



DTS 01/19: Assessment of WEEE collection systems and their effectiveness in other European countries

Report for Valpak Retail WEEE Services Limited

Public Version

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Executive Summary

Until recently the UK WEEE system has performed well, increasing WEEE collections dramatically since 2008 and becoming a leading nation in terms of WEEE collected per inhabitant. The UK reported a WEEE collection rate in 2016 above the EU average and has met all WEEE collection targets up to 2017, exceeding the 45% target, based on the previous three years placed on the market (POM). The UK's EPR system is also relatively low-cost, when compared to some other systems in Europe. The UK also uses substantiated estimates to help meet collection targets, whereas the research has identified that other EU countries only count WEEE dealt with through the official systems towards such targets.

The more demanding 65% collection target for 2019 is more challenging, particularly given a decline in EEE POM and declining WEEE generation (in part due to hoarding and informal reuse and because consumers may be buying new EEE products in addition to their existing EEE, rather than as replacements).

There is concern, therefore, about the UK's ability to meet the 65% collection target in 2019 and beyond. Defra has therefore set targets for 2019 that mean that the UK has to collect 58,000 tonnes more than was collected in 2018. Defra's targets show a particular need to target more small household appliances and small mixed WEEE in particular - an increase of 25% above the 2018 collection figure and 20,000 tonnes up on the 2018 target. A significant amount of this small WEEE stream is thought to be hoarded or disposed of in residual waste.

This study was therefore initiated by the Distributor Takeback Scheme (DTS) to establish how the performance of collection systems, both municipal and retail, can be improved, in particular regarding small WEEE, learning from best practice overseas. This document represents the findings of literature research, stakeholder interviews and overseas site visits, to support an assessment of WEEE collection systems and their effectiveness in other European countries, with a view to exploring options for increasing UK WEEE collection performance.

The focus of the research has sought to gather data and ascertain:

- WEEE legislation and enforcement, with a specific focus on collection and take-back;
- Principles of collection and take-back systems;
- WEEE collection and take-back performance;
- WEEE collection and take-back infrastructure;
- WEEE collected outside the official system;
- Collection and take-back costs;
- Approaches to consumer engagement; and
- Progress with tackling online traders and free riders.

E.1.1 The importance of national context

The national context of individual countries is clearly important when comparing WEEE collection systems and performance. Often there is complementary legislation in place at a national level which helps to support and drive bring systems. Pay-As-You-Throw (PAYT) schemes are used by local authorities in Belgium, the Netherlands and Switzerland, and it has also been recently introduced in Ireland, in an effort to increase recycling and reduce residual waste collected from households.

In addition to the above cited examples whereby householders are incentivised to handover WEEE via the official collection channels, in some countries this is mandatory; for example, in Switzerland and (under proposed law) the Netherlands. Several countries, including Ireland have introduced a mandatory requirement for retailers to handover all household WEEE via the compliance route. Furthermore, many of the studied countries have introduced policy and regulation with the objective of promoting and increasing WEEE collected for re-use.

Table A compares both performance and collection systems observed across those countries studied. It should be noted that several have significantly improved their collection rates since 2016 (the latest Eurostat data year), plus it's important to note that the other countries studied do not use substantiated estimates, as the UK does, to take into account recycling and reuse outside the official system. In other words, if these countries studied were to do what the UK does, their collection rates would be significantly higher as we know that there are similar issues with light iron and B2B being dealt with unofficially and unrecorded.

This is a particularly important point when benchmarking UK collection performance against its EU counterparts. Where the method of calculating WEEE collection performance is brought in line with protocols used by other EU countries (e.g. emitting estimates for WEEE in light iron), the UK is not doing as well as the official figures suggest, with collection performance at around 42%, although still broadly in line with countries such as Germany, Belgium and France.

