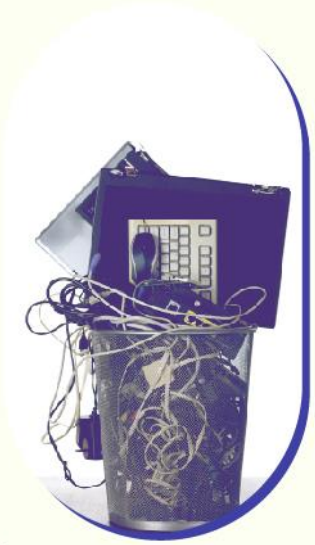
ECOSWEEE

Enhancing collection of small W/EEE and batteries



Deliverable D2.1

Best practice collection initiatives

10.11.2023

This project is co financed by the LIFE Programme 2021-2027 of the European Union for the Environment and Climate Action under the project number 101104443 - LIFE22-PLP-BE-LIFE-ECOSWEEE.

Document Control Sheet

PROJECT INFORMATION

Project Number	101104443-LIFE22-PLP-BE-LIFE-ECOSWEEE		
Project Acronym	ECOSWEEE		
Project Full title	Enhancing collection of small W/EEE and batteries		
Project Start Date	1 April 2023		
Project Duration	22 months		
Funding Instrument	LIFE2027	Type of Action	LIFE-PJG
Topic	LIFE-2022-PLP-Environment		
Coordinator	WEEE Forum		

DELIVERABLE INFORMATION

Deliverable No	**D2.1**
Deliverable Title	**Report on good practices of take back schemes for small electronics and batteries with summary booklet on collection practices**
Work-Package No	WP2
Work-Package Title	Background research on good practices, drivers and obstacles in the collection of small U/WEEE and batteries
WP-Leader (Name and Short Org. Name)	UNITAR
Task No	T2.1
Task Title	Mapping of collection practices
Task Leader (Name and Short Org. Name)	Ramboll
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Status	Draft ☐ Final ☒
Deliverable Type	Report ☒ Data ☐ Demonstration ☐ Other ☐
Dissemination Level	Public (PU) ☐ Sensitive (SEN) ☒ Classified ☐ PU: Public, fully open SEN: Sensitive, limited under the conditions of the Grant Agreement Classified R-UE/EU-R – EU RESTRICTED under the Commission Decision No2015/444 Classified C-UE/EU-C – EU CONFIDENTIAL under the Commission Decision No2015/444 Classified S-UE/EU-S – EU SECRET under the Commission Decision No2015/444

Date Approved by Coordinator	

DOCUMENT VERSION HISTORY

Version	Date	Author	Description of Change
1	07.07.2023	R. Bliklen, F. Frick	Initial draft
2	12.10.2023	R. Bliklen, F. Frick	Draft final
3	10.11.2023	R. Bliklen, F. Frick	Final

DOCUMENT REVIEW

Reviewer	Date	Reviewer Name (Short Organisation Name)
1	15.09.2023	E. Vermeersch (UNITAR), L. Herreras (WEEE Forum)
2	10.10.2023	E. Vermeersch (UNITAR), D. Kritikos (WEEE Forum)
3	15.10.2023	C. Santos (DG ENV)

Legal disclaimer

This project is co-financed by the LIFE Programme 2021-2027 of the European Union for the Environment and Climate Action under Grant Agreement number 101104443 - LIFE22-PLP-BE-LIFE-ECOSWEEE. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

ABBREVIATIONS

Abbreviation	Definition
B2B	Business to Business
B2C	Business to Consumer
BCR	Brussels Capital Region
BE	Belgium
CA	Civic Amenity
CENELEC	European Committee for Electrotechnical Standardization
CIAP	Consumer Insights Action Panel
CPU	Central processing unit
CRM	Critical raw materials
DCF	Designated Collection Facilities
DKK	Danish Krone
DPA	Danish Producer Responsibility
DTS	Distributor Take Back Scheme
EC	European Commission
EEA	European Economic Area
EEE	Electrical and Electronic Equipment
EoL	End of Life
EPA	Environmental Protection Agency
EPR	Extended Producer Responsibility
ES	Spain
EU	European Union
EUR	Euro
HDD	Hard disk drive
IMS	Integrated Management Systems
IT	Information Technology
kg	Kilogram
KPI	Key Performance Indicator
MS	Member State
MSW	Municipal Solid Waste
NL	Netherlands
NWR	National (W)EEE Register Foundation
p4r	Preparation for reuse
PAYT	Pay as You Throw
PC	Personal Computer
PCS	Producer Compliance Scheme
POM	Put on Market
PRL	Producer Register Ltd.
PRO	Producer Responsibility Organisation
RO	Romania
UBD	Universal Binding Declaration
UEEE	Used Electrical and Electronic Equipment
UK	United Kingdom
UNITAR	United Nations Institute For Training and Research
VCA	Vehicle Certification Agency
vEMC	visible Environmental Management Costs
vRG	Advance recycling fee (“vorgezogene Recyclinggebühr”)
WBMP	Waste Battery Management Plan
WBMR	Waste Battery Management Report
WEEE	Waste of Electrical and Electronic Equipment

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1. About the project

Enhancing collection of small W/EEE and batteries

ECOSWEEE is a project co-funded by the European Union, under the LIFE Project Grants with the aim of practically testing several methods and incentives to increase the collection rate of small WEEE and portable batteries. Every product that is not collected for re-use or de-polluted and recycled represents a wasted opportunity in terms of loss of natural resources and energy, a decreasing supply of (critical and/or valuable) materials to feed into manufacturing, which in turn puts the sector's resilience, the EU economy's autonomy and jobs in jeopardy. Since after twenty years of WEEE rules, Member States (MS) are falling short of reaching the EU minimum collection rate of 65%. The EU is committed to improving the small WEEE collection rate in the frameworks of the European Green Deal.

The project proposes to design and implement 10 new pilots in 8 Member States to test the practicability, achievability, usefulness, and viability of different collection strategies and incentives. Strategies to be tested include deposit return, buyback, and other reward schemes, e.g., donation, postal services, other collection routes, involvement of online retail, financial aspects, and improvement of the collection network. Another 11 ongoing or planned initiatives carried out by producer responsibility organisations (PROs) will also provide direct input to the project. Results of the pilot implementation will be analysed on the basis of pre-established criteria and indicators to measure the impacts and effectiveness (success) of the actions implemented, define potential areas of improvement, and provide recommendations to policymakers at Member States and EU levels.

The primary target users of the project results are PROs and other stakeholders involved in the collection of small WEEE and batteries across the MS, which will have access to the mapping of incentive-driven collection schemes, the good practices identified, and the recommendations developed by the project. Second, the project's results will be targeted at the EC and other EU bodies involved in decision-making and will contribute to the consultation process on the revision of WEEE legislation and the Commission proposal on Batteries Regulation. Finally, EU consumers, who will be directly involved in consultations as well as active participants in the piloting of different take-back solutions, will benefit from the project's results by testing the collection strategies developed in the project and acquiring additional knowledge on the small U/WEEE and portable battery collection.

2. Partners

Partners	
WEEE FORUM	Waste Of Electrical And Electronical Equipment Forum Aisbl - WEEE Forum (Belgium)
UNITAR	United Nations Institute For Training And Research (Switzerland)
SPI	Sociedade Portuguesa De Inovacao Consultadoria Empresarial E Fomento Da Inovacao Sa (Portugal)
RAMBOLL	Ramboll Deutschland GmbH (Germany)
ECO	Erion Compliance Organization Scarl (Italy)
ECYCLE	Appliances Recycling S.A. (Greece)
ECOTIC	Asociația Ecotic (Romania)
ELECTRÃO	Electrão – Associação De Gestão De Resíduos (Portugal)
GRS Batterien	Stiftung Gemeinsames Rucknahmesystem Batterien (Germany)
Stichting OPEN	Stichting Organisatie Producentenverantwoordelijkheid E-Waste Nederland (Netherlands)
ZEOS DOO	Zeos Ravnanje Z Elektricno In Elektronsko Opremo Doo (Slovenia)
WEEE Ireland	Waste Electrical And Electronic Equipment Ireland (Ireland)
Ecologic	Ecologic (France)
Ecosystem	Ecosystem (France)
Recupel	Recupel Aisbl (Belgium)
RENAS AS	Renas As (Norway)
Stiftung SENS	Sens Foundation (Switzerland)

Chapter 3

Executive Summary

ECOSWEEE
Enhancing collection of small W/EEE and batteries

3. Executive Summary

The European Union Member States (EU MS) are facing challenges in meeting the collection targets for Waste Electrical and Electronic Equipment (WEEE) and waste batteries set by the respective legislative regulations. In particular small WEEE such as mobile phones, lamps and kitchen appliances remain an issue, as they are oftentimes hoarded at households at the end of life or disposed of via municipal waste streams.

Distributors and producers of electrical and electronic equipment (EEE) are responsible for financing and organizing the separate collection of WEEE and waste batteries. In pursuit of meeting collection targets, individual producers and collective systems of producers have hence implemented initiatives to increase collection rates. These initiatives target either specific customer groups such as school children, households, or offices, or specific waste streams, such as B2B appliances and e-vapes, which are not effectively captured through regular collection channels. Incentives have played a crucial role in these initiatives.

A survey among EU Producer Responsibility Organizations (PROs) revealed that various incentive types have been employed, and a total of nine types of incentives were classified. From the survey, 20 initiatives from 13 countries were further assessed through interviews. As described in detail in Chapter 6, many initiatives focused on increasing convenience for customers through bring points, pick-up services, or postal services. Others implemented financial incentives, such as monetary rewards, non-monetary rewards and vouchers, and deposit return fees. Each incentive type has its own implementation nuances and lessons learned, presented in detail in Chapter 7. Overarching lessons learned were:

1. Success rates and Key Performance Indicators (KPIs) for the initiatives are primarily based on volume and consumers reached. While these initiatives complement regular collection methods, they may not significantly impact overall collection volumes due to the nature of small WEEE and their lower weight.

2. Downstream activities involve recycling, preparation for re-use, and in few cases direct re-use for the collected W/EEE and waste batteries. Critical Raw Materials (CRM) recovery is not a primary focus of most initiatives.

3. Collaboration with partners is essential for the success of the initiatives, involving postal services, logistics partners, retailers, treatment operators, refurbishers, municipalities, schools, and second-hand shops. Effective communication with partners and consumers is vital to increase collection rates.

4. Economics play a significant role, as these initiatives are often more expensive than regular collection methods. The economic viability depends on factors such as the material value, market competition, and the target collection rate. Financial contributions from PROs to actors involved in the initiatives help ensure their engagement.

5. Data protection and legal aspects are addressed by some initiatives, with a focus on secure data deletion for collected devices.

6. Scalability and replicability of initiatives vary, depending on factors such as EPR market design, fee design, roles of actors, geography, population density, and public awareness.

7. Challenges in implementation include theft, logistics costs in remote areas, competition for space, communication with local authorities, and designing collection infrastructure. Future challenges include effectively collecting e-cigarettes/vapes and adapting to changes in battery regulations.

The study team identified further conclusions per incentive type which can help with implementation of similar initiatives and provides recommendations for the successful realization and upscaling of pilots (sections 7.2 and 7.3).

Chapter 4

Introduction

ECOSWEEE
Enhancing collection of small W/EEE and batteries

4. Introduction

4.1 Objectives of the study

The amount of waste electrical and electronic equipment (widely known as WEEE or e-waste) generated every year in the European Union (EU) is increasing rapidly. WEEE has now become one of the fastest-growing waste streams in both the EU and worldwide. Among WEEE, small WEEE, which includes items like mobile phones, tablets, and laptops, present a significant challenge. Despite their high value in terms of materials for a circular economy, small WEEE however, have a particularly low collection rate compared to other WEEE types. This, in turn, negatively impacts the amount of WEEE available for recycling and recovery, and the achievement of the overall objectives of the circular economy. Batteries, on the other hand, present an additional challenge, as they are partly disposed of through mixed municipal waste (MSW) streams instead of separately collected and treated, posing the risk of fires in MSW treatment plants. Additionally, batteries are often part of electronic products and disposed of together with such at the end of life without removing the batteries, which is a risk for fires igniting in WEEE treatment plants.

The research conducted in the framework of work package 2 of the LIFE ECOSWEEE Project therefore aimed at achieving the following main objectives:

- Identifying best practices for the collection of small WEEE and waste batteries in different EU Member states (MS);
- Analysing the successes and challenges of the identified collection initiatives and comparing them in the context of different legal, organizational, and market settings on a national level;
- Assessing the role of actors involved in the implementation of the collection of small WEEE and batteries and their responsibilities;
- Providing a knowledge pool for the development of pilot projects in different EU MS.

This report is complemented by a booklet, describing the identified best practices in more detail and with a focus on their legal context and replicability aimed at inspiring producers/producer responsibility organisations (PROs) and distributors of electrical and electronic equipment (EEE) and batteries, and policy makers.

4.2 Background of the work package

WEEE[1] and Battery legislation[2] have laid down ambitious collection and recovery targets. Yet, despite many improvements achieved in the past 20 years since the first WEEE Directive (2002/96/EC) came into force in 2003, separate collection of in particular small WEEE (and Batteries) is still forming the tail end of the WEEE collection categories. The main factors identified which may limit the collection or return rates of small EEE include:

- household storage (hoarding) as consumers are reluctant to return their small used EEE and as a result store them at home;
- discarding through municipal waste streams;
- scavenging, incompliant collection activities; and
- illegal exports of WEEE to third countries.

A study commissioned by the WEEE Forum published in 2022[3], displays that on average, households possess 74 EEE items (excluding lamps and luminaires). Out of these, 61 items are currently in active use, nine are stored as working but unused, and an additional four are kept despite being non-functional. When evaluating the specific categories of used EEE or WEEE that are most commonly hoarded, small WEEE is identified to make up the largest share by count. Among these, small IT equipment accounts for 17%, closely followed by small miscellaneous equipment at 14%. Screens and monitors rank third at 14%, encompassing outdated cathode ray tube monitors, televisions, flat panel monitors, and televisions that have been replaced by laptops.

Hoarding of used and waste EEE means the potential for collection, recycling and recovery of materials for the circular economy cannot be realized. On the other hand, disposal if happening through the wrong waste streams, can present an even bigger problem. The bvse Bundesverband Sekundärrohstoffe und Entsorgung e. V. (German Association for Secondary Raw Materials and Waste Disposal) conducted a survey amongst its members on fires caused by lithium-ion batteries ending in recycling facilities for municipal mixed waste. Out of all responding recyclers, 80% indicated that a wrongly disposed battery had caused at least one fire in the past year (2022)[4]. According to the bvse, this situation is posing a significant

[1] Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02012L0019-20180704

[2] Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02006L0066-20180704.

[2] Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 concerning batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC [2023] OJ L 191/1 ("Batteries Regulation")), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2023.191.01.0001.01.ENG&toc=OJ%3AL%3A2023%3A191%3ATOC.

[3] C.P. Baldé, G. Iattoni, C. Xu, T. Yamamoto, Update of WEEE Collection Rates, Targets, Flows, and Hoarding – 2021 in the EU-27, United Kingdom, Norway, Switzerland, and Iceland, 2022, SCYCLE Programme, United Nations Institute for Training and Research (UNITAR), Bonn, Germany.

[4] EUWID, accessed 8th August 2023, https://www.euwid-recycling.de/news/wirtschaft/bvse-ueber-braende-bei-entsorgern-und-suche-nach-versicherungen-lage-ist-dramatisch-250723/

threat to the recycling industry as a whole and is calling for urgent action on the side of politics, producers, and PROs to ensure better information to end users on proper disposal and removal of batteries from WEEE prior to such disposal.

To tackle the aforementioned issue, improve the separate collection rates, increase re-use and repair as well as recycling of small WEEE and batteries, the EU is devoted to evaluating new approaches and initiatives to incentivize individuals to return their unwanted small electronic devices like mobile phones, tablets, and chargers and their batteries. This work package therefore assesses ongoing initiatives in several EU MS to improve collection rates for either small WEEE or batteries and share the experiences made by producers, PROs, and distributors in setting up such systems with a wider audience, focusing on discussing enabling factors and challenges for replication and scale up of initiatives.

4.2.1 Status quo of small WEEE collection in the EU

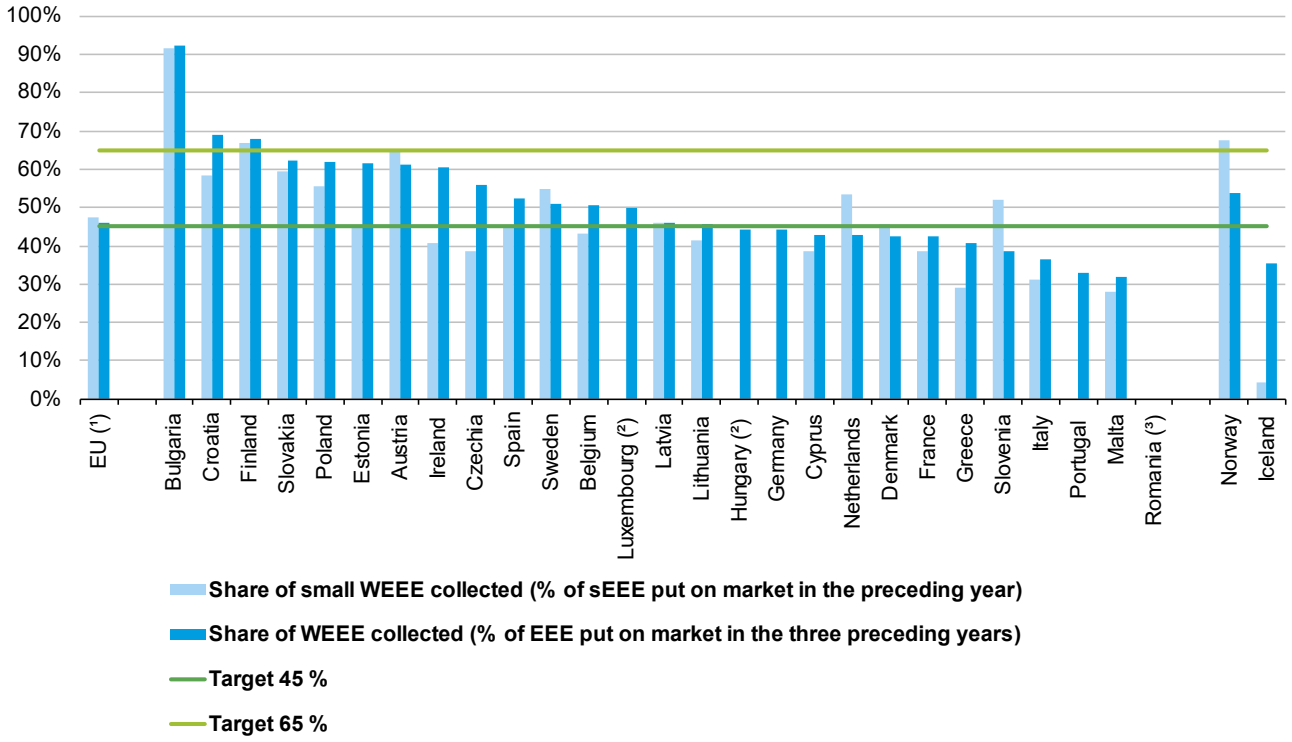
Collection of WEEE is regulated at EU level by the provisions of the WEEE Directive, which in Article 7(1) sets out that from 2019, the minimum collection rate to be achieved by MS annually shall be 65% of the average weight of EEE placed on the market in the three preceding years in the MS concerned, or alternatively 85% of WEEE generated on the territory of that MS depending on which calculation method the MS opts for. The producers of electrical and electronic equipment individually or collectively through PROs and the distributors of EEE - if they fulfil certain criteria on size – are responsible for setting up take back systems for the separate collection of WEEE from private households (either through assuming operational or financial responsibility) according to Article 5(2) of the WEEE Directive.

As depicted in Figure 4-1, the collection target of 65% as percentage collected of the average amount of EEE put on the market (POM) in the three preceding years, was achieved only by Bulgaria, Croatia and Finland in 2020. Additionally, Slovakia, Poland, Estonia, Austria and Ireland also came close to reaching this target.[5] For small WEEE (category 5 and 6 defined in Annex III of the WEEE Directive), the collection rate as percentage of the 3-year average small EEE POM cannot be calculated for 2020, as data on EEE POM is only available for 2019 and 2020 (and are missing for 2018). Hence, the collection rate of small WEEE depicted in Figure 4-1, is based only on the small EEE POM in 2019 and small WEEE collected in 2020 (Eurostat, data categories “EE_SITE” and “EE_SE”) and is not an official collection rate reported by producers or PROs to the Member States. Even though the significance of the collection rate based on one year data of small EEE POM is low, if can be seen from the graph, that compared to the overall collection rate of WEEE, the one for small WEEE falls behind in most countries. Noticeable exceptions are

[5] Eurostat, Waste statistics - electrical and electronic equipment, accessed 2nd August 2023, https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Waste_statistics_-_electrical_and_electronic_equipment

Bulgaria, Slovakia, Norway, Latvia, Spain, Austria, Poland, and Slovenia where for reasons unknown, the collection rate for small WEEE exceeds the overall collection rate for WEEE.

Total collection rate for waste electrical and electronic equipment and small waste electrical and electronic equipment, 2020
(% of the weight of (small) EEE put on the market in the three preceding years (2017 -2019))



Note: Data for small EEE put on market not available before 2018 and in 2018 only limited (for Poland, Portugal, Hungary, Bulgaria, and Lituania). Small WEEE as category 5 and 6 defined in Annex III of the WEEE Directive.
(1) Eurostat estimate.
(2) 65 % target not applicable, as Luxembourg and Hungary have chosen the calculation methodology based on share of WEEE generated.
(3) Data from Romania not available.

Figure 4-1 Collection rates for WEEE and sWEEE in the EU in 2020 (Source: Eurostat, adapted by Ramboll)

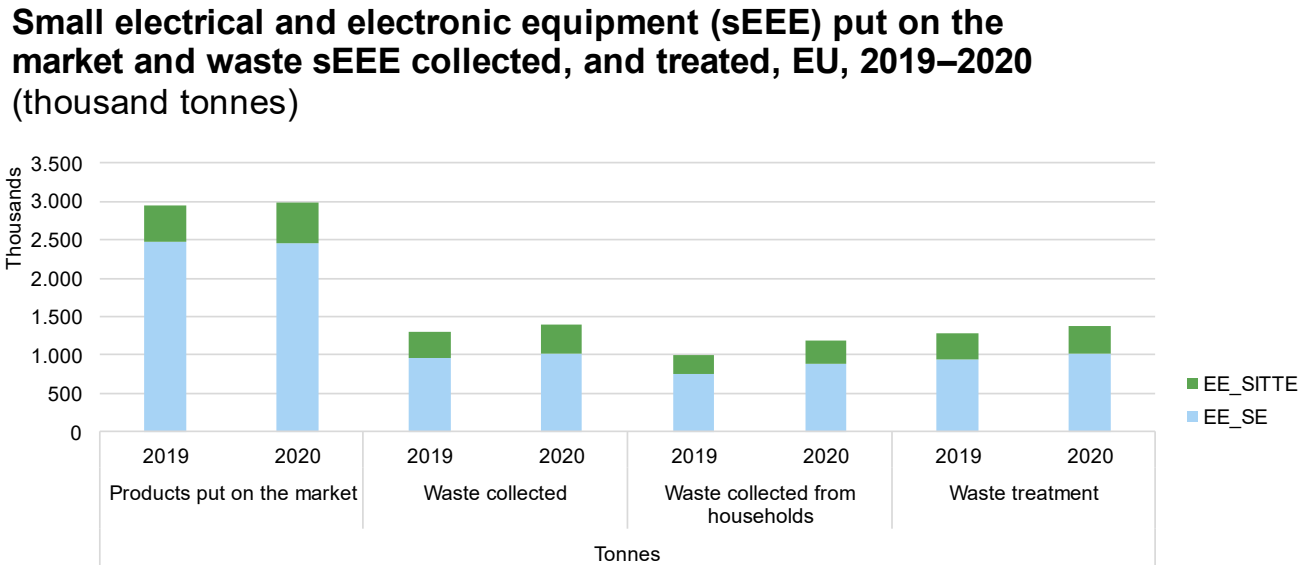
The collection rates for small WEEE depicted in Figure 4-1 above are based on the POM and collection data available for category 5, Small equipment (no external dimensions more than 50 cm)[6] and category 6, Small IT and telecommunications equipment (no external dimension more than 50 cm). As shown in Table 4-1 and depicted in Figure 4-2, the volumes of small EEE POM increased slightly from 2019 to 2020 by 1.2% while the volumes of small WEEE collected increased by 6.6% and of small WEEE collected from

[6] Including but not limited to: Household appliances; consumer equipment; luminaires; equipment reproducing sound or images, musical equipment; electrical and electronic tools; toys, leisure and sports equipment; medical devices; monitoring and control instruments; automatic dispensers; equipment for the generation of electric currents. This category does not include equipment included in categories 1 to 3 and 6.

households by 18.3% from 2019 to 2020. Treatment of small WEEE also increased by 8% from 2019 to 2020.

Table 4-1 Small EEE put on the market and small WEEE collected in the EU from 2019 to 2020 (Source: Eurostat, adapted by Ramboll)

	2019	2020	Difference 2019-2020	
Total sEEE put on the market	2,956,179	2,991,173	34,994	1.2%
Total sWEEE collected	1,306,527	1,392,429	85,903	6.6%
Total sWEEE collected from households	1,001,641	1,185,077	183,437	18.3%
Total sWEEE treated	1,278,477	1,380,744	102,266	8%

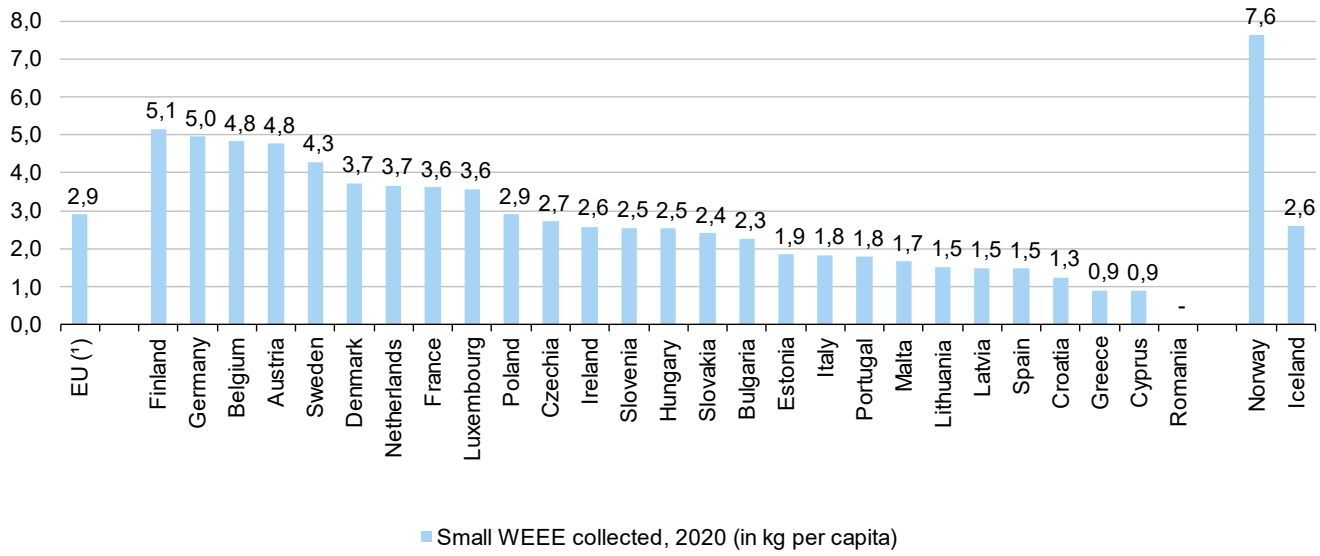


Note: EE_SE for category 5: Small equipment (no external dimension more than 50 cm); EE_SITE for category 6: Small IT and telecommunications equipment (no external dimension more than 50 cm)
Source: Eurostat (online data code: env_waseleeos and env_waselee)

Figure 4-2 Small EEE put on the market and small WEEE collected in the EU from 2019 to 2020 (Source: Eurostat, adapted by Ramboll)

Figure 4-3 depicts the collection rate as kilogram (kg) of WEEE collected per capita, showing that in 2020, on average 10.5 kg of WEEE were collected per inhabitant in the EU of which 2.9 kg were small WEEE. The collection of small WEEE shows significant differences between the member states, with Finland and Germany achieving high collection volumes of 5.1 and 5.0 kg per capita respectively, and Greece and Cyprus being on the low end with 0.9 kg per capita collected each.

Small waste electrical and electronic equipment (sWEEE) collected, 2020 (in kg per capita)



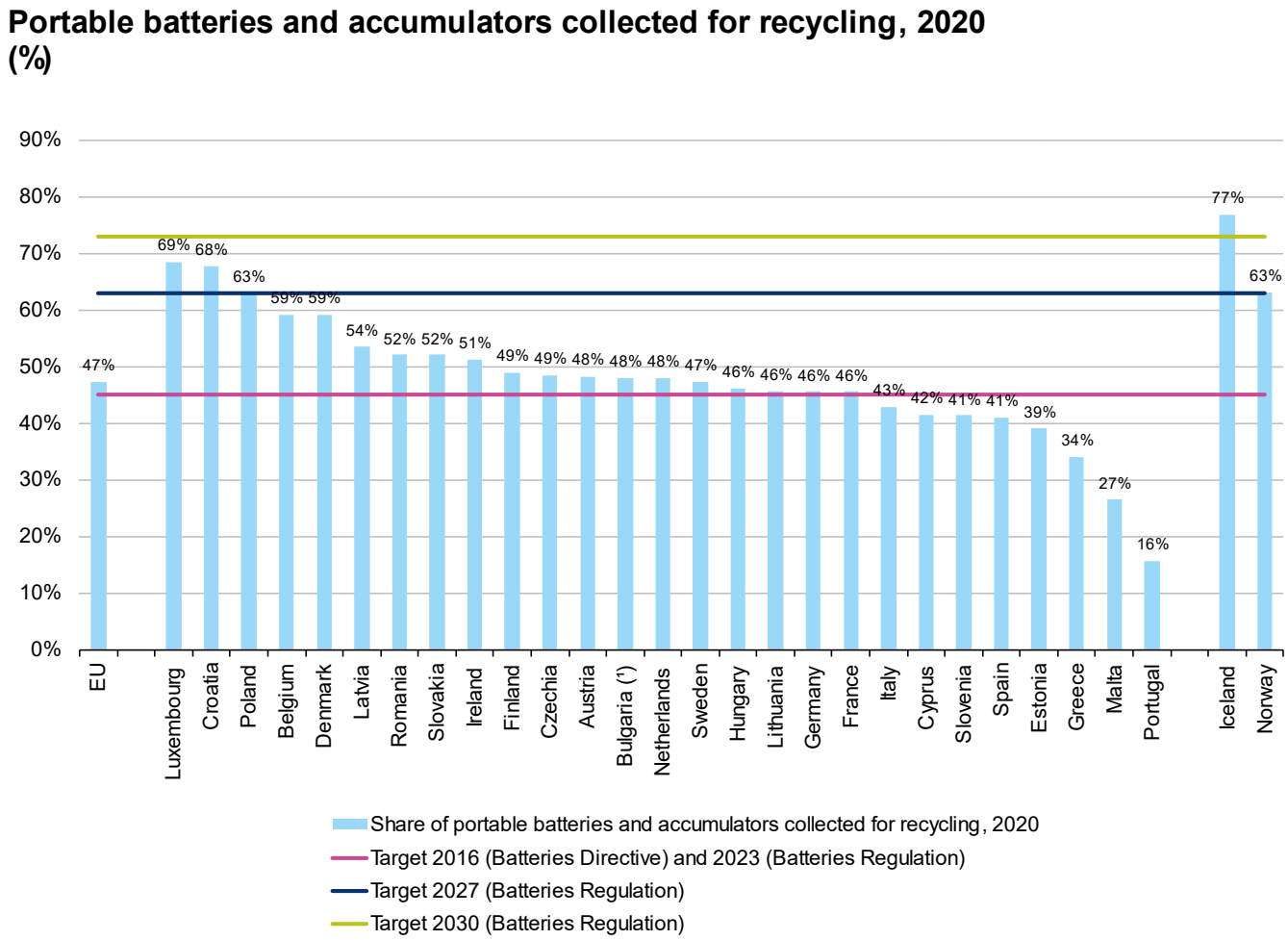
Note: Data based on category 5 and 6 collection;Data from Romania not available.
(1) Estimate.
Source: Eurostat (online data code: env_waseleeos and env_waselee)

Figure 4-3 Per capita collection of sWEEE in 2020 (Source: Eurostat, adapted by Ramboll)

4.2.2 Status quo of waste batteries collection in the EU

Collection of waste batteries until July 2023 was regulated at EU level by the Batteries Directive 2008/98/EC, which set out that Member States had to achieve as a minimum collection rate 45% by 26 September 2016. As of 2020, nearly one half (47%) of the portable batteries and accumulators sold in the EU were collected for recycling. From 2009 to 2020, the collected amount almost doubled. The figure below shows that some countries (such as Norway, Island) have higher portable batteries collection rates then others (such as Portugal). The Battery Directive was replaced in July 2023 by the Battery Regulation[7] which in Article 59 sets targets for producers or their designated PROs, ensure separate collection of waste portable batteries (63% by the end of 2027 and 73% by the end of 2030). As shown in Figure 4-4 the new collection target of 63% by the end of 2027 would already be achieved in 2020 by Luxemburg, Croatia, Poland, Iceland, and Norway, whereas all other MS still need to improve their collection rates to achieve the new targets.

[7] Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 concerning batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC.



(1) 2019 data instead of 2020

Source: Eurostat (online data code: env_waspb)

eurostat

Figure 4-4 Portable batteries and accumulators collected for recycling, 2020 (Source: Eurostat, adapted by Ramboll)

4.3 Regulatory context

Aspects related to the management of WEEE are regulated in the WEEE Directive[8]. Aspects related to the management of batteries and their end of life (EoL) were formerly regulated in the Battery Directive, which has been replaced by the Battery regulation[7] that came into force on 17th of August 2023. The following subchapters provides a summary of the aspects related to the separate collection of small WEEE and waste batteries as they are regulated through the respective EU initiatives.

4.3.1 WEEE Directive

The WEEE Directive[8] currently in force is the second revision of the first WEEE Directive that first came into force in 2003 (WEEE Directive 2002/96/EC). The Directive establishes amongst other obligations, responsibilities of the actors for the separate collection, treatment, and disposal of WEEE.

Regarding separate collection, the Directive lays out the following obligations (Article 5):

- **For distributors**: A free of charge take-back of 1:1 provided that the "equipment is of equivalent type and has fulfilled the same functions as the supplied equipment" and 1:0 for small WEEE "with no obligation to buy EEE of an equivalent type" (when retail surface dedicated to the EEE > 400 m^2).
- **For producers**: Producers are allowed to set up and to operate individual and/or collective take-back systems for WEEE from private households.
- **For Member States**: The MS should ensure the availability and accessibility of the necessary collection facilities with regard to the population density.

Apart from responsibilities, the Directive also defines targets for the separate collection of WEEE:

- From 2016: **45% POM** (collected in a MS in a given year of the average weight of EEE placed on the market in the three preceding years in that MS)

- From 2019: **65% POM** (collected in a MS in a given year of the average weight of EEE placed on the market in the three preceding years in that MS) or alternatively **85% of WEEE generated** on the territory of that Member State (based on the WEEE generated method)

The Directive furthermore stipulates that producers of EEE must provide for the financing of the collection, treatment, recovery and environmentally friendly disposal of household WEEE (Article 12) also in line with the Extended Producer Responsibility (EPR) principle set out in the Waste Framework Directive[9], which they can do individually or collectively through PROs.

The WEEE Directive has been implemented differently in different MS. This has led to differences between MS mostly in the designs of the EPR system and the number and responsibilities of PROs. The differences between MS are important as they affect practices for the separate collection of small WEEE and general WEEE and for the purpose of further evaluation, may also affect the replicability of the identified best

[8] Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012L0019.
[9] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32008L0098.

practice collection systems. The main points of divergence are described in general terms below and broken down by country in the following chapters.

