in 2016. BCS' must report annually by 31 May on achievement of the targets, supported by battery evidence notes. BCS' who significantly over- or under-collect could have their approval withdrawn.
- **Retailers** selling more than 32 kilos of portable batteries per year must take back waste batteries free of charge from end-users. They must display posters informing end-users about separate collection at their outlets.

- **Local authorities** may voluntarily collect waste batteries at civic amenity sites or by kerbside collection. Battery compliance schemes are not responsible for financing councils' collection activities.

### Requirements on systems

There are no requirements regarding schemes' legal form, ownership, for-profit objective or financial disclosure. Schemes must provide an operational plan annually to the Environment Agencies. The plan must cover the following three years and a BCS must continue to meet the approval criteria, including

- proof of sufficient financial resources and technical expertise to deliver its operational plans over a three year period
- details of its proposed membership and an explanation of how the obligations of its prospective members relate to the collection arrangements put in place
- details for meeting obligations regarding publicity
- details of what reasonable arrangements it will make for accepting batteries from retailers, local authorities and other economic operators and waste collection authorities.

Approval costs are high: GBP 118,000 (EUR 132,455) annual 'subsistence charge', plus GBP 680 (EUR 763) per member. These fees should cover all costs of the Environmental Agencies associated with battery compliance, except costs for enforcement actions against free-riders.

## Development of compliance systems

The mono or multiple compliance schemes approach was a key issue in stakeholder consultations in late 2007: while EEE producers and existing WEEE and packaging compliance schemes largely advocated a multi-system approach, the responsible government departments BIS (then BERR) and DEFRA questioned the multi-system approach as ‘a proliferation of schemes can be confusing to producers and [present] a risk that targets are not met’.

The single system approach was supported by some battery producers (Varta, Energizer) as multiple schemes could make the crucial awareness-creation process more complex. Varta also called for an independent and effective coordinating body should a multi-scheme approach be chosen. LARAC, which represents recycling officers of 400 local authorities, also supported a single national compliance scheme.

In summer 2008 it was decided to opt for multiple schemes (albeit with high annual statutory charges to prevent too many schemes) without a clearing house to ‘provide producers with choice, and probably ... lower costs as a result of competition.’

By the 31 May 2009 deadline, eight companies had applied for approval as Battery Compliance Schemes (BCS). For the compliance periods 2010 and 2011, the Environment Agency’s approved six systems. For 2012, five systems were approved, through which as about 490 large producers<sup>165</sup> currently comply:

- **BatteryBack**, a joint-initiative between **WasteCare**, the parent company of WEEE compliance scheme ‘WeeeCare’, and **Veolia ES** which also operates a WEEE Compliance Scheme. Its members include Duracell, Hewlett-Packard, Philips, Toshiba, Procter & Gamble, Sony and retailers Tesco, ASDA, John Lewis and Morrisons. The membership of these large retailers gives BatteryBack access to the waste portable batteries which are collected via supermarkets and other large stores.
- **Valpak**, set up by the packaging industry chain as a collective packaging compliance organisation in 1997, it also operates a WEEE compliance scheme. Retail members include Ikea, Sainsbury’s and B&Q, producer members include Acer, Brother, Energizer, IBM, Johnson & Johnson, Kenwood, Lenovo, Motorola and Panasonic..
- **Budget Pack Ltd**, which has operated a packaging compliance scheme since 2003. Its members including Black & Decker, Daikin, Kodak, Olympus, FujiFilm, Nikon and Office Depot.
- **ERP UK**, founded as a pan-European WEEE compliance scheme by Braun, Electrolux, Hewlett Packard and Sony. Duracell, the UK’s largest supplier of portable batteries, joined ERP for the 2010 compliance period, but moved to BatteryBack for the 2011 period.
- **Repic eBatt**, a sister organisation of the producer-initiated WEEE scheme REPIC which is supported by AMDEA (the Association of Manufacturers of Domestic Appliances) and Intellect (the Information Technology, Telecommunications and Electronics Association). Large members include Hitachi, Hoover, JVC, LG, Sanyo and Sharp.