Table A: Comparison of WEEE collection systems in countries studied

	Belgium	Finland	France	Germany	Ireland	Netherlands	Sweden	Switzerland	UK
Number of PROs	1	3	4	0	2	5 (2 B2C)	2	3	28
WEEE POM (kg/inhabitant) 3-year average 2013-2015 ²	26.7	24.1	23.3	21.5	18.9	19.1	25.4	26.8 ¹	25.9
WEEE collection rate (% 2016)	42.6%	47.3%	45.3%	44.9%	58.2%	47.9%	66.4%	60.0%	59.7
WEEE collected (kg/inhabitant) 2016 ²	10.7	9.7	10.8	8.6	8.1	8.3	13.9	14.8	14.6
% WEEE collected via retail	24%	- ³	17%	10% ⁴	56%	35%	- ⁵	16%	9% ⁶
Use of derogation option under Article 5 (2)	X	X	X	X	X	X	X	X	✓
Cost information disclosed to public (visible fee)	✓	X	✓	X	✓	X	X	✓	X
Municipal collection points	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mobile collection points	X	✓	X	X	X	X	✓	X	X
Kerbside collection	X	✓	X	X	Limited	X	Limited	X	Limited
Courier take-back collection via postal service	✓ (trial)	X	X	X	X	✓ (trial)	X	X	X
Special collection events	✓	X	✓	X	✓	✓	X	X	X
Strong focus on national consumer campaigns	✓	X	✓	X	✓	✓	X	X	X
Progress with tackling free riders	✓	X	✓	✓	✓	✓	X	X	X

¹ The Global E-Waste Statistics Partnership <https://globalewaste.org/countrystatistics/switzerland-2016/>

² Eurostat 2019 (official 2016 data)

³ Finnish retailers return collected WEEE to permanent collection points (HWRCs). PROs are unable to estimate the proportion collected via home delivery.

⁴ Transposition of the WEEE Directive only occurred in Germany in 2015, which saw the introduction of 1:1 and 1:0 take back in-stores.

⁵ In Sweden, municipalities collect from 3-4 locations in each municipality, including retail collections (rather than the PRO). The Swedish Waste Management Association (Avfall Sverige) has been approached with a view to requesting data on retail collection performance. No data has been sourced at the time of writing.

⁶ EA WEEE data 2017: 91k handed over by retailers under Regulation 43 (17%) of 525k household collected and sent to an AATF – but there was also the unobligated 119k, 269k assumed in scrap metal (some of which will have come from retailers but we don't know how much) and 57k assumed from B2B – so 91k out of 970k estimated – just 9.4%

E.1.2 Municipal collection systems and performance

In all systems, with the exception of Ireland, the municipal collection points contribute the majority of the WEEE collected, although the proportion varies very significantly across the EU. The UK currently collects approximately 65% of WEEE via municipal collection points. This can be compared against Belgium and France which deliver similar levels of WEEE collection performance via municipal collection points, 55% and 57% respectively.

Against the other countries studied, the UK has the lowest density of municipal collection points per inhabitant, very similar to that in Ireland. Significantly, following the introduction of the Irish WEEE Regulations, civic amenity site infrastructure across Ireland was deemed to be insufficient to deliver the requisite capacity and convenience for collection, hence the Irish EPA and WEEE Ireland, since 2015, have been collaborating with retailers to provide additional collection and take-back provisions. The UK also has one of the lowest densities per km² of municipal collection points – a quarter of the number per km² compared with Belgium, and half the number of France per km².

The Netherlands delivers 43% of WEEE collection via a high density of municipal collection points, however notably, it also achieves a WEEE collection performance of 35% via retail. In countries including Belgium and Switzerland, municipal collection point density is mandated⁷, whereas in France, municipalities can set up a separate collection scheme (drop-off centres) by contracting with an existing PRO. In Sweden, every municipality is required to have 3 to 4 collection options available, where households can discard their WEEE. In Finland the collection system is entirely separate from the municipal system; a mandated number of collection points that have to be provided by the Producer Responsibility Organisations (PROs).