The study on the transposition of the 2012 WEEE Directive in Europe, carried out by BIO by Deloitte for ADEME, as well as a study carried out by adelphi in 2021 on EPR Schemes, both highlighted that different designs of the national PRO systems influence the potential replicability of collection pilots. This is illustrated with the following differences between MS in the way that EPR has been implemented (following information based on BIO 2016[10] and adelphi 2021[11] and own reflections):

- Collection obligation imposed to local authorities: In 11 EU Member States the collection obligations are imposed on local authorities. In these countries, PROs must work together with local authorities, i.e., when setting up new collection initiatives, the local authority is a given actor who has to be involved.
- Visible fees: in some countries visible fees published on the final consumer's invoice is forbidden while in others it is mandatory. In the remaining countries it is neither forbidden nor mandatory but "possible". The current evaluation of the WEEE Directive and subsequent changes might change the situation. In some countries the visible fee is used for some EEE categories (e.g. Ireland)
- Obligation for PROs to exercise a not-for-profit activity: In 6 Member States it is mandatory for PROs to operate as non-profit organizations. In 4 other MS, being non-profit is not mandatory, but the operations are not taxed. When replicating a pilot, it can be relevant to check whether the PRO who designed the pilot is a non-profit one and thus has set other targets than a for profit one.
- Implementation of individual and/or collective systems: Almost all Member States provide the opportunity for producers of household and professional EEEs to set up an individual system or to join a collective one. In the present study only best practices from collective systems are described.
- Number of PROs and competitive or non-competitive PRO set-up: The number of PROs ranges from 0 (Germany) to 26 in the UK (included as the WEEE Directive applied to the UK until January 2020), whereas five MS have only one PRO. The set-up of a collection system from a one-PRO country is likely to be different to a multiple-PRO country as the competitive and collaborative conditions are different.

Regarding distributors' take-back obligations, the vast majority (20) of MS have transposed the take-back obligations identically to the WEEE Directive (status 2016):

- 1:1 take-back obligation in case of purchasing new equipment;

[10] BIO by Deloitte, Study on the 2012 WEEE Directive in Europe, 2016 (prepared for ADEME).
[11] adelphi consult GmbH, Analysis of Extended Producer Responsibility Schemes, 2021.

- 1:0 free take-back of small equipment with no condition of purchase in case that the distributor has a sales surface dedicated to EEE greater than 400 m^2.

In Hungary there is the obligation for distributors of EEE to encourage the return of unused devices by giving a purchase voucher. The minimum value of the purchase voucher is regulated by Annex I of Government Decree 197/2014. (VIII.11) within a value limit of HUF 100-1000[12].

4.3.2 Battery Directive and new Battery Regulation

The LIFE ECOSWEEE Projects falls into a time of change of multiple major waste legislative pieces. The Batteries Directive[13] from 2006 has been replaced by a new Batteries Regulation[14] coming into force on 17 August 2023 and starting to apply as of 18 February 2024. A new set of regulations concerning batteries will have a significant influence on how various types of batteries are designed, produced, and managed in the European Union. The new rules expand the responsibilities of producers and necessitate careful assessment of social and environmental risks throughout supply chains for batteries. This assessment particularly targets the sourcing of cobalt, natural graphite, lithium, and nickel. Through new labelling requirements, consumers will receive more precise details about the social and environmental implications of batteries. These new rules will be applicable to all battery manufacturers, producers, importers, and distributors operating within the EU market, regardless of the type of battery—whether industrial, automotive, electric vehicle, or portable—and their origin.

Regarding separate collection of waste portable batteries, which are of relevance for the scope of this study, the Regulation lays out the following obligations (Article 59 and 62):

- **For distributors**: A free of charge take back obligation from end-users for the categories of waste batteries which the distributors offer as products without any obligation to purchase a new battery. Distributors are furthermore obliged to cooperate with producers and hand over any batteries they have taken back to producers or PROs or to a waste management operator for their treatment.
- **For producers (or PROs)**: Producers are obliged to establish waste portable battery take-back and collection systems, as well as offer the collection of waste portable batteries free of charge and provide for the collection and transport of such batteries from collection points free of charge. The collection system must cover the entire territory of the MS in which the producers are placing their products on the market, and consist of collection points formed through cooperations with

[12] Decree No. 197 of 2014 (VIII. 1.) Korm of the Government on waste management activities related to electric and electronic equipments. | FAOLEX

[13] Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02006L0066-20180704.

[14] Regulation (EU) 2023/1542 of the European Parliament and of the Council of 12 July 2023 concerning batteries and waste batteries, amending Directive 2008/98/EC and Regulation (EU) 2019/1020 and repealing Directive 2006/66/EC [2023] OJ L 191/1 ("Batteries Regulation")), https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2023.191.01.0001.01.ENG&toc=OJ%3AL%3A2023%3A191%3ATOC.

distributors, public authorities or other third parties carrying out waste management on their behalf, and voluntary collection points.

- **For Member States**: The MS should make sure that any collection point collects waste batteries only after having concluded a contract for the collection with producers or PROs.

Apart from responsibilities, the former Directive and new Regulation also define targets for the separate collection of portable batteries:

- By 26 September 2012: 25% collected in a MS in a given year (of the average weight of batteries sold during the three preceding years in that MS)
- By 26 September 2016: 45% collected in a MS in a given year (of the average weight of batteries sold during the three preceding years in that MS)

Battery Regulation, coming into force on 17 August 2023:

- By 31 December 2023: **45%** collected in a MS in a given year (of the average weight of batteries sold during the three preceding years in that MS)
- By 31 December 2027: **63%** collected in a MS in a given year (of the average weight of batteries sold during the three preceding years in that MS)
- By 31 December 2030: **73%** collected in a MS in a given year (of the average weight of batteries sold during the three preceding years in that MS)

The Regulation furthermore stipulates that producers of batteries must provide for the financing of the collection, transport and treatment, taking into account also any potential revenues from preparation for re-use or recycling activities (Article 56). The Regulation goes beyond the mere financing of operational activities, furthermore laying down that producers shall cover the costs for providing information on prevention and management of waste batteries, as well as the costs of data gathering and reporting to the competent authorities. They can choose to fulfil their financial and/or operational responsibilities individually or collectively through PROs. To manage waste portable batteries and comply with their EPR obligations, producers within each MS hence set up PROs to finance collection and treatment of waste batteries.

4.4 Previous work done on collection of small (W)EEE and batteries

In 2022, the Commission commissioned a study aimed at identifying and conceptualizing EU-level policy measures to support take-back schemes for small WEEE and small UEEE to ensure higher collection

rates and facilitate re-use, repair, refurbishment, and recovery of this equipment[15]. The study conducted by Ramboll identified 192 systems (65 were general EPR schemes) for the collection of small WEEE and small UEEE in the EU and categorized them according to the incentive applied to improve collection rates. The study highlighted existing challenges related to the separate collection of small WEEE and small UEEE and furthermore proposed different policy measures which were identified to improve overall separate collection rates:

1. Main characteristics of small EEE and WEEE that result in low collection and household storage

    a. **their perceived value**: in some cases, consumers believe their used devices are worth more than their actual market value; These devices are kept and deemed valuable to consumers as back-up and for data storage;

    b. **their lifetime**: the most recent predictions point to the increasing service life due to product design developments and a lower replacement rate as prices for new devices increase and the second-hand market grows;

    c. **their size**: small devices are more easily forgotten in household drawers, lost or disposed of via mixed household waste;

    d. **their weight**: it is easier to meet collection targets by collecting heavier devices, which can result in less of an incentive for authorities, PROs and waste management operators to improve and increase the collection of smaller and lighter devices;

    e. **their complex design**: the relatively high costs of recycling small WEEE due to increasing complexity in product design can hinder demand from recyclers and impact the ease of repairability for actors involved in repair and refurbishment activities.

2. Lack of awareness on collection and appropriate disposal practices

3. Presence of illegal collectors and scavengers due to inefficient law enforcement by local authorities and challenges related to the organisation and financing of take-back operations

4. Household storage (= consumers store (e.g., for the use as backup device) or/and forget their old small devices in household drawers)

    a. **emotional attachment** and perceived value

[15] European Commission, Directorate-General for Environment, Romagnoli, V., Bruijne, E., Drapeau, P., et al., *Study on options for return schemes of mobile phones, tablets and other small electrical and electronic equipment in the EU*, Publications Office of the European Union, 2022, https://data.europa.eu/doi/10.2779/237189

b. **data security** concerns

c. **lack of trust** in the recycling or collection process

d. **lack of access or awareness** of proper take-back options, which can lead to for example the improper disposal of such devices via the mixed municipal household waste.

These findings are also supported by other studies, such as the Circular Electronics project of the Consumer Insights Action Panel (CIAP), which presents models that could support potential future initiatives in the field of circular electronics and similarly identified points of intervention to address the barriers to the return of obsolete devices[16]. The ECOSWEEE Project builds upon the findings of the previous studies conducted on options for return schemes and extends it for batteries. It also takes into account the WEEE Forum Collection Platform for sharing of best practices on collection of WEEE, which allows members of the WEEE Forum to Exchange on their experiences and share learnings on successful collection initiatives[17].

[16] Consumer Insight Action Panel – Electronics Club, Old, R., Schmidt, I., Slaughter, R., et al., Electronics Club Final Report, 2022, https://circulareconomy.europa.eu/platform/en/knowledge/consumer-insight-action-panel-electronics-club-final-report
[17] WEEE Forum Collection Platform, Accessed 14th August 2023, https://weee-forum.org/collectionplatform/.

Chapter 5

Methodology for assessment of best practice initiatives

ECOSWEEE
Enhancing collection of small W/EEE and batteries

5. Methodology for assessment of best practice initiatives

5.1 What is considered "best practice"

At the beginning of this work stands the question of what to consider best practice for the collection of small WEEE and batteries in the context of this report. For this purpose, the following key criteria have been defined and at least one of them has to be fulfilled by a collection initiative to be considered best practice:

1. The collection initiative and/or campaign complement and **go beyond the legally mandatory requirements** of 1:1 and 1:0 collection (for large and small equipment respectively) for distributors as described in section 4.3.1.

2. The collection initiative and/or campaign targets a specific group of actors (i.e., households, companies, schools, etc.) through **one or multiple of the following incentive types**: reward incentives, convenience incentives, other incentive to improve collection rates of small WEEE and/or batteries (see classification below).

3. The collection initiative and/or campaign actively **engages relevant stakeholders** such as producers of WEEE/batteries, distributors of WEEE/batteries, public authorities, and decision makers, to improve collection rates of small WEEE and/or batteries.

It should be noted that success rates of collection initiatives measured through KPIs such as collection volumes were not taken into account for the selection of best practice initiatives, as they were not comparable across incentives implemented in different MS and across different incentive types. Success rates are however included in the analyses and discussed in the respective chapters. The best practice initiatives which were further assessed in the study, were additionally selected keeping in mind an even distribution of initiatives across the EU, an even distribution of incentive types and, last but not least, the willingness of actors to share information with the study team.

It should furthermore be noted that the best practices identified and presented in the following have been designed in the context of specific national legislation, markets, culture, and geographies and might work differently in other national or regional contexts.

5.2 Classification of initiatives

Previous work[18] identified three types of incentives for consumers to hand-over small WEEE (financial incentives, convenience incentives, other incentives). Based on these categories, the best practice

[18] Ramboll et al., Study on options for return schemes of mobile phones, tablets and other small electrical and electronic equipment in the EU, 2022 (prepared for EU COM DG ENV).

initiatives were classified (see figure below). Additionally, campaigns (such as social media activities) accompanying the initiatives were included in the analysis.

- Collection systems based on **reward incentives** offer an economic benefit or gain to the user in return for small EEE/WEEE and batteries handed in. Such benefits or gains are not limited to monetary compensation but can also include coupons, reductions, refunds etc.
- Collection systems based on **convenience incentives** contain elements that aim to make the handing in of small EEE/WEEE and batteries practically easier or less time-consuming, i.e. convenient for individuals or organisations, and thus more attractive. Examples are pick-up services, drop-off points, hand-over location search engines (online), etc.
- Collection systems based on other incentives are either connected to **charity, other good causes** or **contests,** which may bring individuals or organisations to hand-in their small EEE/WEEE and batteries. This may also include additional raised awareness for end-of-life costs expressed to the consumer through a visible fee.

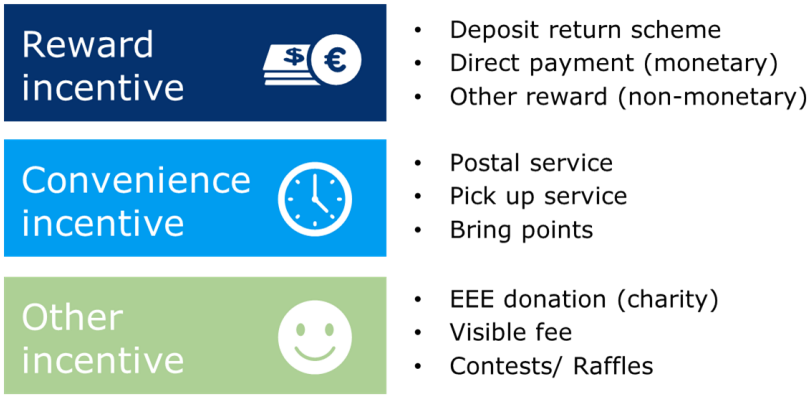


Figure 5-1 Incentive categories and sub-categories

5.3 Data collection methodology

The search for best practice initiatives for the collection of small WEEE/UEEE and batteries started with desk research on existing initiatives in the EU and the development of a database listing such initiatives. The database was complemented with initiatives identified through an online survey which was shared among the members of the WEEE Forum (PROs) and non-WEEE Forum PROs acting inside of the EU and non-EU countries (UK, Switzerland, Norway).

Through the survey, the participants were asked to identify any collection initiatives or campaign the PRO they represent had conducted which they consider best practice, and to provide relevant information on the way the initiative was designed, its incentive type, the target group(s), the success rate. Lastly, participants were asked whether they would be willing to share further information with the study team through in-depth interviews.

Participants of the online survey who consented to providing more information on the initiatives, and other actors willing to share further information on best practice initiatives identified, were interviewed by the study team. For this purpose, an interview guideline was developed, which built upon the questions from the online survey and aimed to understand in more detail the role of actors in the initiatives, the incentive type chosen, the logistics of collection and transport, the treatment of collected WEEE/UEEE and batteries, economic considerations, legal aspects, and lastly the integration of the initiatives into the national WEEE collection and treatment system. The information gathered through the interviews was reviewed and complemented by literature research to verify the data gathered from survey and interviews especially on the national WEEE and battery legal and market frameworks. In cases where the interviewee did not consent to be cited with the name of the organization, they represent the information was anonymized.

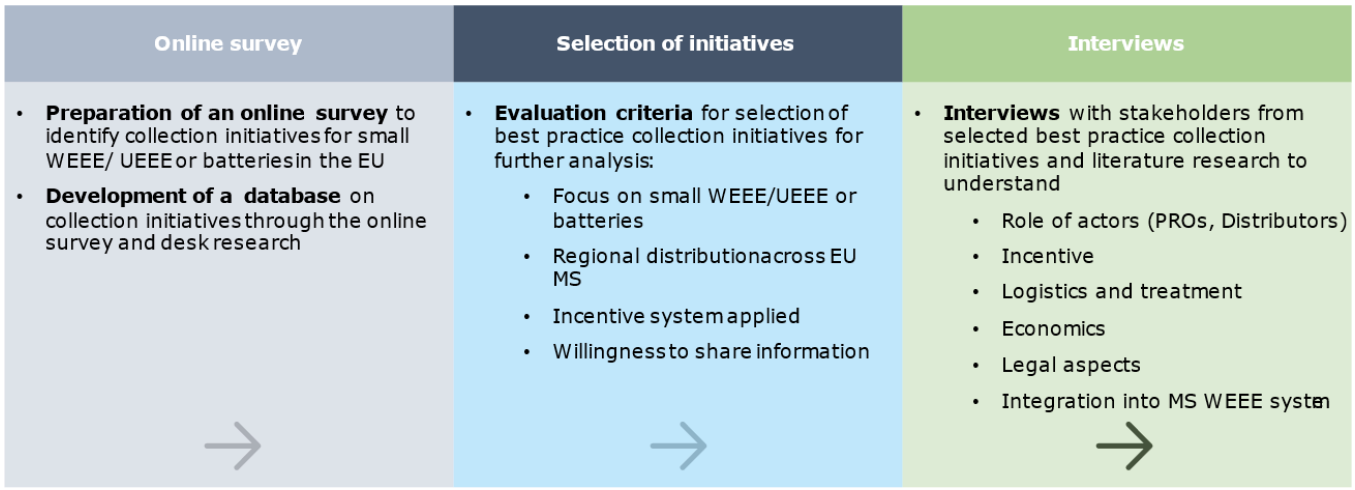


Figure 5-2 Methodology for identification and analysis of best practice collection initiatives

5.4 Evaluation criteria

All best practice initiatives identified in the course of this study were analysed in order to answer the questions and to reach the objectives laid out in section 4.1. Special attention was given to identifying enabling factors for the success of the initiatives as well as challenges encountered, and lessons learned to facilitate replication of the initiatives and pilot projects in different EU MS. The assessment of scalability and replicability is based on the qualitative evaluation of stakeholders during the interviews and is not based on further data evidencing the claims. Scalability is the ability of a system to grow larger, while replicability is the ability of system to be duplicated at another location or time.

The following aspects were discussed in more detail for each initiative:

- Role of actors
- Incentive design
- Logistics and treatment/fate of collected equipment/batteries

- Economics
- Data protection
- Legal aspects
- Replicability and Scalability
- Integration into the national WEEE and batteries collection system

An overall discussion of the individual aspects is provided in the conclusions in section 1.

Chapter 6

Evaluation of best practice schemes

ECOSWEEE
Enhancing collection of small W/EEE and batteries

6. Evaluation of best practice schemes for small WEEE and batteries collection

The following subchapters each describe one or several collection initiatives from an EU Member State and places them in relation to the respective national legal and market framework conditions. More detailed information on individual initiatives aimed at their replication is given in the booklet which accompanies this report.

6.1 Belgium

6.1.1 Status quo of small WEEE and batteries collection in Belgium

The Belgian Constitution organises Belgium on a federal basis, sharing competencies, also for waste management, between the federal state and three regions: Flanders, Wallonia and Brussels Capital Region (BCR). The three regions have transposed EU waste law in their regional legislation. The extended producer responsibilities that these various regional provisions impose are dealt with through collective take-back schemes, organised by the concerned industry sectors on a non-profit basis (e.g., Recupel with respect to WEEE, BEBAT for batteries, FEBELAUTO for end-of-life vehicles)[19]. The below Table 6-1 provides a summary of the collection data for WEEE, small WEEE, and batteries in Belgium as far as available.

Table 6-1 Summary table on WEEE, small WEEE[20] and Battery flows in Belgium[21]

	Products put on the market (tons)		Waste collected (tons)		Collection rate (%)		Recycling and preparation for re-use rate (%)	
	2014	**2020**	**2014**	**2020**	**2014**	**2020**	**2014**	**2020**
(W)EEE	260,391	334,789	116,345	159,696	37	51	77	74
Small (W)EEE	n/a	106,653	n/a	55,693	n/a	43[22]	n/a	72
Portable batteries and accumulators	4,222	5,611	2,343	3,149	55	59	n/a	n/a

WEEE

[19] Bernard Deltour, Laurène Provost, Valérie Vandegaart and Zoé Thiéry, Environmental Law in Belgium, accessed on 21st of August 2023, https://www.lexology.com/library/detail.aspx?g=ba407fd4-5970-4fd6-ba9c-954acda1882f

[20] Small WEEE = Small equipment (no external dimension more than 50 cm)+ Small IT and telecommunications equipment (no external dimension more than 50 cm)

[21] Numbers based on Eurostat ENV_WASELEEOS and ENV_WASPB, accessed 2nd August 2023, based on bipro, WEEE compliance promotion exercise, 2017, https://op.europa.eu/en/publication-detail/-/publication/09c7215a-49c5-11e8-be1d-01aa75ed71a1/language-en (prepared for the EU COM DG ENV) and based on Update of WEEE Collection Rates, Targets, Flows, and Hoarding, 2021, https://weee-forum.org/wp-content/uploads/2022/12/Update-of-WEEE-Collection_web_final_nov_29.pdf

[22] Collection rate for small WEEE calculated by the authors based on small EEE POM in the previous year, no official collection rate reported

Each region has its own legislation on WEEE management, producers and importers of electrical appliances however typically operate across all three regions of Belgium. As a result, a unified nationwide system to fulfil the producer take-back obligation defined in the WEEE Directive has been established. To facilitate the establishment of this nationwide take-back system, periodic agreements are entered into between the regional authorities and the industry within each region. These agreements, known as "Environmental Policy Agreements" or "Take-Back Obligation Agreements," specifically address the responsibility for waste take-back and are based on regional waste management plans[23,24].

The Belgian WEEE management is therefore organized inter-regionally by Recupel, which is the single not-for-profit PRO operating in Belgium, representing most producers and importers of EEE. Within the Recupel structure, there exist seven distinct non-profit entities, each dedicated to specific sectors and acting as representatives for producers and importers of various electric and electronic devices. The governing bodies of these entities engage in negotiations and formalize the regional “Environmental Policy Agreements”. The tariffs, which producers and importers of EEE have to pay to the PRO are openly accessible through its website and updated regularly based on the outcomes of the price negotiations with all actors involved in the WEEE collection and treatment.

In Belgium, WEEE collection takes place in different manners, whether or not making use of the PRO Recupel’s services. Producers are legally obliged to finance the cost of the whole value chain including collection, transportation and treatment in all three regions. As of 2017, the distributors 1:0 take-back obligation for small WEEE was only implemented in Flanders, whereas the 1:1 take-back obligation had been implemented in all regions[25]. For household WEEE, options for disposal include: municipal collection points, re-use centres, retailers (according to the 1:0 and 1:1 obligations set out in the WEEE Directive) and recycling points located in e.g. supermarkets (only for lamps and small appliances). For professional use WEEE, Recupel provides a free take-back service described in more detail in the subsequent section. The PRO Recupel is furthermore responsible for awareness raising activities, which does not lie with the government.

The collection rate for WEEE in 2020 was slightly higher than the EU average (46%), having reached 51% using the POM method and 43% for small WEEE[26] specifically, putting Belgium on the 12th rank of the EU MS. The amount of WEEE collected per capita has slightly increased between 2014 and 2020, from 10.4 to 13.8 kg per capita (and 4.8 kg of small WEEE). The preparation for re-use and recycling rate however

[23] Bipro for the European Commission, Directorate-General for Environment, WEEE compliance promotion exercise, 2017
[24] Recupel, accessed on 21st of August, https://www.recupel.be/en/about-recupel/legislation-authorities/
[25] Bipro for the European Commission, Directorate-General for Environment, WEEE compliance promotion exercise, 2017
[26] Collection rate for small WEEE calculated by the authors based on small EEE POM in the previous year, no official collection rate reported.

has decreased for all WEEE categories from 77% to 74% between 2014 and 2020, and for small WEEE was at 72% in 2020.[27]

Batteries

The European Directive on Waste Batteries (Directive 2006/66/EC of 6 September 2006 on "Batteries and Accumulators and Waste Batteries and Accumulators") was transposed into Belgian law by Royal Decree of 27 March 2009[28]. However, a large part of the Directive falls under the competence of the Regions, which have adopted their own legislation in this regard. Since January 1, 1996, the BEBAT collection and take-back initiative have been operational. BEBAT, an organisation driven by the industry, provides a system to fulfil the take-back obligation of producers and importers of different types of batteries. Throughout Belgium, over 22,500 collection points are operational for both portable and industrial battery disposal. These collection points, which are equipped with dedicated BEBAT collection receptacles, are strategically situated in diverse locations like supermarkets, stores, educational institutions, enterprises, and waste disposal facilities. Consumers can deposit their discarded batteries into these collection receptacles without incurring any cost or being under any obligation to make a purchase.[29]

Between 2014 and 2020, the collection rate of portable batteries and accumulators has increased from 55 % to 59 % which is above to the EU average of 47% and amongst the highest collection rates for portable batteries and accumulators in the EU.

The table below list the different specificities of the Belgian PRO systems for WEEE and for batteries. It is to highlight that in Belgium, only one not-for-profit PRO for WEEE and one for Batteries is active and operating in close cooperation with the authorities. Most EEE producers and importers have joined these nationally operating PROs.

Table 6-2 Overview table of specificities of PRO set up in Belgium for WEEE and waste portable batteries (own compilation based on BIO 2016[30], adelphi 2021[31] and Eunomia 2015[32])

Specificities of PRO set up in Belgium	WEEE	Batteries
Collection obligation imposed on local authorities	The collection obligations are **not** imposed on local authorities.	The collection obligations are **not** imposed on local authorities.

[27] Numbers based on Eurostat ENV_WASELEEOS and ENV_WASPB, accessed 2nd August 2023.
[28] Koninklijk besluit inzake het op de markt brengen en de informatie voor de eindgebruikers van batterijen en accu's, en tot opheffing van het koninklijk besluit van 17 maart 1997 inzake batterijen en accu's die gevaarlijke stoffen bevatten, http://www.ejustice.just.fgov.be/cgi_loi/change_lg.pl?language=nl&la=N&cn=2009032738&table_name=wet.
[29] Eunomia et al., Final Implementation Report for the Directive 2006/66/EC on Batteries and Accumulators, 2015.
[30] BIO by Deloitte, Study on the 2012 WEEE Directive in Europe, 2016 (prepared for ADEME)
[31] adelphi consult GmbH, Analysis of Extended Producer Responsibility Schemes, 2021
[32] Eunomia et al., Final Implementation Report for the Directive 2006/66/EC on Batteries and Accumulators, 2015

Visible contribution	The visible contribution published on the final consumer's invoice is **possible**.	n/a
Obligation for PROs to exercise a not-for-profit activity	It is **mandatory** for PROs to be non-profit.	It is **mandatory** for PROs to be non-profit.
Implementation of individual and/or collective systems	100% collective system but with possibility to organise individually.	100% collective system but with possibility to organise individually.
Number of PROs (household and/or professional)	One PRO (Recupel)	One PRO (BEBAT)
Competitive or non-competitive PRO set-up	The WEEE PRO system is non-competitive	The battery PRO system is non-competitive

6.1.2 Recupel[33]

Recupel[34] is the only PRO that manages take-back of WEEE (professional and household) in Belgium. To reach the EU collection rates, Recupel has developed several initiatives and campaigns for small WEEE of which one will be analysed in the following. Please consult the accompanying booklet for more detailed information on the initiative described.

Table 6-3 Example of Recupel initiatives

Set up	Recupel Pick-Up
Waste stream in focus	All categories of WEEE
B2C / B2B	B2B
Incentive type	Convenience incentive (free collection service)
Fate of collected equipment	Preparation for re-use, recycling
Short description	A collection service for offices, schools, organizations, etc. which can be requested through the Recupel website, is free of charge and requires low minimum volumes.
Scalability	Medium
Replicability	High

Recupel noticed that WEEE generated at offices, schools, retirement homes, etc. was not effectively collected through existing systems, so it was unclear where this WEEE ended up. To collect the WEEE from these B2B channels, Recupel set up a free pick-up service and communicated this new service through radio channels (national radio campaign for greater awareness), printed media, and then by

[33] Please note that the following chapter is based on stakeholder input. The interview with Recupel was performed in July 2023.
[34] Homepage – Recupel

mailing specific schools and organizations grouping schools once they had been identified. The campaign ran at national level, although there is more success in big cities and less success in areas with smaller villages and a small number of offices.

The companies, and organizations that wish to have WEEE collected need to provide some basic information for Recupel through an online platform and then the demand for pickup is evaluated. If necessary, more information is requested over the phone to make a better evaluation. Currently there are 1,500-1,600 collections per year, indicating that indeed there was a need for a collection service for B2B. The truck drivers arrive to the pickup location and fill the boxes with the collected WEEE themselves. This helps ensuring that WEEE does not break during placing in the collection boxes or the transport (which happens often at municipal collection points) and therefore that preparation for re-use (p4r) is not hindered. The advantage is that the truck drivers can also pay attention to how the old electronic devices and recipients are being handled, as the companies are not used to doing this (e.g., if they only ask for collection once a year).

The items that are collected through the free pick-up are kept separate from those collected through the regular collection system. At this point, re-use centres come over and can select what they want from both the WEEE from pick-up and regular collection services. The remaining items are then handed over to a recycler/treatment facility. The contracted collectors (logistic partners and transport companies) provide “transfer stations”, and they have contractual agreements with local re-use centres on when they can come over and make their selection.

Why is the initiative considered best practice / successful?

- About 360 tons are collected annually through the pick-up, which, compared to the total collection of 110,000 tons per year, makes up only a small part of 0.3% of the total value. The majority of WEEE is collected through municipal waste yards (roughly 60%). However, this stream is especially important because it is **WEEE that would likely not be collected** through the usual collection points at municipal waste yards and retail.
- The appliances recovered through the pick-up program are, on average, **of better quality and they are handled better** than appliances from municipal waste yards and retail, which increases their potential for p4r. Local re-use and repair centres have contracts with Recupel, and a 3-party agreement is set up per transfer station. The re-use/repair centres can select devices for p4r and the rest is picked up from the transfer stations by treatment operators.

What were the enabling factors?

- **Taking the operative responsibility**: Recupel initiated the project as a mere matchmaking platform between actors requesting pick-ups and transporters offering pick-up, but due to low

success rates, later changed the platform to become a middleman between the organizations and transporters to increase collection rates.

- **Increasing the convenience for commercial actors**: Requesting a pick-up through the platform is simple and doesn't require more than basic information on volume and type of WEEE. Additionally, transporters take care of safe handling and packaging of WEEE during the pick-up on-site, so companies don't have to do the packaging themselves. For this, Recupel provides 3 types of recipients for small WEEE depending on the volumes to be collected: cardboard boxes, iron walled rolling cages (1 m^3), or wooden pallet boxes (2 m^3).

Why and how is the initiative scalable?

- The initiative is scalable but **success rate for collection may vary regionally** with the density of existing commercial actors, offices, and schools with a need for a pick-up service for (small) WEEE. Therefore, a pick-up service might be more economically feasible in bigger cities than in rural areas.

Why and how is the initiative replicable?

- **The replicability is assumed to be high**, since the initiative uses elements of WEEE collection which are already available to most PROs or can be replicated without large efforts. It builds upon an online request form and uses logistics contractors who were already doing collection for the PRO at collection points such as municipal waste yards and retail.
- Regional clustering of collection points for pick-up has an impact on the initiative's replicability, which is considered to be high in Belgium, due to the country's relatively small size and overall high population density.

Which lessons learned were taken?

- The price paid to logistic contractors (truck drivers) had to be increased compared to regular pick-up from collection points, due to higher time and work efforts at the point of collection for handling, packaging and loading of the WEEE volumes. This and the overall smaller volumes and more pick-up locations increased the overall costs for collection compared to regular collection costs at municipal waste yards and retail. It did, however, not have a significant effect on the fees collected from producers due to the overall low volumes collected compared to the total WEEE collected.
- Working closely with the transporters who package, load and unload the WEEE, as well as setting aside WEEE from pick-up for re-use centres, helps to increase the p4r rate.

6.2 France

6.2.1 Status quo of small WEEE collection in France

France currently does not reach the EU target for collection of WEEE of 65%. The collection rate for WEEE is currently at 50% using the POM method, although it approaches the target with continuous improvements each year. The amount of WEEE collected per capita increased by 56% from 7.9 to 12.3 kg per capita (and 3.6 kg of small WEEE). The per capita collection is at 12.3 kg/year as average across France with Paris reaching only about 2 kg/year[35].

Table 6-4 Summary table on WEEE, small WEEE[36] and Battery flows in France[37]

	Products put on the market (tons)		Waste collected (tons)		Collection rate (%)		Recycling and preparation for re-use rate (%)	
	2014	**2020**	**2014**	**2020**	**2014**	**2020**	**2014**	**2020**
(W)EEE	1,554,305	2,179,743	522,793	832,651	29	42	80.8	80.0
Small (W)EEE	n/a	650,610	n/a	244,200	n/a	39[38]	n/a	79.7
Portable batteries and accumulators	31,330	35,268	11,989	15,124	36.8	45.6	n/a	n/a

In France, the EPR system for WEEE is reported by interviewed stakeholders to be more complex than in other EU MS. PROs in France receive information about the products placed on the market by their members and in some cases, also the composition of these products for carrying out a recyclability assessment for eco-modulation of fees. Overall, there is more of a focus on repair, and re-use than just recycling, and eco-design is incentivized through the eco-modulation of fees.

There is a legal requirement in France for disclosing a visible fee for B2C (not B2B) for electronic devices and furniture which indicates the price that producers pay to PROs to consumers. The fee at first only included the costs for recycling, but it now also includes the repairing fee. Currently the price is shown as a combined price, there is the possibility of specifying the price of preparation for re-use and the price of recycling and seeing how that influences customer behaviour. No pilot related to visible fee exists at Ecologic because they are not sure how they would implement it as it requires a lot from the producers and distributors and the influence on customer behaviour is difficult to measure. The PRO also focuses

[35] Eurostat data and Interview with Ecologic France
[36] Small WEEE = Small equipment (no external dimension more than 50 cm)+ Small IT and telecommunications equipment (no external dimension more than 50 cm).
[37] Numbers based on Eurostat ENV_WASELEEOS and ENV_WASPB, accessed 2nd August 2023, based on bipro, WEEE compliance promotion exercise, 2017, https://op.europa.eu/en/publication-detail/-/publication/09c7215a-49c5-11e8-be1d-01aa75ed71a1/language-en (prepared for the EU COM DG ENV) and based on Update of WEEE Collection Rates, Targets, Flows, and Hoarding, 2021, https://weee-forum.org/wp-content/uploads/2022/12/Update-of-WEEE-Collection_web_final_nov_29.pdf.
[38] Collection rate for small WEEE calculated by the authors based on small EEE POM in the previous year, no official collection rate reported.

more on studies involving donation and collection for recycling and repair instead of consumer buying patterns and behaviour.

Table 6-5 Overview table of specificities of PRO set up in France for WEEE and waste portable batteries (own compilation based on BIO 2016[39] and adelphi 2021[40])

Specificities of PRO set up in France	WEEE
Collection obligation imposed to local authorities	The collection obligations are **not** imposed on local authorities.
Visible contribution	The visible contribution published on the final consumer's invoice is **mandatory.**
Obligation for PROs to exercise a not-for-profit activity	It is **mandatory** for PROs to be non-profit.
Implementation of individual and/or collective systems	100% collective systems but with possibility to organise individually.
Number of PROs (household and/or professional)	4 PROs
Competitive or non-competitive PRO set-up	The WEEE PRO system is competitive

6.2.2 Ecologic France[41]

Ecologic is a French non-profit company starting its operations from 15th November 2006 with the collection and treatment of WEEE. The system has been initiated by 30 producers from large household appliances, IT, office appliances, photo, consumer equipment, and telecommunication.[42]

Similar to other PROs, Ecologic aim is to improve the collection rate in order to be compliant with the legislative provisions of the WEEE Directive and its transposition into national law. Hence, they have set up different pilots and run experiments for collection of small WEEE. Besides the pilots targeting small WEEE, which will be described below, in 2024, Ecologic will start a pilot where they encourage people to separate batteries from WEEE. Today, batteries are removed from WEEE at the treatment facilities for WEEE and subsequently handed over to the battery PROs for treatment.

Table 6-6 Examples of Ecologic France initiatives

Set up	Yoyo project (not best practice)	Téléphones Solidaires
	Note the Yoyo project was ended as it was not working, i.e. it cannot be considered best practice but allows to draw conclusions from it.	

[39] BIO by Deloitte, Study on the 2012 WEEE Directive in Europe, 2016 (prepared for ADEME).
[40] Adelphi consult GmbH, Analysis of Extended Producer Responsibility Schemes, 2021.
[41] Please note that the following chapter is based on stakeholder input. The interview with Ecologic France was performed in June 2023.
[42] Ecologic | WEEE Forum (weee-forum.org)

Waste stream in focus	Small WEEE and small used EEE	Small WEEE and small used EEE
B2C / B2B	B2C	B2C
Incentive type	Reward incentive (products, vouchers, discounts, etc.)	Convenience (Postal service)
Fate of collected equipment	Re-use and recycling	Re-use and recycling
Short description	Ambassadors collected and handed over WEEE bags to the PRO and got rewards from Yoyo stores.	Téléphones Solidaires was a test run for a postal service where people can send their phones back.
Scalability	Low	Medium
Replicability	Low	High

*6.2.2.1 Yoyo project (note: this initiative is **not** considered best practice)*

In the Yoyo project WEEE from the 13th and 14th arrondissements in Paris was collected. Ambassadors collected WEEE from other people in bags up to a weight of 10 kg after which the WEEE was handed over to the PRO. The ambassadors received a reward from the Yoyo online store for each bag collected.

Why is the initiative **not** considered best practice / unsuccessful?