In addition to the 490 large producers (July 2012), 1017 **small producers** - which represents combined 1% of POM and are not required to finance waste batteries management - are registered with and report volumes to the Environment Agencies<sup>166</sup>. In the context of the Government’s **Red Tape Challenge** initiative, there are discussions to exempt small producers also from the registrations and reporting obligations as a result of the.

<sup>165</sup> As of July 2013. Registered producers are published on EA’s public register - [batteries](#)

<sup>166</sup> Note: There are also 298 registrations for industrial and 112 for automotive batteries.

### Clearing for over- and under-collection

All collected batteries must be handed to Approved Battery Treatment Operators (ABTOs) and/or Approved Battery Exporters (ABEs). ABTOs and ABEs record WBA volumes received on the Environment Agency's IT system in the name of the BCS which delivered the batteries. Once recorded, schemes may sell the evidence to other schemes.

### Interface with WEEE systems

All battery systems are either also WEEE systems or are associated with WEEE systems which facilitates coordination of activities between the two waste streams.

### Collection results

The collection rate increased from 10% in 2010 – the first 'compliance period' for battery collection systems – to 27% in 2012, as the collection volume increased from 4.5 to 11 thousand tonnes and POM fell from 43 to 36 thousand tonnes.



However, the collection rate is disputed as lead acid batteries made up 83% of the collection volume while contributing only 8% of POM. Assuming a 100% collection rate for portable lead acid batteries results in an overall collection rate on a current year basis to 13% in 2012. Removing lead acid batteries from the equation shows that the collection rate for all other battery chemistries has been rather flat at 5-6%.

| <b>Collection rate %, current year basis</b> | <b>2010</b> | <b>2011</b> | <b>2012</b> | <b>2013-Q1</b> |
|--|-------------|-------------|-------------|----------------|
| Portable batteries as reported               | 10%         | 19%         | 30%         | 50%            |
| Portable lead acid batteries only            | 29%         | 116%        | 296%        | 515%           |
| Portable batteries, all other chemistries    | 7%          | 6%          | 5%          | 8%             |
| Overall rate, adjusted*                      | 21%         | 17%         | 13%         | 16%            |

\* The adjusted overall collection rate assumes collection of lead acid batteries is 100% of POM; for all other batteries the actual collection volumes are given.

## Drivers affecting the collection rate

### Availability of collection points and use of collection channels

There are an estimated 50,000 waste portable battery collection points in the UK, or one per 1,250 residents.

In 2010, systems were confident of reaching the interim targets through retail take-back, existing municipal sites and schools but acknowledged that other collection possibilities would have to be explored for 2012 and beyond. Local authorities' involvement is considered crucial to increase collection, notably by providing kerbside collection and promoting collection in schools.

Number of collection points and share of collected batteries, estimate 2011:

| <i>Collection point host</i>  | <i>Number of collection points</i> | <i>Share of total waste battery collection</i> |
|-------------------------------|------------------------------------|--|
| Retailers serviced by systems | 45,000                             | 20%  |
| Municipalities                | 1,000                              | 10%  |
| Schools                       | 1,500                              | 3%   |
| Companies                     |                                    | 65%*   |
| WEEE dismantlers              |                                    | 2%   |

Source: *Own estimates*

\* *main source of lead acid batteries*

## Consumer awareness measures

### Supporting legal requirements

**Battery systems** must provide information to end-users on

- the reasons why batteries should not be disposed of with ordinary waste,
- the collection and recycling facilities available to end-users,
- the meaning of the crossed-out wheeled bin symbol and the chemical symbols for mercury, cadmium and lead.

BIS Guidance notes that BCS' have the flexibility to design their publicity in ways which complement the collection methods that they are using. Systems may also wish to co-operate on publicity to ensure a consistent and coherent message to consumers, and to consider working with local authorities.

**Distributors/retailers** must display [posters](#) informing end-users about separate collection at their outlets.

### Batteryback

WasteCare has been running BatteryBack as a national recovery service for waste portable batteries since July 2008. Batteries are collected from retailers, offices, schools and local authorities. WasteCare already works with Veolia on WEEE collection. It aims to provide over 80,000 collection points over the next few years. By the end of 2008 it operated around 1,500 collection points including points hosted by retailers Currys, PC World, ASDA, Boots and TESCO.