Mobile and pop-up collection systems only contribute a small proportion towards the overall total of WEEE collected via official routes (~1% or less), with such systems inevitably incurring higher operating costs. It is worth noting, however, that for many communities in rural and island locations, mobile collections represent a means of accessing recycling points, which would otherwise be much less convenient, and require driving long distances to permanent municipal recycling points. Pop-up events, such as on a weekend market in a town centre, whilst expensive, can be helpful in terms of awareness raising and in helping residents access repair and reuse operators.

Kerbside collection is not a mandatory requirement under the WEEE Directive, and the research has identified limited examples of WEEE kerbside systems which are fully integrated within existing domestic kerbside collections, other than Sweden and the UK,

⁷ The minimum requirements for a municipality are that “90% of the population lives within a maximum radius of 5 kilometres from a recycling yard site that is accessible to them or there is at least one recycling yard in a municipality with more than 10,000 residents”.

and even here coverage is very sporadic. Discussion with a national UK waste management contractor that delivers integrated WEEE kerbside collection services provided the view that small WEEE collection via kerbside can be successfully implemented where services are incorporated with dry recycling collections (or residual).

E.1.2.1 Retail collection systems and performance

The UK is unusual (perhaps unique) in that considerable use is made of the derogation option under Article 5 (2) of the WEEE Directive, to allow distributors to help to finance local authorities via the DTS to collect WEEE free of charge, primarily through the HWRCs. None of the countries studied during the course of the research make use of the derogation set out within Article 5 (2) of the WEEE Directive.

Article 5 states that derogations may only be applied in regard to retailer take back ...
*“...provided that they ensure that returning the WEEE is not thereby made more difficult for the final holder and that it remains free of charge for the final holder” ... and where ...
“ alternative existing collection schemes are likely to be at least as effective. Such assessments shall be available to the public.”*

It is not unreasonable to suggest that taking WEEE to a relatively distant (often out of town HWRC), where the UK density is very low as noted above, is often less convenient for some consumers than taking WEEE to an in-town retailer, and impossible for those without cars. Consequently, they may be more likely to hoard or dispose of WEEE (and small WEEE in particular) in their residual bin as a result.

All countries we considered are implementing 1:1 (like for like on buying a new item of EEE) and 1:0 WEEE take back (without a new item purchase) in line with the WEEE Directive requirements, and operate a national network of in-store retail collection points. Against the countries studied, the UK has the lowest number of official retail collection points - both in terms of per capita and per km² - as well as very low municipal collection point density.

LDA take back on delivery represents a significant focus across each of the countries studied, representing over 75% of retail collection by weight in most countries. Countries including Belgium, France, Ireland and the Netherlands mandate 1:1 take back of WEEE on delivery free of charge under national legislation, going beyond the requirements of the WEEE Directive. In the UK, retailers are allowed to charge for this service, and most do. Countries including Belgium and Ireland have also extended take back on delivery to include small WEEE, which can be handed over to delivery drivers at the same time as 1:1 replacement items (something Dixons also do in the UK, whilst still charging for the larger items to be removed).

As stated earlier, Netherlands collects approximately 35% of WEEE via the retail route, despite a high density of municipal collection points (higher than the UK). Ireland also collects 56% of WEEE via retail, despite maintaining a lower density of municipal collection points than the UK. The majority of those countries studied also financially compensate retailers for providing WEEE collection services, which is typically on a cost per tonne basis, ranging from €60 - €140 per tonne.

Instore collection systems are also commonplace, both through small WEEE collection containers (often including lamps and integrated with battery and printer cartridge compartments), and over-the-counter deposit. Belgium maintains around 600 contracts with the Belgian retail sector, with over 3,000 retail collection points. Evidence suggests that in-store retailer recycling points have generally been well received by consumers, with a study showing that 40% of consumers find them to be a good supplement to a recycling point⁸. In France, distributors (including retailers) host more than 24,000 collection points for WEEE, with 15,500 for lamps. There are also 5,800 'green counters' in stores for 1:0 take back of WEEE over the counter. This all means that it is very convenient for consumers to bring their WEEE to be collected and to be able to hand it over securely.