- The Yoyo project is not considered to be a best practice initiative as it was ended and was not working. However, the lessons learned allow to draw conclusions from the project, which is why it is included in the report.
- With Yoyo, 200 people were reached, and in the end, about 2.5 tons of WEEE were collected.

What were the factors of **un**success?

- **Variety of rewards:** Within the Yoyo project, various rewards were distributed. They were shown on the online store and the number of awards varied through the project, mostly depending on when the partnerships were formed and whether the rewards were viable during the pandemic (e.g., movie theatre tickets were not). The variety of rewards and the fact that the store was online could have been counter-productive in motivating the population because it was too complex.
- **KPIs not met:** Yoyo was a start-up out of the usual collection system. Ecologic gave them money for the collection but the KPIs were not reached. The relationship between Ecologic and Yoyo was a contractual one and the prices for the gifts given to the collectors through Yoyo were defined by Yoyo's subcontracts with companies.
- **Bag size:** A major issue within the Yoyo pilot was the sizing of the bags. The 5 kg bags provided were too big for individuals (the ambassadors) to fill up themselves. Therefore, a lot of the bags

that were collected in the end came from groups and organizations, not necessarily from individuals.

- **Presence on site:** Another challenge was the outreach needed to help support the program. The presence of Yoyo to support the coaches onsite would have been helpful but this also requires more people to be involved in the project. It was too expensive to pay the pre-collection to the storage centre before treatment without reaching a critical mass.

Why and how is the initiative scalable?

- For the **Yoyo project**, Ecologic does not believe it is replicable or scalable because the pilot did not work well. The idea is difficult and expensive to put into place.

Why and how is the initiative replicable?

- Since the project was not successful, replication in the same way is not recommended.

Which lessons learned were taken?

- For replication of the initiative as pilot it should be made sure that there are enough people onsite at the beginning to encourage the ambassadors and reach a critical mass. Also, the support of municipalities should be gained, and the number and type of rewards defined in advance.
- Ecologic observes that among consumers the culture of receiving money for used items (through apps/ stores like “Vinted” for second-hand clothing) is getting stronger for some population groups and that it can be difficult to shift the culture towards donation. Contradictory to this, participants of Yoyo said that they do not care about receiving 1€ but associate giving it to an association as positive.
- Ecologic learned that hypotheses should be tested before scaling up pilots and a small-scale test should be done before a large-scale test. The small-scale test will be more expensive relative to the results that can be achieved due to missing scale effects, but it also provides an opportunity to evaluate how to reduce costs on a larger scale. Additionally, initiatives which are tested in a big city might not work well in more rural areas with lower population density.

6.2.2.2 Téléphones Solidaires

The Téléphones Solidaires Postal Service initiative was a pilot and experiment for a postal service where people could send their old phones back. The experiment used a control group and a variable group. The control group received an envelope for their phones, the other group in addition could indicate whether they wanted their phone to be recycled or prepared for re-use.

Why is the initiative considered best practice / successful?

- For Téléphones Solidaires, there were around 1,500 envelopes sent back, containing a total of approximately 2,500 phones.

What were the enabling factors?

- **Ease of handover and charity incentive:** There was no financial reward given to the participants but there was the ease of sending back the phone. Moreover, reusable phones were redistributed to people in precarious situation incentivising people to donate their device.
- **Choice between recycling and re-use:** Part of the incentive for the participants in the experiment group was also the choice that they had for what happens to their phones. The group that was given the choice gave back 30% more phones than the control group, also indicating that the collection rate can be a matter of information instead of just financial incentives since people feel engaged when they can make choices.
- **Partnerships:** Communication through the city (i.e., through Paris's Instagram page) was important. The social organization Emmaus Connect for treatment, Ateliers Sans Frontieres, the French post and a supplier to distribute the information flyer were involved.

How does the operator deal with the specific challenges of small WEEE?

- **Data deletion**: Ecologic's partners have software to delete data. However, the challenge of communicating to consumer how exactly data is erased remains. According to Ecologic, a booth that deletes all data right at the collection point, or a device that consumers could use to do data deletion on their own at home could be helpful. Hence, they would know exactly how their data is treated. Ecologic considers conducting an experiment where one group is explicitly told their data will be erased and the other is not.

Why and how is the initiative scalable?

- The Téléphones Solidaires project was ended after the planned 1.5 months, but there are plans to continue because Ecologic has now build up strong partnerships and wants to try other settings.

Why and how is the initiative replicable?

- Replicability is possible in theory in such countries, where the shipment of waste (electronics) by post is not prohibited by law.

Which lessons learned were taken?

See descriptions above.

6.3 Germany

6.3.1 Status quo of small WEEE collection in Germany

In Germany, the WEEE Directive is transposed in national law by the ElektroG[43]. The responsibility for the collection of WEEE is shared between local authorities, producers and retailers and cannot be passed on to third parties ("geteilte Verantwortung"). A coordinating body (Stiftung ear[44]) is tasked to coordinate the management of WEEE flows between the different producers according to their market share. Local authorities are required to set up sufficient collection points, while producers or their responsibility organizations must take over the financial or operational responsibility to collect the quantities of equipment allocated by the Stiftung ear from the municipal collection points and hand them over to treatment operators. Producers can set up additional take-back points to deduct the amounts allocated to them.

The Stiftung ear monitors the status of fulfilment of the recovery targets of each producer based on the ratio between the amount of EEE placed on the market and the amount collected from the collection points in the municipalities. [45]

In Germany, distance sellers are subject to a take-back obligation. The take-back is carried out by a collection point chosen by the distance seller and located at a reasonable distance from the consumer's place of residence. The buyer must inform the distance seller at the time of delivery of his intention to return an old electrical or electronic appliance. [46]

Table 6-7 Summary table on WEEE, small WEEE[47] and Battery flows in Germany[48]

	Products put on the market (tons)		Waste collected (tons)		Collection rate (%)		Recycling and preparation for re-use rate (%)	
	2014	**2020**	**2014**	**2020**	**2014**	**2020**	**2014**	**2020**
(W)EEE	1,713,902	2,847,926	722,968	1,037,019	42.9	44.2	82.0	85.8
Small (W)EEE	n/a	162,292	n/a	70,298	n/a	58.6	n/a	85.9
Portable batteries and accumulators	43,979	65,368	19,142	26,343	44.2	45.6	n/a	n/a

[43] ElektroG - nichtamtliches Inhaltsverzeichnis (gesetze-im-internet.de)
[44] stiftung-ear.de/de/startseite
[45] BIO by Deloitte, Study on the 2012 WEEE Directive in Europe, 2016 (prepared for ADEME)
[46] BIO by Deloitte, Study on the 2012 WEEE Directive in Europe, 2016 (prepared for ADEME)
[47] Small WEEE = Small equipment (no external dimension more than 50 cm) + Small IT and telecommunications equipment (no external dimension more than 50 cm)
[48] Numbers based on Eurostat ENV_WASELEEOS and ENV_WASPB, accessed 2nd August 2023, based on bipro, WEEE compliance promotion exercise, 2017, https://op.europa.eu/en/publication-detail/-/publication/09c7215a-49c5-11e8-be1d-01aa75ed71a1/language-en (prepared for the EU COM DG ENV) and based on Update of WEEE Collection Rates, Targets, Flows, and Hoarding, 2021, https://weee-forum.org/wp-content/uploads/2022/12/Update-of-WEEE-Collection_web_final_nov_29.pdf

The collection rate for WEEE in 2020 was slightly below than the EU average (46%), having reached 44% using the POM method and 59% for small WEEE[49] specifically, putting Germany on the 17th rank of the EU MS. The amount of WEEE collected per capita has increased between 2014 and 2020, from 8.9 to 12.5 kg per capita (and 5.0 kg of small WEEE). The preparation for re-use and recycling rate equally has increased for all WEEE categories from 77% to 86% between 2014 and 2020, and for small WEEE was at 86% in 2020.[50]

Table 6-8 Overview table of specificities of PRO set up in Germany for WEEE (own compilation based on BIO 2016[51] and adelphi 2021[52])

Specificities of PRO set up in Germany	WEEE
Collection obligation imposed to local authorities	Yes
Visible contribution	Forbidden
Obligation for PROs to exercise a not-for-profit activity	No PRO in place; instead, the coordinating body “Stiftung ear” exists.
Implementation of individual and/or collective systems	No collective system
Number of PROs (household and/or professional)	0
Competitive or non-competitive PRO set-up	No PRO in place; instead, the coordinating body “Stiftung ear” exists.

The collection rate for WEEE in 2020 was slightly below than the EU average (46%), having reached 44% using the POM method and 59% for small WEEE[53] specifically, putting Germany on the 17th rank of the EU MS. The amount of WEEE collected per capita has increased between 2014 and 2020, from 8.9 to 12.5 kg per capita (and 5.0 kg of small WEEE). The preparation for re-use and recycling rate equally has increased for all WEEE categories from 77% to 86% between 2014 and 2020, and for small WEEE was at 86% in 2020.[54]

6.3.2 SHIFT (EEE producer)[55]

SHIFT GmbH founded in 2014 is a German manufacturer of smartphones, phablets (mix of phone and tablet), detachable notebooks, chargers, bikes and other products. SHIFT’s aim is that phones and other devices can be repairable by producing modular devices. The main markets are Germany, Austria, and

[49] Collection rate for small WEEE calculated by the authors based on small EEE POM in the previous year, no official collection rate reported.
[50] Numbers based on Eurostat ENV_WASELEEOS and ENV_WASPB, accessed 2nd August 2023.
[51] BIO by Deloitte, Study on the 2012 WEEE Directive in Europe, 2016 (prepared for ADEME)
[52] adelphi consult GmbH, Analysis of Extended Producer Responsibility Schemes, 2021
[53] Collection rate for small WEEE calculated by the authors based on small EEE POM in the previous year, no official collection rate reported.
[54] Numbers based on Eurostat ENV_WASELEEOS and ENV_WASPB, accessed 2nd August 2023.
[55] Please note that the following chapter is based on stakeholder input. The interview with SHIFT was performed in September 2023.

Switzerland whereby the focus lies on Germany. With the purchase of a SHIFT device, consumers are charged with a deposit fee which is visible on the bill. After the first life of the SHIFT device, consumers can decide to send back the device to SHIFT to receive the deposit amount or, if repair is needed, to send it to SHIFT's authorized repair shop. SHIFT checks and evaluates condition and if no repair is able the owner can claim the deposit amount. Regardless the condition and the age of the phone, the customer will receive the deposit amount. The deposit fee is returned in form of a voucher for their own shop (22 Euro) or a reduced cash amount (18 Euro). The amount was calculated by an LCA research analysis of the product.

Depending on the condition (A level: minimal signs of use e.g. no scratches, pressure marks and B level: signs of use e.g. light scratches but no pixel defect) and age (12 months or less, 24 months or less, more than 24 months) of the phone, an additional amount, "rest value", can be paid to the customer. The only criteria to receive the total amount of the deposit fee is to send the device back in original packaging to ensure safe transport. Alternative packaging with similar requirements can be used but, in that case, less refund is paid. The SHIFT support team is responsible for clearing the deposit fee.

For safety reasons and to avoid rapid discharge during transport, it is recommended to the customer to fully charge the battery (in case it is still working). Moreover, customers are asked to reset the devices to factory settings. When the phone is refurbished or repaired, a new operating system is installed, and remaining data is deleted. After the take-back, the phones are sold as second-life devices or if not possible due to the condition of the device at least well-preserved components are reused.

In addition to the take back of their phones, SHIFT "offsets" the waste they generate by cooperating with Closing the Loop[56]. Closing the Loop takes back broken phones from African countries and directs them to recycling facilities in Europe. For every phone sold by SHIFT one broken phone is collected through their cooperation partner Closing the Loop.

Table 6-9 SHIFT initiative

Set up	SHIFT
Waste stream in focus	Small UEEE (phones, headphones, detachable notebooks, tablets, keyboards etc. – no cables)
B2C / B2B	B2C
Incentive type	Reward incentive: Deposit return scheme (DRS) and in some cases the additional amount of the "rest-value"
Fate of collected equipment	Re-use; Repair-Refurbish; Recycle
Short description	Deposit return scheme of the electronics manufacturer SHIFT GmbH

[56] Closed loop solutions for IT hardware | Closing the Loop

Scalability	Medium
Replicability	Medium

Why is the initiative considered best practice / successful?

The initiative is considered best practice as it makes use of a combination of financial incentive, namely the **DRS fee** combined with a high repairability extending the device's life. From 80,000 units of sold SHIFT phones, 5,000-10,000 were returned through the DRS system.

What were the enabling factors?

- **Financial and environmental incentive:** The guarantee that at least 18 Euro (cash) or 22 Euro (voucher) are returned as DRS fee and the company's sustainability profile via supporting repairability seem to motivate people to stay on their ecosystem and return their devices. However, as mainly environmentally conscious people buy SHIFT phones, this relates to a high intrinsic motivation for reuse & recycling.

- SHIFT tries to respect **circular economy principles in a holistic way** driving the company to set up successful DRS, repair schemes etc.

- **Convenience return:** Devices can be returned via post back to SHIFT.

- **Taking responsibility:** SHIFT does not run this system with an economic viability target only but to provide a solution to their customers , to be responsible for their products and to inspire other companies.

- **Cooperating with partners**: SHIFT cooperates with several actors to provide a holistic solution for their customers with the DRS, such as with the post office, recyclers, battery scheme, non-for-profit organizations (e.g., "Arbeit für Menschen mit Behinderung") Afb supply of motherboards and small parts such as microphones, loudspeakers, irreparable displays), universities for research etc.

How does the operator deal with the specific challenges of small WEEE/UEEE?

- Data protection: To tackle the data protection issue of phones, SHIFT asks their customers to erase all data and to reset to factory settings. When the phone is prepared for second hand use, a new operational system is uploaded and old data is erased.

Why and how is the initiative scalable?

According to SHIFT, a DRS system can be implemented and is scalable in other countries and for other products as well. The scalability is assumed **medium**.

Why and how is the initiative replicable?

The initiative is replicable but highly depends on a manufacturer's motivation and overall environmental approach. The replicability is assumed **medium.**

Which lessons learned were taken?

There is a difficulty to persuade customers to pay more compared to the competition as sometimes the overall benefit is not directly obvious. The more expensive devices according to the company can be justified when thinking about the DRS as also the whole circular approach of the company (repairability, social and environmental responsibility).

6.4 Ireland

6.4.1 Status quo of small WEEE and batteries collection in Ireland

WEEE

In Ireland the Directive 2012/19/EU on WEEE was transposed into national legislation in 2014 with the WEEE Regulations[57]. The Environmental Protection Agency (EPA) Ireland is the authority in charge of supervising and controlling the implementation of the legislation and it provides various guidance documents on WEEE. Ireland's national producer registration body is called the Producer Register Ltd. (PRL, formerly 'WEEE Register Society') which was set up to assist producers meet their obligations for the responsible management of WEEE as well as batteries, verifies contributions of producers and their declarations on market share, verifies visible Environmental Management Costs (vEMC) and notifies EPA about any irregularity. The Producer Register Ltd also provides access to producers to report EEE and battery POM data each month to the online database known as the "Blackbox". EEE is reported by units and weight and Batteries are reported by weight.

Ireland has a mandatory visible fee (visible Environmental Management Costs, vEMC) visible to consumers (on shelves, online, on receipts, etc.) and applicable to certain sub-categories of EEE. Such vEMCs are standardised charges added to the price of certain goods aimed to raising awareness when buying or browsing for new appliances and to support the development of additional infrastructure and programmes to increase take back of WEEE, contributions to the EPA for R&D and enforcement, and to Local Authorities sites[58]. The rate charged is approved by the Producer Register Ltd.

The collection rate for WEEE in 2020 was significantly higher than the EU average (46%), having reached 60% using the POM method and 41% for small WEEE specifically, putting Ireland on the 8th rank of the EU MS. The amount of WEEE collected per capita increased by 35% between 2014 and 2020, from 9.6

[57] S.I. No. 149/2014 - European Union (Waste Electrical and Electronic Equipment) Regulations 2014, Official publication: Iris Oifigiúl; Number: 25; Publication date: 2014-03-28.
[58] Elise Finidori, WEEE Ireland, Visible environmental fees: Consumer awareness and behaviour (2021)

to 13 kg per capita (and 2.6 kg small WEEE). The preparation for re-use and recycling rate has increased slightly for all WEEE categories from 83.7% to 84.8% between 2014 and 2020, and for small WEEE was at 79.4% in 2020.

Batteries

In Ireland, from 26 September 2008 onwards, each producer or a third party acting on his or her behalf must finance any of the costs associated with the collection, storage, treatment, and recovery and/or disposal of waste batteries and/or accumulators. Additionally, public information campaigns on the collection, storage, treatment and recovery and/or disposal of portable batteries and/or portable accumulators in respect of portable batteries and/or portable accumulators have to be conducted.

Each producer or a third party acting on his or her behalf must register every year as a battery producer with the national producer registration body - Producer Register Ltd - which also works as the national registration body for WEEE. They must declare, every month, the types and quantities of batteries that were placed on the market in Ireland using the "Blackbox", a secure online reporting system provided by the Producer Register. To comply with the obligation to finance the environmentally sound management of the waste batteries, producers may either join one of the two existing collective compliance schemes or self-comply requiring a Waste Battery Management Plan (WMBP) and Waste Battery Management Report (WBMR) to be submitted to the EPA every year. Visible environmental management costs (vEMCs) are not applicable to Batteries.

The collection rate for waste portable batteries and accumulators in 2020 reached 51.1%, putting Ireland on the 9th rank of the EU MS and reaching the 45% target for 2023 set out in the Batteries Regulation.

The below Table 6-10 provides a summary of the collection data for WEEE, small WEEE, and batteries in Ireland as far as available.

Table 6-10 Summary table on WEEE, small WEEE[59] and Battery flows in Ireland[60]

	Products put on the market (tons)		Waste collected (tons)		Collection rate (%)		Recycling and preparation for re-use rate (%)	
	2014	**2020**	**2014**	**2020**	**2014**	**2020**	**2014**	**2020**
(W)EEE	n/a	124,354	44,911	64,856	46	60	83.7	84.8

[59] Small WEEE = Small equipment (no external dimension more than 50 cm) + Small IT and telecommunications equipment (no external dimension more than 50 cm)

[60] Numbers based on Eurostat ENV_WASELEEOS and ENV_WASPB, accessed 2nd August 2023, based on bipro, WEEE compliance promotion exercise, 2017, https://op.europa.eu/en/publication-detail/-/publication/09c7215a-49c5-11e8-be1d-01aa75ed71a1/language-en (prepared for the EU COM DG ENV) and based on Update of WEEE Collection Rates, Targets, Flows, and Hoarding, 2021, https://weee-forum.org/wp-content/uploads/2022/12/Update-of-WEEE-Collection_web_final_nov_29.pdf

Small (W)EEE	n/a	36,464	n/a	12,827	n/a	41[61]	n/a	79.4
Portable batteries and accumulators	2,378	3,543	678	1,461	32.6	51.3	n/a	n/a

The table below lists the different specificities of the Irish PRO systems for WEEE and for batteries. It is to highlight that in Ireland, only two PROs for WEEE and for Batteries are active and operating in close cooperation with the authorities. Most EEE producers and importers have joined these nationally operating PROs.

Table 6-11 Overview table of specificities of PRO set up in Ireland for WEEE and waste portable batteries (own compilation based on BIO 2016[62] and adelphi 2021[63])

Specificities of PRO set up in Ireland	WEEE
Collection obligation imposed to local authorities	The collection obligations are **not** imposed on local authorities.
Visible contribution	The visible contribution (Visible Environmental Management Costs, vEMCs) is **applicable to some categories of EEE** (not small EEE).[64]
Obligation for PROs to exercise a not-for-profit activity	No (commercial and non-profit PROs exist)
Implementation of individual and/or collective systems	Collective and individual systems
Number of PROs (household and/or professional)	2 PROs
Competitive or non-competitive PRO set-up	The WEEE PRO system is competitive

6.4.2 WEEE Ireland[65]

WEEE Ireland operates extensively across Ireland, covering over 80% of the country's regions. Due to the presence of two competing compliance schemes, there is a geographical split in the operations. Presently, WEEE Ireland serves 23 out of the 31 local authority areas in the country.

The regulatory environment in Ireland is stringent with regards to retailers and distributors take-back obligations, mainly due to the deficit of public amenities like municipal waste yards. As a result, WEEE Ireland has collaborated closely with retailers to help them meet their legal obligations. The regulations also emphasize the importance of communication around the take-back service at the point of sale. For

[61] Collection rate for small WEEE calculated by the authors based on small EEE POM in the previous year, no official collection rate reported
[62] BIO by Deloitte, Study on the 2012 WEEE Directive in Europe, 2016 (prepared for ADEME)
[63] adelphi consult GmbH, Analysis of Extended Producer Responsibility Schemes, 2021
[64] A full listing can be found here: https://www.producerregister.ie/images/uploads/inner/Category_Listing_6.pdf
[65] Please note that the following chapter is based on stakeholder input. The interview with WEEE Ireland was performed in June 2023.

products like white goods, screens, and lighting, where a visible fee is applicable, information about the take-back service is provided alongside the visible fee. To promote take-back services and increase general awareness, WEEE Ireland and retailers have established a joint marketing fund, which they utilize for advertising and promotional activities. This approach ensures that consumers are well-informed about the recycling options available for their old electronic items.

Table 6-12 Example of WEEE Ireland initiatives

Set up	Retail collection network
Waste stream in focus	Small WEEE
B2C / B2B	B2C
Incentive type	Convenience (Bring points) and Other (visible fee)
Fate of collected equipment	Recycling
Short description	Retailer take-back programs account for >50% of WEEE Ireland's tonnage. Collection portfolio diversification aims at small WEEE and screen materials with retail collaboration and customer service focus.
Scalability	Low
Replicability	Medium

The regulatory environment in Ireland is stringent with regards to retailers and distributors take-back obligations, mainly due to the deficit of public amenities like municipal waste yards. As a result, WEEE Ireland has collaborated closely with retailers to help them meet their legal obligations. The regulations also emphasize the importance of communication around the take-back service at the point of sale. For products like white goods, screens, and lighting, where a visible fee is applicable, information about the take-back service is provided alongside the visible fee. To promote take-back services and increase general awareness, WEEE Ireland and retailers have established a joint marketing fund, which they utilize for advertising and promotional activities. This approach ensures that consumers are well-informed about the recycling options available for their old electronic items.

Why is the initiative considered best practice / successful?

- The initiative to involve retail strongly in the take-back of WEEE has **resolved the issues of historical WEEE legacy to manage, and the lack of municipal waste yards per capita** through providing collection points, and information on take-back services in retail.
- Nowadays a substantial >50% of WEEE Ireland's take-back tonnage is attributed to retailer take-back programs.

What were the enabling factors?

- There are two schemes in Ireland, and the approach is jointly delivered by both, ERP and WEEE Ireland, leading to success through the **collaboration networks**. Relevant actors are the 7 major retailer groups and the individual retail points under them.
- Additionally, the **regulator who has introduced the visible fee** played an important role in the functioning of the initiative, as it serves as a unifying element, connecting consumers and retailers. Retailers have shown a higher level of commitment after realizing that providing take-back services not only fulfils regulatory requirements but also enhances their customer service, which is valued by their customers.
- Retailers benefit from a **central marketing payment** to be used in the generation of marketing awareness in conjunction with their own advertising, disseminating the take back message at the same time as they're advertising their new appliances etc. (websites, in store and media). This payment comes mainly from the visible fee. Retailers are not only rewarded based on the size of their take back tonnage, but they're rewarded also on the delivery of their marketing activity
- To support retailers in their service provision of collecting, handling, storing, and presenting WEEE, they receive **contributions towards costs through the compliance scheme**. This contribution stems from the visible fee and is not ring fenced to be distributed to retailers but has been introduced as it incentivizes retailers to actively participate in the take-back process.

How does the operator deal with the specific challenges of portable batteries and accumulators?

- To tackle the challenge to collect and capture small WEEE, WEEE Ireland provides receptacles for small WEEE and cages at the back of retailers' facilities and they are developing additional shop floor receptacles as a supplement.

Why and how is the initiative scalable?

- The initiative's **scalability is assumed to be low**, since major retail players are already on-board for providing WEEE take-back as a service to their customers. The visible fee might be extended to include small WEEE (IT and small equipment) to increase awareness among customers.

Why and how is the initiative replicable?

- **The replicability is assumed to be medium**, since the initiative is based on strong cooperation between actors and a legally mandatory visible fee which serves as unifying element between retail, PROs, and customers. Introduction of visible fees on a national level is possible in theory but might be difficult to realize in the short or medium term.
- Additionally, due to **Ireland's smaller marketplace** in comparison to other EU MS, WEEE Ireland are closer to decision makers and to authorities.

Which lessons learned were taken?

- "Like for like" take back, take back on delivery and mandatory handover of the collected WEEE, in combination with the work done by the EPR schemes are the main factors for success of the collection system in Ireland. These elements were furthermore knitted together by invisible fee that then supported additional contributions to the retailers. The visible fee cooperation agreements, and the contribution to retailers to support them in their service provision of collecting, handling, storing, and presenting WEEE were relevant.
- Funding of the EPR schemes comes through both visible fees and nonvisible fees, but it is also important to realize that visible fees displayed by retailers on behalf of producers and directly expressed to consumers and shown on ticketing, which unifies the whole chain.
- Legally the visible fee is not defined as an additional charge or levy to consumers, still they were expecting some protests from customers on the visible fee in the early years, but it mostly received good customer buy-in and positive sentiment.

6.5 Italy

6.5.1 Status quo of small WEEE and batteries collection in Italy

WEEE

The Italian WEEE PRO system started to operate in November 2007 with the Ministry decrees that established the National Clearinghouse and other national organisations. By the end of 2008 all municipalities had registered in the National Clearinghouse and thus included WEEE take back activities on behalf of compliance organisations' and were eligible for compensation.[66] Since then, municipalities and distributors take back WEEE.

In Italy, the WEEE Directive was transposed in Legislative Decree 49/2014[67]. The Decree sets out that depending on the size of the store the 1:0 or 1:1 principle is applicable. The 1:1 principle applies in the case of the supply of new, equivalent equipment, on a "one against one" basis, to WEEE from domestic locations. In the case of professional EEE, the 1:1 principle only applies to historical devices (i.e., placed on the market up to 31 December 2010). For EEE placed on the market after that date, the producer is responsible for proper management, even if no new EEE is supplied.[68] For B2C WEEE an eco-contribution must be paid by the producers, while for B2B WEEE this is not the case.[69] Hence, several PROs offer specific programmes for professional WEEE to access this market as well.

The collection rate for WEEE in 2020 was far from reaching the 65% target set out by the WEEE Directive applicable since 2019, reaching 36.5% using the POM method and 31.1% for small WEEE specifically,

[66] https://www.sciencedirect.com/science/article/abs/pii/S0956053X16303105
[67] *** NORMATTIVA - Stampa *** (stackpathcdn.com)
[68] Italian legislation - Erion Professional
[69] Source: Interview with Erion representatives

putting Italy on rank 25 of the 27 EU MS. Relatively seen, The amount of WEEE collected per capita increased 56% between 2014 and 2020, from 5.2 to 8.0 kg per capita (and 1.8 kg small WEEE). The preparation for re-use and recycling rate has increased slightly for all WEEE categories from 82.3% to 86.4% between 2014 and 2020, and for small WEEE was at 79.3% in 2020.

Batteries

In Italy, the Batteries Directive was transposed in Italian law by Legislative Decree 188/2008. Articles 6 and 7 of Legislative Decree No 188/2008 provide that producers or third parties acting on their behalf shall set up and manage, either individually or collectively and at their own expense, a separate collection system for portable batteries and accumulators and another for industrial and automotive batteries and accumulators, providing a consistent service across the entire country. For waste portable batteries and accumulators, the collection is organised by the public waste collection service and distributors.[70] Between 2014 and 2020, the collection rate of portable batteries and accumulators has increased from 34.1% to 43.0% which is close to the EU average of 47% but still below the target of 45% for 2023 set out in the Batteries Regulation.

The below Table 6-13 provides a summary of the collection data for WEEE, small WEEE, and batteries in Italy as far as available.

Table 6-13 Summary table on WEEE, small WEEE[71] and Battery flows in Italy[72]

	Products put on the market (tons)		Waste collected (tons)		Collection rate (%)		Recycling and preparation for re-use rate (%)	
	2014	**2020**	**2014**	**2020**	**2014**	**2020**	**2014**	**2020**
(W)EEE	883,883	1,560,600	314,210	477,972	43.6 (2013)	36.5	82.3 (2013)	86.4
Small (W)EEE	n/a	346,945	n/a	109,237	n/a	31.1[73]	n/a	79.3
Portable batteries and accumulators	26,944	27,859	9,585	11,110	34.1	43.0	n/a	n/a

[70] Eunomia et al., Final Implementation Report for the Directive 2006/66/EC on Batteries and Accumulators, 2015.
[71] Small WEEE = Small equipment (no external dimension more than 50 cm)+ Small IT and telecommunications equipment (no external dimension more than 50 cm).
[72] Numbers based on Eurostat ENV_WASELEEOS and ENV_WASPB, accessed 2nd August 2023, based on bipro, WEEE compliance promotion exercise, 2017, https://op.europa.eu/en/publication-detail/-/publication/09c7215a-49c5-11e8-be1d-01aa75ed71a1/language-en (prepared for the EU COM DG ENV) and based on Update of WEEE Collection Rates, Targets, Flows, and Hoarding, 2021, https://weee-forum.org/wp-content/uploads/2022/12/Update-of-WEEE-Collection_web_final_nov_29.pdf.
[73] Collection rate for small WEEE calculated by the authors based on small EEE POM in the previous year, no official collection rate reported.

The table below list the different specificities of the Italian PRO system for WEEE and for batteries. In Italy, 14 WEEE PROs are active and compete against each other. EEE producers are free to choose to join a collective system (PRO) or to set up an individual system.

Table 6-14 Overview table of specificities of PRO set up in Italy for WEEE and waste portable batteries (own compilation based on BIO 2016[74], adelphi 2021[75] and Eunomia 2015[76])

Specificities of PRO set up in Italy	WEEE	Batteries
Collection obligation imposed to local authorities	The collection obligations are imposed on local authorities.	The collection obligations are imposed on local authorities.
Visible contribution	The visible contribution published on the final consumer's invoice is **possible** (but hardly ever happens)	The visible contribution published on the final consumer's invoice is **possible** (but hardly ever happens)
Obligation for PROs to exercise a not-for-profit activity	YES	YES
Implementation of individual and/or collective systems	Collective and individual systems	Collective and individual systems
Number of PROs (household and/or professional)	14 PROs	16 PROs (3 individual scheme)
Competitive or non-competitive PRO set-up	The WEEE PRO system is competitive	The batteries PRO system is competitive

6.5.2 Erion[77]

Erion[78] is the largest PRO in Italy and manages take-back of WEEE (professional and household), batteries and accumulators, and other waste streams. To reach the EU collection rates, Erion has set up several initiatives for batteries and small WEEE which will be analysed in the following. Please consult the accompanying booklet for more detailed information on the best practices.

Table 6-15 Examples of Erion initiatives

Set up	Energia al cubo	Renew project	Exceed
Waste stream in focus	Portable batteries and accumulators	WEEE	Professional WEEE
B2C / B2B	B2C	B2C	B2B

[74] BIO by Deloitte, Study on the 2012 WEEE Directive in Europe, 2016 (prepared for ADEME).
[75] Adelphi consult GmbH, Analysis of Extended Producer Responsibility Schemes, 2021.
[76] Eunomia et al., Final Implementation Report for the Directive 2006/66/EC on Batteries and Accumulators, 2015.
[77] Please note that the following chapter is based on stakeholder input. The interview with Erion was performed in June 2023.
[78] Homepage - Erion.

Incentive type	Reward incentive (Non-monetary reward such as plants, devices, etc. and monetary reward (awards to schools)	Convenience incentive (Bring points)	Convenience incentive (Pick-up service for installers of professional EEE and take-over of reporting obligations)
Fate of collected equipment	Recycling	Recycling	Recycling
Short description	Awareness campaign on the proper collection of portable batteries and accumulators. A batteries collection challenge between municipalities, citizens or schools. The winners received a prize. 4 pilots in 4 Italian regions were performed.	WEEE collection points established inside cities, addressing the problem of having the collection point being outside/out of the way.	Aim to make professional WEEE collection more like domestic WEEE collection, i.e., to incentivise producers to join a system instead of setting up own B2B systems.
Scalability	Medium	Medium - High	High
Replicability	High	High	High

6.5.2.1 Energia al cubo

Energia al cubo is an awareness campaign on the proper collection of portable batteries and accumulators. There were four pilots preformed in four regions of Italy that consisted of a battery collection challenge between municipalities, citizens or schools. The winners received a prize.

Why is the initiative considered best practice / successful?

- Energia al cubo is considered a best practice as it allowed to significantly increase the collection rate. Compared to the same time period in the year before each pilot project area saw an increase in collection rate (measured in mass): Florence (+10,85%), Rimini area (+29,00%), Massa Lubrense - near Naples (+195%), 6 municipality challenge in Emilia Romagna (+33%). Combined, this project increased the collection by 32.71 % (73.337 to 97.323 kg).

What were the enabling factors?

- **Close collaboration with partners**: A close collaboration with municipalities and municipal sectors (e.g., waste management company, schools) which were approached by Erion contributed significantly to the success. A separate company was contracted to support coordinating with all pilots (e.g., for setting up info points) and to ease Erion's work.

How does the operator deal with the specific challenges of portable batteries and accumulators?

- **Location of ecopoints / safety:** The challenges that came with the initiative include organization, logistics, and collaboration with the municipalities. This includes, for example: where to put the

ecopoints (includes both collection centres and information communication centres) while ensuring safety, and how to organize the project itself. Economic challenges include financing the ecopoints.

Why and how is the initiative scalable?

- The initiative is scalable but if repeated in the same area, the collection rates will vary, probably resulting in less collection. The schools or municipalities included in these challenges should then be varied.

Why and how is the initiative replicable?

- The replicability is assumed to be high, especially because other member states have done similar projects as well (BE; RO; ES; etc).

Which lessons learned were taken?

- Although the pilots allowed to increase the collection the pilots are heavily related to costs: costs for communication activity, communication materials, coordination, collection boxes, prizes, etc.

6.5.2.2 Renew

WEEE collection points are established inside cities, addressing the problem of having the collection point being outside of the city and difficult or time consuming for some people to access. The eco-points collect small WEEE, lamps, portable batteries, and some medium WEEE and also act as information centres.

Why is the initiative considered best practice / successful?

- As Renew is a new project (June 2023), the success rate is not yet known. However, experience from other countries has shown that bring points are a valid instrument to ease-the-handover for consumers and to increase the collection rate. Due to the relative novelty of the initiative and the ecopoints having just been installed there is no data yet on the collection and possible increases due to the installation of the ecopoint.

What were the enabling factors?

- **Ease-of-handover:** Previous studies[79] and initiatives in other countries have shown that facilitating ease-of-hand-over is one major enabling factor to motivate citizens to dispose of WEEE. Renew will allow a dense net of collection points inside cities, making disposal convenient for consumers.

[79] Ramboll et al., Study on options for return schemes of mobile phones, tablets and other small electrical and electronic equipment in the EU, 2022 (prepared for EU COM DG ENV).

- **Close collaboration with partners**: Similar to the first initiative, Renew includes close collaboration with municipalities and municipal sectors (e.g. waste management company, schools) which are approached by Erion.

How does the operator deal with the specific challenges of small B2C WEEE?

- **Location of ecopoints / safety:** The challenges that came with the initiative include organization, logistics, and collaboration with the municipalities. This includes, for example: where to put the ecopoints (includes both collection centres and information communication centres) while ensuring safety, and how to organize the project itself. Economic challenges include financing the ecopoints.
- **Data protection:** Since the collected electronics are not re-used, data deletion is not performed and hence not perceived as challenge.

Why and how is the initiative scalable?

- Scalable in the sense that an increase of the numbers of collection points is possible.

Why and how is the initiative replicable?

- Increasing collection points can be replicated (and was already done) in other MS.

Which lessons learned were taken?

- Since the initiative was launched only recently, no lessons learned can be drawn yet.

6.5.2.3 Exceed

Exceed is a voluntary collective scheme aimed at industrial EEE producers and distributors (air conditioning, printing, and food industry) which offers among other services, improved convenience through taking over monitoring and reporting obligations, and convenience through pick-up services for installers and other actors who become waste generators of industrial WEEE after reaching a certain volume threshold.

Why is the initiative considered best practice / successful?

- Exceed for professional WEEE is a best practice as it addresses a new market segment and offers more convenience for professional EEE producers. Moreover, there is a huge potential to be tapped in this area, as currently the rate of professional collection of WEEE in Italy is only around 10%.
- However, is is not yet clear to which extent the initiative leads to an increase in the return rate of professional WEEE.