- **Collection containers:** BatteryBack has collection points in hundreds of ASDA, Boots and TESCO stores all over the UK.



### Budget Pack

Bristol-based producer compliance scheme Budget Pack Environmental has launched a new battery collection and recycling service.

- **Collection containers:** In Mid-2013 Budget Pack released a new battery collection box.



### ERP

- **Collection containers:**



### Valpak

- **Collection containers:** Valpak found that free standing collection tubes were more effective than cardboard boxes.



- **Campaigns:** The [Recycle-more](#) campaign provides information, help and advice on all aspects of recycling within the home, schools and workplaces and conducts competitions in various regions with prizes on offer. The website is accompanied by a [Facebook page](#).
  - Since 2011, Valpak has organised campaigns in schools.
  - In mid-2012, Valpak launched free 'Regional Forums for UK businesses' during which workshops are held across the UK designed to keep businesses up-to-date with ever-changing environmental legislation.
  - Valpak supports charities, raising money for Warwickshire Wildlife Trust, The Elisabeth Svendsen Trust for Children and Donkeys, Action 21's Sustainability Garden, Kamla Foundation - sustainable water management solutions in Tamil Nadu, India and the Warwickshire Wildlife Trust.



### Municipalities

Many local authorities and other voluntary collectors purchase durable battery collection containers from manufacturers such as [RS Fabrications](#).



## Consumer awareness and disposal behaviour

In December 2010, **ERP** announced the results of a survey on battery recycling awareness in the UK found that

- nearly half (49%) of the respondents had never separately disposed of batteries,
- 45% were unaware of any battery collection points near to where they live or work,
- almost twice as many people over 55 (52%) have disposed of batteries separately, compared with 16-24 year olds (27%)
- the Welsh were the keenest recyclers with 58% of the population having separately disposed of batteries, whilst in Northern Ireland less than 30% had done so.

A July 2010 [survey](#) commissioned by **ERP** found that battery recycling awareness was particularly low among 11-16 year olds: 58% of the respondents had never separately disposed of batteries while 38% did not know that batteries could be recycled.

## Data accuracy

The Environment Agency publishes quarterly break downs of the overall POM and collection volumes into 3 chemistry groups (Lead acid, NiCd, Other). Data of each systems are not disclosed.

The Agencies and Industry Batteries Operational Liaison Group (AIBOLG) meets<sup>167</sup> quarterly to discuss issues arising from the implementation of the Waste Batteries Regulations. AIBOLG is comprised of two representatives from battery systems, four from approved battery treatment operators or exporters and six from the Environment Agencies.

## POM

Systems typically **audit** battery declarations of a share of their members annually based on risk profiling. In 2011, 27 large producers were audited representing 55% of portable batteries POM. In 2012, 33 producers representing 11% of POM were audited. In 2012, the Environment Agency audited all systems.

The Environment Agency is not funded to actively identify **free-riders** but investigates when made aware of specific companies. As regards small producers, which represent 1% of the total market, the Environment Agency takes a risk-based approach. An EA project targeting WEEE free-riders also covers compliance of batteries in EEE. A hotline number is provided (0800 023 2090) that allows callers to report details of suspected freeriders anonymously.

## Collection

Batteries collectors must hand over waste batteries to Approved Battery Treatment Operators (ABTOs) and/or Approved Battery Exporters (ABEs). ABTOs and ABEs record volumes received on the Environment Agency's IT system in the name of the compliance systems which delivered the batteries. Once recorded, schemes may sell the evidence to other schemes.

The publication of 2010 collection data was delayed by almost a year due to the lack of an **audit** trail for data from one of the systems which subsequently ceased to act as a BCS. In 2012, 17 ABTOs and ABE were audited responsible for 46% of portable batteries evidence (2011 9 sites representing 52%). The number of approved battery treatment sites fell from 35 in 2012 to 20 in 2013 (the volumes handled by the no longer approved sites were small).

The disproportionate amount of **waste lead acid batteries** points to the shortcomings of the definition of batteries whose category cannot be distinguished as such at the time of delivery to the ABTOs/EBEs.