Many of the countries studied place significant emphasis on communication campaigns as an integral enabler to support increased collection performance, including Belgium, France, Ireland and the Netherlands. Examples include WEEE Ireland's 2017 "The Year of Small WEEE" campaign to increase the collection of small WEEE. This correlated to 32% of small household compliances being collected for recycling in 2017, compared to 26% the previous year.

E.1.2.2 B2B collections

Many of the countries studied (Belgium, Finland, the Netherlands, Sweden and Switzerland) offer dual use B2B WEEE collection services, which are typically via municipal collection points, and free of charge or low cost. In the case of Switzerland, there is no distinction between B2C and B2B WEEE in its collection and financing arrangements. In the Netherlands, it is seen to be important to encourage B2B collection in the formal system so as to gather the data and allow more B2B WEEE to contribute to the overall 65% collection target, with municipal collection points accepting up to seven items of B2B WEEE per trip, free of charge.

In Belgium, businesses can return a small number of dual use WEEE items to retail collection points free of charge. The majority of DIY stores also offer designated B2B WEEE collection points for trade services, with the Belgian PRO Recupel recently launching a new B2B WEEE collection service, targeting SMEs across Belgium, which will be free of charge for participating businesses other than paying a small fee towards the logistics costs.

E.1.2.3 Courier/Mail Take-back

Countries including Belgium and the Netherlands have piloted small WEEE collections via courier and post-office delivery services, whereby households can hand over small WEEE items to delivery staff at the point of delivery of new items, free of charge. Pilots have so far proved to be challenging and not necessarily cost effective.

⁸ Communication with Recupel, July 2019

While the Belgian trial was not well received by the delivery company involved, in the Netherlands the trial showed that the postal service could accommodate small WEEE on their delivery vans (generally only a few items per round) and had room at their depot to bulk items for collection by the PRO, however the level of financial compensation sought by the delivery organisations was very high - quoted as ~€2 per item by WEEE Nederland. Feedback from WEEE Nederland suggests that collection services could be financially sustainable where delivery partners were willing to accept a lower financial rebate of €0.5 per item, although this remains costly on a per tonne basis.

E.1.2.4 Progress tackling free riders

Perhaps the most significant steps taken to address the issue of free riding is demonstrated in France, where in 2019, new obligations were announced requiring online multi-seller platforms such as Amazon to ensure that the collection and recycling of WEEE arising from products marketed and sold on such websites is properly financed. The online platforms will, by default, be held responsible if they cannot prove that a business that sells a product on their site makes an 'eco-contribution'.⁹

In Finland, producers including distance sellers must provide data annually on the volumes placed on the market in the previous year.¹⁰ There are fines for failing to register (1% of turnover); failing to report; and failing to arrange proper waste management.

The Irish WEEE Regulations are also more stringent than those typically found in other EU Countries. They require online websites to list its individual EEE producer Registration Number and require distance sellers to fulfil take-back obligations and retain records for at least two years of the amount of WEEE taken back each year.¹¹ Since the introduction of these requirements, the Irish EPA (which is funded by Producer contributions to investigate free-riding) has investigated many cases and prosecuted one company in Ireland relating to free-riding to act as a deterrent to others¹¹.

There is an acknowledgement across the countries studied that addressing the impact of free-riding is complex and challenging in the absence of further EU regulation, with no legal tools to fully address the issue. Difficulties still also persist with the compliance levels of non-EU distance sellers.