What were the enabling factors?

- **Convenience incentive:** The incentive for companies producing professional EEE to join Exceed is that joining the collective system offered by Erion is cheaper and more convenient due to reduced administrative burdens than taking care of compliance with WEEE take-back obligations individually. Additionally, since Erion already has a supply chain set up they can negotiate cheaper prices with recyclers, and are experienced with reporting and monitoring of WEEE flows.

How does the operator deal with the specific challenges of small B2B WEEE?

- Currently the rate of professional collection of WEEE in Italy is only around 10%. To tackle this challenge, Erion has set up the Exceed programme which focus on B2B WEEE.

Why and how is the initiative scalable?

- Since currently the rate of professional collection of WEEE in Italy is only around 10% there is room for scale-up. The scalability relates to the number of producers that put B2B WEEE on the Italian market.

Why and how is the initiative replicable?

- Replicable because the problem of professional WEEE is the same in all the member states and collection is done in the same way (i.e., often by the companies themselves). Erion does not know if similar B2B initiatives have been started elsewhere.

Which lessons learned were taken?

- Having been active for less than 2 years, more time is needed to reach conclusions and see if the initiative can lead to an increase in the return rate of professional WEEE.

6.6 Malta

6.6.1 Status quo of small WEEE collection in Malta

In September 2015, the Maltese government implemented Extended Producer Responsibility (EPR) and since then PROs are active for WEEE. In Malta, the two PROs WEEE Malta and WEEE Recycle are in a competitive market, but the collection obligations are still imposed on local authorities. The PROs perform the collection in Malta and on the sister island Gozo (called “double insularity”). Although the cost burden of recycling WEEE is generally higher on islands compared to other main land countries[80], being an island has the advantage of having island boundaries, which supports the control of the territory and having short distances to the next collection point[81].

[80] WEEE Malta reports that the direct cost to ship, treat and recycle a fridge is 34€, whereas mainland Italy has a cost of approximately 12€.
[81] Source: Interview with WEEE Malta representatives.

In Malta, bulky waste including bulky WEEE is collected via the door-to-door 'Bulky Refuse' system funded by Local Councils. Sometimes small WEEE is collected with that same system too. The waste material goes to Civic Amenity (CA) Sites of which in 2017, 6 existed and which are governed by the National Waste Agency WasteServ Malta Ltd. The PROs are the obliged parties to collect the WEEE from the CA Sites according to their market shares and to treat and recycle it. The Competent Authority pays an agreed fee for the WEEE portion to the PRO[81,82].

Additionally to the local councils on which the collection obligations for WEEE are imposed, producers with a retail shop area relating to EEE of at least 400m^2 , are to provide for the collection of very small WEEE (WEEE with no external dimension more than 25cm) free of charge to end-users and without the obligation to buy a new EEE.[83] In 2020, 854 tons of small WEEE from 2,865 tons POM where collected in Malta or around 30% collection rate for small WEEE (see table Table 6-16).

The collection rate for WEEE in 2020 was far from reaching the 65% target set out by the WEEE Directive applicable since 2019, reaching 31.7% using the POM method and 28.1% for small WEEE specifically, putting Malta on rank 26 of the 27 EU MS only before Romania. The amount of WEEE collected per capita increased by 79% between 2014 and 2020, from 3.8 to 6.8 kg per capita (and 1.7 kg small WEEE). The preparation for re-use and recycling rate has decreased from 107.1% to 58.9% between 2014 and 2020, and for small WEEE was at 58.4% in 2020.

Due to Malta's geographical location as an Island, WEEE collected in Malta undergoes one of two processes depending on current market prices: local pre-treatment, followed by exporting separated fractions for additional treatment, or direct exportation for recovery and recycling operations. Due to fluctuating markets, significant quantities of WEEE collected in Malta are temporarily stored at authorized waste management facilities. Consequently, in some years, the quantities of WEEE reported as exported for further treatment can exceed the amounts collected in those years, resulting in recovery and recycling rates exceeding 100%.[82]

The below Table 6-16 provides a summary of the collection data for WEEE, small WEEE, and batteries in Malta as far as available.

[82] ERA, FREQUENTLY ASKED QUESTIONS on Subsidiary Legislation 549.89 – the Waste Management (Electrical and Electronic Equipment) Regulations, 2017, https://era.org.mt/wp-content/uploads/2019/10/WEEE-FAQs.pdf.
[83] ERA, FREQUENTLY ASKED QUESTIONS on Subsidiary Legislation 549.89 – the Waste Management (Electrical and Electronic Equipment) Regulations, 2017, https://era.org.mt/wp-content/uploads/2019/10/WEEE-FAQs.pdf.

Table 6-16 Summary table on WEEE, small WEEE[84] and Battery flows in Malta[85]

	Products put on the market (tons)		Waste collected (tons)		Collection rate (%)		Recycling and preparation for re-use rate (%)	
	2014	**2020**	**2014**	**2020**	**2014**	**2020**	**2014**	**2020**
(W)EEE	17,138	10,852	1,673	3,512	12.2	31.7	107.1	58.9
Small (W)EEE	n/a	2,865	n/a	854	n/a	28.1	n/a	58.4
Portable batteries and accumulators	103	143	21	35	21.3	26.5	n/a	n/a

The table below list the different specificities of the Maltese PRO system for WEEE and for batteries. In Malta, 2 WEEE PROs are active and compete against each other. EEE producers are free to choose to join a collective system (PRO) or to set up an individual system.

Table 6-17 Overview table of specificities of PRO set up in Malta for WEEE and waste portable batteries (own compilation based on BIO 2016[86] and adelphi 2021[87])

Specificities of PRO set up in Malta	WEEE
Collection obligation imposed to local authorities	The collection obligations are imposed on local authorities.
Visible contribution	n/a
Obligation for PROs to exercise a not-for-profit activity	No
Implementation of individual and/or collective systems	Collective and individual systems
Number of PROs (household and/or professional)	2 PROs
Competitive or non-competitive PRO set-up	The WEEE PRO system is competitive

6.6.2 WEEE Malta[88]

WEEE Malta[89] is one of the two WEEE PROs in Malta. They manage take-back of professional and household WEEE. In 2016, WEEE Malta launched the WEEE Trolleys around local councils in Malta and

[84] Small WEEE = Small equipment (no external dimension more than 50 cm)+ Small IT and telecommunications equipment (no external dimension more than 50 cm).
[85] Numbers based on Eurostat ENV_WASELEEOS and ENV_WASPB, accessed 2nd August 2023, based on bipro, WEEE compliance promotion exercise, 2017, https://op.europa.eu/en/publication-detail/-/publication/09c7215a-49c5-11e8-be1d-01aa75ed71a1/language-en (prepared for the EU COM DG ENV) and based on Update of WEEE Collection Rates, Targets, Flows, and Hoarding, 2021, https://weee-forum.org/wp-content/uploads/2022/12/Update-of-WEEE-Collection_web_final_nov_29.pdf.
[86] BIO by Deloitte, Study on the 2012 WEEE Directive in Europe, 2016 (prepared for ADEME).
[87] adelphi consult GmbH, Analysis of Extended Producer Responsibility Schemes, 2021.
[88] Please note that the following chapter is based on stakeholder input. The interview with WEEE Malta was performed in July 2023.
[89] WEEE Malta – Dispose of their electric and electronic household appliances

Gozo. WEEE trolleys are metal-based grid boxes with rolls (see picture) in which citizens can dispose of their small WEEE free of charge. WEEE Malta has purchased around 200 trolleys and installed them in Malta and Gozo. The WEEE Trolleys give consumers a place to dispose of any small electric and electronic household appliances. Signs are posted asking consumers to separate batteries from appliances before disposing of them in the WEEE trolley. Next to the trolley small bins for batteries are installed. These are operated by the other PRO WEEE Recycling as WEEE Malta is not licensed to collect batteries. The initiative is aimed to support reaching the EU collection rates and thus will be analysed in the following. Please consult the accompanying booklet for more detailed information on the WEEE trolley campaign.

Table 6-18 Example of WEEE Malta initiatives

Set up	WEEE trolley campaign
Waste stream in focus	Small WEEE (categories 5 and 6)
B2C / B2B	B2C
Incentive type	Convenience (Bring points)
Fate of collected equipment	Recycling
Short description	Metal-based grid boxes in which citizens can dispose of their small WEEE free of charge, located in and around local councils, townhalls, schools and companies.
Scalability	Low
Replicability	High

WEEE trolleys are metal-based grid boxes on wheels in which citizens can dispose of their small WEEE free of charge. WEEE Malta has purchased around 200 trolleys and installed them in Malta and Gozo. The trolleys are located in and around local councils, townhalls, schools and companies with more than 80 employees.

Why is the initiative considered best practice / successful?

- Between 2017 and 2023, more than 1 million small WEEE items were collected with the WEEE trolley campaign, summing up to 40-50 tons of WEEE per year and roughly 1 ton of collected WEEE per week in Malta. Compared to the bulky waste collection, the quantities are not very large but measured against the number of items collected, the collection is considerable. In schools, the amount of e-waste collected in the trolleys is not too high, but it is a good place to raise awareness and teach children about WEEE.
- Since in Malta, the collection obligations are imposed on local authorities, WEEE Malta made use of the local councils to install a dense net of WEEE trolleys. The focus was laid on collection of

small WEEE, as a separate initiative for collection of bulky WEEE together with other bulky waste exists on the Island.

What were the enabling factors?

- **Ease of hand-over for consumers:** Due to the good distribution of the trolleys over the entire islands and the small territory of Malta and Gozo, it is easy for consumers to always have a trolley nearby. The close collaboration with local councils and schools allows a good coverage of the whole territory.
- **Successful collaboration with partners:** As WEEE Malta has few own employees, it is important for WEEE Malta to work together with other actors and to contract other parties. WEEE Malta has successfully collaborated with local councils, collectors, and other stakeholders. Contracted collection companies ensure to empty the trolleys regularly.
- **Easy acceptance criteria:** It is easy and clearly depicted what must be disposed in the trolley: only small WEEE should be placed in the trolley whereas batteries and lamps are excluded. Batteries can be put in a separate box nearby that is provided by another PRO.
- **Promotion:** To promote the trolleys, WEEE Malta conducts educational campaigns in schools and teaches pupils from grade 4 on how to proper dispose of WEEE. WEEE Malta also provides literature and infographics that the local councils can share on their social media channels. However, not all councils cooperate for the marketing campaign. To decide on marketing spending which are typically an investment, WEEE Malta let their members (i.e., EEE producers) vote.

How does the operator deal with the specific challenges of small WEEE?

- **Theft:** Through the open nature of the WEEE trolley (no lid on it), the light weight of small WEEE and the (precious) metals in WEEE and cables, a certain percentage of the devices became target of theft and misuse of WEEE. WEEE Malta has not taken specific measures against thefts. However, trolleys inside the local council offices are well controlled and less subject to theft.
- **Misthrows and misuse as residual waste bin**: In the drive-in-trolleys, bottles and other misthrows are common. WEEE Malta has not taken specific measures against but similar to the previous bullet trolleys inside the local council offices are better protected against misuse.
- **Data protection:** WEEE Malta is aware that some consumers may be reluctant to drop off their equipment at WEEE collection points for fear of equipment theft and associated data theft. However, no evidence about such behaviour exists. As no re-use is performed, data deletion is not performed by WEEE Malta.

Why and how is the initiative scalable?

- In theory the initiative is scalable but 44 of 68 councils are already part of the collection, i.e., there is not much more to reach. Some councils simply do not have enough space in their offices to place a trolley in it. Moreover, the council's commitment to the trolleys in the council offices is dependent on election periods and elected persons, i.e., can change over time. As there is no contractual agreement between WEEE Malta and the local councils, WEEE Malta would appreciate more and specifically more long-term commitment from local councils.

Why and how is the initiative replicable?

- When setting up the trolley system WEEE Malta had learned from Recupel (Belgium) and WEEE Ireland who have similar bring points in place which proves that the systems is replicable to other countries.

Which lessons learned were taken?

- WEEE Malta reports that, when it comes to marketing campaigns, some councils collaborate but others do not. WEEE Malta always provides literature and infographics that the councils can share on their social media channels but not all local councils are active on this.
- The trolleys had an acquisition cost of 510 Euro each. Additionally, each emptying and the recycling of the collected small WEEE is a cost factor.
- Due to the open nature of the WEEE trolley (no lid on it), a certain percentage of the devices become target of theft and misuse of WEEE. For trolleys which are openly accessible and not part of other offices or waste yards, bottles and other misthrows are common.

6.7 Netherlands

6.7.1 Status quo of small WEEE and batteries collection in the Netherlands

WEEE

In the Netherlands, Directive 2012/19/EU on WEEE was transposed into national legislation in 2014 with the NL WEEE Regulation[90]. The Environmental and Transport Inspectorate (Inspectie leefomgeving en Transport) is the authority in charge of monitoring implementation of the legislation. The National (W)EEE Register Foundation (NWR) is designated by the government to establish and manage a register as described in Section 18 of the NL WEEE Regulation. The register provides for the recording and reporting of data of producers and importers of EEE (through the Stichting Organisatie Producentenverantwoordelijkheid E-waste Netherlands, Stichting OPEN), processors, and exporters of WEEE and EEE. In 2021, the ministry changed the EPR system to a single mandatory producer collective based on a Universal Binding Declaration (UBD) requested by Stichting OPEN (formerly Wecycle) which

[90] Regulation n° IENM/BSK 2014/14758 of 5 February 2014; available here.

came into effect in March 2021 in expectation of improving collection rates. Since then, existing collective producer schemes have changed their status and some have started collaboration with Stichting OPEN as operational organisations providing collection infrastructure and services.

The collection rate for WEEE in 2020 was slightly lower than the EU average (46%), having reached 43% using the POM method and 54% for small WEEE specifically, putting the Netherlands on the 19th rank of the 27 EU MS. The amount of WEEE collected per capita increased by 50% between 2014 and 2020, from 8.4 to 12.6 kg per capita (and 3.7 kg for small WEEE). The preparation for re-use and recycling rate has reduced for all WEEE categories from 82.4% to 74.0% between 2014 and 2020, and for small WEEE was at 82.6% in 2020.

Batteries

In the Netherlands, producers or importers of (products with integrated) batteries bear a producer responsibility and are subject to the 2008 Decree pertaining to the management of batteries and accumulators[91]. The Decree states that all producers and importers must have a notice of approval in order to market batteries and/ or accumulators. Approval is dependent on the introduction of a collection system covering the marketing area. Additionally, the batteries placed on the market have to be collected in the same amounts and recycled using “the cleanest and best processing techniques available” and public information campaigns on the collection, storage, treatment and recovery and/or disposal of portable batteries and/or portable accumulators in respect of portable batteries and/or portable accumulators have to be conducted.

Each producer or a third party acting on his or her behalf must hence register as well as report to the government on the tonnage of batteries placed on the market annually. To comply with the obligation to finance the environmentally sound management of the waste batteries, producers of portable batteries must register with Stibat, who is commissioned by the Batteries Foundation (Stichting Batterijen) to carry out its statutory producer responsibility.

The collection rate for waste portable batteries and accumulators in 2020 reached 48.1%, putting the Netherlands on the 14th rank of the EU MS and reaching the 45% target for 2023 set out in the Batteries Regulation.

The below Table 6-10 provides a summary of the collection data for WEEE, small WEEE, and batteries in the Netherlands as far as available.

[91] Besluit beheer batterijen en accu's 2008; available here.

Table 6-19 Summary table on WEEE, small WEEE[92] and Battery flows in the Netherlands[93]

	Products put on the market (tons)		Waste collected (tons)		Collection rate (%)		Recycling and preparation for re-use rate (%)	
	2014	**2020**	**2014**	**2020**	**2014**	**2020**	**2014**	**2020**
(W)EEE	319,951	754,987	141,805	220,236	44.0	43.7	82.4	74.0
Small (W)EEE	n/a	132,308	n/a	63,981	n/a	53.6	n/a	82.6
Portable batteries and accumulators	7,687	10,888	3,261	4,683	45.0	48.1	n/a	n/a

The table below list the different specificities of the Dutch PRO system for WEEE and for batteries. In the Netherlands, 1 WEEE PROs is active. EEE producers are free to choose to join a collective system (PRO) or to set up an individual system.

Table 6-20 Overview table of specificities of PRO set up in Netherlands for WEEE and waste portable batteries (own compilation based on BIO 2016[94], adelphi 2021[95] and Eunomia 2015[96])

Specificities of PRO set up in the Netherlands	WEEE	Batteries
Collection obligation imposed to local authorities	The collection obligations are imposed on local authorities.	The collection obligations are imposed on producers/ importers.
Visible contribution	The visible contribution published on the final consumer's invoice is **possible**.	n/a
Obligation for PROs to exercise a not-for-profit activity	No	No
Implementation of individual and/or collective systems	100% collective system but with possibility to organise individually.	100% collective system but with possibility to organise individually.
Number of PROs (household and/or professional)	1 PRO	1 PRO
Competitive or non-competitive PRO set-up	The WEEE PRO system is non-competitive	The portable Batteries PRO system is non-competitive

[92] Small WEEE = Small equipment (no external dimension more than 50 cm)+ Small IT and telecommunications equipment (no external dimension more than 50 cm).
[93] Numbers based on Eurostat ENV_WASELEEOS and ENV_WASPB, accessed 2nd August 2023, based on bipro, WEEE compliance promotion exercise, 2017, https://op.europa.eu/en/publication-detail/-/publication/09c7215a-49c5-11e8-be1d-01aa75ed71a1/language-en (prepared for the EU COM DG ENV) and based on Update of WEEE Collection Rates, Targets, Flows, and Hoarding, 2021, https://weee-forum.org/wp-content/uploads/2022/12/Update-of-WEEE-Collection_web_final_nov_29.pdf.
[94] BIO by Deloitte, Study on the 2012 WEEE Directive in Europe, 2016 (prepared for ADEME).
[95] Adelphi consult GmbH, Analysis of Extended Producer Responsibility Schemes, 2021.
[96] Eunomia et al., Final Implementation Report for the Directive 2006/66/EC on Batteries and Accumulators, 2015.

6.7.2 Stichting OPEN[97]

Since 1st March 2021, the OPEN Foundation is responsible for the collection and recycling of all WEEE in the Netherlands on behalf of those producers who decided to join the scheme. To reach the EU collection rates, Stichting OPEN has set up several initiatives for batteries and small WEEE which will be analysed in the following. Please consult the accompanying booklet for more detailed information on the best practices.

Table 6-21 Example of Stichting Open initiatives

Set up	Kringloopwinkels (thrift stores)	Collection boxes at retail
Waste stream in focus	Used EEE, WEEE	Small WEEE, Batteries
B2C / B2B	B2C	B2C
Incentive type	Convenience (Bring points) and other incentive (Charity)	Convenience (Bring points)
Fate of collected equipment	Re-use, P4R, and Recycling	Recycling
Short description	300-400 thrift stores that have a contract with Stitching Open. The thrift stores receive donated EEE and if they are not resalable (either because of the condition they were brought in or because they don't sell after a certain period of time) they are given to Stitching Open for recycling	About 4,000 collection boxes set up at food retail shops for lamps, small WEEE, and batteries. And an additional 800-900 container boxes set up at construction/ do-it-yourself stores. The stores are given a financial incentive to stimulate participating in the collection scheme
Scalability	Medium	Medium
Replicability	High	High

6.7.2.1 Kringloopwinkels (thrift stores)

Thrift stores (Kringloopwinkels) receive UEEE as donations and after checking basic functionality (no repair) put them in the shop. After a certain time (approximately 3 weeks) if the appliance is not sold, they hand it over to Stichting OPEN for recycling. The collection through OPEN is free of costs and thrift stores receive the same fee as retailers for operating as collection point for WEEE. After receiving the WEEE from thrift stores, a maximum of 5% is prepared for reuse (p4r) as a lot of equipment is not fit for reuse because it is outdated, has a high energy requirement, etc.

Why is the initiative considered best practice / successful?

[97] Please note that the following chapter is based on stakeholder input. The interview with Stichting Open was performed in June 2023.

- The initiative increases rates of re-use of used EEE before becoming waste and increases overall collection rates of WEEE, as thrift stores have a double function as re-sale points and waste collection points after testing whether the used appliances can be re-sold.
- Even though most of the WEEE is collected through municipal transfer stations (5-6 kg/cap/year), thrift stores work best out of the tested other initiatives (0.6-0.7 kg/cap/year) and hand over 7,000-8,000 tons of WEEE per year to Stitching OPEN.

What were the enabling factors?

- Existence of thrift shops and acceptance of such by the population.
- Close cooperation with thrift shops to operate as waste collection points and provision of fee to the shops for collection and handling of WEEE.

Why and how is the initiative scalable?

- Scalability for this initiative is considered to be medium and depending on wider outreach of thrift stores and the possibility to return functional but used EEE as well as WEEE at their locations.
- The option of including preparation for re-use (p4r) activities at the thrift stores is considered to be difficult due to requirement for trainings of personnel and need for standards for repair activities.

Why and how is the initiative replicable?

- The initiative is considered to be replicable in all cases where networks of thrift stores exist.

Which lessons learned were taken?

- About 50% of the total small UEEE donated to thrift stores return to Stichting OPEN as WEEE. The thrift stores do not repair because they don't have the knowledge or training to do this.
- If p4r should be increased, there needs to be a safety check e.g., using CENELEC for re-use. They could give permits to companies to do such quality checks centrally and only those companies can do it in a safe manner. This is however opposed to the idea of local repair shop/ social inclusion initiatives as exist now.

6.7.2.2 Collection boxes at retail

Most of what is recuperated from the retailer network is large appliances in a 1:1 manner (e.g., a customer buys a new fridge and gets rid of their old one). There is not much small WEEE collected through the retail network, but this is changed by setting up about 4,000 collection boxes at food retail shops for lamps, small WEEE, and batteries in particular and an additional 800-900 container boxes set up at construction/ do-it-yourself stores.

Why is the initiative considered best practice / successful?

- The food retail stores have limited success in terms of volumes collected, whereas the construction shops have a slightly higher success rate than the food retail shops. It should be noted however, that what is collected at food and construction retail is only low weight categories (like lamps) and small WEEE and that such collection points at stores are also important points for raising awareness.

What were the enabling factors?

- Stichting OPEN has cooperations with retailers to financially support them to fulfil their legal obligation as collection points for small WEEE and batteries (if the retailer also sells EEE or batteries, which is common in the Netherlands).
- The monetary incentives for the retail collection points are small and depend on the type of retailer. Food stores and construction stores receive 13 cents/kg which equates to on average around 100 EUR/year for small locations for the volumes they usually collect. For electronic stores fulfilling their 1:1 take-back obligation for large appliances that have a higher tonnage this fee can become substantial and 13 cents per kilogram is currently the highest price across Europe.
- National government backed Stichting Open to take the lead as sole PRO in the Netherlands because under previous competitive conditions with several PROs, many categories were not sufficiently collected, and areas not serviced. A lot of different small PROs were competing, and none were transparent about their prices. The government wanted to change this and only have one organization collecting the fees in the best way possible, highest volumes, best treatment.

Why and how is the initiative scalable?

- Scalability for this initiative is considered to be medium and depending on the cooperation willingness of retail and the information made available to customers on take-back options.

Why and how is the initiative replicable?

- The initiative is considered to be replicable and similar initiatives are in fact active in several EU MS.

Which lessons learned were taken?

- The best results occur when the incentives are incorporated within the waste collection system of the local municipality for household waste (so not for WEEE).
- In the Netherlands, some municipalities have a pay as you throw (PAYT) scheme, where higher separate collection rates are achieved in general (only 0.5 kg of WEEE generated per capita per year in MSW) while in others that do not have this, the separate collection rates are much lower (e.g., Amsterdam where there is 3-5 kg of WEEE generated per capita per year in MSW).

Combining the general municipal waste collection system with waste yards/bring points plus awareness is important.

- Monetary incentives are not given to customers because they increase the administrative burden, and it can be challenging to find places that would be willing to give back the money. For example, municipal yards and retailers do not want to deal with financial aspects and handing out incentives as they don't have the infrastructure to do so.
- Additionally, the introduction of monetary incentives for customers could be counterproductive because retailers could choose to no longer act as collection points if they have to bear the administrative burden of handing out incentives. Currently, many food retailers in NL also sell lamps and batteries so they have a legal takeback obligation, but they could choose to no longer sell these products.

6.8 Norway

6.8.1 Status quo of small WEEE collection in Norway

Being a member of European Economic Area (EEA), Norway must implement the EU WEEE legislation. The environmental fees paid by producers to PROs are a percentage of the sales price for certain product categories. Although it is not decided by law, the market expects the calculated fee to be visible on business documents.[98]

In Norway, 4 PROs for WEEE exist and the legislative piece Avfallsforskriften, Kap 1[99] includes the PROs obligations. In Norway, every municipality must collect WEEE free-of-charge. The municipalities collect for categories 1-8 (1-6 are equivalent to the European categories, with an addition of 1. Large industrial equipment, and 2. Large industrial cables)[100].

The collection rate for WEEE in 2020 was above the EU average (46%), having reached 53.8% for WEEE in general and 51.3% for small WEEE specifically. The amount of WEEE collected per capita reduced slightly between 2014 and 2020, from 20.9 to 19.5 kg (with 7.6 kg of small WEEE). The preparation for re-use and recycling rate has increased for all WEEE categories from 80.1% to 90.8% between 2014 and 2020, and for small WEEE was at 86.2% in 2020.

The below Table 6-22 provides a summary of the collection data for WEEE, small WEEE, and batteries in Norway as far as available.

[98] T. Andersen, A comparative study of national variations of the European WEEE directive: manufacturer's view, 2021, Accessed 15th August 2023: https://link.springer.com/article/10.1007/s11356-021-13206-z.
[99] Forskrift om gjenvinning og behandling av avfall (avfallsforskriften) - Kapittel 1. Kasserte elektriske og elektroniske produkter - Lovdata.
[100] Source: Interview with Norsirk representatives.

Table 6-22 Summary table on WEEE, small WEEE[101] and Battery flows in Norway[102]

	Products put on the market (tons)		Waste collected (tons)		Collection rate (%)		Recycling and preparation for re-use rate (%)	
	2014	**2020**	**2014**	**2020**	**2014**	**2020**	**2014**	**2020**
(W)EEE	182,236	222,735	107,236	104,900	41.7	53.8	80.1	90.8
Small (W)EEE	n/a	87,466	n/a	40,988	n/a	51.3	n/a	86.2
Portable batteries and accumulators	1,965	3,526	879	2,321	43.9	63.2	n/a	n/a

The table below list the different specificities of the Norwegian PRO system for WEEE and for batteries.

Table 6-23 Overview table of specificities of PRO set up in Norway for WEEE and waste portable batteries (own compilation based on BIO 2016[103] and adelphi 2021[104])

Specificities of PRO set up in Norway	WEEE
Collection obligation imposed to local authorities	The collection obligations are **not** imposed on local authorities.
Visible contribution	Not decided by law but the market expects the fee to be visible on business documents
Obligation for PROs to exercise a not-for-profit activity	No (commercial and non-profit PROs exist)
Implementation of individual and/or collective systems	n/a
Number of PROs (household and/or professional)	4 PROs
Competitive or non-competitive PRO set-up	The WEEE PRO system is competitive

6.8.2 Norsirk[105]

Norsirk[106] is one of the 4 WEEE PROs in Norway, established in 1998. Alongside WEEE, Norsirk manages batteries and packaging. Norsirk serves about 2500 producers on WEEE and batteries and takes responsibility for the collection and treatment of nearly 50% of all WEEE in Norway (31.12.2018).[107]

[101] Small WEEE = Small equipment (no external dimension more than 50 cm)+ Small IT and telecommunications equipment (no external dimension more than 50 cm).
[102] Numbers based on Eurostat ENV_WASELEEOS and ENV_WASPB, accessed 2nd August 2023, based on bipro, WEEE compliance promotion exercise, 2017, https://op.europa.eu/en/publication-detail/-/publication/09c7215a-49c5-11e8-be1d-01aa75ed71a1/language-en (prepared for the EU COM DG ENV) and based on Update of WEEE Collection Rates, Targets, Flows, and Hoarding, 2021, https://weee-forum.org/wp-content/uploads/2022/12/Update-of-WEEE-Collection_web_final_nov_29.pdf.
[103] BIO by Deloitte, Study on the 2012 WEEE Directive in Europe, 2016 (prepared for ADEME).
[104] adelphi consult GmbH, Analysis of Extended Producer Responsibility Schemes, 2021.
[105] Please note that the following chapter is based on stakeholder input. The interview with Norsirk was performed in June 2023.
[106] Forside - NORSIRK.
[107] Norsirk | WEEE Forum (weee-forum.org).

Although the collection rate is already high in Norway, the PRO Norsirk has ambitions to continuously increase the collection rate. They seek to increase the collected volumes by 5-10% each year. As such Norsirk can focus on high-valuable devices with the initiative “Secure box”. This collection initiative allows them to reach high collection and to profit from the high valuable metals that are included in the collected devices. In the past, Norsirk has also tried other initiatives to increase collection. They have for example, set up re-use initiatives for white goods and tried to rebuild a power bank with waste/used batteries. They have also run social media campaigns to educate on batteries and to teach how and where to dispose of WEEE.

Table 6-24 Example of Norsirk initiatives

Set up	Secure boxes
Waste stream in focus	• Waste of EEE, Used EEE needing data deletion • Small IT etc. (PC, Pads, Laptops, memory stick, cameras, phones etc.)
B2C / B2B	B2C and B2B
Incentive type	Convenience (Bring points)
Fate of collected equipment	P4R, Recycling
Short description	Safe collection of PC, Pads, Laptops, memory stick, cameras, phones etc. needing data deletion. Devices get prepared for reuse and are resold.
Scalability	Medium
Replicability	Medium

Although the collection rate is already high in Norway, the PRO Norsirk has ambitions to continuously increase the collection rate. They seek to increase the collected volumes by 5-10% each year. As such Norsirk can focus on high-valuable devices with the initiative “Secure box”. This collection initiative allows them to reach high collection and to profit from the high valuable metals that are included in the collected devices. In the past, Norsirk has also tried other initiatives to increase collection. They have for example, set up re-use initiatives for white goods and tried to rebuild a power bank with waste/used batteries. They have also run social media campaigns to educate on batteries and to teach how and where to dispose of WEEE.

Secure box is an initiative from Norsirk offering the safe collection of PCs, tablets, laptops, memory sticks, cameras, phones etc. all over Norway. These devices are targeted as they are often forgotten about or left in drawers by the consumer. The devices are all in need of data deletion, which is done after the collection.

Why is the initiative considered best practice / successful?

- The initiative is considered best practice as it tackles the challenge of data deletion for small WEEE. Last year Norsirk has collected 110,000 kgs in total with Secure Box.
- The re-use rate is high and even increasing.

What were the enabling factors?

- **Data deletion tackled**: As data protection and deletion is crucial for owners of end-of-life small IT devices, professional solutions as offered by Norsirk are appreciated and demanded by the market.
- **Certified data deletion system:** As safe disposal is one key aim of “Secure Box”, a certified system is used to delete all data properly. The sorting to separate between re-use and recycling devices is done in special secure rooms which are secured by fences and equipped with video surveillance and access control. When it comes to dismantling and recycling the hard disk drives (HDDs) are shredded and not deleted. In case customers need a certificate for the secure deletion, Norsirk directly ships all devices to Stena Recycling (treatment operator) who performs data deletion with photography for each serial number. The process can be done on site or by trust: Norsirk or the customer that is delivering HDD for shredding can be on site and observe the shredding.
- **Smart financial system:** The devices collected in the Secure Box are donated by the citizens which allows cost savings for Norsirk. For the moment, Norsirk do not see a need to offer financial rewards or a point system to incentive citizens more. Instead, the municipalities receive financial support from the PRO what incentives them to install the boxes. For instance, Norsirk compensates the municipalities per kilo of collected devices and do not charge them anymore with the leasing costs of the boxes. There is good money to be made from recycling phones, IT equipment, computers, etc. The revenue is even greater as no compensation for consumers is paid.
- **Good cooperations:** Norsirk cooperates with retailers, refurbishers and preparing for re-use organisations to ensure proper data deletion, P4R, refurbishment, and recycling. For example, the sorting for P4R is done according to instructions from the re-use partner Foxway that ensure that the sorting fits their needs and reflects the market need. In some cases, Norsirk cooperates with the other Norwegian WEEE PROs too.
- **Retailers as clients** Their customers are municipalities, large electronic companies, companies in municipalities and data centres. Norsirk is especially hunting retailers as customers as they have the legal obligations according to the “Avfallforskriften” and must pay the environmental fee to secure the proper collection of devices. Norsirk explains that there is fierce competition in attracting retailers.
- **Promotion:** Norsirk has experienced that after a new TV spot or a newsletter article from them, the collection rate has increased by 5-10% and then drops again.

Figure 6-1 Secure boxes made of plastic (left) and of steel (right). The steel containers can be used for regions with higher risk of theft (Source: Norsirk)

How does the operator deal with the specific challenges of small WEEE?

- **Decreasing recycling revenue**: Norsirk reports there is a change in the product design and that gold, silver, aluminium, and other metals are used less and replaced by other metals or materials. For example, the hard disk and the central processing unit (CPU) used to contain a lot of gold, but that is no longer the case. Consequently, Norsirk must deal with less valuable components and less revenue from recycled parts. Although Norsirk are in favour of market competition between players for WEEE collection and treatment, they are watching private players entering the market and “cherry-picking” for valuable waste streams with concern. In consequence, less financial gains remain for the PROs which need the revenues from the high-valuable devices to compensate the collection of less valuable WEEE. Alternatives to this could be non-competitive EPR systems such as exist in the Netherlands or Belgium.
- **Collection rate vs. re-use**: Due to specificities of calculating the collection rate, there is some competition between re-use and recycling. If products are collected for re-use, the overall amount that needs to be collected to reach the collection rate is lowered by the same amount reported for re-use, i.e., there is a trade-off for PROs, as re-use is good for the environment on the one hand, but a financial disadvantage for them on the other. As only PROs and no other actors must report the collected and refurbished devices, it is difficult to keep track how much is re-used. Norsirk would appreciate to see data how much is refurbished by companies in Norway (data is only accessible when devices are imported).
- **Theft and misuse**: Since in Norway the citizens are used to collect WEEE separately, Norsirk has seen little misuse of their boxes in the last years. However, for municipalities with higher risk of theft, they offer heavy duty steel containers with an empty weight of 160 kg (right picture) as an alternative to plastic containers.

Why and how is the initiative scalable?

- A scale-up is desirable for plastic containers but should remain small for steel containers as they are costly.

Why and how is the initiative replicable?

- Norsirk believes that the replicability of the “Secure Box” is on the hand easy as it mainly requires to buy commercially available bins, to add stickers on the boxes that explain the process and to do some marketing to make them known. On the other hand, a trustworthy system including 24/7 monitoring, a secured area etc. to avoid thefts must be set up which is more challenging.

Which lessons learned were taken?

- Norsirk reported that they faced several challenges at the beginning of the initiative. For example, the information package was not good enough. Moreover, the secure boxes were placed in basements and not in places where the public usually passed by. Also, the wheels had to be replaced with stronger and more durable ones over time.
- After trying wood, plastic and steel carriers, plastic bins with wheels were chosen. They are easy to lock and to move in and out of a guarded room within the municipalities. Additionally, the bins now have a lid that prevents stealing from the box. The secure boxes of plastic are light and flexible enough to put them behind a service desk.
- At the beginning, the secure boxes had volumes of 660 and 1100 litres (equivalent to around 450 - 500 kg). As it turned out that this is too big for Electronic shops/chains (as Power), 360 litres was introduced as a smaller alternative.