<sup>167</sup> AIBOLG meeting minutes are available on EA website [here](#).

Discussions on the cost impact for producers on introducing a weight threshold for portable batteries are ongoing. The Government (DEFRA) is expected to address concerns over ambiguities in the definition of the 'hand carryability' of portable batteries, industrial batteries (and in this context the term 'vehicle' which these batteries power) in autumn 2013.

### Potential for improving collection rates

The easy availability of lead-acid batteries and facility to use them towards the collection target prevents the systems from implementing awareness creation and collection programmes as it makes them uneconomical.

The accuracy of the collection rate and the collection of non-lead portable batteries could be increased by

- clearer definitions of portable and industrial batteries,
- stricter enforcement,
- Increasing market transparency (e.g. by requiring systems to publish the chemistries they collect) to enable producers to make an informed choice when selecting a system.

Alternatively, the issue could be addressed by restricting the right of each system to choose how it collect batteries, namely by

- requiring mandatory participation of systems in a central coordination, which would also provide a single interface between systems and local authorities
- imposing measurable requirements regarding awareness creation and collection point density on systems.

# PORTABLE BATTERIES LEGISLATION ELSEWHERE

## Croatia

---

### Legislations

Croatia became the 28th EU member state on 1 July 2013. The Waste Batteries and Accumulators Ordinance of December 2006 stipulates mandatory financing through the Environmental Protection and Energy Efficiency Fund (EPEEF). A new Waste Act, transposing EU Directive 2008/98/EC was adopted on 15 July 2013. The new Act notably holds municipalities responsible for providing collection containers for the separate collection of various waste streams (including WEEE and waste batteries) and introduces collective and individual compliance for producers, while maintaining payment of fees to the Recycling Fund as a compliance option.

### Implementation

Since January 2007 producers and importers have had to pay a fee to the Fund on import of batteries. The fee is calculated on the basis of data from the Customs Administration which submits the information to the fund. The Fund's revenue from portable batteries from 2007 to 2011 has totalled around EUR 2.9 million. Payments to collectors and exporters totalled around EUR 1 million, leaving a EUR 1.9 million surplus at the end of 2011.

### Collection Results

Volumes of portable batteries placed on the market declined from 147g per capita in 2007 to 75g in 2011. Collection in 2011 reached 20g per capita, a return rate of 24%. All waste portable batteries are exported for treatment.

## EU candidates

---

### Bosnia-Herzegovina

An amendment to Bosnia's Waste Management Law of 2009 calls for implementing regulations on certain waste streams, including WEEE and waste batteries by 2010. However, there is as yet no implementing regulation as regards waste portable batteries.

The Federal Waste Management Plan 2012-2017 foresees a waste battery regime in which municipalities play a central role in the separate collection of waste batteries while producer fund collection and treatment via the environmental fund.

### Macedonia (FYR - Former Yugoslav Republic of Macedonia)

Macedonia transposed Batteries Directive 2006/66/EC with effect from January 2012: Producers are incentivized to set up or join a licensed compliance system in order to be exempt from an environmental fee of around EUR 2,025 per tonne of batteries placed on the market. Retailers must take back waste batteries and municipalities must co-operate with producers and collective systems in the setting up of collection points and informing the public about collection locations.

Nula Otpad (Zero Waste), formed earlier in 2012 as a non-profit organisation, was licenced as the first compliance system under Macedonia's battery management law on 26 October 2012. Nula Otpad so far represents producers placing 7% of

portable batteries on the market. Macedonia's amended battery management law requires that a system must reach a market share of between 15% and 51% after the first year of operations.

### Montenegro

EU accession negotiations opened in June 2012. So far, the Montenegrin WEEE and Waste Batteries Regulations only partly transpose the equivalent EU Directives. The Law on Waste Management of December 2005 designated WEEE and waste batteries as 'Special Wastes', which must be collected separately and for which producers must pay a Special Waste Management Fee.

Since 1 January 2010 producers and importers have had to report quarterly volumes of electronics, batteries and packaging placed on the market to the Agency for Environmental Protection. From the date of Montenegro's accession to the EU producers will have to pay the special waste management fee (e.g. EUR 140 per tonne of ITC equipment). The fee will accrue to the state budget.