E.1.2.5 The role of communications

High performing countries studied during the course of the research place significant emphasis on the role of communication campaigns and activities to support WEEE

⁹ <https://resource.co/article/france-force-online-retailers-tackle-compliance-free-riding-13061>

¹⁰ https://ec.europa.eu/environment/archives/waste/reporting/pdf/Final_Implementation_Report_2013_2015_WEEE.pdf

¹¹ Extended Producer Responsibility and the Impact of Online Sales (OECD 2019)

[http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP\(2019\)1&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP(2019)1&docLanguage=En)

collection efforts. Evidence from WEEE Ireland's 2017 "The Year of Small WEEE" campaign correlated to 32% of small household compliances being collected for recycling in 2017, compared to 26% the previous year.

Improvements in small WEEE collection across France has been largely attributed to targeted communication campaign efforts and investment – with small WEEE increasing 18.4% between 2013 and 2014, and by 23.7% between 2010 and 2014. The experience in Belgium suggests in-store collection points can have a significant impact on consumer awareness and participation when comprehensively rolled out nationwide in collaboration with media campaigns. PRO campaigns are also often supported by national government campaigns, in addition to those delivered by municipalities (e.g. in France and the Netherlands).

E.1.2.6 Cost effectiveness

Many PROs were unwilling to divulge specific cost information due to commercial sensitivities. For the purpose of benchmarking, PROs were therefore asked to indicate how WEEE collection costs for retail and other routes compare against WEEE collection via traditional municipal collection points. The following analysis should therefore only be considered as indicative, and highly dependent on a range of factors, including retail collection point density, container size, and PRO competition issues.

Stakeholders commented as follows in regard to retail collection costs:

- "Approximately 50% more expensive than HWRC – although collection via larger retail stores (where volumes are higher) can be closer to the cost of municipal collection points;
- "Broadly similar to costs associated with municipal collection points - with the only real difference being treatment costs associated with the different mix of WEEE collected via these routes";
- "Can be cost effective, particular for larger retail establishments – although smaller shops represent a more costly option compared with HWRC."

The approach taken to retailer collections is extremely important. Some of the containers used for small WEEE and lamps are small and hence can be costly in the sense that quite regular collections of very small amounts are required. Better systems bulk the material along with larger WEEE collected over the counter and that collected on delivery. It is also important to note that small WEEE taken to retailers is often of reasonably high value, e.g. gadgets and copper-rich chargers etc.

Feedback from stakeholders on bring collection (e.g. collection events at a town market) suggests that costs can be at least 100% more expensive (i.e. twice the cost) when compared with municipal collection points since pop-up collection points need staffing all day with no guaranteed quantity of WEEE. Operational costs need to be considered alongside wider benefits, however, including awareness raising amongst citizens, with many municipalities in Belgium delivering WEEE collection events independent of Recupel, as this is considered to be an effective mechanism for engaging with the public.

The research has identified that where WEEE kerbside collection systems are not fully integrated within existing domestic collections, this is essentially cost prohibitive. However, discussions with UK waste management contractors that offer integrated WEEE kerbside services within domestic collection identified that and that over the long term is it very much at marginal cost in addition to the core collection service. This presents a case for consideration of WEEE collection via existing kerbside systems, and in particular, in locations where residents are poorly served by HWRC facilities.

E.2.0 Recommendations

In terms of distributor obligations under Article 5 of the WEEE Directive, any alternatives to retailer take back have to be as effective and as convenient for consumers. For some consumers at least (e.g. someone living in an apartment in a town or city without a car or an older person that no longer drives), an HWRC is unlikely to be as convenient as a retail outlet in a town centre.

Alternative collection routes therefore seem necessary and many of these may well be more expensive, per tonne, than the current arrangements and it seems this is something that may well need to be accepted to meet the higher targets. Some of the additional cost may fall on producers, however it seems that distributors also need to take a more active role in allowing free take back in the spirit of the WEEE Directive and as demonstrated across those countries studied during the course of this research.

E.2.1 Primary collection options

Small mixed WEEE collection integrated with domestic kerbside collection

Evidence obtained during the course of the research presents a strong case for wider integration of mixed WEEE collection via existing kerbside systems, and in particular, in locations where residents are poorly served by HWRC facilities. As noted above, integrating WEEE collection on a single-pass basis with refuse/recycling collections should be very cost effective, although it may only be suitable for items that are not data sensitive, such as lamps and small appliances.