6.9 Romania

6.9.1 Status quo of small WEEE and batteries collection in Romania

WEEE

In Romania, the minimum collection rate of 65% for WEEE and lamps must be reached, in line with the EU collection targets. Missing the minimum collection rate costs a penalty fee of 0.4 EUR/kg (status 2023).[108] The interviewed PRO ECOTIC reports that in Romania there are few municipal collection centres but a strong informal collection network going door to door to collect scrap from consumers (including WEEE) in exchange for money. In the near future municipal collection centres will be created. In the meantime, PROs have to compete against the informal sector and must offer similar rewards for the collected items or offer a comparably convenient collection. The financial pressure is aggravated by the

[108] Source: Interview with ECOTIC representatives.

fact that PROs must pay the treatment operators as in Romania the PROs do not have the WEEE property (hands on WEEE) as this is the case in other EU countries (such as Italy).[109]

Table 6-25 Summary table on WEEE, small WEEE[110] and Battery flows in Romania[111]

	Products put on the market (tons)		Waste collected (tons)		Collection rate (%)		Recycling and preparation for re-use rate (%)	
	2014	**2020**	**2014**	**2020**	**2014**	**2020**	**2014**	**2020**
(W)EEE	139,587	n/a	32,159	n/a	24.4	25.2	87.3	83.1
Small (W)EEE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Portable batteries and accumulators	2,730	4,964	779	2,092	31.9	52.1	n/a	n/a

Batteries

The Battery Directive (Directive 2006/66/EC) has been transposed into national Romanian law by Government Decision No 1132/2008 (Official Gazette No 667 of 25/9/2008) on batteries and accumulators and waste batteries and accumulators, amended by Government Decision No 1079/2011 (Official Gazette No 780 of 3/11/2011), and three ministerial orders. In Romania, manufacturers of portable batteries and accumulators, or the collective organisations acting on their behalf, are responsible for setting up suitable collection schemes for waste batteries and portable accumulators.[112] The collection obligations are not imposed on local authorities. Instead, 7 PROs for batteries are active in Romania. The PROs for batteries take over responsibility for collection, recycling, and to promote awareness including educational and informational aspects.

Table 6-26 Overview table of specificities of PRO set up in Romania for WEEE and waste portable batteries (own compilation based on BIO 2016[113], adelphi 2021[114] and Eunomia 2015[115])

Specificities of PRO set up in Romania	WEEE	Batteries
Collection obligation imposed to local authorities	The collection obligations are imposed on local authorities.	The collection obligations are **not** imposed on local authorities.
Visible contribution	n/a	n/a

[109] Source: Interview with ECOTIC representatives.
[110] Small WEEE = Small equipment (no external dimension more than 50 cm)+ Small IT and telecommunications equipment (no external dimension more than 50 cm).
[111] Numbers based on Eurostat ENV_WASELEEOS and ENV_WASPB, accessed 2nd August 2023, based on bipro, WEEE compliance promotion exercise, 2017, https://op.europa.eu/en/publication-detail/-/publication/09c7215a-49c5-11e8-be1d-01aa75ed71a1/language-en (prepared for the EU COM DG ENV) and based on Update of WEEE Collection Rates, Targets, Flows, and Hoarding, 2021, https://weee-forum.org/wp-content/uploads/2022/12/Update-of-WEEE-Collection_web_final_nov_29.pdf.
[112] Eunomia et al., Final Implementation Report for the Directive 2006/66/EC on Batteries and Accumulators, 2015.
[113] BIO by Deloitte, Study on the 2012 WEEE Directive in Europe, 2016 (prepared for ADEME).
[114] Adelphi consult GmbH, Analysis of Extended Producer Responsibility Schemes, 2021.
[115] Eunomia et al., Final Implementation Report for the Directive 2006/66/EC on Batteries and Accumulators, 2015.

Obligation for PROs to exercise a not-for-profit activity	No	Not identified
Implementation of individual and/or collective systems	Collective and individual systems	Collective and individual systems
Number of PROs (household and/or professional)	20 PROs[116]	7 PROS
Competitive or non-competitive PRO set-up	The WEEE PRO system is competitive	The batteries PRO system is competitive

6.9.2 ECOTIC[117]

ECOTIC[118], being the biggest Romanian PROs for WEEE and batteries with a history for more than 15 years, has launched multiple initiatives to increase the collection rate.

In the future, when Romania will set up municipal collection points supported by EU funds, ECOTIC will be involved in these collection points, offering training to personnel in WEEE handling and paying some of the costs related to WEEE. ECOTIC will also be involved as a partner in local collection campaigns and the partnership with the municipality.

Table 6-27 Examples of Ecotic initiatives

Set up	'Little ones do great deeds' and 'Ecoterrians'
Waste stream in focus	Kindergarten: Batteries | Schools: Batteries and WEEE
B2C / B2B	B2C
Incentive type	Non-monetary reward and Convenience
Fate of collected equipment	Recycling
Short description	Collection competitions with prizes to win in schools ('Ecoterrians') and kindergartens ('Little ones do great deeds') to collect batteries/ WEEE. The programmes include educational pieces and lessons.
Scalability	Medium
Replicability	High

6.9.2.1 'Little ones do great deeds' and 'Ecoterrians' School'

Competitions are organized in schools and kindergartens for the collection of batteries/WEEE. There are prizes associated with the competitions and the programmes also include educational pieces and lessons.

Why is the initiative considered best practice / successful?

[116] Source: Interview with ECOTIC representatives.
[117] Please note that the following chapter is based on stakeholder input. The interview with Ecotic was performed in June 2023.
[118] Acasă - ECOTIC.

- In the kindergarten initiatives, the weight of batteries collected increased linearly. With 200 kindergartens 6.5 tons of batteries were collected and with 400 kindergartens 13 tons of batteries were collected (on average 32.5 kg per kindergarten). In the last school campaign 75 tons of WEEE were collected in one school year. However, the collection amount through the campaigns is very small compared to the necessary overall collection rate. The amount collected through campaigns is less than 1-2% of ECOTICs goal. The campaigns therefore have rather the role to increase awareness in the population that WEEE and batteries should be sorted and returned through separate channels and to build a relationship with the municipalities.

What were the enabling factors?

- **Close collaboration with partners and local coordinators**: ECOTIC collaborates with municipalities, and with schools directly. For the kindergartens and schools ECOTIC works with local coordinators who check in on the teachers and schools before and during the initiative. Through this, they have seen participation rise from 80 to 250 schools (out of 300 registered schools).

How does the operator deal with the specific challenges of small WEEE?

- **Awareness raising**: One challenge is to teach people that batteries or small WEEE do not belong in the residual waste, i.e., increase of awareness level and promoting existing infrastructure of PROs is needed. With the kindergarten and school initiatives ECOTIC raises awareness already amongst the youngest in the society.

Figure 6-2 Collection piles within the Ecoterrian project (Source: ECOTIC)

Why and how is the initiative scalable?

- The initiatives in schools and kindergartens could be scaled up. However, it involves many logistics and in general, it is difficult to find transporters for WEEE, which is limiting the scalability.

Why and how is the initiative replicable?

- In principle this program could also be feasible in other countries.

Which lessons learned were taken?

- In schools, it is very important to have good communication to increase active involvement. There is a person that maintains the communication through phone and e-mail and is externalized. It is better to motivate them through fixed prizes (a prize after a certain weight of WEEE and batteries are collected) instead of giving prizes to the top number of schools. The teachers are motivated to participate because they can receive a certificate they add to their professional portfolio. The prizes are awarded after a certain number of sustainability lessons are delivered (6 out of 15 are completed). The teachers integrate the provided lesson plans into the green week that exists in Romanian schools anyway. Additionally, it helps for completion if a timeline is provided (e.g., finish 3 before January) and for specific activities and projects to be integrated into the lesson plan.

6.9.3 SNRB[119]

The Association Sistemul National de Reciclare a Bateriilor (SNRB) is the biggest PRO for batteries in Romania covering 70% of the portable battery market and 80% of the market for batteries from cars and e-vehicles. [120] It operates in the field of waste management since 2012.[121]

SNRB has launched a programme to increase collection as this is the main problem for batteries, especially for portables ones. Moreover, they launched an app to ease the take back of batteries for retailers.[122]

Table 6-28 Example of SNRB initiatives

Set up	App for retailers
Waste stream in focus	Portable batteries and accumulators
B2C / B2B	B2C
Incentive type	Convenience (reduce administrative burden for retailers)
Fate of collected equipment	Recycling

[119] Please note that the following chapter is based on stakeholder input. The interview with SNRB was performed in July 2023.
[120] Source: Interview with SNRB representatives.
[121] Members | Eucobat.
[122] Source: Interview with SNRB representatives.

Short description	An app to facilitate batteries collection from retailers and to reduce the administrative burden for retailers.
Scalability	high
Replicability	high

SNRB has developed an app to facilitate the batteries collection and to reduce the administrative burden for retailers. The app allows retailers to indicate when their collection point is full, and when they need a collection. After requesting a collection, retailers are informed by SNRB when it will take place.

The app is personalized for every retailer which allows to upload and download retailer-specific documents in the app. This allows retailers to track the collection process and see the collected weight. The collection documents are uploaded at the end of the process. The invoice is also issued via the app. Thus, retailers have an overview at any point on their collection amounts and can generate their own reports easily. The app also allows retailers' headquarters to have an overview of batteries collected in all their shops, and each shop can see its own quantities to be collected.

Why is the initiative considered best practice / successful?

- The app reduces administrative burden for retailers and hence makes it easy for retailers to offer a bring point. It is assumed that simple operation of collection points will eventually lead to an increased number of installed collection points.
- SNRB used to have 4.000 collection points to which consumers can bring used batteries. Through this channel, 2-3 tons are collected annually. The introduction of the app and the intensified cooperation with retailers now allows SNRB to collect 20 tons in 6 months from 43 hypermarkets. Their conclusion is that the retailers are very happy to have the app.

What were the enabling factors?

- **Reduce administrative burden for retailers**: The uploading of administrative documents in the app and the simple collection request reduces the administrative burden for retailers when operating collection points.
- **Geographic bundling**: The app allows SNRB to get directly notified on the phone when a collection request is sent. Like this, they can easily plan the collection with collectors based on geographic regions which allows an efficient bundling of relevant amounts of waste batteries. The geographic bundling of volumes is important to make the collection and recycling efficient. SNRB also proactively asks the retailers to regularly put their quantities in the system to be able to plan the collection accurately.

- **Cooperations**: SNRB has contracts with collection and recycling companies and cooperates with retailers. Retailers, companies, gambling stores or other actors who are not (yet) clients of SNRB are approached by three field agents all over Romania.

How does the operator deal with the specific challenges of collecting portable batteries?

- A major challenge for SNRB is the financing of logistics, which must be covered by members' contributions. The app, which makes it easy to organize the efficient collection of device batteries through geographical bundling, partially mitigates the aforementioned challenge.
- Sometimes it is also a challenge to convince retailers to use the app. Since some retailers do not want to use the app, SNRB has additionally set up a small "call centre" and continues to accept emails for collection requests.

Why and how is the initiative scalable and replicable?

- The app is especially replicable as it is very flexible. SNBR reports that its developers can easily adapt the app to different kinds of statistics and reports which allows scalability and replicability in other countries. Moreover, the app has proved to be very user-friendly and contains user tutorials in English and other languages. A Belgian organization has already announced to replicate the app for their clients. SNRB themselves got the inspiration of the app by an energy company.
- The setup of the app is around 15.000 EUR for one country. Additionally, importing data and developing modules have some costs. Additionally, a monthly fee for maintenance is to be paid. Once the app is bought, the owner (e.g., a PRO) can do many adaptations itself and is rarely dependant on the developer. According to SNRB, the app can also be expanded to WEEE. SNRB also uses the app for non-portable batteries. They have already contracts with car importers using the app.

Which lessons learned were taken?

See descriptions above.

6.10 Slovenia

6.10.1 Status quo of small WEEE collection in Slovenia

In Slovenia, the WEEE Directive was transposed by the Decree on Waste Electrical and Electronic Equipment (Official Gazette of the Republic of Slovenia, No. 55/15, 47/16, 72/18, 84/18 – ZIURKOE, 108/20 and 44/22 - ZVO-2)[123]. In Slovenia, one PROs for WEEE exists (ZEOS d.o.o.) which is a non-profit

[123] Verordnung über Elektro- und Elektronik-Altgeräte (pisrs.si).

organization funded in 2005 by main Slovenian producers and retailers of electrical and electronic equipments[124]. The WEEE Register sits with the Slovenian Ministry of Environment[125].

The collection rate for WEEE in 2020 was below the EU average (46%), having reached 39% for WEEE in general and 52% for small WEEE specifically. The amount of WEEE collected per capita increased between 2014 and 2020, from 4.7 to 6.9 kg (with 2.5 kg of small WEEE). The preparation for re-use and recycling rate has increased for all WEEE categories from 81.6% to 85.6% between 2014 and 2020, and for small WEEE was at 81.1% in 2020. For 2014, no data on small WEEE is available.

The below Table 6-29 provides a summary of the collection data for WEEE, small WEEE, and batteries in Slovenia as far as available.

Table 6-29 Summary table on WEEE, small WEEE[126] and Battery flows in Slovenia[127]

	Products put on the market (tons)		Waste collected (tons)		Collection rate (%)		Recycling and preparation for re-use rate (%)	
	2014	**2020**	**2014**	**2020**	**2014**	**2020**	**2014**	**2020**
(W)EEE	30,411	44,298	9,692	14,409	33.7	38.8	81.6	85.6
Small (W)EEE	n/a	10,896	n/a	5,351	n/a	52.1	n/a	81.1
Portable batteries and accumulators	719	826	210	343	29	41.4	n/a	n/a

The table below list the different specificities of the Slovenian PRO system for WEEE and for batteries.

Table 6-30 Overview table of specificities of PRO set up in Slovenia for WEEE and waste portable batteries (own compilation based on BIO 2016[128] and adelphi 2021[129])

Specificities of PRO set up in Slovenia	WEEE
Collection obligation imposed to local authorities	The collection obligations are **not** imposed on local authorities.
Visible contribution	The visible contribution published on the final consumer's invoice is **possible**.
Obligation for PROs to exercise a not-for-profit activity	Yes

[124] ZEOS | WEEE Forum (weee-forum.org).
[125] Ministry of the Environment, Climate and Energy (Ministrstvo za naravne vire in proctor).
[126] Small WEEE = Small equipment (no external dimension more than 50 cm) + Small IT and telecommunications equipment (no external dimension more than 50 cm).
[127] Numbers based on Eurostat ENV_WASELEEOS and ENV_WASPB, accessed 2nd August 2023, based on bipro, WEEE compliance promotion exercise, 2017, https://op.europa.eu/en/publication-detail/-/publication/09c7215a-49c5-11e8-be1d-01aa75ed71a1/language-en (prepared for the EU COM DG ENV) and based on Update of WEEE Collection Rates, Targets, Flows, and Hoarding, 2021, https://weee-forum.org/wp-content/uploads/2022/12/Update-of-WEEE-Collection_web_final_nov_29.pdf.
[128] BIO by Deloitte, Study on the 2012 WEEE Directive in Europe, 2016 (prepared for ADEME).
[129] Adelphi consult GmbH, Analysis of Extended Producer Responsibility Schemes, 2021.

Implementation of individual and/or collective systems	Collective and individual systems
Number of PROs (household and/or professional)	One PRO
Competitive or non-competitive PRO set-up	The WEEE PRO system is non-competitive

6.10.2 ZEOS[130]

ZEOS is the Slovenian non-profit company founded on July 20th, 2005, as PRO for WEEE. In 2009, ZEOS started a collective take-back system for waste batteries and accumulators and in 2013 for waste candles. In 2013, ZEOS established the daughter company ZEOS eko-sistem in Bosnia and Herzegovina.[131]

In 2016, ZEOS has launched street deposit containers for collection of small WEEE. The deposit containers are placed in residential areas and contain explanatory text and figures on how and what to dispose of. With the initiative, ZEOS wants to facilitate the disposal of small WEEE and avoid their disposal in household waste. The initiative was inspired by a similar activity in the Czech Republic. ZEOS bought the containers from the original producer of the Czech initiative who had them refurbished. For small WEEE, the street collection containers are an important stream but not so much for other WEEE categories. Overall, about 60% of WEEE is collected through municipal collection points.

ZEOS also implemented so called ‘green corners’ at retail stores for small WEEE, lamps, and batteries which have been renewed in 2017 and have become an essential part of the collection stream (note: these are not part of the best practice presentation below).

Table 6-31 Example of ZEOS initiatives

Set up	Street collection (Depot containers)
Waste stream in focus	Small WEEE
B2C / B2B	B2C
Incentive type	Convenience (Bring points)
Fate of collected equipment	Recycling
Short description	Street containers for small WEEE collection set up all over Slovenia
Scalability	Medium
Replicability	High

[130] Please note that the following chapter is based on stakeholder input. The interview with ZEOS was performed in July 2023.
[131] ZEOS | WEEE Forum (weee-forum.org).

ZEOS has set up street collection containers for small WEEE all over Slovenia, co-funded by the EU Commission and the Ministry of the Environment and Spatial Planning of the Republic of Slovenia. Additionally, local advertising and marketing in the area are increased if the collection rate in a municipality is lower than expected.

The collected devices are transferred to a recycler in Slovenia. The recycler oversees any sorting, which is done manually. In addition to street containers, ZEOS has developed a program to optimize collection routes. This program is based on extrapolated historical data of the collection containers to understand the filling speed. This allows conclusions to be drawn about the necessary collection rhythm at a given location.

Why is the initiative considered best practice / successful?

- The initiative is considered best practice because the street containers contributed to an increase of collected small WEEE. Overall, the street collection bins make up about 10% of the total amount of small WEEE and batteries collected annually (3,500 tons total of small WEEE). However, since in recent years the general amount of small WEEE generated in Slovenia has increased, it is difficult to know if the waste disposed in street containers would have otherwise been dropped off at other collection points or if it facilitates small WEEE collection that otherwise would not have happened.
- In the last years, the network of street bins was expanded from 450 containers in 2017 to 800 containers today (status August 2023). With that, the collection through the street collection bins has increased rapidly: 20 tons were collected in 2016, 80 tons in 2017, 280 tons in 2018, 320 tons in 2019 and 380 tons in 2020. Nowadays, in average 350 tons are collected per year. The collection rate varies per region. For example, with 140-200 kg collected per container, the coastal and mountainous regions are preforming better than other regions (100-130 kg).

What were the enabling factors?

- **Ease of hand-over for consumers:** An enabling factor is the ease of disposal of small WEEE and batteries for private households. It is especially easier if the containers are placed on existing "eco-islands" where there are also collection containers for other waste streams (e.g., textiles). ZEOS conducted a survey and found out that the collection rate was highest when the containers were placed near the container for used textiles.
- **Successful collaboration with partners:** ZEOS works directly with municipalities and public service providers to find locations for its collection containers, e.g., to find areas with good accessibility and high foot traffic to place the bins. The containers are mostly placed in eco-islands whose land is usually owned by the municipality.

- **Promotion at local level:** ZEOS found that the most effective marketing is at the local level. For this purpose, it connects with utility companies, which operate locally. Together they carry out a local press conferences for local media.
- **Nice design:** The street containers have a catchy design with instructions and collected items shown as stickers on the outside, which act as its own advertising.
- **Ownership of waste:** ZEOS owns own transport vehicles, which they consider particularly important as it means they own the waste they collect.

Figure 6-3 ZEOS street container placed next to a textile waste container (Source: ZEOS)

How does the operator deal with the specific challenges of small WEEE?

- **Thefts:** From time-to-time small WEEE are stolen from the street collection bins. It is suspected that people from the informal collection of metals steal them. The thefts may also affect regional collection statistics.
- **Misthrow:** At eco-islands, sometimes waste other than WEEE is thrown into the WEEE containers when the corresponding other containers (e.g., textiles) are full.
- **Fires:** According to ZEOS, there are no issues with batteries being thrown in and fires happening.

Why and how is the initiative scalable?

According to ZEOS, the initiative is scalable, and they are working on expanding their network.

Why and how is the initiative replicable?

The initiative is replicable, as shown by the fact that ZEOS was inspired by an initiative in the Czech Republic. ZEOS is also setting up street containers in Bosnia and Herzegovina. A PRO in Greece is planning to test similar street containers. This shows that the initiative can be transferred to other countries.

Which lessons learned were taken?

- The size of the bins was determined by trial and error and now measures 1.2 x 1.2 x 1.8 m or 2.59 m^3. It turned out that the bins must be large to avoid too frequent emptying. Today, the collection takes place approximately every 3 months.
- There are also some street containers that were placed or would have been placed near stores (e.g., stores for technical equipment). However, these sites are often owned by the stores, and they have demanded payment for placement. In addition, most stores already have their own collection sites and do not want more outside their doors.
- Due to the increased costs of metals, the cost of each bin including the delivery to its exact location has increased from 1,000 EUR to approximately 1,300 EUR per bin. Additionally, there are usually 3-4 bins that require repairs during each pickup round. According to ZEOS, the cost for refurbishment to repaint and place new stickers on the bin, which is about 500 EUR per bin, will arise in the coming years.
- ZEOS also uses mobile collection containers which are put in front of schools, and which are combined with the collection of hazardous waste from households. However, it turned out that these campaigns are not as effective as street containers.
- Although there is a trend to remove street containers from city centres and place them underground, ZEOS decided to keep the existing street containers. Such a change would have to be correctly timed with the relocation of other collection points underground and would require special vehicles for emptying, which would have resulted in additional costs.

6.11 Spain

6.11.1 Status quo of batteries collection in Spain

In Spain, the collection of portable batteries is regulated by Royal Decree 710/2015[132] the transposition of the EU Batteries Directive. Article 8 of the Batteries Directive on collection schemes has been applied by means of the creation of Management Systems. In the different Autonomous Communities in Spain, “Sistemas de responsabilidad ampliada” del productor (RAP) for the collection of portable and industrial batteries and accumulators were created. The batteries PROs currently operating in Spain are ECOPILAS, ERP, ECOLEC and UNIBAT. Portable batteries and accumulators are also collected in 'clean collection points' at a number of town council offices. With regards to automotive accumulators and batteries, Individual Management Systems exist, in which producers pool collection in workshops.[133]

[132] Real Decreto 710/2015, de 24 de julio, por el que se modifica el Real Decreto 106/2008, de 1 de febrero, sobre pilas y acumuladores y la gestión ambiental de sus residuos.
[133] Eunomia et al., Final Implementation Report for the Directive 2006/66/EC on Batteries and Accumulators, 2015.

Table 6-32 Summary table on WEEE, small WEEE[134] and Battery flows in Spain[135]

	Products put on the market (tons)		Waste collected (tons)		Collection rate (%)		Recycling and preparation for re-use rate (%)	
	2014	**2020**	**2014**	**2020**	**2014**	**2020**	**2014**	**2020**
(W)EEE	557,481	1,004,711	184,818	393,797	30.7	52.3	76.9	85.8
Small (W)EEE	n/a	162,292	n/a	70,298	n/a	44.9	n/a	85.9
Portable batteries and accumulators	10,815	14,364	3,876	5,482	36.4	41	n/a	n/a

Reaching the collection rate for potable batteries and accumulators is an ongoing challenge in Spain. In the last years, a collection rate of 35-40% has been achieved but based on the POM calculation, a rate of 45% should have been reached in 2016.[136]

Table 6-33 Overview table of specificities of PRO set up in Spain for WEEE and waste portable batteries (own compilation based on BIO 2016[137], adelphi 2021[138] and Eunomia 2015[139])

Specificities of PRO set up in Spain	WEEE	Batteries
Collection obligation imposed to local authorities	The collection obligations are **not** imposed on local authorities.	The collection obligations are **not** imposed on local authorities.
Visible contribution	It is **forbidden** to integrate the visible contribution to the bill, however the producer may communicate it on its website or other advertising means.	n/a
Obligation for PROs to exercise a not-for-profit activity	No	No
Implementation of individual and/or collective systems	100% collective systems but with possibility to organise individually.	100% collective systems but with possibility to organise individually.
Number of PROs (household and/or professional)	12 PROs	4 PROs
Competitive or non-competitive PRO set-up	The WEEE PRO system is competitive	The Battery PRO system is competitive

[134] Small WEEE = Small equipment (no external dimension more than 50 cm)+ Small IT and telecommunications equipment (no external dimension more than 50 cm).
[135] Numbers based on Eurostat ENV_WASELEEOS and ENV_WASPB, accessed 2nd August 2023, based on bipro, WEEE compliance promotion exercise, 2017, https://op.europa.eu/en/publication-detail/-/publication/09c7215a-49c5-11e8-be1d-01aa75ed71a1/language-en (prepared for the EU COM DG ENV) and based on Update of WEEE Collection Rates, Targets, Flows, and Hoarding, 2021, https://weee-forum.org/wp-content/uploads/2022/12/Update-of-WEEE-Collection_web_final_nov_29.pdf.
[136] Source: Interview with ECOPILAS representatives.
[137] BIO by Deloitte, Study on the 2012 WEEE Directive in Europe, 2016 (prepared for ADEME).
[138] Adelphi consult GmbH, Analysis of Extended Producer Responsibility Schemes, 2021.
[139] Eunomia et al., Final Implementation Report for the Directive 2006/66/EC on Batteries and Accumulators, 2015.

6.11.2 ECOPILAS[140]

The Ecopilas Foundation[141] is a Collective System of EPR for the management of waste batteries and accumulators, founded in 2000. At present, Ecopilas has the largest collection of batteries and portable batteries in Spain, with about 40,000 collection points in Spain at retailers, schools, libraries, etc. These are divided into 3 flows: retail, municipal, and professional stream.[142] This makes them the second largest network in Europe with approximately 796 collection points per million of inhabitants.[143]

On Ecopilas website every retailer can request a collection box to put up in its stores. The collection volumes from municipal waste yards depend on the region. In some regions there is a coordinating office with which Ecopilas has an agreement and in other regions where this doesn't exist at a regional level, it is signed directly with the municipality. The municipality can then choose if they want everything (collection point, etc.) set up from scratch or if they just want collection of something that is already in place. The containers are plastic tubs with a 25l/40 kg capacity for shops and direct collection points through collection partners and a 15l/20 kg cardboard box for schools or other public points (e.g., libraries and sport centres). These have been installed since 2008. The professional stream includes batteries from repair shops, pre-consumer waste batteries from producers and dismantlers.

Table 6-34 Examples of Ecopilas initiatives

Set up	Gestores intermedios initiative	School battery collection
Waste stream in focus	Portable batteries and accumulators	Portable batteries and accumulators
B2C / B2B	B2B	B2C
Incentive type	Reward incentive (Payment per ton)	Reward incentive (non-monetary reward) and Convenience (Bring points)
Fate of collected equipment	Recycling (<1 % re-use)	Recycling (<1 % re-use)
Short description	Ecopilas pays WEEE dismantlers and other professional waste collectors a fixed amount per ton of portable batteries collected.	Ecopilas collaborates with municipalities and other PROs to set up initiatives in schools in Catalonia, Galicia, and Valencia.
Scalability	Low	Medium
Replicability	High	High

[140] Please note that the following chapter is based on stakeholder input. The interview with Recyclia was performed in July 2023.
[141] HOME - Ecopilas.
[142] Source: Interview with ECOPILAS representatives.
[143] Members | Eucobat.

6.11.2.1 Gestores intermedios initiative

Ecopilas pays WEEE dismantlers and other professional waste collectors a fixed amount per ton of portable batteries collected. Volumes above 3 tons are incentivized with higher per ton prices. The recipients of this money are responsible for the handling and transport of the batteries to the battery sorting facilities.

Why is the initiative considered best practice / successful?

- The initiative is a success as it currently makes up around 20% of the portable battery collection stream.
- The initiative targets dismantlers that recover batteries from other waste products, especially WEEE, instead of the batteries collectors themselves.

What were the enabling factors?

- **Economic viability:** The fees the dismantlers receive include the cost for transporting and collecting so that Ecopilas has no further effort or costs to receive the batteries. The fee is fixed per ton of portable batteries collected. Volumes above 3 tons are incentivized with higher per ton prices.
- **Organised collaboration:** Initially Ecopilas identified who to involve through a good collaboration with recyclers and the recycler's team's contacts. After 3 or 4 years, they contracted a consultant company to do a public announcement to identify waste collectors and WEEE dismantlers.

How does the operator deal with the specific challenges of batteries?

- A major challenge is the increasing amount of lithium batteries in the battery waste stream as they can cause fires and thus need separate containers. Ecopilas is currently developing procedures for retailers who collect lithium batteries to be able to remain compliant.

Why and how is the initiative scalable?

- The scale up of Gestores Intermedios is limited because they have reached many of the big waste sorters already. When the program was first implemented, Ecopilas saw increases in batteries that were collected. However now there is not much room for improvement, the volumes that are collected are quite stable.

Why and how is the initiative replicable?

- The replicability is estimated to be high, as WEEE dismantlers and other professional waste collectors also exist in other countries and might be interested in selling dismantled batteries.

Which lessons learned were taken?

- No specific lessons learned were identified.

6.11.2.2 School battery collection

Ecopilas collaborates with municipalities and other PROs to set up initiatives in schools in Catalonia, Galicia, and Valencia. In these places students are encouraged to bring batteries from home to be recycled and the school that performs the best gets a prize. Ecopilas also organizes its own initiatives in some schools and some summer sailing schools. In these cases, the prize is related to sport equipment or trees that are planted.

Why is the initiative considered best practice / successful?

- Similarly to the school initiatives in Romania, some increase of the collection volume was realized by the initiative; however, the main positive aspect of the initiative is the increased awareness amongst participants.

What were the enabling factors?

- **Engagement of relevant stakeholders:** Ecopilas collaborates with municipalities and other PROs to set up initiatives in schools in Catalonia, Galicia, and Valencia.
- **Non-monetary reward as incentive:** The initiatives at schools typically have prizes of sports equipment (if the initiative is done at the sailing schools) or trees planted by Ecopilas as incentives.

How does the operator deal with the specific challenges of batteries?

- Ecopilas report that a future challenge is the change in the EU battery regulation setting out that the definition of portable batteries will change from 1kg to 5kg which increases the volumes of batteries that need to be covered by the system and poses new requirements on the collection receptacles currently in use.

Why and how is the initiative scalable?

- A challenge for the school initiatives is that it does not produce the same level of results in regions where it has already been in place for several years, i.e., scalability is only feasible by changing location. This is part of the reason why Ecopilas tries to both refine existing initiatives and to come up with new ones. They regularly are developing new strategies and are doing studies.

Why and how is the initiative replicable?

- Since in Italy and Romania similar initiatives exist, the replicability is proven.

Which lessons learned were taken?

- No specific lessons learned were identified.

6.12 Switzerland

6.12.1 Status quo of small WEEE collection in Switzerland

In Switzerland the EU provisions of the WEEE Directive do not apply, but national law has been developed for the management of WEEE. The Ordinance on the Return, Take-Back and Disposal of Electrical and Electronic Equipment (VREG) has been in force since January 1, 2022 (cf. legal text VREG). It regulates the handling of discarded electrical and electronic equipment. Distributors of EEE are obliged to take back old equipment from their product range free of charge and to provide it for professional e-recycling. The private foundation SENS eRecycling handles and implements this legal requirement for producers, importers, and distributors who have to register return points with SENS and is therefore considered "PRO" in this chapter, even though it is not a producer responsibility organization in the sense of EU legislation. Apart from SENS, Swico Recycling is another voluntary and solidarity-based take-back system for end-of-life appliances from the IT, office, consumer electronics and photo/film sectors.

Table 6-35 Summary table on WEEE, small WEEE[144] and Battery flows in Switzerland[145]

	Products put on the market (tons)		Waste collected (tons)		Collection rate (%)		Recycling and preparation for re-use rate (%)	
	2014	2020	2014	2020	2014	2020	2014	2020
(W)EEE	n/a	n/a	126,600	129,800	n/a	n/a	n/a	n/a
Small (W)EEE	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Portable batteries and accumulators	n/a	n/a	2,734	3,175	71	n/a	n/a	64

A specificity of the Swiss WEEE management system is the advanced recycling fee ("vorgezogene Recycling Gebühr", vRG) which secures the financing of the recycling of electrical and electronic equipment. Consumers make a recycling contribution when buying a new electrical or electronic device. How much depends on the type of device and its weight. Every year, the vRG tariffs are reassessed by the vRG Commission according to current WEEE handling, management, and recycling costs. Consumers who have not paid the vRG due to online shopping of EEE which did not include the vRG can pay it voluntarily via SMS at a later time[146]. Switzerland reached a collection of 14.9 kg per capita of WEEE in 2020 (EU average is 10.6 kg per capita).

[144] Small WEEE = Small equipment (no external dimension more than 50 cm)+ Small IT and telecommunications equipment (no external dimension more than 50 cm).
[145] Numbers based on BAFU Waste statistics.
[146] SENS eRecycling | Freiwilliger vRB.

Table 6-36 Overview table of specificities of PRO set up in Switzerland for WEEE and waste portable batteries (own compilation based on BIO 2016[147] and adelphi 2021[148])

Specificities of PRO set up in Switzerland	WEEE
Collection obligation imposed to local authorities	The collection obligations are **not** imposed on local authorities.
Visible contribution	The advance recycling fee (vRG) is **mandatory** and indicated to the consumer at the point of sale
Obligation for PROs to exercise a not-for-profit activity	No
Implementation of individual and/or collective systems	Collective and individual systems
Number of PROs (household and/or professional)	2
Competitive or non-competitive PRO set-up	The WEEE PRO system is non-competitive

6.12.2 SENS eRecycling[149]

The purpose of the foundation is to promote privately organized recycling solutions, quality assurance in WEEE Recycling as well as environmentally sound disposal, the optimization of logistics systems and the competitive financing of services by means of the advanced recycling fee vRG which is determined through the fee committee on a yearly basis. SENS eRecycling is one of two organizations taking care of implementing the national law on WEEE in Switzerland. The network of return points in Switzerland is extensive due to the general obligation of retail and producers to take back products which they put on the market. Every retailer who sells an electrical product must take back this same type of product regardless of sales area or whether the customer has bought a device in the shop.

Table 6-37 Example of SENS eRecycling initiatives

Set up	Postal Services Initiative “ElectroBag”
Waste stream in focus	Small WEEE (not IT)
B2C / B2B	B2C
Incentive type	Convenience incentive (Postal service)
Fate of collected equipment	Recycling and P4R
Short description	
Scalability	High. A variant of the pilot will be rolled-out nationwide soon.

[147] BIO by Deloitte, Study on the 2012 WEEE Directive in Europe, 2016 (prepared for ADEME).
[148] Adelphi consult GmbH, Analysis of Extended Producer Responsibility Schemes, 2021.
[149] Please note that the following chapter is based on stakeholder input. he interview with SENS was performed in June 2023.

Replicability	Medium

The motivation to start the “ElectroBag” pilot came from a survey amongst Swiss citizens showing that certain types of WEEE are nonetheless being kept at home - either because they forget about them, people do not know how to dispose of them, or they are too big to conveniently dispose of. Considering that household collection of WEEE was not considered financially feasible, the idea of a postal service to return WEEE was raised.

Within the “ElectroBag” pilot each household in the Zürich and Bern area was given a plastic bag into which about 5 kg of electrical material fit. The filled bag is to put in the mailbox. From there it is collected by the postal service. In Geneva the initiative was extended to a re-use project. People were required to put a sticker on the package if the devices in it were potentially suitable for re-use (self-assessment by consumers). Moreover, reusable bags were tested. SENS eRecycling cooperated with the Swiss Post which was also interested in expanding its services and with the PRO “SWICO” for cell phone recycling. The Swiss Post is paid per kg of WEEE that is taken back through the postal service route. The pilot is now being rolled out nationwide. Besides that pilot, SENS eRecycling is about to start a pilot for the collection of e-cigarettes/vapes in September.

Why is the initiative considerepicd best practice / successful?

- The convenience incentive of having a bag which could be returned free of cost through the postal service, was well accepted by the population in the pilot areas and resulted in 6.5 tons of small WEEE and used EEE collected over 2.5 months (return rate of 4,500 out of 100,000 distributed bags or 4.5%). The initiative was therefore expanded from the first pilot region of Zurich to Geneva and Bern.
- In the area of Geneva households had the option to self-assess the re-usability of the devices they turned in by putting a sticker on the package if the devices are suitable for re-use. The devices were sorted by a social organization and tested and repaired by a repair centre for resale. This element of the initiative increases longevity of the devices and puts re-use and preparation for re-use at the top of the waste hierarchy.
- The aim of SENS eRecycling was also to get closer to the end customer with this initiative and to raise awareness about WEEE. To reach this objective, every household in the pilot area received an information letter and an ElectroBag.

What were the enabling factors?

- **Convenience incentive:** The main incentive for citizens was the easy take back with the bag which incentivized many to check their drawers and basements.

- **Swiss letter boxes:** Standardized mailboxes with a flap that hangs out at the bottom for letter carriers facilitated implementation. Although they are typical for Switzerland, other countries might not have this precondition.
- **Collaboration with relevant partner:** SENS eRecycling cooperated with the Swiss Post which was also interested in expanding its services and was looking for new business models, i.e., they pushed the pilot as well.

How does the operator deal with the specific challenges of small WEEE?

- One challenge was to avoid the misuse of the bags. This is more critical in cases where citizens must pay for waste disposal per weight. Introducing a fee for the “ElectroBag” might resolve this challenge.
- Another challenge was the transport of waste (e.g., IT equipment including lithium-ion batteries) due to the health and safety risks. These risks were tackled through open discussions with the postal service, trainings, and information to the postal staff about safe handling. Since the Post also supplies new EEE products (e.g., cell phones) posing similar risks during handling, safety concerns regarding waste could be eliminated.

Why and how is the initiative scalable?