### Turkey

The 2004 Batteries Regulation requires producers to collect 80% of NiCd and HgO batteries placed on the market and 40% of all other portable batteries by 2009 (collection results in 2009 showed the target was missed by a factor of around 10). A new Waste Management Law, currently in drafting, which will replace the Solid Waste Control Regulation of 1991 and repeal all 13 Regulations relating to specific waste streams, including the Waste Batteries and Accumulators Regulation of 2004. Batteries Directive 2006/66/EC, which has lower targets than the current Turkish Regulation, is scheduled to be transposed in 2013.

There is one collection system for portable batteries, TAP, set up by the Portable Battery Manufacturers and Importers Association of the same name in 2004. TAP has around 350 members.

## EU neighbours

---

### Belarus

The 2007 'Law on Waste Management' empowers State Ministers to apply producer responsibility obligations to products that generate waste. There are no plans yet to apply the principle to portable batteries.

### Russia

Pending amendments to reform the Russian Federation's 1998 Law on "Waste from Production and Consumption" would i.a. introduce the legal framework for producer responsibility. Portable batteries are not on the list of products to be regulated at this stage.

### Ukraine

Waste batteries legislation has been driven by industrial policy with the objective of protecting local production, in particular of lead batteries. Batteries Directive 2006/66/EC is notably absent from the government's schedule for implementing EU legislation. Cabinet Orders on the collection and reprocessing of spent lead-acid batteries 1996 aimed to establish a closed-loop production facility for lead-acid batteries run by partly state-owned company ISTA.

## Americas

---

### Argentina

On a national level there is as yet no legislation regulating the take-back of batteries. In March 2013 a Bill advocating EPR on waste batteries was introduced to the Senate. The Bill would effectively hold manufacturers of primary and rechargeable batteries (containing hazardous substances over certain thresholds) responsible for their end-of-life management.

### Brazil

The EPR and reverse logistics related provisions of the National Waste Law No. 12.305/2010 have not yet been implemented with regards to batteries. On a state level, Sao Paulo's Law 12.300 of March 2006 and implementing Resolution SMA 38/2011 of August 2011 require producers and importers of batteries to establish reverse logistics programmes for their end-of-life batteries.

### Canada

There is no federal legislation mandating the collection and recycling of waste batteries in Canada. However, several of the 10 provinces have implemented programmes to collect waste batteries, e.g. Ontario, British Columbia, Manitobam and Quebec. Ontario's Orange Drop scheme collected around 61 g of single use batteries per capita of the state population. Call2Recycle recycled about 15 g per capita of rechargeable batteries in all of Canada.

### Colombia

The legal basis for producer responsibility was introduced in Hazardous Waste Law 4741 in 2005. A Resolution of July 2010 by the Ministry of Environment subjected all batteries and accumulators – integrated into EEE or sold separately - to mandatory take-back programmes.

### Costa Rica

Decree 35933-S-2010 of 5 May 2010 on the mandatory take-back of certain WEEE includes laptop and cell-phone batteries in its scope. Separately sold batteries and accumulators are not yet subject to mandatory take back requirements: A draft implementing regulation on 'Special Waste Management' (No. DRS-IC-883/12), released in December 2012, subjects Cadmium and Lithium batteries to EPR programmes. A new Framework Waste Law covering special wastes, is currently being drafted.

### USA

While there is no federal legislation requiring the take back of waste batteries by retailers or producers, 9 of the 51 states have take-back requirements on some batteries in place, mostly on rechargeable batteries only, e.g. California, New York State, Florida. In 1994, non-profit public service organization 'the Rechargeable Battery Recycling Corporation' (RBRC) set up Call2Recycle. Call2Recycle takes back waste rechargeable batteries from retailers in California and New York and operates such programs on a voluntary basis throughout much of the US and Canada. BBRC's board members include representatives from Sanyo, Black&Decker, Varta, Panasonic and Sony. In November 2011, Four of the largest battery manufacturers (Duracell, Energizer, Panasonic and Rayovac) incorporated an Non-profit organisation 'the Corporation for Battery Recycling' (CBR) with the mandate to establish a nation-wide voluntary battery take-back programme.