Small WEEE collections, for selected items, should therefore be integrated into existing domestic kerbside collections nationally. Furthermore, local authorities should be incentivised to introduce kerbside collection services and collect more, by being paid a compensation sum via PROs per tonne of WEEE (by category), as is the case in many of the countries studied.

Increased retailer involvement in WEEE collection

To compliment kerbside collections, or substitute for them where they are not deemed possible or are prohibitively expensive, it seems most cost-effective to require an increased contribution from distributors including:

- On delivery: Free 1:1 take-back of new EEE, plus free 1:0 take-back of small WEEE (including lamps), offering consumers the greatest convenience (after kerbside) and also potentially avoiding the loss of white goods to less-well controlled waste routes (particularly refrigeration equipment);
- In store: Free 1:1 in all EEE stores and 1:0 of all small WEEE in all EEE sales stores (over the counter), plus larger DIY and grocery stores (containers inside the store, e.g. entrance lobbies, rather than in car parks) and potentially other outlets such as petrol stations that people visit very regularly. Clearly it does not make sense to have every store that sells just a few items of EEE per year (such as a clothing store selling watches) to have to collect WEEE, and hence it is suggested that a de-minimis should be applied in a similar fashion to the UK Batteries Regulations¹², e.g. perhaps in regard to the value of EEE sales or number of items per year by store rather than weight, which could be burdensome to calculate for each store.

This approach seems to be logical in terms of fulfilling Article 5 requirements (re. convenience vs HWRCs), consistent with battery collection (and in many countries small WEEE is collected in combined containers with batteries), and particularly useful for the collection of small WEEE, in particular lamps and data devices, the latter where people are more willing to deposit with a retailer than risk theft from a public collection, and while a small tonnage, will have a disproportionate value.

These new collection approaches need to be combined with a strong and consistent national communication campaigns and clear in-store comms. It is worth noting that ‘Visible Fees’, used in several Member States including Belgium and France (and until 2014 in the Netherlands), are thought to be helpful in ensuring that consumers return WEEE into the official systems, given that they feel that they have paid for the recycling service up-front. In terms of eco-modulation, however, it appears (not least from the French experience) that a ‘Visible Fee’ is not helpful in driving eco-design since the consumer automatically pays the fee rather than the producer, and the cost differential through eco-modulation is generally too small to have any significant impact on consumer choice.

Given an increase in retailer collection it would also be helpful for all retailers to be required to:

- Hand over WEEE to a PRO, with an appropriate compensation arrangement; or, as a minimum
- Provide data to a central body regarding WEEE collected and passed on to AAFs or other bodies (such as secondary sellers or non-AAF re-use organisations) to minimise data ‘leakage’ from the formal system.

¹² Distributors and retailers that sell or supply more than 32 kg of batteries a year must participate in the take back scheme. This involves providing a free collection point for waste portable batteries at their premises and arranging their transport to an ABTO or ABE, usually through a BCS.

As in a number of EU countries, the retailer could be treated in a similar fashion to other collectors, with a nationally agreed payment schedule. This could be set to:

- compensate for a loss of sales space where going beyond the minimum legal take back requirements under the WEEE Directive, i.e. taking back 1:0 when having less than 400m² of EEE sales area; and
- compensate for the residual value of the products (e.g. scrap value or resale value), where handing over WEEE to a PRO.

B2B WEEE collection

All of the countries studied provide some form of provision for collecting dual use B2B WEEE free of charge, which is usually via municipal collection centres. Switzerland makes no distinction between B2C and B2B in its collection and financing arrangements, and the Netherlands allows a certain number of B2B WEEE items per visit to an HWRC. In Belgium, businesses can return a small number of dual use WEEE items to retail collection points. Opening up existing HWRCs to businesses in regard to un-obligated B2B WEEE should significantly increase the capture of this WEEE in the official systems and reduce reliance on substantiated estimates. Dual use B2B would count towards PRO household targets while any other WEEE would still be counted towards the overall national target. It may be necessary to compensate the PRO for dealing with this un-obligated B2B WEEE that isn't dual use.