- In September, SENS eRecycling started rolling out the pilot on a national scale together with the post. A bag can then be ordered on demand for a cost of 5 Swiss franc (~5 EUR). For the national scale-up, the distribution of sorting and recycling centres is divided regionally.

Why and how is the initiative replicable?

- Not in all countries - Standardized mailboxes with a flap that hangs out at the bottom for letter carriers facilitated implementation.
- The initiative would only be scalable in countries where shipment of waste (electronics) by post is not prohibited.

Which lessons learned were taken?

- Reusable bags were tested in Geneva, with the idea that people should contact SENS eRecycling if interested in getting a bag. However, this required a higher effort from people and led to less response. The reusable bags (about 50 cm big) used in Geneva were quite robust, but they were much more expensive and oftentimes did not look usable after one use. Since the initiative is B2C the aesthetic is important. Finally, it was decided not to use reusable bags anymore. Alternatively, SENS eRecycling recommends plastic bags, which are recyclable or made of recycled material.

- SENS also realized that a fee for the postal bag is needed to make the initiative economically feasible in the long run, i.e., a fee of 5 CHF for ordering the “ElectroBag” was introduced for the nation-wide initiative.

6.13 United Kingdom

6.13.1 Status quo of small WEEE and batteries collection in the United Kingdom

WEEE

After Brexit, the United Kingdom (UK) kept its national implementation of the WEEE Directive, the Waste Electrical and Electronic Equipment Regulations 2013[150], i.e., still has a similar legal framework as the EU Member States. There have been plans by the government to renew the Regulation for several years, but no changes have been initiated yet. Currently, consumers can return their old appliances to the retailer when buying a new appliance if they are of the same type (like-for-like system).[151]

In the UK, 26 PROs for WEEE collection and treatment exist[152]. The majority focus on private collection (B2B) or collection from retailers; 8 of the PROs collect from local authorities. In the UK no allocation system exists but the PROs need to win tenders from local authorities for the collection and treatment of WEEE. As a result, the PROs compete strongly with each other and don’t often work together.[153]

In the UK, local authorities have no binding obligations with respect to the collection of WEEE. However, they are encouraged to set up Designated Collection Facilities (DCF) or designated collection centres. These DCFs are all registered by Valpak (collective system) that manages the DCF park for the entire UK. The DCF can be financed by Distributor Take Back Schemes (DTS), but local authorities are in general free to find a suitable agreement with producers who opt for collective systems (Producer Compliance Scheme or PCS) to finance the functioning of the DCF. This way, the PCS can ensure a constant flow of WEEE that needs to be treated over the year. Note that DCF may not always be put in place by local authorities but can also be private.

There are many producer compliance schemes in the UK: 5 for batteries, 27 for packaging, 26 for WEEE (status in September 2023). There is also a loose obligation for schemes to invest in communication or go beyond the minimum requirements. If a producer compliance scheme misses its annual collection target, they must pay a compliance fee based on the tonnage that is short or missing compared to the national targets. This system has been in place since 2013/2014 when the WEEE Regulations were reviewed, and the money goes into a pot (compliance fee Fund) managed by Material Focus. This fund is spent on

[150] The Waste Electrical and Electronic Equipment Regulations 2013
[151] Source: Interview with Material Focus representatives
[152] Source: Authorized WEEE producer compliance schemes public register (September 2023)
[153] Source: Interview with Material Focus representatives

supporting recycling and reuse organisations for research and implementing innovative projects. Roughly 20,000 pounds of funding are awarded per project and Material focus organises regular funding rounds.[154]

Table 6-38 Summary table on WEEE, small WEEE[155] and Battery flows in UK[156]

	Products put on the market (tons)		Waste collected (tons)		Collection rate (%)		Recycling and preparation for re-use rate (%)	
	2014	**2020**	**2014**	**2020**	**2014**	**2020**	**2014**	**2020**
(W)EEE	n/a	n/a	491,880	460,134	35.8	*2021*: 29	80.6	n/a
Small (W)EEE	n/a	n/a	68,999	59,913	n/a	n/a	n/a	n/a
Portable batteries and accumulators	36,943	*2022: 40,146*	13,167	*2022: 18,679*	35.8	*2021:* 45.9	n/a	n/a

Batteries

The management of waste Batteries in the UK is regulated by the Waste Batteries Regulations 2009[157], which is the UK implementation of the European Union Waste Batteries and Accumulators Directive 2006/66/EC which came into force in May 2009. Article 31(1) of the Regulations requires distributors to take-back waste portable batteries at no charge and to inform end-users about the possibility of such take-back at their sales points. Regulation 32 ensures battery compliance schemes collect waste portable batteries from distributors without charge. Other collection schemes are encouraged by imposing collection targets on producers (regulation 7); and providing economic operators and waste collection authorities with the right to participate in collection, treatment, and recycling schemes. Consequently, 5 collection schemes are now established in addition to the collection points located at distributors' premises. The collection target for batteries is fixed at 45% of the POM since 2016.

Reaching the collection rate for potable batteries and accumulators is an ongoing challenge in the UK. In the last years, a collection rate of 35-40% has been achieved but based on the POM calculation, a rate of 45% should have been reached in 2016.

Table 6-39 Overview table of specificities of PRO set up in the UK for WEEE and waste portable batteries (own compilation based on BIO 2016[158], adelphi 2021[159] and Eunomia 2015[160])

Specificities of PRO set up in UK	WEEE	Batteries

[154] Source: Interview with anonymous UK PRO representatives
[155] Small WEEE = Small equipment (no external dimension more than 50 cm)+ Small IT and telecommunications equipment (no external dimension more than 50 cm)
[156] Numbers based on Eurostat ENV_WASELEEOS and ENV_WASPB, accessed 2nd August 2023, based on UK Battery Collection data published on NPWD
[157] Waste Batteries Regulations 2009
[158] BIO by Deloitte, Study on the 2012 WEEE Directive in Europe, 2016 (prepared for ADEME)
[159] adelphi consult GmbH, Analysis of Extended Producer Responsibility Schemes, 2021
[160] Eunomia et al., Final Implementation Report for the Directive 2006/66/EC on Batteries and Accumulators, 2015

Collection obligation imposed to local authorities	The collection obligations are **not** imposed on local authorities.	The collection obligations are **not** imposed on local authorities.
Visible contribution	The visible contribution published on the final consumer's invoice is **forbidden.**	The visible contribution published on the final consumer's invoice is **forbidden.**
Obligation for PROs to exercise a not-for-profit activity	It is not mandatory for PROs to be non-profit but the exercise of the not-for-profit activity is **not taxed.**	It is not mandatory for PROs to be non-profit but the exercise of the not-for-profit activity is **not taxed.**
Implementation of individual and/or collective systems	Collective systems and individual (for small producers)	Collective systems and individual (for small producers)
Number of PROs (household and/or professional)	26 PROs	5 PROs
Competitive or non-competitive PRO set-up	The PRO system is competitive	The PRO system is competitive

6.13.2 Anonymous UK PRO[161]

The following initiatives are from a PRO which prefers to stay anonymous. The PRO is collecting batteries and WEEE and operates its own facilities. The table below shows three initiatives the PRO is running or is planning to run. Only the new battery initiative (second column) will be described in more detail in the following paragraphs.

Table 6-40 Examples of anonymous UK PRO initiatives

Set up	Battery campaign	New battery initiative	Vapes initiative
Waste stream in focus	Portable batteries	Portable batteries	Vapes
B2C / B2B	B2C	B2C	B2C
Incentive type	Convenience (Bring points)	Convenience (Bring points) + Donation/charity incentive	Convenience (Bring points)
Fate of collected equipment	Recycling	Recycling	Recycling
Short description	The battery campaign to collect from schools was in place but had to be paused because of COVID. It was started in 2018 and reached over 1.5 million children each	A new initiative for portable battery collection that will be launched this year in supermarkets.	Separate collection points for vapes free-of-charge to keep the stream separated from WEEE and batteries. The collection points are at e-cigarette stores, at local

[161] Please note that the following chapter is based on stakeholder input. The interview with the PRO was performed in July 2023.

	year through 5,500 schools.		municipal collection points, supermarkets, and electrical retailer stores.
Scalability	Not assessed	Medium - High	Not assessed
Replicability	Not assessed	High	Not assessed

Note: only the **new battery initiative** of the PRO will be assessed in more detail:

The new initiative for portable battery collection will be launched this year in supermarkets. Yellow buckets having a QR code will be placed in cooperating supermarkets. When customers return portable batteries, they can scan the QR code and choose which charity to donate the money to, from a list selected by the retailer.

Why is the initiative considered best practice / successful?

Since the initiative will only be launched this year, its success is still unclear. It is included in the best practice overview as it provides an incentive to the customer through an optional charity contribution of the retailer they bring their batteries to, and hence tries to increase customer's motivation to bring back waste portable batteries while staying competitive in the competitive PRO setting of the UK.

What were the enabling factors?

- **Incentives for the consumer:** An enabling factor is that two incentive types are used: on the one hand, an increased number of collection points in retail for portable batteries makes disposal easy for the consumer (convenience incentive) while on the other hand donation to charities is promoted. The donation is handled through discounts offered by retailers, who pledge to donate a certain amount to charities. Customers can select which charity they would like to donate to via an app, which they can access by scanning the QR code on the top of the collection bucket.

- **Partnership with large players:** The PRO cooperates with major grocers (currently 4 out of 5 major grocers in the UK) as well as some DIY stores like B&Q (part of the Kingfisher group).

How does the operator deal with the specific challenges of batteries?

- In larger stores, the challenge is that multiple recycling streams (e.g., flexible plastics) or donation boxes (e.g., textile collection boxes) compete for available space. In addition, it may be difficult for customers to identify the location of the collection box and they may walk past it. This issue could not yet be solved.

Why and how is the initiative scalable?

- The initiative will be scalable as the battery collection buckets could be implemented in different grocery stores and expanded to smaller retailers too. One goal of scalability is to incentivize large collection volumes so that collection must occur less frequently.

Why and how is the initiative replicable?

- The initiative itself was inspired from LitterLoto which is an app that lets users enter a raffle for a prize if they pick up litter.

Which lessons learned were taken?

Since the initiative will only be launched this year, lessons learned cannot be drawn yet.

6.13.3 Material Focus (formerly WEEE Fund) [162]

The non-profit organisation Material Focus was launched in 2020 in the UK and employs 11 people. Material focus is not a PRO but receives money from the UK WEEE Compliance Fee Fund and uses it to invest in new initiatives for the collection of WEEE. Material Focus is not involved in any operational task and also do not invest in capital but focus on project management and communication. The WEEE fund contains all the compliance fees from the missed collection targets, i.e., the original money comes from producers. The further away the results are from the rate, the more the fee is above the average costs. The fees vary per year, but Material Focus found a way to factor in this financial variability and makes a three-year plan to reduce risks. In 2019, the WEEE fund distributed 7 million pounds.

The investments can be received by local authorities, charities, re-use organisations, commercial waste management companies etc. Currently, Material Focus has invested in over 50 new collection projects since 2020. Alongside standard kerbside collection and public drop-oof point projects they look to support more innovative projects. For example, they are funding a bus going around collecting devices on site and educating people about WEEE collection. Another initiative they are looking to support would offer postal lockers as return option for small WEEE.

Material Focus invests in collection initiatives that have links to recycling and to re-use. They estimate that around 30% of the projects they support do re-use. Material Focus highlights that digital inclusion is important to them and that they have already worked with partners delivering this. Most of the initiatives Material Focus supports focus on small WEEE such as cables, kettles, toasters, etc. rather than small IT equipment for which there is already a market. Although these are less valuable, Material Focus want ‘to solve a real problem” and add value.

[162] Please note that the following chapter is based on stakeholder input. The interview with Material Focus was performed in July 2023.

To get funding from Material Focus initiatives must apply. According to Material Focus the application form is not very long but is needed to make sure that the applicants fulfil all requirements and that they are committed. For example, it is needed that the applicant is aware of the administrative burden related to WEEE collection, such as recording in the UK electrical system (to have evidence on re-use and recycling) and is aware about potentially hazardous waste. Moreover, Material Focus focuses on initiatives that offer new services or scale up existing ones. It does not want to maintain the status quo or merely to divert collection volumes from other sources. Moreover, on the long run the initiatives have to be able to stand on own legs, i.e., to reach breakeven. Last time, over 100 initiatives applied. The grant depends on households impacted by the new service but can be up to £100,000.

The strong competition between PROs makes it difficult for them to carry out a large-scale national communication campaign to promote WEEE collection, as they would also advertise for their competitors for free. Material Focus, on the other hand, can do this and sees this as one of their tasks. Material Focus do communications campaigns, provides insights to all, goes to national press etc. to promote WEEE collection. Since they are independent not for profit this helps as they are not suspected of trying to sell anything.[163]

Table 6-41 Material Focus as a best practice itself

Set up	
Waste stream in focus	Small WEEE
B2C / B2B	n/a
Incentive type	Investment in small WEEE collection initiatives
Fate of collected equipment	n/a
Short description	A non-profit organisation that receives money from the UK WEEE Compliance Fee Fund and uses it to invest in new initiatives for the collection of WEEE.
Scalability	Low - medium
Replicability	Medium

Why is the initiative considered best practice / successful?

- **Support of local initiatives:** in comparison to PROs, Material Focus can support very local initiatives. Material Focus emphasises that the collection needs are very different across the country and that there is no one size fits all solution, i.e., local projects are important and worth funding.
- **No competition pressure:** The strong competition between PROs makes it difficult for them to carry out a large-scale national communication campaign to promote WEEE collection, as they

[163] Source: Interview with Material Focus representatives.

would also advertise for their competitors for free. Material Focus, on the other hand, can do this and sees this as one of their tasks. Material Focus do communications campaigns, provides insights to all, goes to national press etc. to promote WEEE collection. Since they are independent not for profit, this helps as they are not suspected of trying to sell anything.

What were the enabling factors?

- **Communication:** According to Material Focus, one key enabler for a successful WEEE collection is regular communication that is repeated again and again and that is not a onetime activity. Material Focus itself does regular communications campaigns, provides insights to all, goes to national press etc. to promote WEEE collection.
- **More volumes for PROs:** Material Focus works together with all its projects and also with PROs. They mainly partner up with PROs for the operational parts. Thus, they are no concurrence to PROs but even redirect more volumes to them.
- **Partners and projects' network:** They also have a partner accounting firm to help administer the compliance fee process. Material Focus also works together with designers, IT companies, create agencies etc. to prepare the communication campaigns. Soon, Material Focus wants to start an exchange between their projects and foster a network.

How does the operator deal with the specific challenges of small WEEE?

- n/a

Why and how is the initiative scalable?

- Every year new initiatives have the chance to apply and to get funding from Material Focus. However, the budget of the WEEE Compliance Fund is a natural limit to how Material Focus is scalable.

Why and how is the initiative replicable?

- Material Focus is convinced its concept/set-up is impactful and offers value for money and would also recommend it to other countries. However, in other countries the funding must potentially be organised differently.

Which lessons learned were taken?

- Material Focus invests in several projects and is not limited to one incentive form. However, they observed that the ease of handover and continuous communication about the collection points is very important to incentivize and motivate consumers to bring back their small WEEE.
- Material Focus tracks all of its activities. They do a regular survey on the KPIs of the supported projects, media monitoring, use google and other data analytics and contract an independent firm

to analyse the overall success of the campaign. Material Focus in on the opinion that weight should not be the only indicator to measure success of WEEE systems.

- Regular communication is key (see “enabling factors”). Material Focus highlights that new initiatives and new bring points etc. must be spoken about to draw people's attention to it and then regular communication must continue.

Chapter 7

Conclusions and recommendations

ECOSWEEE
Enhancing collection of small W/EEE and batteries

7. Conclusions and recommendations

7.1 General conclusions

Both for WEEE (and small WEEE in particular) and for waste batteries the EU MS are struggling to reach the collection targets defined in the respective legislative pieces. For WEEE, the collection target of 65% (POM) for 2019, was achieved only by Bulgaria, Croatia and Finland in 2020 and the EU average lingering at 46% in 2020[164]. For waste batteries, the collection target of 45% for 2016 has been achieved by most MS, however the new targets set out by the Battery Regulation (EU) 2023/1542 (63% by the end of 2027 and 73% by the end of 2030) are still far from being reached with the EU average being at 47%[165]. The actors responsible for financing and organizing separate collection of WEEE and waste batteries are defined in the respective legislative pieces (see section 4.3) and include distributors and producers of EEE and batteries. In fulfilling their legal obligation and reaching the mandatory collection targets, individual producers and collective systems of producers (PROs) have implemented various initiatives for increasing collection rates. The identified collection initiatives presented in further detail in this report in section 6 all aim to collect WEEE and waste battery streams which are otherwise not effectively captured such as B2B appliances from schools and offices (Recupel, Belgium) or e-vapes at supermarkets (PRO UK).

7.1.1 Incentives

The initial survey among PROs active in the EU (n=62) showed that all types of incentives identified by the study team have been implemented by PROs in the past or are still active in the form of initiatives, with reward systems and social media campaigns ranking highest.

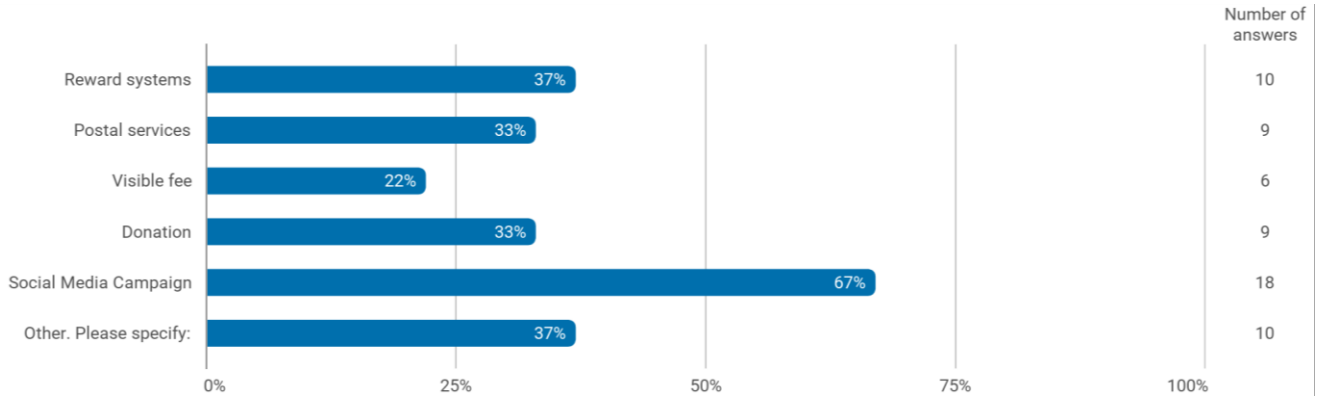


Figure 7-1 Overview over incentive types tested by PROs in the EU (n=62) (Source: Survey by Ramboll, 2023)

[164] Source: Eurostat (online data code env_waseleeos and env_waselee).
[165] Source: Eurostat (online data code env_waspb).

From the respondents who provided further details on specific incentives they carried out (n=16), most indicated they focused on increasing convenience for customers through e.g., bring points, pick up services or postal services as depicted in Figure 7-2.

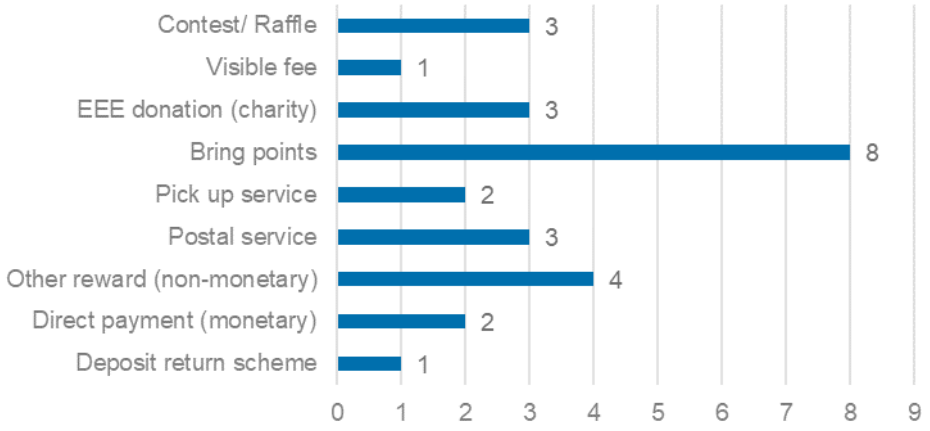


Figure 7-2 Overview over initiatives presented in report (n=16) (Source: Interviews by Ramboll, 2023)

Reward incentives (DRS, monetary payment, non-monetary payment) have also been tested but in fewer numbers. The producer of mobile phones Shift from Germany (see SHIFT (EEE producer)), fulfils its take back obligation individually and has set up a deposit return scheme for its mobile phones, returning to its customers a fixed price if they send back their end-of-life devices. Direct payments are commonly directed at collection points through contracts between PROs and collection points (municipal or retail) to incentivize higher collection rates or to schools for their collaboration in collection initiatives and not at the household/consumer level. Sometimes, non-monetary rewards (e.g., plants, pencils, etc.) are used instead of monetary rewards especially in combination with raffles and contests (i.e., Energia al cubo and School battery collection by Ecopilas).

7.1.2 Success rate / KPIs

When setting up the initiatives, the PROs indicated applying target performance indicators (PI), most based on volume and consumers reached as depicted in Figure 7-3 below.

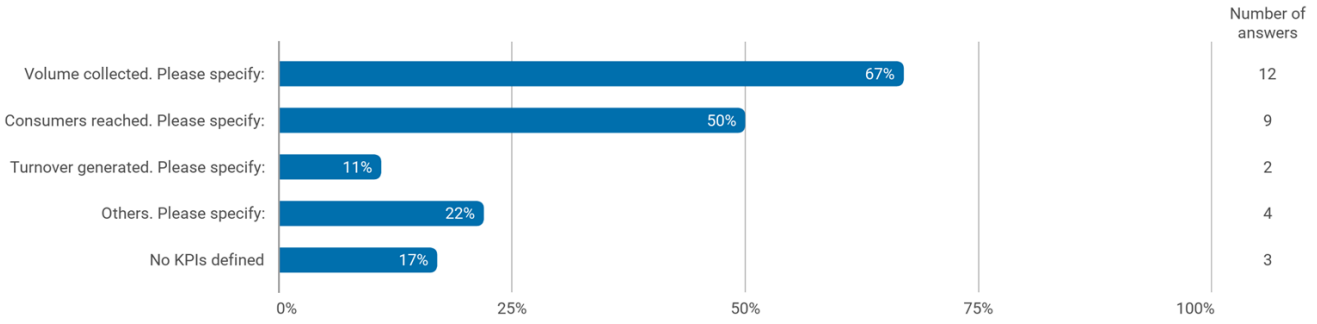


Figure 7-3 Target performance indicators of initiatives (n=31) (Source: Survey by Ramboll, 2023)

The volume-based PI ranged from 1 ton (of WEEE or batteries) per village to 2,500 tons per year depending on the initiative and its location. Performance indicators based on consumers reached included number of views of communication campaigns, mail response rates, and municipalities covered. Other performance indicators named by the PROs were number of retailers involved, quality of material (no misthrows), and number of active collection points.

It should be noted that the initiatives are all aimed at complementing the regular collection from municipal waste yards, and retail take-back to better target a specific WEEE and waste batteries flow and usually the overall impact of the identified best practice collection initiatives is low compared to the collection volumes from regular sources. Volumes, however, might also be low because the weight of small WEEE compared to other collection categories is lower (e.g., big white). Consequently, the initiatives are rather expensive in relation to their collection success. Indeed, many of the pilots uses the collected volumes as indicators for success. One stakeholder criticises this as a too narrow metric. Some initiatives don't aim to increase collection rates but to increase awareness, to have better relationships/ contact with end-consumers or to reduce the administrative burden of actors. Especially the collection activities in schools are rather seen as an educational task than to increase the collection rate significantly.

In general, specific campaigns have a strong educational purpose, and might target waste streams, which would otherwise not be covered through the more common collection paths. Collecting high volumes of small appliances at optimal cost to collected volume ratio is therefore not seen as the goal of the initiatives.

7.1.3 Downstream activities

As can be seen from Figure 7-4 below, all interviewed initiatives indicated that (small) WEEE and waste batteries they collect through the initiative is directed towards recycling. Some further indicated that before handing over the equipment to treatment operators for recycling, they - or other entities in their name - sort for WEEE which is suitable for preparation for re-use (e.g., repair, data deletion, refurbishment) and which is handed over to specialized repair and refurbishment organizations. Only three initiatives apart from collecting WEEE, also collected used EEE which is directly re-used after sorting (i.e., Téléphones Solidaires, Kringloopwinkels (thrift stores), and the Norsirk Secure boxes).

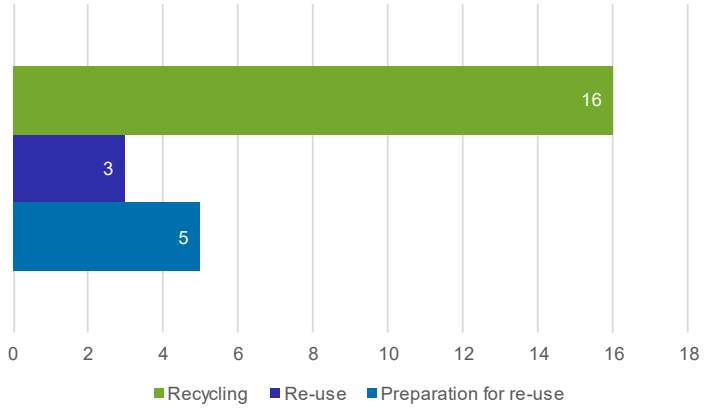


Figure 7-4 Overview over initiatives' treatment paths (n=16) (Source: Interviews by Ramboll, 2023)

The handling of small WEEE during collection (e.g., through WEEE Malta trolleys or ZEOS depot containers) sometimes stands in the way of preparation for re-use, as devices may break or be otherwise in no condition for re-use. Another actor also highlighted, that devices they receive through their initiative have no market value anymore and cannot be re-sold, which is why recycling is left as only option.

With regards to recovery of critical raw materials (CRM), most interviewed PROs do not conduct a pilot with a specific focus on CRM. Some mentioned that take-back of high-value small IT appliances (phones, laptop) is already covered by the market, e.g., through second-hand platforms and buy-back programs for refurbishing, therefore PROs focus on other devices.

7.1.4 Actors

Many PROs work together with partners, which is crucial for those with few employees and no infrastructure or vehicles of their own to perform the activities of communications, awareness, transport, and sorting depending on the initiative. For regional campaigns (e.g., school collections) consultants or partners on-place were assigned. Actors involved in the initiatives are the following:

- Postal services (e.g., for the postal take-back services of Ecologic France, SHIFT (EEE producer), SENS eRecyling)
- Logistics partners (e.g., for the B2B pick-up services of Recupel Pick up, and Erion's Exceed)
- Retailers (e.g., for the bring point network of WEEE Ireland, Norsirk, and the Anonymous UK PRO)
- Second-hand shops (e.g., for the bring point network of Stichting OPEN)
- Treatment operators (e.g., for the B2B battery take-back from WEEE dismantlers of ECOPILAS)
- Refurbishers (e.g., for the p4r of WEEE collected by SHIFT (EEE producer) and SENS eRecyling)
- Municipalities (e.g., for identifying suitable locations for bring-point containers of ZEOS, and WEEE Malta)
- Schools (e.g., for competitions and raffles of Erion, ECOTIC, and ECOPILAS)

It was furthermore reported that accompanying communication with the initiative is essential to increase collection rates and to guarantee good partnerships with all involved actors. One example is the visible fee which is mandatory to be displayed in retail for EEE sold in Ireland and which in turn makes inclusion of retail as collection points easier for the PROs as the fee also covers the retails costs for communication and take-back.

7.1.5 Economics

As highlighted in section 7.1.2, the success of the presented initiatives was not solely measured based on collected volume but also on other parameters such as customer reached, and others. The initiatives furthermore all aimed at capturing waste streams which were otherwise not effectively covered through the existing take-back options (i.e., municipal waste yards, retail take-back) through measures which oftentimes are more cost-intensive (e.g., pick-up services). Most interviewed stakeholders pointed out that the initiatives were more costly than collection from regular take-back streams and resulted in lower collection volumes overall. As indicated in Figure 7-5 below, the economic viability of initiatives was seen to be mostly dependent on the material value of collected WEEE, whereas for batteries, the material value, market competition, and other aspects mainly the target collection rate were considered equally important.

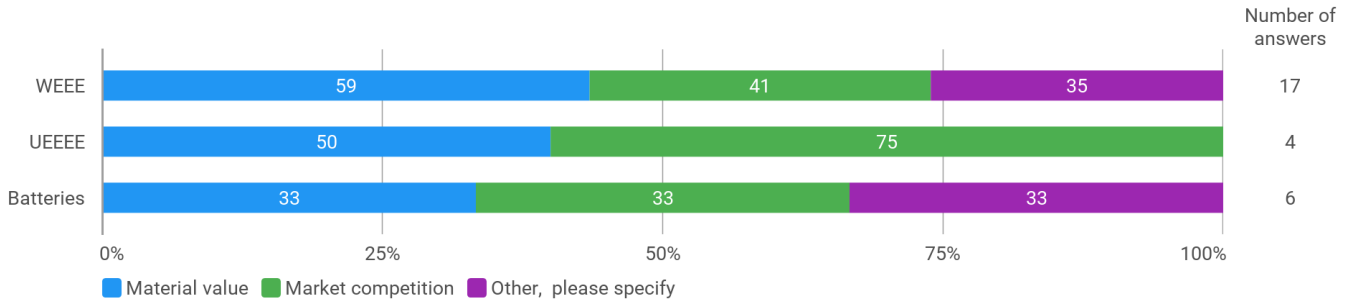


Figure 7-5 Economic viability determinators of initiatives (Source: Ramboll Survey, 2023)

One point that was highlighted by multiple stakeholders was the necessity to provide financial contributions from the collective schemes (PROs) to actors involved in the initiatives. One example was given by WEEE Ireland who provide financial contributions to retailers to support them financially in meeting their legal take-back obligations through a price per collected ton and additional contribution for the infrastructure, and awareness raising material provided at the retail points. Through this financial contribution the goodwill and engagement in the national programme is guaranteed and the availability of retail collection points for consumers increased.

7.1.6 Data protection and legal aspects

Ecologic's experience is that people have different understandings of data protection. Whereas some are primarily concerned with the removal of all data from their devices, others are more concerned with not losing any of their data and want to retrieve this data (photos, etc.) to keep before erasing everything.

Multiple PROs have addressed the issue of data protection and deletion respectively in their initiatives. The PRO Norsirk has set up separate “Secure Boxes” for collection of IT appliances for re-use, and recycling. The boxes are designed to be protected against theft and are placed at retail points. After collection a certified system is used to delete all data properly from the WEEE.

The French PRO Ecologic employs partners to delete data from the devices collected through their postal service take-back initiatives and is finding a way to communicate their data handling procedure to consumers to address their concerns effectively. Other PROs not interviewed also indicated through the survey that they rely on external actors to take care of data deletion from the devices they collect or rely on the treatment operators to ensure data deletion or destruction of the equipment.

7.1.7 Scalability and replicability

Most initiatives reported that their pilots are replicable and/or scalable depending on the initiative at hand. Regarding scalability, mostly intra-national differences have to be taken into account, whereas regarding replicability national differences have to be considered, amongst others:

- EPR market design: competitive PRO systems vs. non-competitive;
- EPR fee design: eco fee modulation vs. no eco-modulated fees;
- Role of actors: collection obligation on municipalities vs. on retail and producers alone;
- Geography and population density: island states vs. main land;
- Awareness and habits of households: high awareness vs. low awareness;

The following table provides an overview of the authors assessment of the individual initiatives’ scalability and replicability based on the information provided by the interview partners.

Table 7-1 Overview of initiatives scalability and replicability (Source: Ramboll based on interviews)

Initiative name	Scalability	Replicability
Pick-Up' by Recupel	Medium	High
Téléphones Solidaires' by Ecologic France	Medium	High
Deposit System by Shift	Medium	Medium
Retailer takeback by WEEE Ireland	Low	Medium
Energia al cubo' by Erion	Medium	High
WEEE Trolley' by WEEEMalta	Low	High
Kringloopwinkel by Stichting open	Medium	High
Secure boxes' by Norsirk	Medium	Medium
Little ones to great deeds' by Ecotic	Medium	High
Depot container by Zeos	Medium	High
Gestores intermedios by Ecopilas	Low	High
School collection by Ecopilas	Medium	High
ElectroBag' by SENS	High	Medium

Charity Battery collection UK	Medium	High
Renew project' by Erion	Medium	High
Exceed' by Erion	High	High

7.1.8 Challenges

Challenges in the implementation of the initiatives and the specific responses of the operators differ per initiative. Some common challenges mentioned are (not in order of importance):

- Theft of WEEE/ Batteries and/ or misuse of provided infrastructure;
- Costs for logistics in remote or sparsely populated areas;
- Competition of collection boxes (with other type of waste collection) for space and awareness of consumers in retail areas;
- Difficult communication with local authorities (e.g., in defining spaces for setting up collection boxes or providing trainings to competent authorities);
- Providing appealing and clear information to target audience (e.g., on how to use provided boxes);
- Design of collection infrastructure (e.g., containers which are easy to handle by retailers);
- Fire hazards (e.g., designing containers to be fireproof for collection of batteries).

Some PROs additionally mentioned transport of waste as an issue, such as for the implementation of postal service take-back initiatives. One actor explained having tested postal services in the past for take-back of WEEE but stopped due to logistical issues and fire hazard reasons, explaining that postal services were not designed for the safe collection and handling of waste batteries and WEEE.

Future and upcoming challenges, which were named by several PROs for the collection of small WEEE and batteries but which were not part of an assessed initiative include:

- E-cigarettes/ vapes, as they are currently not captured effectively through neither WEEE nor batteries waste collection infrastructure and are instead regularly disposed of through municipal waste streams;
- The change in the scope of the EU Battery Regulation since the definition of portable batteries will change from 1kg to 5kg which increases the volumes of batteries that need to be covered by the system and poses new requirements on the collection receptacles currently in use.

7.2 Conclusions on incentive types

Nine different incentive types in three categories (see section 5.2) were assessed in this study to understand how they were implemented, and which lessons learned were taken by the implementors. The following table provides an overview over the incentive types, the actors implementing them identified through this study, and the conclusions and learnings they drew from the implementation.

Table 7-2 Overview of conclusions per incentive type (Source: Ramboll, 2023)

Type of incentive	Implementor	Conclusions/ learnings
Reward incentive		
Deposit return scheme	SHIFT (EEE producer), Germany	• Justifying the increased costs for more circular products and business models compared to competitive products to customers remains a challenge. The customers who purchase such a device are however also more inclined to return it at the EoL as part of a DRS and are environmentally conscious. • The return rate of the last years ranges from 6.25% to 13.0% of sold SHIFT phones applying a DRS fee of 18 EUR (cash) or 22 EUR (voucher). Setting a deposit return fee together with a circular approach and services for the customer can incentivize the return even for initially higher price purchased appliances such as the mobile phones.
Direct payment (monetary)	Energia al cubo, Italy; ECOPILAS, Spain	• The participation of municipalities and municipal sectors in setting up info points on proper disposal of waste batteries increased through collaborating closely and hiring a contractor who took over parts of the coordination work. • The combination of information and collection point together with a monetary price which can be won (by citizens, schools, municipalities) increased collection rates significantly (in Erion's case a total of + 32.7 % collection increase). • The involvement of WEEE dismantlers in the collection of batteries through providing them with a fee per kg of batteries handed over, resulted in high B2B battery collection rates (making up 20% of portable battery collection in ECOPILAS' case). • Monetary rewards to consumers per kg of small WEEE/waste batteries collected are not common and not implemented by any of the PROs and producers interviewed.