## Asia

---

### China

The Waste Battery Pollution Control Policy of October 2003 stipulates collection of rechargeable batteries (nickel-cadmium batteries, nickel hydrogen batteries, lithium-ion batteries, lead acid batteries) and button cells and makes producers responsible for recycling. Retailers of such batteries should provide take back of waste batteries. However, a central collection system is not deemed necessary as batteries have reached low mercury levels.

### Japan

As one of the product groups regulated under the revised Law for Promotion of Utilization of Recyclable Resources (LPEUR) of 2000, portable rechargeable batteries have been subject to labelling and take back obligations since April 2001. There are no collection targets.

### South Korea

Since 2005 the EPR System extended to batteries in personal computers, audio equipment, mobile phones and since January 2008 to separately sold alkali manganese, Ni-Cd, mercury-containing, oxidized silver, primary lithium batteries, as well as and such batteries contained in certain electronics including calculators, notebooks, razors, phones, cameras and watches. The Government announces annually collection target for producers who must submit an individual or collective implementation plan to implementation agency. Fines are issued for underachievement of the targets.

### Republic of China (Taiwan)

Since 1998 producers have been obligated to pay 'Recycling Fees' into the Environment Protection Agency's Recycling Fund, while EPA uses the funds to pay 'Recycling Subsidies' to accredited recyclers. Retailers of batteries, in particular supermarkets, discounters, convenience stores, retailers of mobile phones or cameras must collect waste batteries. In addition, municipal mobile waste collection services must collect batteries separately. According to EPA, around 5,470 tonnes of waste dry cell batteries were collected in 2008, or around 240 per capita.

# ANNEX

## Sources

The study's findings rely on primary research of publications by collection organisations (notably annual reports) and national authorities, supported by questionnaires and interviews with representatives from selected organisations.

### Austria

[Lebensministerium](#), Government  
[Umweltbundesamt](#), Environment Agency  
[EAK](#), Coordination centre  
[CCR Austria](#), Compliance organisation  
[ERA](#), Compliance organisation  
[ERP Austria](#), Compliance organisation  
[Interseroh Austria](#), Compliance organisation  
[UFH](#), Compliance organisation  
[Saubermacher AG](#), Waste Management Company

### Belgium

[IBGEBIM \(Brussels\)](#), Environment Agency (Brussels)  
[OVAM \(Flanders\)](#), Environment Agency (Flanders)  
[OWD \(Wallone\)](#), Environment Agency (Wallone)  
[BEBAT](#), Compliance organisation  
[FEE](#), Waste management association

### Bulgaria

[Ministry of Environment and Water](#), Government  
[EMEPA](#), Environment Agency  
[Ecobattery](#), Compliance organisation  
[Ecobulbattery](#), Compliance organisation  
[Eltechresource](#), Compliance organisation  
[Greentech Bulgaria](#), Compliance organisation  
[Nooro](#), Compliance organisation  
[Nord Recycling](#), Compliance organisation  
[Recobat](#), Compliance organisation  
[Transins Battery](#), Compliance organisation  
[UBA Recycling](#), Compliance organisation

### Croatia

[Ministry of Environment and Nature Protection](#), Government  
[Eko-Ozra](#), Compliance organisation (prospective)  
[Fund for Environmental Protection and Energy Efficiency](#), Recycling Fund

### Cyprus

[Ministry of Agriculture, Natural Resources and Environment](#), Government  
[AFIS Cyprus](#), Compliance organisation

### Czech Republic

[Ministry of Environment](#), Government  
[ECOBAT](#), Compliance organisation  
[REMA Battery](#), Compliance organisation

### Denmark

[Ministry of the Environment](#), Government  
[VIRK \(batt. tax\)](#), Government  
[Environmental Protection Agency](#)  
[DPA System](#), Coordination center  
[Elretur](#), Compliance organisation  
[ERP Denmark](#), Compliance organisation  
[RENE AG](#), Compliance organisation  
[Returbat](#), Lead battery organisation  
[Batteri foreningen](#), Producer association

### Estonia

[Ministry of the Environment](#), Government  
[EES-Ringlus](#), Compliance organisation  
[Elektroonikaromu](#), Compliance organisation  
[Probleemtooteregister](#), Producer register