This approach should be supported via targeted local and national communications, as in the case of Belgium, which provides information to businesses and trade services (plumbers, electricians etc.) to increase awareness and provide guidance on collection points available locally.

Convenient and low-cost collection options for B2B WEEE should be investigated more broadly. Options may include pilots funded via the WEEE Fund. The 'Smartloop' collection service currently being piloted in Belgium provides one example of a collection system where businesses are only required to cover the costs of logistics.

Postal/courier take back for online sales

Pilots to evaluate the effectiveness of WEEE collection via courier/postal service in Belgium and Netherlands have (so far) not been considered to be cost effective, however this is largely due to the courier partners involved not having the appropriate collection and reverse logistics systems in place at the point of the trial and/or wanting an unrealistic level of financial compensation.

A UK WEEE courier/Royal Mail collection pilot is recommended to assess and evaluate the potential effectiveness and role in supporting WEEE collection, with a particular focus on online sales, with post-back as an alternative option for online sellers to be trialled for effectiveness. We would also suggest that the DTS is only available in the future as an opt-out for online sellers, given the suggested mandatory role of retailers noted above. It is recognised that carriers may require waste carrier licenses and licenses and driver training for the carriage of dangerous good (e.g. equipment

containing batteries and hazardous substances). In the trials undertaken in the Netherlands the quantities per round are small and hence small secure containers on the outside of delivery vehicles can be used to help minimise the risk.

E.2.2 Complimentary activities to support collection

The expansion and investment in targeted national communications campaigns represents a prerequisite to support the primary collection options discussed above. This should be centrally coordinated and managed under guidance from Defra and the Devolved Administrations, and consider minimum financial contributions from PROs, in order to:

- Provide practical information on where and how to recycle, and include motivating reasons to recycle – including product category specific guidance;
- Make people aware of where the convenient collection and drop-off points are in their local area; and
- Address data security to overcome barriers to the hoarding of data devices.

Whilst it should be noted that no studies evaluating the impact of ‘Visible Fees’ on consumer behaviour have been identified during the course of the research, we believe that very visible and engaging point-of-sale WEEE take-back communications should be introduced across all retail stores in the UK – including messaging adjacent to electrical appliances sold in store, on sales brochures and literature, websites and sales receipts.

Additional options for expanded communication activities, with a focus more on awareness raising than tonnage, include:

- A focus on schools – drawing on examples of school specific communications within countries studied, options include the development of PRO funded materials on the importance of WEEE recycling, to be used as part of the national curriculum, and a national ‘WEEE-race’ collection competition aimed at encouraging school children to work with the local community to compete for prizes;
- PRO funded bring collection events in partnership with local authority and re-use partners as part of an expanded programme of local communication activity, aimed at improving awareness and encouraging reuse and repair.

Contents

- Executive Summary i**
- 1.0 Introduction13**
 - 1.1 Purpose..... 13
 - 1.2 Approach 13
- 2.0 The UK context: where we are today15**
 - 2.1 Overview of the UK WEEE collection system 15
 - 2.2 UK WEEE collection performance 15
- 3.0 WEEE collection performance18**
 - 3.1 The importance of national context 19
 - 3.1.1 *Methods used to calculate WEEE collection performance* 19
 - 3.1.2 *Pay-as-you-throw legislation*..... 19
 - 3.1.3 *Visible fee on new electrical product purchases* 20
 - 3.1.4 *Mandatory and contracted requirements on retailers to handover WEEE*.... 21
 - 3.1.5 *Drivers for reuse* 21
- 4.0 Municipal collection systems and performance22**
 - 4.1 Municipal collection point density22
 - 4.2 WEEE collected via municipal collection points25
 - 4.3 Municipal collection point open hours 26
 - 4.4 Other municipal collection systems 26
 - 4.4.1 *Bring/special collection events*..... 26
 - 4.4.2 *Mobile collection points* 28
 - 4.4.3 *Kerbside systems* 28
- 5.0 Retail collection systems and performance31**
 - 5.1 WEEE take-back in line with WEEE Directive 31
 - 5.2 WEEE collection performance via retail 31
 - 5.2.1 *Take back on delivery* 33
 - 5.2.2 *WEEE collection via courier service* 33
 - 5.3 In-Store take back 34
 - 5.3.1 *In-store container systems* 39