		• Sharing contributions from the PROs to collection points (municipal or retail) to support them in covering their costs for collection strongly increases their goodwill and engagement and the number of available collection points as well as improves the service for customers.
Reward (non-monetary)	Erion, Italy; ECOTIC, Romania; ECOPILAS, Spain	• Some PROs have made good experience with raffles and school/ kindergarten challenges to collect small WEEE or batteries over a limited time. The winning party receives non-financial rewards like new electronic devices, vouchers for books, toys, investment in a playground etc. Other PROs see an ethical conflict in handing out new products to consumers in return for waste products. Another pilot based on ambassadors collecting devices from fellow citizens for a reward turned out to be too difficult (Ecologic France, Yoyo). • The participation of schools and kindergartens in school competitions and raffles for collection of waste batteries and small WEEE has increased significantly (+ 312%) through the involvement of local coordinators, paid by the PRO after reaching a certain collection target, who check in on teachers and schools before and during the initiative. Active involvement was furthermore guaranteed through providing teachers a certificate to add to their professional portfolio.
Convenience incentive		
Postal service	SENS eRecyling, Switzerland; Ecologic France, France; SHIFT (EEE producer),Germany	• Main prerequisite for implementing a postal service pilot is a good partnership with a postal service company and achieving an agreement on the financial contribution for each waste item shipped by post. • Reusable bags were tried out for B2C postal service (Ecologic France, Téléphones Solidaires), but they turned out to become unsightly and unusable too quickly. • Postal services are considered dangerous by several PROs due to the difficulty of introducing a potentially dangerous waste stream into logistic routes not suited or designed

		for waste, especially in light of increasing cases of fires in WEEE treatment facilities caused by lithium-ion batteries. • Additionally, the legal considerations of transporting waste via post are putting some actors off. These may differ on a national level.
Pick up service	Recupel, Belgium; Erion, Italy	• Free collection from certain B2B and non-household sources such as offices, and schools has been proven to increase collection rates of small WEEE from sources that were otherwise not effectively addressed. • The collection service can be requested through an app or the website of the initiative. • Clustering collection regionally and offering it in denser regions improves the economic viability of the pick up service. • Additionally, providing suitable containers for (small) WEEE to the consumer by the logistics operator has been proved to be beneficial to the time efficiency and acceptance of the service. • (small) WEEE collected from B2B sources is better suited for p4r activities than WEEE from municipal and retail collection due to its higher homogeneity of appliances and generally better state of products.
Bring points	WEEE Ireland, Ireland; WEEE Malta, Malta; Erion, Italy; Stichting OPEN, Netherlands; Norsirk, Norway; ECOTIC, Romania; ZEOS, Slovenia; Anonymous UK PRO	• Most PROs have tested increased number and different variations of bring points. • Depot containers were tested by some PROs in proximity to places already associated to waste collection (i.e., waste textiles) to achieve higher collection volumes or inside of public spaces and in cooperation with retailers, supporting them to fulfil their take-back obligation by providing them with containers/infrastructure and information as well as providing financial contributions to them. • The design of the container located at bring points (e.g., trolley, depot container, bin, box) should be attractive and informative and suited to the logistics need of the space they are located in. It should furthermore be safe against theft and fire hazards.

Other incentive		
EEE donation (charity)	Ecologic France, France, Anonymous UK PRO	• The added incentive of supporting a charity through a donation while handing in small WEEE and batteries has been tested in different settings e.g., in the form of a QR code that can be scanned by customers when dropping of their small WEEE and batteries into containers at retailers and selecting which charity goal they want to donate to. • The effect on the collection rates cannot be decided, however there seems to be an added value to retailers' corporate image by participating in such an initiative.
Visible fee	WEEE Ireland, Ireland; SENS eRecyling, Switzerland	• Visible fees for waste management at the point of purchase at retailers have been identified to improve awareness amongst customers and at the same time increase engagement of retailers in the topic of WEEE management in combination with shared contributions to such retailers from the schemes. • Visible fees were said to be well accepted by customers and not perceived as additional costs. • Whether the use of visible fees on the purchase receipt and the product itself is possible or prohibited depends on the national implementation of the WEEE Directive (or other WEEE legislation in the case of UK and Switzerland).
Contest/ Raffle	Erion, Italy; ECOTIC, Romania; ECOPILAS, Spain	• The use of gamification of waste collection through contests and raffles has proven successful in increasing awareness and collection rate (for a limited time) amongst kindergarten children, and school children, but also in competitions between municipalities. • Contests are usually combined with non-monetary rewards for the winner(s) and/or the involved actors (such as teachers) which can lead to high costs of such initiatives. • Collaboration and active involvement of responsible actors at kindergartens, schools, and municipalities is strongly dependant on the communication and organization on the ground. Therefore, some PROs have hired local coordinators who regularly follow up and organize with the local actors.

7.3 Recommendations for the replication and scale up of best practice initiatives

The following recommendations have been deducted from the survey and interviews amongst implementing actors of different incentive types and initiatives for increased collection of small WEEE and waste portable batteries and accumulators:

1. Define overall goal/ motivation for the pilot:
    a. Increase collection rates;
    b. Increase awareness;
    c. Reduce administrative burden (e.g., for retailers).
2. Select type of incentive to reach the goal. Consider combining incentive types.
3. Analyse the collection rate across your country to choose the regions with highest impact (e.g., in Paris the collection rate is much lower than in rest of France). Be aware that the settings for a pilot might be different for a city or the countryside.
4. Get in touch with PROs across country borders to share learnings.
5. Get in touch with PRO in same country to assess potentials to cooperate.
6. Define KPIs to measure the success of the initiative in line with the goals. Be aware that economic viability of the initiative strongly dependent on targets set e.g., the target collection volume, or consumers reached.
7. Consider tracking and monitoring the devices collected within a pilot separately from the regular collection, to be able to assess the success of the pilot.
8. Define your target audience: Target audience depends on the type of incentive and can range from school children to teachers, office workers, retail customers but also WEEE dismantlers or recyclers. Suitable communication is required for each target group.
9. Communicate your pilot and more specifically communicate it in an easy way and repeatedly.
10. Define the actors (municipalities, schools, retailers etc.) that should be part of the pilot and specify their role(s).
11. Inclusion of retailers in collection schemes and their goodwill and engagement can be improved through contribution by the schemes to cover costs involved in meeting the legal takeback obligations (e.g., space required for collection receptacle and safe WEEE/ waste battery storage, trainings for staff, information material for customers).
12. Consider contracting local consultants/local coordinators/ local project managers for increasing active involvement of local actors in activities.
13. Test your hypotheses before scaling up and perform small-scale test before large-scale tests. In most cases a pilot is an investment and does not necessarily bring the expected results.
14. If the pilot aims for prepare for re-use of WEEE, handling and transport must be designed to ensure devices don’t break and transparent data handling and safe deletion must be guaranteed.

15. Make sure that (open/unsecured) collection points are not subject to theft and that recipients are not misused (e.g., filled with residual waste) through adequate design.

7.4 Links to further initiatives

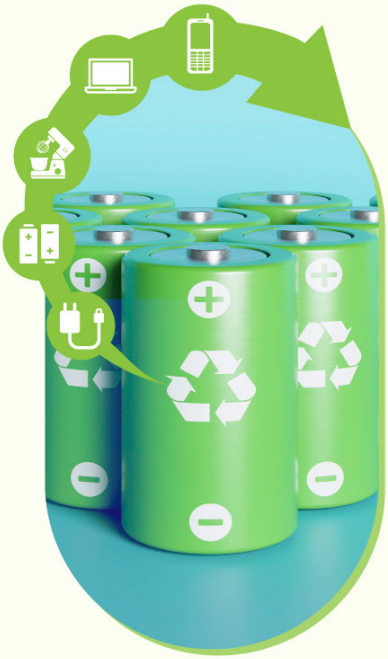
The present report describes a selection of best practices identified (mainly) among PROs which were willing to contribute to this activity. However, other PROs and other actors (individual producers, and distributors) have worked on initiatives which allow increasing the collection volumes of small WEEE and portable batteries and accumulators and to incentivize consumers to return their devices. To address this, we list below other initiatives that might be worth a look.

Incentive types	Links to further initiatives from PROs and other actors
Reward incentives	How to get rid of your unwanted tech | Currys (UK) Batteries: Corepile proposes to pay communities for collection (actu-environnement.com) (FR) Take your battery back to Lidl... and win! – Screlec (FR) 10 tons collected! Prize-giving of the contest To your batteries, collect, win with the SYBERT! – Screlec (FR) Plopsa Schools 2023 | Bebat (BE) Big small hunters for batteries | AFIS (GR) REDOIT From unwanted IT equipment to revenue (RO) Instant price: CLEAN CITIES FAIR THURSDAY, SEPTEMBER 25-30 - ECOTIC (RO) Raffles: CLEAN COMMONS CUMPĂNA 14 - 15 SEPTEMBER 2023 - ECOTIC (RO)
Convenience incentives	Electroreturn | Deutsche Post and Alba Postal Service - discontinued (DE) Remobile project (CZ) Secure collect (DK, SE, NO) Jedonnemontelephone.fr (Igivemyphone) (FR) Recolha porta-a porta (Door to door collection) (PT) Cleaning Slovakia (SK)

	E-deratization“ campaign (SK - B2B) Form - I want mini battery container - ECOTIC (RO)
Other incentives	Mobilisation pour le Téléthon : Srelec lance la campagne 1 Pile = 1 don (handirect.fr) (FR) The Nostalgia Magic Tour (nostalgie.be) (BE) Fair und zirkulär - Althandys retten Jungaffen (Fair and circular - Old mobile phones save young monkeys) (AT) Quartel Electrão (PT) Escola Electrão (PT) School Recycle games (SK) Waste is useful (SI) ECOTIC CARAVAN - ECOTIC (RO) Social Reuse – ECOTREL (LU) Follow your lead – WEEE Ireland (IE) “Bosque Gratitud para Nuestros Mayores” “Forest gratitude for our elder” - RECYCLIA (ES)

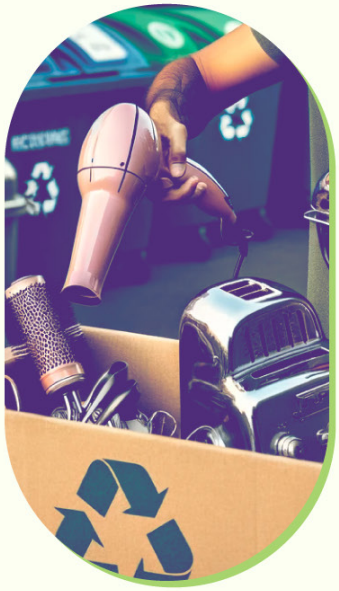
ECOSWEEE

Enhancing collection of small W/EEE and batteries



DELIVERABLE D2.1

BEST PRACTICE COLLECTION INITIATIVES BOOKLET

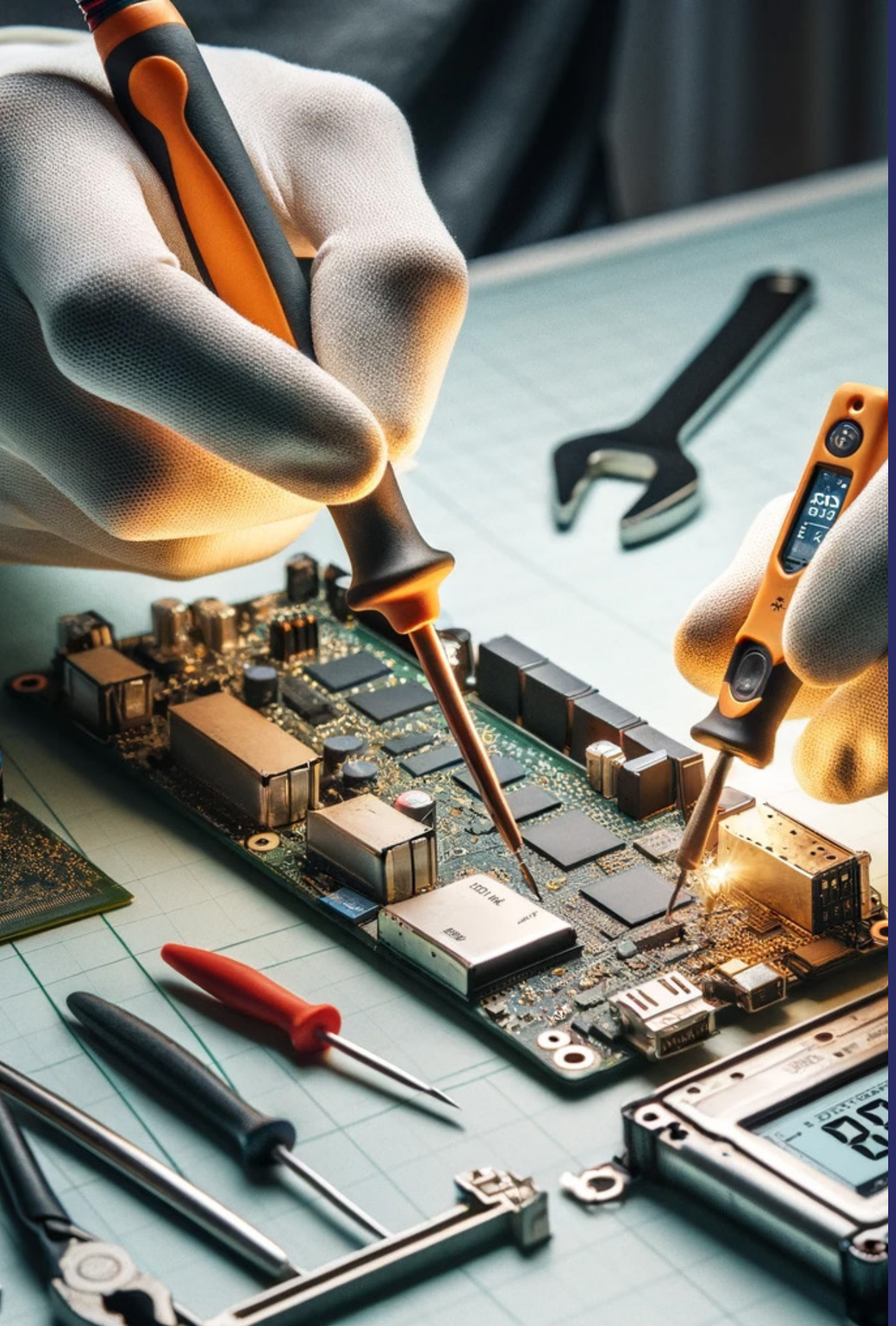


DATE - 17.11.2023

This project is co financed by the LIFE Programme 2021-2027 of the European Union for the Environment and Climate Action under the project number 101104443 - LIFE22-PLP-BE-LIFE-ECOSWEEE.

ABBREVIATIONS

Abbreviation	Definition
B2B	Business to Business
B2C	Business to Consumer
BE	Belgium
CENELEC	European Committee for Electrotechnical Standardization
CH	Switzerland
DE	Germany
EC	European Commission
EEE	Electrical and Electronic Equipment
EoL	End of Life
EPR	Extended Producer Responsibility
ES	Spain
EU	European Union
EUR	Euro
FR	France
IE	Ireland
IT	Italy
kg	Kilogram
KPI	Key Performance Indicator
MS	Member State
MT	Malta
NL	Netherlands
NO	Norway
p4r	Preparation for reuse
PAYT	Pay as You Throw
PC	Personal Computer
PRO	Producer Responsibility Organisation
RO	Romania
SI	Slovenia
UEEE	Used Electrical and Electronic Equipment
UK	United Kingdom
UNITAR	United Nations Institute For Training and Research
WEEE	Waste of Electrical and Electronic Equipment



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PARTNERS

Partners	
WEEE FORUM	Waste Of Electrical And Electronical Equipment Forum Aisbl - WEEE Forum (Belgium)
UNITAR	United Nations Institute For Training And Research (Switzerland)
SPI	Sociedade Portuguesa De Inovacao Consultadoria Empresarial E Fomento Da Inovacao Sa (Portugal)
RAMBOLL	Ramboll Deutschland GmbH (Germany)
ECO	Erion Compliance Organization Scarl (Italy)
ECYCLE	Appliances Recycling S.A. (Greece)
ECOTIC	Asociația Ecotic (Romania)
ELECTRÃO	Electrão – Associação De Gestão De Resíduos (Portugal)
GRS Batterien	Stiftung Gemeinsames Rucknahmesystem Batterien (Germany)
Stichting OPEN	Stichting Organisatie Producentenverantwoordelijkheid E-Waste Nederland (Netherlands)
ZEOS DOO	Zeos Ravnanje Z Elektricno In Elektronsko Opremo Doo (Slovenia)
WEEE Ireland	Waste Electrical And Electronic Equipment Ireland (Ireland)
Ecologic	Ecologic (France)
Ecosystem	Ecosystem (France)
Recupel	Recupel Aisbl (Belgium)
RENAS AS	Renas As (Norway)
Stiftung SENS	Sens Foundation (Switzerland)

CHAPTER 1

INTRODUCTION

INTRODUCTION

This booklet describes selected best practice initiatives for the collection of small WEEE and portable batteries implemented within Europe. It is aimed at inspiring producers, PROs and distributors of EEE and batteries, and policy makers in the organisation of similar initiatives.

WHAT IS CONSIDERED "BEST PRACTICE"

At the beginning of this work stands the question of what to consider best practice for the collection of small WEEE and batteries in the context of this report. For this purpose the following key criteria have been defined and at least one of them has to be fulfilled by a collection initiative to be considered best practice:

1. The collection initiative and/or campaign complement and go above the legally mandatory requirements of 1:1 and 1:0 collection (for large and small equipment respectively) for distributors.

2. The collection initiative and/or campaign targets a specific group of actors (i.e., households, companies, schools, etc.) through one or multiple of the following incentive types: financial incentives, convenience incentives, other incentives to improve collection rates of small WEEE and/or batteries.

3. The collection initiative and/or campaign actively engages relevant stakeholders such as producers of WEEE/batteries, distributors of WEEE/batteries, public authorities, and decision makers, to improve collection rates of small WEEE and/or batteries.

It should be noted that success rates of collection initiatives measured through KPIs such as collection volumes were not taken into account for the selection of best practice initiatives, as they were not comparable across incentives implemented in different MS and across different incentive types.
It should furthermore be noted that the best practices identified and presented in the following have been designed in the context of specific national legislation, markets, culture, and geographies and might work differently in other national or regional contexts. This brochure is therefore intended as an inspiration and encouragement to develop and test collection practices in other Member States.

CLASSIFICATION AND PRESENTATION OF INITIATIVES

- Collection systems based on reward incentives offer an economic benefit or gain to the user in return for small EEE/WEEE and batteries handed in. Such benefits or gains are not limited to monetary compensation but can also include coupons, reductions, refunds etc.

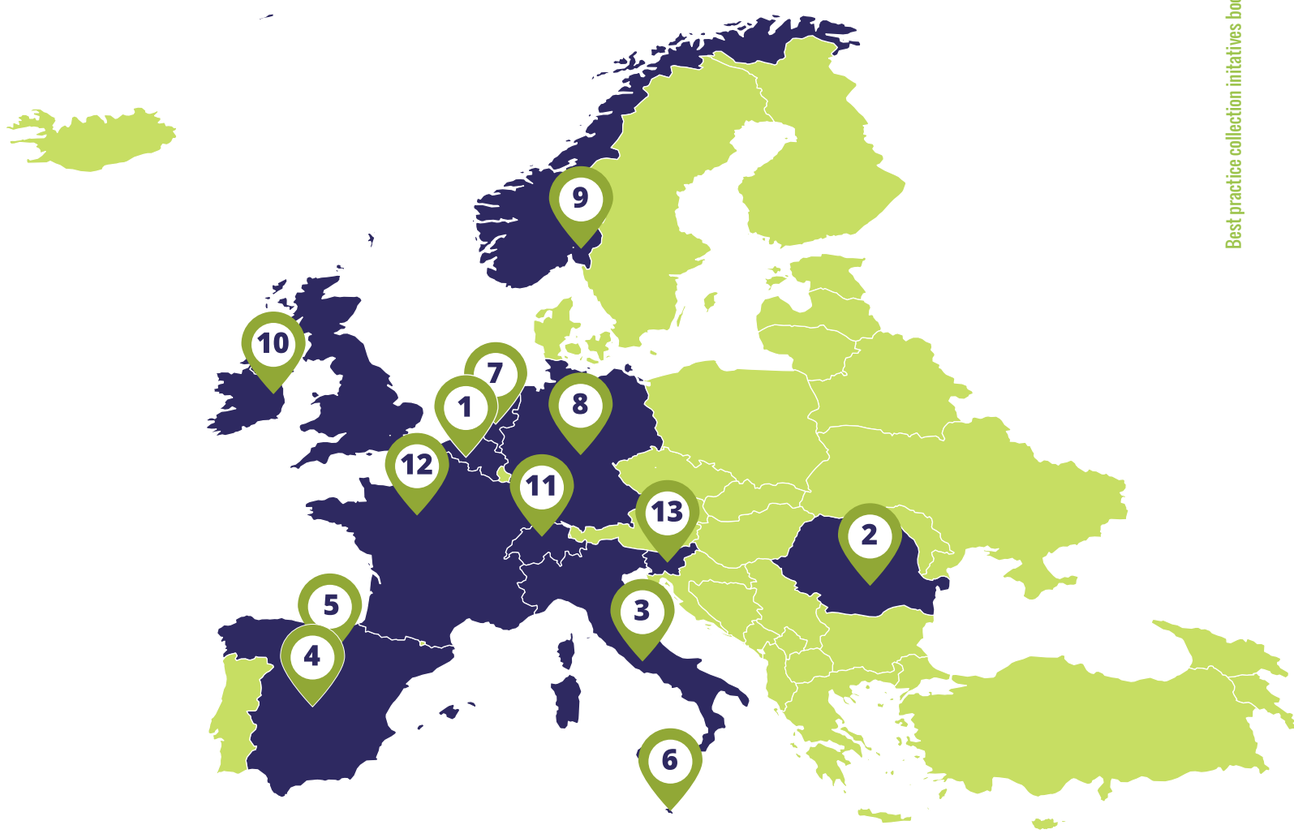
- Collection systems based on convenience incentives contain elements that aim to make the handing in of small EEE/WEEE and batteries practically easier or less time-consuming i.e. convenient for individuals or organisations, and thus more attractive. Examples are pick-up services, drop-off points, hand-over location search engines (online) etc.

- Collection systems based on other incentives are either connected to charity, other good causes or contests which may bring individuals or organisations to hand-in their small EEE/WEEE and batteries. This may also include additional

The analysis has shown that in the case of the selected initiaitives the third category ('other incentive') is always linked to the first ('reward incentive') or second ('convenience incentive') category. Therefore, the following chapters are only divided into 'reward incentives' and 'convenience incentives' both including other incentives as well. Other benefits such as 'awareness raising' are included in these chapters as well.

In the presentation of the initiatives in the following chapters, special attention is given to enabling factors for the success of the initiatives as well as challenges encountered, and lessons learned to facilitate replication of the initiatives and pilot projects in different EU MS. The assessment of scalability and replicability is based on the qualitative evaluation of stakeholders during the interviews and is not based on further data evidencing the claims. Scalability is the ability of a system to grow larger, while replicability is the ability of system to be duplicated at another location or time.

GEOGRAPHICAL OVERVIEW OF BEST PRACTICE INITIATIVES



Initiative name

1 Deposit System by Shift (DE)
2 Little ones do great deeds' by Ecotic (RO)
3 Energia al cubo' by Erion (IT)
4 School collection by Ecopilas (ES)
5 Gestores intermedios by Ecopilas (ES)
6 Téléphones solidaire' by Ecologic France (FR)
7 ElectroBag' by SENS (CH)
8 Pick-Up' by Recupel (BE)
9 Secure boxes' by Norsirk (NO)
10 Retailer takeback by WEEE Ireland (IE)
11 Kringloopwinkel bring points (NL)
12 Trolley bring points (MT)
13 Depot container bring points (SI)

OVERVIEW OF INCENTIVE TYPES APPLIED

Initiative name	Deposit return scheme	Direct payment (monetary)	Other reward (non-monetary)	Postal service	Pick up service	Bring points	EEE donation (charity)	Visible fee	Contest/ Raffle
	Reward incentive			Convenience incentive			Other incentive		
Deposit System by Shift	x			(x)					
Little ones to great deeds' by Ecotic			x			x			x
Energia al cubo' by Erion		(x)	x						x
School collection by Ecopilas			x						x
Gestores intermedios by Ecopilas		x							
'Téléphones Solidaires' by Ecologic France				x			x		
ElectroBag' by SENS				x					
'Pick-Up' by Recupel					x				
Secure boxes' by Norsirk						x			
Retailer takeback by WEEE Ireland						x		x	
Kringloopwinkel by Stichting open						x	(x)		
WEEE Trolley' by WEEEMalta						x			
Depot container by Zeos						x			
	1	2	3	3	1	6	2	1	3
	8%	15%	23%	23%	8%	46%	15%	8%	23%

OVERVIEW OF INCENTIVE TYPES APPLIED

Initiative name	Preparation for re-use	Re-use	Recycling	B2C	B2B	Small WEEE	Used small EEE	Batteries	SCALABILITY	REPLICABILITY
	Treatment fate			Target customer		Target stream				
Deposit System by Shift		x	x	x		x	x		Medium	Medium
Little ones to great deeds' by Ecotic			x	x		x		x	Medium	High
Energia al cubo' by Erion			x	x				x	Medium	High
School collection by Ecopilas			x	x				x	Medium	High
Gestores intermedios by Ecopilas			x		x			x	Low	High
'Téléphones Solidaires' by Ecologic France	x	x	x	x		x	x		Medium	High
ElectroBag' by SENS	x		x	x		x			High	Medium
'Pick-Up' by Recupel	x		x		x	x			Medium	High
Secure boxes' by Norsirk	x	x	x	x	x	x	x		Medium	Medium
Retailer takeback by WEEE Ireland			x	x		x			Low	Medium
Kringloopwinkel by Stichting open		x	x	x		x	x		Medium	High
WEEE Trolley' by WEEEMalta			x	x		x			Low	High
Depot container by Zeos			x	x		x			Medium	High
	4	4	13	11	3	10	4	4		
	31%	31%	100%	85%	23%	77%	31%	31%		

LEGEND OF ICONS

INCENTIVE TYPES

Deposit return scheme

Direct payment (monetary)

Other reward (non-monetary)

Awareness

Postal service

Pick up service

Bring points

EEE donation (charity)

Visible fee

Contest/ Raffle

FATE OF COLLECTED EQUIPMENT

Preparation for re-use

Recycling

Re-use

TYPE OF COLLECTED EQUIPMENT

Small IT

Small Household appliances

Batteries

CONSUMER GROUP

B2B

B2C

Best practice collection initiatives booklet D2.1

CHAPTER 2

BEST PRACTICE INITIATIVES FOR THE COLLECTION OF SMALL WEEE AND BATTERIES

| REWARD INCENTIVES

BEST PRACTICE INITIATIVES FOR THE COLLECTION OF SMALL WEEE AND BATTERIES | REWARD INCENTIVES

SHIFT DEPOSIT SYSTEM (DE)

https://www.shiftphones.com/13-shiftcycles-teil-3-2/
https://shop.shiftphones.com/shift6mq.html

DESCRIPTION

SHIFT GmbH is a German manufacturer of smartphones, phablets (mix of phone and tablet), detachable notebooks, chargers, bikes and other products which focuses on producing modular, and repairable devices. With the purchase of a SHIFT device, consumers are charged with a deposit return scheme (DRS) fee which is visible on the bill. After the first life of the SHIFT device, consumers can reclaim the deposit fee, plus an extra amount depending on the state of the device.

OPERATIONS

SHIFT offers a deposit fee for its devices, which customers can claim back by sending the device to SHIFT or its repair shop. The deposit fee is a voucher (22 EUR) or cash amount (18 EUR) based on an LCA analysis. Customers may also get an extra amount depending on the device's condition and age. The device must be sent in original or similar packaging to claim the full deposit fee. Customers should charge the battery and reset the device before sending it back. SHIFT then sells or reuses the device or its parts. When the phone is refurbished or repaired, a new operating system is installed, and remaining data is deleted.

REWARD INCENTIVES
REWARD INCENTIVES

INCENTIVE TYPES

Deposit return scheme

Postal service

FATE OF COLLECTED EQUIPMENT

Re-use

Recycling

TYPE OF COLLECTED EQUIPMENT

Small IT

CONSUMER GROUP

B2C

SCALABILITY: MEDIUM

REPLICABILITY: MEDIUM

NAME OF OPERATOR: SHIFT

MAIN ACTORS: SHIFT, POST OFFICE, RECYCLERS, BATTERY SCHEME, NON-FOR-PROFIT ORGANIZATIONS (E.G., "ARBEIT FÜR MENSCHEN MIT BEHINDERUNG")

2014 - ONGOING

WHY BEST PRACTICE?

The initiative is considered best practice as it makes use of a DRS fee to incentivize customers to return their end-of-life devices.

SUCCESS RATE AND KPIS

Of the 80,000 units of SHIFT phones sold, 5,000-10,000 have been returned through the DRS system.

ENABLERS

The **financial incentive** of at least 18 or 22 euros returned encourages consumers to return their device. However, some of this can also be explained by an **environmental incentive** since many of SHIFT phone's customers may be environmentally conscious and have a high intrinsic motivation to support reuse & recycling.

Convenience return: Devices can be returned via post back to SHIFT.

SHIFT's focus on not only economic targets but environmental ones enable them to provide a solution to their customers and be responsible for their products.

SHIF's **cooperation with partners**, such as with the post office, recyclers, battery scheme, non-for-profit organizations (e.g., Afb), universities for research etc.), helps them to provide a holistic solution for their customers with the DRS.

CHALLENGES

To tackle the issue of data protection on phones, SHIFT asks their customers to erase all data and to reset their phone to factory settings. For second hand use a new operating system is installed, and remaining data is deleted.

SCALABILITY

According to SHIFT, a DRS system can be implemented and is scalable in other countries and for other products as well.

REPLICABILITY

The initiative is replicable but is highly dependent on the manufacturer's motivation.

LESSONS LEARNED

There is a difficulty to persuade customers to pay more compared to the competition as sometimes the overall benefit is not directly obvious. The more expensive devices according to the company can be justified when thinking about the DRS as also the whole circular approach of the company (repairability, social and environmental responsibility).

LINKS

https://www.shiftphones.com/en/

https://net.shift.eco/

Similar initiatives mapped

Téléphones Solidaires Postal Service (FR) (see convenience incentive section)

'ElectroBag Postal Service (CH) (see convenience incentive section)

Best practice collection initiatives booklet D2.1

LITTLE ONE'S DO GREAT DEEDS AND ECOTERRIANS (RO)

https://www.ecotic.ro/en/project/and-the-little-ones-do-great-deeds/

Ecoterrians; Source ECOTIC

DESCRIPTION

Competitions are organized in schools and kindergartens for the collection of batteries/WEEE. There are prizes associated with the competitions and the programmes also include educational pieces and lessons.

OPERATIONS

ECOTIC collaborates with municipalities and directly with schools. At the schools, local coordinators regularly follow up with the teachers and schools to increase participation. ECOTIC works with many treatment operators and chooses the one closest to the campaign/school to minimize transportation costs. The collected batteries/small WEEE is directed to recycling facilities.

REWARD INCENTIVES

REWARD INCENTIVES

INCENTIVE TYPES

- Other reward (non-monetary)
- Contest/ Raffle
- Bring points

FATE OF COLLECTED EQUIPMENT

- Recycling

TYPE OF COLLECTED EQUIPMENT

- Batteries
- Small IT
- Small Household appliances

CONSUMER GROUP

- B2C

SCALABILITY: MEDIUM

REPLICABILITY: HIGH

NAME OF OPERATOR: ECOTIC

MAIN ACTORS: ECOTIC, MUNICIPALITIES, SCHOOLS, KINDERGARTENS

01/2020 - ONGOING

WHY BEST PRACTICE?

The campaigns increase awareness in the population that batteries and WEEE should be sorted and not thrown away in the trash and help to build a relationship with the municipalities.

SUCCESS RATE AND KPIS

In the kindergarten initiatives, the weight of batteries collected increased linearly. With 200 kindergartens, 6.5 tons of batteries were collected and with 400 kindergartens, 13 tons of batteries were collected. In the last school campaign 75 tons of WEEE were collected in one school year. However, the collection amount through the campaigns is very small compared to the necessary overall collection rate. The amount collected through campaigns is less than 1-2% of ECOTIC's goal.

ENABLERS

ECOTIC collaborates closely with municipalities, and with schools directly. For the kindergarten and school, ECOTIC works with local coordinators that check in on the teachers and schools. Through this, they have seen participation rise from 80 to 250 schools (out of 300 registered schools).

CHALLENGES

One challenge is to teach people that batteries or small WEEE do not belong in the residual waste, i.e., increase of awareness level and promoting existing infrastructure of PROs is needed. With the kindergarten and school initiatives ECOTIC is raising awareness amongst the youngest in the society.

SCALABILITY

The initiatives in schools and kindergartens could be scaled up. However, it involves many logistics and in general, it is difficult to find transporters for WEEE, which is limiting the scalability.

REPLICABILITY

In principle this program could also be feasible in other countries.

LESSONS LEARNED

In schools, it is very important to have good communication to increase active involvement. It is better to motivate the schools through fixed prizes (a prize after a certain weight of WEEE and batteries are collected) instead of giving prizes to the top number of schools.

The teachers are motivated to participate because they can receive a certificate they add to their professional portfolio. The prizes are awarded after a certain number of sustainability lessons are delivered (when 6 out of 15 are completed). The teachers integrate the provided lesson plans into the green week that exists in Romanian schools anyway. Additionally, it helps for completion if a timeline is provided (e.g., finish 3 lessons before January) and for specific activities and projects to be integrated into the lesson plan.

LINKS

https://www.ecotic.ro/en/

Similar initiatives mapped

Energia al cubo by Erion (IT)

Ecopilas school collection of batteries (ES)

Best practice collection initiatives booklet D2.1

ENERGIA AL CUBO REWARD INCENTIVE (IT)

Source: Erion

DESCRIPTION

Energia al cubo is an awareness campaign on the proper collection of portable batteries and accumulators. There were four pilots preformed in four regions of Italy that consisted of a battery collection challenge between municipalities, citizens or schools. The winners received a prize.

OPERATIONS

For the pilot challenge between municipalities, 6 were chosen and were provided with boxes by Erion. The boxes were then taken to a collection point in each municipality and weighed. This pilot was done in cooperation with the municipal waste collection company.
The pilot challenge between citizens was also done in cooperation with the municipal waste collection company. Citizens were given 2 months to take their batteries to a municipal collection point and the 100 citizens that gathered the most won prizes, paid for by Erion. There was also collaboration with local media outlets to advertise the initiative.
The pilot challenge between schools was also done in cooperation with the municipal waste collection company. Students were taught about WEEE and recycling, and then the schools competed against each other to win prizes for the school. The collected batteries are directed to recycling facilities.

REWARD INCENTIVES
REWARD INCENTIVES

INCENTIVE TYPES

Other reward (non-monetary)

Contest/ Raffle

Awareness

FATE OF COLLECTED EQUIPMENT

Recycling

TYPE OF COLLECTED EQUIPMENT

Batteries

CONSUMER GROUP

B2C

SCALABILITY: MEDIUM

REPLICABILITY: HIGH

NAME OF OPERATOR: ERION

MAIN ACTORS: ERION, MUNICIPALITIES, MUNICIPAL SECTORS (E.G., WASTE MANAGEMENT COMPANY, SCHOOLS), CONTRACTORS

02/2022 - 12/2022

WHY BEST PRACTICE?

Energia al cubo is considered a best practice as it significantly increased the collection rate in the regions it was performed.

SUCCESS RATE AND KPIS

Compared to the same time period in the year before, each pilot project area saw an important increase in collection rate (measured in mass): Florence (+10,85%), Rimini area (+29,00%), Massa Lubrense - near Naples (+195%), 6 municipality challenge in Emilia Romagna (+33%). Combined, this project increased the collection by of 32.71% (73.337 to 97.323 kg).

ENABLERS

A close collaboration with municipalities and municipal sectors (e.g., waste management company, schools) which were approached by Erion contributed significantly to the success. A separate company was contracted to support coordinating with all pilots (e.g., for setting up info points) and to ease Erion's work.

CHALLENGES

The challenges that came with the initiative include organization, logistics, and collaboration with the municipalities. This includes, for example: where to put the ecopoints (includes both collection centres and information communication centres) while ensuring safety, and how to organize the project itself. Erion was also faced with economic challenges include financing the ecopoints

SCALABILITY

The initiative is scalable but if repeated in the same area, the collection rates will vary, probably resulting in less collection. The schools or municipalities included in these challenges should then be varied.

REPLICABILITY

The replicability is assumed to be high, especially because other member states have done similar projects as well (BE; RO; ES; etc).

LESSONS LEARNED

Although the pilots allowed to increase the collection, the pilots are heavily costly (e.g., costs for communication activity, communication materials, coordination, collection boxes, prizes, etc.)