## Finland

[Pirkanmaa](#), Environment Agency  
[ERP Finland](#), Compliance organisation  
[RECSER OY](#), Compliance organisation

## France

[MoE](#), Government  
[MoI](#), Government  
[ADEME](#), Environment Agency  
[RegistreDEEE](#), Producer register  
[Corepile](#), Compliance organisation  
[Screlec](#), Compliance organisation

## Germany

[BMU](#), Government  
[UBA](#), Environment Agency (Federal)  
[Batteriemelderegister](#), Producer register  
[GRS](#), Compliance organisation  
[CCR Rebat](#), Compliance organisation  
[ERP Germany](#), Compliance organisation  
[Öcorecell](#), Compliance organisation  
[ZVEI](#), Producer Association

## Greece

[Ministry of Environment](#), Government  
[E.O.AN.](#), Government agency overseeing separate waste streams  
[AFIS](#), Compliance organisation

## Hungary

[KVVM Ministry of Environment](#), Government  
[OKTV](#), Environment Agency  
[OHÜ](#), National Waste Management Agency  
[Customs Association](#), Government  
[CCR Rebat Nonprofit Kft](#), Compliance organisation  
[RE'LEM Nonprofit Kft](#), Compliance organisation  
[Re-bat Nonprofit Kft](#), Compliance organisation

## Iceland

[Ministry for the Environment](#), Government  
[Icelandic Recycling Fund](#), Recycling Fund

## Ireland

[Department of the Environment, Community and Local Government](#)  
[EPA](#), Environment Agency  
[ERP Ireland](#), Compliance organisation  
[WEEE Ireland](#), Compliance organisation  
[WEEE Register Society](#), Producer register

## Italy

[MoE](#), Government  
[Registro Pile e Accumulatori](#), Producer register  
[CDCNPA](#), Coordination center  
[Remedia](#), Compliance organisation  
[RAEcycle](#), Compliance organisation  
[ERP Italia](#),  
[Ecoped](#), Compliance organisation  
[CCR Italia](#), Compliance organisation  
[Ecodom](#), Compliance organisation  
[EcoR'it](#), Compliance organisation  
[Cobat](#), Compliance organisation  
[ANCI](#), Association of regions  
[ANIE](#), Producer association  
[ISPRA](#) Institute for Protection and Environmental Research

## Latvia

[MoE](#), Government  
[Green Dot Latvia](#), Compliance organisation  
[Latvia Green Electronics](#), Compliance organisation  
[ZALĀ JOSTA](#), Compliance organisation  
[ZALĀIS CENTRS](#), Compliance organisation  
[BAO](#), Waste management company

## Lithuania

[Ministry of Environment](#), Government  
[Aplinkos Apsaugos Agentūra](#), Environment Agency  
[EEPA Collective system](#), Compliance organisation  
[GIA System](#), Compliance organisation  
[Zalvaris](#), Compliance organisation  
[EMP](#), Waste management company

## Luxembourg

[Administration de l'Environnement, Division des Déchets](#)  
[SuperDrecksKëscht](#), Waste collection program  
[Ecobatterien](#), Compliance organisation

**Macedonia (FYR)**[MOEPP](#), Government**Malta**[MEPA](#), Environment Agency[WasteServ Malta](#), Waste collection program[GreenPak](#), Compliance organisation (potential)**Montenegro**[EPA Montenegro](#), Environment Agency**Netherlands**[SenterNovem](#), Government[Stibat](#), Compliance organisation[ARN](#), Lead battery organisation**Norway**

Climate and Pollution Agency, Environment Agency

[Batteriretur AS](#), Compliance organisation[Rebatt AS](#), Compliance organisation[EE Registreret](#), WEEE coordination centre**Poland**[MoE](#), Government[GIOS](#), Environment Agency[NFEP](#), Recycling Fund[REBA](#), Compliance organisation[Biosystem](#), Compliance organisation[ERP Batteries Poland Sp. z o. o.](#), Compliance organisation[Auraeko](#), Compliance organisation[CCR Polska](#), Compliance organisation**Portugal**[Apambiente](#), Environment Agency[ANREEE](#), Producer register[Ecopilhas](#), Compliance organisation[AMB3e](#), Compliance organisation[ERP Portugal](#), Compliance organisation**Romania**[Ministry of Environment and Climate Change](#)[ANPM](#), Environment Agency[CCR Rebat](#), Compliance organisation[ECOTIC BAT](#), Compliance organisation[RECOBAT Plus](#), Compliance organisation[RoRec](#), Compliance organisation[SNRB](#), Compliance organisation[SNRB](#), Compliance organisation**Serbia**[Ministry of Environment and Spatial Planning](#)[SEPF](#), Recycling Fund**Slovakia**[Ministry of Environment](#), Government[Slovak Environmental Agency](#), Environment Agency[Recycling Fund](#), Recycling Fund[INSA](#), Battery collection program[Asekol](#), Compliance organisation[Elektrorecycling](#), Compliance organisation[Natur Elektro](#), Compliance organisation[SEWA](#), Compliance organisation[Mach Trade](#), Waste management company**Slovenia,**[MoE](#), Government[ZEOS](#), Compliance organisation[Interseroh](#), Compliance organisation[Slopak](#), Compliance organisation**Spain**[Registro P&A](#), Producer register[OfiPilas](#), Coordination centre (voluntary)[Ecopilas](#), Compliance organisation[El Kretsen](#), Compliance organisation[ERP Spain](#), Compliance organisation[Asimelec](#), Producer association**Sweden**[MoE](#), Government[Naturvardsverket](#), Environment Agency[EE- & Batteriregistret](#), Producer register[Batteriinsamlingen](#), Battery collection program[El-Kretsen](#), Compliance organisation[Avfall Sverige](#), Waste management association[SKL](#), Association of regions**Switzerland**[Bundesamt für Umwelt BAFU](#), Government[INOBAT](#), Compliance organisation**Turkey**[TAP](#), Compliance organisation

**UK**

[Department for Business, Innovation & Skills](#)

[Environment Agency](#)

[BatteryBack](#), Compliance organisation

[Budget Pack](#), Compliance organisation

[ERP UK](#), Compliance organisation

[Repic eBatt](#), Compliance organisation

[Valpak](#), Compliance organisation

**References**

ADEME (2001/2/3/6/7/8/10/11) - Synthèse Piles et Accumulateurs,

BEBAT (2005) - Determination de la quantité de piles disponibles à la collecte dans les déchets ménagers en 2004. RDC Brussels

BIO Intelligence Service (Jul-03) - Impact assessment on selected policy options for revision of the Battery Directive

Commission Services (updated, first release May-06): Questions and Answers on the Batteries Directive (2006/66/EC)

Commission Staff Working Paper (Nov-03) - Directive of the European Parliament and of the Council on Batteries and Accumulators and Spent Batteries and Accumulators - Extended impact assessment {COM(2003)723 final}

EBPA/Recharge (Jul-07) - Compliance Blueprint: A guidance document for setting up a Battery Compliance Organisation

EBRA (Oct-08) - 10 years of battery recycling in Europe (presentation)

EURAS (Oct-05) - Contribution of Spent Batteries to the Metal Flows of Municipal Solid Waste

EUROSTAT (Oct-12) - WEEE statistics 2006-10

Klif/Norsas (2006-12) - Annual reports for EE-registered

Ministère de l'Écologie et du Développement Durable (2005) - Efficacité de la filière des piles et accumulateurs

Perchards (updated 2006-09) – Batteries Directive - Transposition Summary

Recharge (Jun-07) - The Battery Directive and the WEEE Directive, Synergies and Expectations (presentation)

Institution of Electrical Engineers (Jun-04) - Recycling of Batteries – FactFile

**Further research**

- Rechargeable portable batteries being placed on the market in EEE or separately: Market shares and trends, unit weight, chemistries, applications, average lifetime, reuse and disposal routes.
- Industrial batteries: Applications, market developments (energy storage, vehicle propulsion), weights, life-times, reuse and disposal routes.
- Statistical analysis of registered WEEE and battery producers in Europe in view of the impact of potential de minimis exceptions on the environmental and financial performance of collection schemes