LINKS

https://erion.it/en/

Similar initiatives mapped

'Little ones do great deeds' and 'Ecoterrians' School' by Ecotic (Ro)

Ecopilas school collection of batteries (ES)

SCHOOL BATTERY COLLECTION (ES)

https://www.ecopilas.es/en/la-segunda-edicion-de-la-campana-pilabot-ya-esta-en-marcha-en-galicia-3/

https://www.ecopilas.es/en/clubes-y-escuelas-nauticas-de-toda-espana-recogen-1-200-kilos-de-pilas-usadas-para-su-reciclaje-3/

DESCRIPTION

Ecopilas collaborates with municipalities and other PROs to set up initiatives in schools in Catalonia, Galicia, and Valencia. In these places students are encouraged to bring batteries from home to be recycled and the school that performs the best gets a prize. Ecopilas also organizes its own initiatives in some schools and some summer sailing schools. In these cases, the prize is related to sport equipment or trees that are planted.

OPERATIONS

The initiatives are set up in collaboration with the region/ municipality and other PROs. In the school initiatives the children collect batteries from home and the competition is based on the volume of batteries collected. A communication agency is also contracted to develop materials for the initiative. The collected batteries are directed to recycling facilities.

REWARD INCENTIVES

REWARD INCENTIVES

INCENTIVE TYPES

Other reward (non-monetary)

Contest/ Raffle

Awareness

FATE OF COLLECTED EQUIPMENT

Recycling

TYPE OF COLLECTED EQUIPMENT

Batteries

CONSUMER GROUP

B2C

SCALABILITY: MEDIUM

REPLICABILITY: HIGH

NAME OF OPERATOR: ECOPILAS

MAIN ACTORS: ECOPILAS, MUNICIPALITIES, SCHOOLS, OTHER PROS

2016 - ONGOING

WHY BEST PRACTICE?

Some increase of the collection volume was realized due to the initiative; however, the main positive aspect of the initiative is the increased awareness amongst participants.

SUCCESS RATE AND KPIS

Although the initiative has resulted in some increase in collection volume, it is unclear how much more is collected at schools that would not otherwise be collected at other collection sites. However, there are increases in awareness.

ENABLERS

Ecopilas works with municipalities and other PROs to run school initiatives in Catalonia, Galicia, and Valencia. The incentives are prizes, sports equipment or trees planted by Ecopilas.

CHALLENGES

Ecopilas report that a future challenge is the change in the EU battery regulation setting out that the definition of portable batteries will change from 1kg to 5kg, which increases the volumes of batteries that need to be covered by the system and poses new requirements on the collection receptacles currently in use.

SCALABILITY

The initiative does not produce the same level of results in regions where it has already been in place for several years, i.e., scalability is only feasible by changing location.

REPLICABILITY

Since similar initiatives exist, i.e., the replicability is proven.

LESSONS LEARNED

The collection rate decreases after the initiative has been in place at the same schools for many years, showing that the location of the school initiative should change semi-frequently and/or that the initiative set up should be changed every couple of years in the areas it has been established.

LINKS

https://www.ecopilas.es/en/home/

Similar initiatives mapped

‘Little ones do great deeds’ and ‘Ecoterrians’ School’ by Ecotic (Ro)

Energia al cubo by Erion (IT) (batteries)

GESTORES INTERMEDIOS BATTERY COLLECTION FROM WEEE (ES)

Source: Unsplash

DESCRIPTION

Ecopilas pays WEEE dismantlers and other professional waste collectors a fixed amount per ton of portable batteries collected.

OPERATIONS

WEEE dismantlers and other professional waste collectors are paid a fixed amount per ton of portable batteries collected. Volumes above 3 tons are incentivized with higher per ton prices. This fee also includes the handling and transport of the batteries to the battery sorting facilities.

Ecopilas has a contract with the sorting facilities through a public tender every 3-4 years. Under this contract, the sorting facilities are responsible for further processing of the batteries through a contract with a recycler that must be approved by Ecopilas.

REWARD INCENTIVES

REWARD INCENTIVES

INCENTIVE TYPES

Direct payment (monetary)

FATE OF COLLECTED EQUIPMENT

Recycling

TYPE OF COLLECTED EQUIPMENT

Batteries

CONSUMER GROUP

B2C

SCALABILITY: LOW

REPLICABILITY: HIGH

NAME OF OPERATOR: ECOPILAS

MAIN ACTORS: ECOPILAS: CONSULTANT COMPANY, WASTE COLLECTORS, WEEE DISMANTLERS/RECYCLERS

2018 - ONGOING

WHY BEST PRACTICE?

The initiative targets dismantlers that recover batteries from other waste products, especially WEEE, instead of the batteries collectors themselves.

SUCCESS RATE AND KPIS

This initiative currently makes up approximately 20% of the portable battery collection stream of Ecopilas.

ENABLERS

The fees the dismantlers receive include the cost for transporting and collecting so that Ecolpilas has no further effort or costs to receive the batteries. Moreover, the fee for the batteries is a fixed one and is not increased annually.

Initially, Ecopilas identified whom to involve through a good collaboration with recyclers and the recycler's team's contacts. After 3 or 4 years, they contracted a consultant company to do a public announcement to identify additional waste collectors and WEEE dismantlers.

CHALLENGES

A major challenge is the increasing amount of lithium batteries in the battery waste stream as they can cause fires and thus need separate containers. Ecopilas is currently developing procedures for retailers who collect lithium batteries to enable them to remain compliant.

SCALABILITY

The scale up of Gestores Intermedios is limited because they have reached many of the big waste sorters already. When the program was first implemented, Ecopilas saw increases in the collection of batteries. However now there is not much room for improvement and the volumes that are collected are quite stable.

REPLICABILITY

Since similar initiatives exist, i.e., the replicability is proven.

LESSONS LEARNED

The setup of the initiative, including pricing, is working well. However, a certain limit of scalability has been reached.

LINKS

https://www.ecopilas.es/en/home/

Similar initiatives mapped

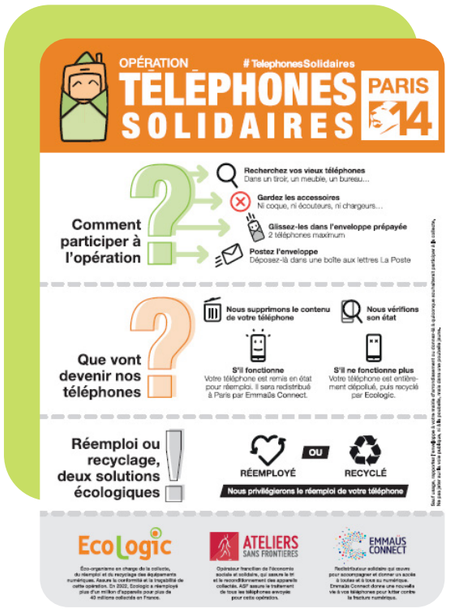
'Little ones do great deeds' and 'Ecoterrians' School' by Ecotic (Ro)

Energia al cubo by Erion (IT) (batteries)

CHAPTER 3

BEST PRACTICE INITIATIVES FOR THE COLLECTION OF SMALL WEEE AND BATTERIES | CONVENIENCE INCENTIVES

TÉLÉPHONES SOLIDAIRES POSTAL SERVICE (FR)



DESCRIPTION

The Téléphones Solidaires Postal Service initiative was a pilot and experiment for a postal service where people could send their old phones back. The experiment used a control group and a variable group. The control group received an envelope for their phones, the other group in addition could indicate whether they wanted their phone to be recycled or prepared for re-use.

OPERATIONS

The Téléphones Solidaires project was carried out with the social organization Emmaus Connect and Ateliers Sans Frontières. Ecologic provided an envelope that contained an informative flyer that was distributed, through a supplier, to each building in Paris's 14th arrondissement. Consumers could then use these envelopes to send their phones back. One group was additionally able to choose (through checking a box included in the envelope) whether their phone should be recycled or preparation for reuse (p4r).

REWARD INCENTIVES

REWARD INCENTIVES

INCENTIVE TYPES

Postal service

EEE donation (charity)

FATE OF COLLECTED EQUIPMENT

Preparation for re-use

Recycling

TYPE OF COLLECTED EQUIPMENT

Re-use

Small IT

CONSUMER GROUP

B2C

SCALABILITY: MEDIUM

REPLICABILITY: HIGH

NAME OF OPERATOR: ECOLOGIC

MAIN ACTORS: ECOLOGIC, EMMAUS CONNECT, ATELIERS SANS FRONTIERES, THE FRENCH POST, SUPPLIER TO DISTRIBUTE FLYERS

06/2023 - 07/2023

WHY BEST PRACTICE?

This initiative is considered best practice because it allows for people to send back their phones which means higher convenience for returning end-of-life devices. Moreover, the experiment has shown that leaving people a choice (ticking recycling or p4r) increases the collection rate.

SUCCESS RATE AND KPIS

Approximately 1,500 envelopes, containing approximately 2,500 phones, were sent back.

ENABLERS

There was no financial reward given to the participants but there was the ease of sending back the phone. The group that was given the choice what should happen with their phone gave back 30% more phones than the control group. This is an indication that the collection rate can be a matter of information instead of just financial incentives since people feel engaged when they can make choices.

Ecologic highlighted that partnerships are very important for the success of any project and communicating through these partners can also be valuable. For example, the communication through the city itself (i.e., through Paris's Instagram page) could be important.

CHALLENGES

Communicating to consumers how exactly data is erased, is a challenge. According to Ecologic, a booth that deletes all data right at the collection point, or a device that consumers could use to delete data on their own at home could be helpful. Hence, they would know exactly how their data is treated. Ecologic considers conducting an experiment where one group is explicitly told their data will be erased and the other is not.

SCALABILITY

The Téléphones Solidaires project is believed to be scalable. Its first iteration ended after 1.5 months, but there are plans to continue because Ecologic has now built-up strong partnerships and wants to try other settings.

REPLICABILITY

Replicability is possible in countries where the shipment of waste (electronics) by post is not prohibited by law.

LESSONS LEARNED

Through this initiative, Ecologic learned that participants were more likely to send their phones back when they were presented with the choice of what would happen to their phones (recycling or p4r). They additionally found that some of the main reasons why people chose either recycling or p4r was concerns with data protection, concerns with the environmental impacts of recycling, etc., indicating what information is considered important for consumers and could be later shared through information campaigns.

LINKS

https://www.ecologic-france.com/

Similar initiatives mapped

ElectroBag Postal Service (CH)

Shift Deposit System (DE)

Best practice collection initiatives booklet D2.1

ELECTROBAG POSTAL SERVICE (CH)

Source: SENS eRecycling

DESCRIPTION

Within the "ElectroBag" pilot each household in the Zürich and Bern area was given a plastic bag into which about 5 kg of electrical material fit. The filled bag is to put in the mailbox. From there it is collected by the postal service. In Geneva the initiative was extended to a re-use project. People were required to put a sticker on the package if the devices in it were potentially suitable for re-use (self-assessment by consumers). Moreover, reusable bags were tested. SENS eRecycling cooperated with the Swiss Post which was also interested in expanding its services and with the PRO "SWICO" for cell phone recycling. The Swiss Post is paid per kg of WEEE that is taken back through the postal service route. The pilot is now being rolled out nationwide.

OPERATIONS

The postal service was responsible for distributing information flyers and the bag into households' mailboxes. The filled bags were sent to a sorting centre where they were opened and sorted before being sent to a contracted recycler. The phones were separated during the sorting step and sent to "Kanal SWICO", the association for IT and telecommunication with a recycling department.

REWARD INCENTIVES

REWARD INCENTIVES

INCENTIVE TYPES

Postal service

Preparation for re-use

FATE OF COLLECTED EQUIPMENT

Recycling

TYPE OF COLLECTED EQUIPMENT

Small IT

CONSUMER GROUP

B2C

SCALABILITY: HIGH

REPLICABILITY: MEDIUM

NAME OF OPERATOR: SENS ERECYCLING

MAIN ACTORS: SENS ERECYCLING, SWISS POST

2021

WHY BEST PRACTICE?

The initiative is considered best practice as it targets devices that are kept at households and are usually forgotten in drawers. A secondary aim of the initiative was to increase awareness about WEEE through information that was distributed to each household.

SUCCESS RATE AND KPIS

During the pilot, an interest from the population was visible. From 100,000 distributed bags, SENS eRecycling collected 4,500 bags and recovered 6.5 tons of WEEE and used EEE.

ENABLERS

The main incentive for citizens was the easy take back with the bag which incentivized many to check their drawers and basements.
Standardized mailboxes with a flap for letter carriers facilitated implementation. As they are typical for Switzerland, other countries might not have this precondition.
SENS eRecycling cooperated with the Swiss Post which was also interested in expanding its services and was looking for new businesses, i.e., they pushed the pilot as well.

CHALLENGES

One challenge was to avoid the misuse of the bags. This is more critical in countries in which citizens must pay for residual waste disposal.

SCALABILITY

In September, SENS eRecycling will roll out the pilot on a national scale together with the post. A bag can then be ordered on demand for a cost of 5 Swiss franc (~5 EUR). For the national scale-up, the distribution of sorting and recycling centres is divided regionally.

REPLICABILITY

This initiative is not replicable in all countries, as standardized mailboxes with a flap hanging out at the bottom are not available in every country. These have significantly facilitated the implementation of the collection. The initiative would only be scalable in countries where shipment of WEEE by post is not prohibited.

LESSONS LEARNED

Reusable bags were tested in Geneva, with the idea that people should contact SENS eRecycling if interested in a bag. However, this required a higher effort from consumers and led to a lower response rate. The reusable bags (about 50 cm big) used in Geneva were quite robust, but they were much more expensive and oftentimes did not look usable after one use. Since the initiative is B2C, the aesthetic is important. Finally, it was decided not to use reusable bags anymore. Alternatively, SENS eRecycling recommends plastic bags which are recyclable or made of recycled material.
SENS also realized that a fee is needed to make the initiative economically feasible on the long run, i.e., the initiative must enable to cover costs if it is supposed to be scaled up and become a long-term project.

LINKS

https://www.ecologic-france.com/

Similar initiatives mapped

Téléphones Solidaires Postal Service (FR)

Shift Deposit System (DE)

Best practice collection initiatives booklet D2.1

RECUPEL PICK-UP (BE)

Source: Recupel

DESCRIPTION

To collect WEEE generated at offices, schools, retirement homes, etc. which was not effectively collected through existing systems, Recupel set up a free pick-up service. They communicated this new service through radio channels, printed media, and then by mailing specific schools and organizations-grouping schools once they had been identified. The campaign ran at a national level, although there was more success in big cities and less success in less densely populated areas and those with a small number of offices.

OPERATIONS

Recupel collects WEEE for free from companies and organizations through an online platform. If needed for the pick-up more information is requested over the phone. Recupel hires collectors who load the WEEE in boxes, cages, or pallets to ensure that WEEE does not break during loading in the collection boxes or the transport enabling more p4r. The WEEE goes to a transfer station, where re-use centres can select what they want. Remaining devices are transferred to a recycling or treatment facility.

REWARD INCENTIVES

REWARD INCENTIVES

INCENTIVE TYPES

- Pick up service
- Preparation for re-use

FATE OF COLLECTED EQUIPMENT

- Recycling

TYPE OF COLLECTED EQUIPMENT

- Small Household appliances
- Small IT

SCALABILITY: MEDIUM

REPLICABILITY: HIGH

NAME OF OPERATOR: RECUPEL

MAIN ACTORS: RECUPEL, RETAILERS

ONGOING

WHY BEST PRACTICE?

Recupel currently coordinates 1,500 to 1,600 collections per year, suggesting that there is a need for B2B collection services and that B2B flows are not captured well enough through standard collection channels.

SUCCESS RATE AND KPIS

The pick-up service collects 360 tons of WEEE per year, which is only 0.3% of the total collection but represents an important stream of WEEE that would likely not be collected through other collection points at municipal waste yards and retailers. The appliances recovered through the pick-up program are, on average, of better quality and are handled better than appliances from municipal waste yards and retail, which increases their potential for p4r. Local re-use and repair centres have contracts with Recupel, and a third-party agreement is set up per transfer station. The re-use/repair centres can select devices for p4r and the rest is picked up from the transfer stations by treatment operators.

ENABLERS

Recupel took the operative responsibility by becoming a middleman between the actors requesting pick-up and transporters. Initially Recupel launched the project as a matchmaking platform between actors requesting pick-ups and transporters offering pick-ups but, due to low collection rates, Recupel took on more responsibility to increase collection rates. Requesting a pick-up through the platform is simple and does not require more than basic information on volume and type of WEEE, Increasing the convenience for commercial actors. Additionally, transporters take care of safe handling and packaging of WEEE during the pick-up on-site, so companies do not have to package the WEEE themselves.

CHALLENGES

In general p4r is a challenge because of WEEE handling at collection points like municipal collection points is not handled well.

SCALABILITY

The initiative is scalable but success rate for collection may vary regionally depending on the density of existing commercial actors, offices, and schools. Therefore, a pick-up service might be more economically feasible in bigger cities than in rural areas.

REPLICABILITY

The replicability is assumed to be high, since the initiative uses elements of WEEE collection which are already available to most PROs or can be replicated without large efforts. It builds upon an online request form and uses logistics contractors who were already doing collection for the PRO at collection points such as municipal waste yards and retail. Regional clustering of collection points, like in Belgium, for pick-up has an impact on the initiative's replicability.

LESSONS LEARNED

The cost for logistic contractors (truck drivers) is higher compared to regular pick-up from collection points, due to longer time and greater work efforts at the point of collection for handling, packaging and loading of the WEEE volumes. This increased cost combined with smaller volumes and more pick-up locations led to greater costs compared to those at established collection points. However, these increased costs did not have a significant impact on the fees collected from producers due to the low volume collected.

Working closely with the transporters who package, load and unload the WEEE, as well as setting aside WEEE from pick-up for re-use centres, helps to increase the p4r rate.

LINKS

https://www.recupel.be/en/

Similar initiatives mapped

Exceed B2B (Erion, IT) (note: see report for further information on the Exceed initiative; due to unclear success rate, Exceed is not included in the present booklet)

Best practice collection initiatives booklet D2.1

SECURE BOX COLLECTION AND DATA DELETION (NO)

Source: Norsirk

DESCRIPTION

Secure box is an initiative from Norsirk offering the safe collection of PCs, tablets, laptops, memory sticks, cameras, phones etc. all over Norway. These devices are targeted as they are often forgotten about or left in drawers by the consumer. The devices are all in need of data deletion, which is done after the collection.

OPERATIONS

The boxes are set up in municipalities and at electronic shops. A transport company is contracted to collect the secure boxes. The collection happens through an online booking where Norsik can order the collection and replace the boxes. Norsik cooperates with Oslo Produksjon og Tjenester and OsloKollega to sort the devices collected in the boxes. The aim of the sorting is to separate devices for reuse from devices for recycling. This sorting is done according to the instructions from Foxway, who further process the fraction for reuse (second sorting, software deletion, cleaning, etc.) before the devices are sold. The parts that are not suitable for reuse are sent to Stena recycling or other companies for recycling.

REWARD INCENTIVES

REWARD INCENTIVES

INCENTIVE TYPES

Bring points

FATE OF COLLECTED EQUIPMENT

Preparation for re-use

Recycling

Re-use

TYPE OF COLLECTED EQUIPMENT

Small IT

CONSUMER GROUP

B2B

B2C

SCALABILITY: MEDIUM

REPLICABILITY: MEDIUM

NAME OF OPERATOR: NORSIK

MAIN ACTORS: NORSIRK, RETAILERS, REFURBISHERS AND PREPARING FOR RE-USE ORGANISATIONS

01/2012 - ONGOING

WHY BEST PRACTICE?

The targeted waste stream is WEEE that may otherwise not be collected and there is a strong emphasis on preparation for re-use.

SUCCESS RATE AND KPIS

Last year Norsirk collected 110,000 kg of WEEE with Secure Box. The reuse rate for the collected WEEE is high and even increasing. However, due to inflation and the increasing interest rate, Norsirk saw collection volumes falling this year.

ENABLERS

Norsirk tackles the issue of data deletion by using a certified system to delete data securely and offers certificates to customers. It cooperates with retailers, refurbishers, and re-use partners to ensure proper data deletion, P4R, refurbishment, and recycling. For example, the sorting for P4R is done according to instructions from the re-use partner Foxway that ensure that the sorting fits their needs and reflects the market need. Retailers are especially attractive customers as they have legal obligations according to the "Avfallforskriften" and must pay the environmental fee to secure the proper collection of devices. Norsirk does not pay citizens for devices but pays municipalities for collection and does not charge them for the leasing costs of the boxes. Norsirk promotes its service through TV and newsletters which has allowed collection rate increases by 5-10%.

CHALLENGES

Norsirk reported that they faced several challenges at the beginning of the initiative. Some challenges included placement of the secure boxes in areas with low foot traffic, leading to decreased collection rates, as well as wheels that needed to be replaced with stronger, more durable ones. There was initially also a challenge with the information package that was distributed because it was not detailed enough. Another challenge is the fierce competition to attract retailers as clients.

SCALABILITY

A scale-up is desirable for plastic containers but should remain small for steel containers as they are costly.

REPLICABILITY

Norsirk believes that the "Secure Box" is replicable because it requires 'just' adding stickers to commercially available bins along with marketing. However, a system including 24/7 monitoring, a secured area etc. to avoid theft must be set up which is more challenging to set-up.

LESSONS LEARNED

After trying several bin materials, plastic bins were chosen as they are easy to lock and move in and out of a guarded room within the municipalities. Additionally, the bins now have a lid that prevents stealing from the box. They are light and flexible enough to put them behind a service desk. Initially, the boxes had volumes of 660 and 1100 litres (equivalent to around 450 -500 kg). This, however, was too big for electronic ships and so a 360 litres size was introduced as an alternative.
Norsirk has experienced that after a new TV spot or a newsletter article from them, the collection rate increases by 5-10% and then drops again.

LINKS

https://norsirk.no/

Similar initiatives mapped

ZEOS containers

Erion Renew (IT) (note: see report for further information on the Renew initiative; due to unclear success rate, Renew is not included in the present booklet)

RETAIL COLLECTION AND VISIBLE FEE (IE)

https://www.weeeireland.ie/weee-annual-environmental-report-2022/

DESCRIPTION

More than 50% of WEEE Ireland's take-back tonnage is directly attributed to retailer take-back programs. Efforts are being made to diversify the collection portfolio from these streams, focusing on advancing small WEEE and screens through close collaboration with retail and a shift from obligation to customer service.

OPERATIONS

WEEE Ireland collaborates closely with retailers to set up collection points and to help them meet their legal obligations (incl. communication) which are stringent in Ireland. For products like white goods, screens, and lighting, where a visible fee is applicable, information about the take-back service is provided alongside the visible fee. To promote take-back services and increase general awareness, WEEE Ireland and retailers have established a joint marketing fund, which they utilize for advertising and promotional activities. The amounts collected from retail are directed to recycling facilities. Currently, WEEE Ireland do not separate UEEE for re-use or WEEE for p4r.

REWARD INCENTIVES

REWARD INCENTIVES

INCENTIVE TYPES

Bring points

Visible fee

FATE OF COLLECTED EQUIPMENT

Recycling

TYPE OF COLLECTED EQUIPMENT

Small IT

CONSUMER GROUP

B2C

SCALABILITY: LOW

REPLICABILITY: MEDIUM

NAME OF OPERATOR: WEEE IRELAND

MAIN ACTORS: WEEE IRELAND, RETAILERS

07/2014 - ONGOING

WHY BEST PRACTICE?

The initiative to involve retail strongly in the take-back of WEEE has resolved the issues of historical WEEE legacy to manage, and the lack of municipal waste yards per capita through providing collection points, and information on take-back services in retail.

SUCCESS RATE AND KPIS

More than 50% of WEEE Ireland's take-back tonnage is attributed to retailer take-back programs.

ENABLERS

The collection system in Ireland is successful because of the "Like for like" take back, the take back on delivery, the mandatory handover of WEEE, the work of the PROs, and the visible fee. The visible fee connects consumers, retailers, and producers and funds the service. The two Irish PROs, ERP and WEEE Ireland, collaborate to deliver the service. Retailers have shown a higher level of commitment after realizing that providing take-back services not only fulfils regulatory requirements but also enhances their customer service, which is valued by their customers. Retailers also benefit from a central marketing payment and contributions towards costs from the visible fee. Therefore, retailers improve their customer service and awareness by advertising the take-back message.

CHALLENGES

Distance sellers and delivery provided by third party couriers are a challenge since remuneration is paid on a per item basis instead of a per trip or day basis. The retailers support the finance of their take back logistics from the contribution through the schemes and sometimes the figures do not add up for small appliances weighing less than a few kg.
Collecting small WEEE has also been difficult. Currently WEEE Ireland provides receptacles for small WEEE and cages at the back of retailers' facilities and they are also developing additional shop floor receptacles as a supplement.

SCALABILITY

The initiative's scalability is assumed to be low since major retail players are already on-board for providing WEEE take-back as a service to their customers. The visible fee might be extended to include small WEEE (IT and small equipment) to increase awareness among customers.

REPLICABILITY

The replicability is assumed to be medium, since the initiative is based on strong cooperation between actors and a legally mandatory visible fee which serves as unifying element between retail, PROs, and customers. Introduction of visible fees on a national level is possible in theory but might be difficult to realize in the short or medium term.
Additionally, due to Ireland's smaller marketplace in comparison to other EU MS, WEEE Ireland are closer to decision makers and to authorities.

LESSONS LEARNED

Protests from customers were expected when the visible fees were initially introduced although legally the visible fee is not defined as an additional charge or levy to consumers. However, this was not the case and was largely well received and positively evaluated by customers.

LINKS

https://www.weeeireland.ie/

Best practice collection initiatives booklet D2.1

KRINGLOOPWINKEL BRING POINTS (NL)

https://www.stichting-open.org/en/ik-ben/recycling-company/

Source: Stichting OPEN

DESCRIPTION

Thrift stores give non-resalable donated EEE to Stitching OPEN for recycling.

OPERATIONS

Thrift stores (Kringloopwinkels) receive UEEE as donations and after checking basic functionality put them in the shop. Donated appliances that are not resalable because of their condition, and appliances that are not sold after a certain time (approximately 3 weeks) are handed over to Stichting OPEN for recycling. 300-400 thrift stores have a contract with Stitching OPEN. The collection through Stichting OPEN is free and thrift stores receive the same fee as retailers for operating as collection point for WEEE. A maximum of 5% is p4r. A lot of equipment is not fit for reuse because it is outdated, has a high energy requirement, etc.

REWARD INCENTIVES

REWARD INCENTIVES

INCENTIVE TYPES

Bring points

EEE donation (charity)

FATE OF COLLECTED EQUIPMENT

Re-use

Recycling

TYPE OF COLLECTED EQUIPMENT

Small IT

CONSUMER GROUP

B2C

SCALABILITY: MEDIUM

REPLICABILITY: HIGH

NAME OF OPERATOR: STICHTING OPEN

MAIN ACTORS: STICHTING OPEN, THRIFT SHOPS

ONGOING

WHY BEST PRACTICE?

The initiative increases rates of re-use of used EEE and increases overall collection rates of WEEE, as thrift stores have a double function as re-sale points and waste collection points after testing whether the used appliances can be re-sold.

SUCCESS RATE AND KPIS

The thrift stores annually collect 0.6-0.7 kg WEEE per capita and hand over 7,000-8,000 tons of WEEE per year to Stitching OPEN.

ENABLERS

The existence of thrift shops and their acceptance by the population is a key enabler for this initiative. Additionally, the provision of fees to the shops for the collection and handling of WEEE allows for close cooperation with them.

CHALLENGES

Stitching Open is in charge of collection points that StiBat has set up, which adds more collection points and complexity to their system. They are looking for ways to optimize the efficiency and cost-effectiveness of these points. Stitching Open is also exploring how to handle the new challenge of electronic vapes, which are a growing waste stream. They are considering whether setting up collection points at over 2,000 tobacco and e-cigarette stores is feasible and cost-efficient. Moreover, Stitching Open is aware that waste collection is organized at a municipal level and not at a district level in the Netherlands. This leads to a variety of practices and policies, such as the Pay-as-you-throw principle, which affect the performance of different initiatives across the country.

SCALABILITY

Scalability for this initiative is considered to be medium and depends on wider outreach of thrift stores and the possibility to return functional but used EEE as well as WEEE at their locations. The option of including p4r activities at the thrift stores is difficult due to the personnel trainings required and the need for standards for repair activities.

REPLICABILITY

The initiative is considered to be replicable in all cases where networks of thrift stores exist.

LESSONS LEARNED

About 50% of the total small UEEE donated to thrift stores returns to Stichting OPEN as WEEE. The thrift stores do not repair because they do not have the knowledge or training to do this.
If p4r is to be increased, there needs to be a safety check e.g., using CENELEC for re-use. They could give permits to companies to do such quality checks centrally and allow only those companies to do it in a safe manner. This is however opposed to the idea of local repair shop/social inclusion initiatives as they currently exist.

LINKS

https://www.stichting-open.org/en/

TROLLEY BRING POINTS (MT)

https://www.stichting-open.org/en/ik-ben/recycling-company/

DESCRIPTION

WEEE trolleys are metal-based grid boxes on wheels in which citizens can dispose of their small WEEE free of charge. WEEE Malta has purchased around 200 trolleys and installed them in Malta and Gozo. The trolleys are located in and around local councils, townhalls, schools and companies with more than 80 employees.

OPERATIONS

The trolleys are placed by WEEE Malta around local councils, townhalls, schools, and companies employing more than 80 people. Three collection companies are contracted for the emptying of the trolleys based on internal tenders. The WEEE collected in the trolleys is transferred to a contracted recycler who sorts the devices and partially dismantles them. These fractions are then exported for further treatment.
The trolleys had an acquisition cost of 510 EUR each. Additionally, each emptying and the recycling of the collected small WEEE is a cost factor.

REWARD INCENTIVES
REWARD INCENTIVES

INCENTIVE TYPES

Bring points

FATE OF COLLECTED EQUIPMENT

Recycling

TYPE OF COLLECTED EQUIPMENT

Small IT

Small Household appliances

CONSUMER GROUP

B2C

SCALABILITY: LOW

REPLICABILITY: HIGH

NAME OF OPERATOR: WEEE MTALTA

MAIN ACTORS: WEEE MALTA, LOCAL COUNCILS, COLLECTORS, CONTRACTORS, OTHER STAKEHOLDERS

2017 - ONGOING

WHY BEST PRACTICE?

Since the collection obligations are imposed on local authorities in Malta, WEEE Malta made use of the local councils to install a dense net of WEEE trolleys. The focus was on collection of small WEEE, as a separate initiative for collection of bulky WEEE together with other bulky waste exists on the island.
Although there are some locations, like schools, where there is comparably less e-waste collected, the trolleys help raise awareness and teach children about WEEE.

SUCCESS RATE AND KPIS

Between 2017 and 2023, more than 1 million small WEEE items were collected with the WEEE trolley campaign, summing up to 40-50 tons of small WEEE per year and roughly 1 ton of collected small WEEE per week in Malta.

ENABLERS

The dense net of bring points makes it convenient for consumers to dispose of their small WEEE in local council buildings, schools and companies. The system is enabled by successful collaboration with local councils, collection companies who empty the trolleys regularly collectors, and other stakeholders. Items that can be disposed of in the trolley are clearly depicted. Only small WEEE should be placed in the trolley whereas batteries and lamps are excluded. Batteries can be put in a separate box nearby that is provided by another PRO. To promote the trolleys, WEEE Malta conducts educational campaigns in schools and teaches pupils from grade 4 on how to proper dispose of WEEE.

CHALLENGES

Due to the open nature of the WEEE trolley (no lid on it), a certain percentage of the devices become target of theft and misuse of WEEE. For trolleys which are openly accessible and not part of other offices or waste yards, bottles and other misthrows are common.
The lack of contractual agreement between WEEE Malta and local councils is sometimes a challenge, since commitment to the project is potentially subject to changes during election periods and dependent of elected officials. Moreover, WEEE Malta always provides literature and infographics that the councils can share on their social media channels but not all local councils do so.

SCALABILITY

The initiative can scale, but 44 out of 68 councils are already in it. Some councils simple lack space for a trolley.

REPLICABILITY

When setting up the trolley system WEEE Malta learned from Recupel (Belgium) and WEEE Ireland who have similar bring points in place proving that the system is replicable.

LESSONS LEARNED

Theft and misuse are topics that can hinder proper collection but can be mitigated by choosing save locations for collection points such as local council buildings. Marketing is very important and councils should be taken on board to participate and to share content on relevant channels.

LINKS

https://www.weeemalta.org/

Similar initiatives mapped

ZEOS containers (SI)

Erion Renew (IT) (note: see report for further information on the Renew initiative; due to unclear success rate, Renew is not included in the present booklet)

Best practice collection initiatives booklet D2.1

DEPOT CONTAINER BRING POINTS (SI)

https://www.zeos.si/en/Equipment-for-the-collection-of-waste-and-used-products/

DESCRIPTION

Thrift stores give non-resalable donated EEE to Stitching OPEN for recycling.

OPERATIONS

Thrift stores (Kringloopwinkels) receive UEEE as donations and after checking basic functionality put them in the shop. Donated appliances that are not resalable because of their condition, and appliances that are not sold after a certain time (approximately 3 weeks) are handed over to Stichting OPEN for recycling. 300-400 thrift stores have a contract with Stitching OPEN. The collection through Stichting OPEN is free and thrift stores receive the same fee as retailers for operating as collection point for WEEE. A maximum of 5% is p4r. A lot of equipment is not fit for reuse because it is outdated, has a high energy requirement, etc.

REWARD INCENTIVES

REWARD INCENTIVES

INCENTIVE TYPES

Bring points

FATE OF COLLECTED EQUIPMENT

Recycling

TYPE OF COLLECTED EQUIPMENT

Small IT

Small Household appliances

CONSUMER GROUP

B2C

SCALABILITY: MEDIUM-HIGH

REPLICABILITY: HIGH

NAME OF OPERATOR: ZEOS

MAIN ACTORS: ZEOS, MUNICIPALITIES, PUBLIC SERVICE PROVIDERS

2016 - ONGOING

WHY BEST PRACTICE?

The initiative is considered best practice because the street containers contributed to an increase of collected small WEEE. However, since in recent years the general amount of small WEEE generated in Slovenia has increased, it is difficult to know if the waste disposed in street containers would have otherwise been dropped off at other collection points or if it facilitates small WEEE collection that otherwise would have not happened.

SUCCESS RATE AND KPIS

Overall, the street collection bins make up about 10% of the total amount of small WEEE and batteries collected annually (3,500 tons total of small WEEE). In the last years, the network of street bins was expanded from 450 containers in 2017 to 800 containers in 2023. With that, the collection through the street collection bins has increased rapidly: 20 tons were collected in 2016, 80 tons in 2017, 280 tons in 2018, 320 tons in 2019 and 380 tons in 2020. Nowadays, an average of 350 tons are collected per year. The collection rate varies per region. For example, with 140-200 kg collected per container, the coastal and mountainous regions are preforming better than other regions (100-130 kg). The difference in collection rate by region could be due to greater tourism and/or awareness.

ENABLERS

An enabling factor is the ease of disposal of small WEEE and batteries for private households. It is especially easier if the containers are placed on existing "eco-islands" where there are also collection containers for other waste streams (e.g., textiles). Through a survey, ZEOS found that the collection rate was highest when the containers were placed near containers for used textiles. ZEOS works directly with municipalities and public service providers to find locations for its collection containers. For marketing purposes, ZEOS connects with local utility companies, as it turned out that local advertisement is more successful. The street containers have a catchy design with instructions and collected items shown as stickers on the outside, which acts as its own advertising. ZEOS owns transport vehicles, which they consider particularly important as it means they own the waste they collect.

CHALLENGES

At eco-islands, sometimes waste other than WEEE is thrown into the WEEE containers when the corresponding other containers (e.g., textiles) are full. Occasionally small WEEE are also stolen from the street collection bin.

SCALABILITY

According to ZEOS, the initiative is scalable, and they are working on expanding their network.

REPLICABILITY

The initiative is replicable, as shown by the fact that ZEOS was inspired by an initiative in Czechia. ZEOS is also setting up street containers in Bosnia and Herzegovina. A PRO in Greece is also testing similar street containers.

LESSONS LEARNED

The size of the bins was determined by trial and error and now measure 1.2 x 1.2 x 1.8 m or 2.59 m3. The bins must be large to avoid emptying too frequently. Today, the collection takes place approximately every 3 months. It was also found out, that street containers near stores work less good as these sites are often owned by the stores which have demanded payment for placement. In addition, most stores already have their own collection sites and do not want more outside their doors. ZEOS also used to install mobile collection containers in front of schools, which were combined with the collection of hazardous waste from households. However, it turned out, that these campaigns are not as effective as street containers.

LINKS

https://www.zeos.si/en/

Similar initiatives mapped

Trolley bring points (MT)

Erion Renew (IT) (note: see report for further information on the Renew initiative; due to unclear success rate, Renew is not included in the present booklet)


ECOSWEEE
Enhancing collection of small W/EEE and batteries