5.3.2	<i>Back of store collection</i>	40
6.0	B2B collections	42
7.0	WEEE collected via unofficial routes	44
8.0	Progress tackling free riders	46
9.0	Communication campaigns in studied countries	49
9.1	Communication expenditure	49
9.2	Impact of the visible fee	49
9.3	National campaigns	50
9.4	Retail specific campaigns	50
9.5	Competitions	51
9.6	Pop-up events	51
9.7	School campaigns	52
9.8	Campaigns led via other actors	52
9.9	Use of technology and social media	52
9.10	The importance of communications - Ipsos Mori Consumer Attitudes Survey	53
9.10.1	<i>Introduction</i>	53
9.10.2	<i>Main findings</i>	54
9.10.3	<i>Survey conclusions</i>	56
9.11	Impact of in-store communications and take back	58
10.0	WEEE collection costs	59
10.1	Financial compensation paid to collectors	59
10.2	Additional costs	61
10.3	Collection cost comparison by collection route	62
11.0	Summary and Recommendations	64
11.1	Primary collection options	65
11.1.1	<i>Small mixed WEEE integrated with domestic kerbside collection</i>	65
11.1.2	<i>Increased retailer involvement in WEEE collection</i>	65
11.1.3	<i>B2B WEEE collection</i>	67
11.1.4	<i>Postal/courier take back for online sales</i>	68
11.2	Complimentary activities to support collection performance	68
11.2.1	<i>National WEEE communication campaign</i>	68
11.2.2	<i>Enhanced role of Point of Sale communications</i>	69

11.2.3	<i>Expanded communications focus with schools</i>	70
11.2.4	<i>Communications and incentives for students</i>	70
11.2.5	<i>Bring collection events</i>	70
11.2.6	<i>Mobile collection points for rural and low population density areas</i>	71
APPENDICES		73
	Literature review of selected countries	75
A.1.0	Introduction	75
A.2.0	Belgium	77
A.3.0	Finland	89
A.4.0	France	96
A.5.0	Germany	111
A.6.0	Ireland	121
A.7.0	Netherlands	134
A.8.0	Sweden	147
A.9.0	Switzerland	155

1.0 Introduction

1.1 Purpose

This study was initiated to establish how the performance of collection systems, both municipal and retail, can be improved, in particular regarding small WEEE, learning from best practice overseas. This document represents the findings of literature research, stakeholder interviews and overseas site visits, to support an assessment of WEEE collection systems and their effectiveness in other European countries, with a view to exploring options for increasing UK WEEE collection performance. The focus of the research has sought to gather data and ascertain:

- WEEE legislation and enforcement, with a specific focus on collection and take-back;
- Principles of collection and take-back systems;
- WEEE collection and take-back performance;
- WEEE collection and take-back infrastructure;
- WEEE collected outside the official system;
- Collection and take-back costs;
- Approaches to consumer engagement; and
- Progress with tackling online traders and free riders.

1.2 Approach

Criteria used to support select target countries of focus included those countries which:

- Are achieving higher than average collection rates for WEEE;
- Are making progress towards the WEEE Directive 2019 collection target of 65%;
- Have collection systems other than via municipal collection points (e.g. retail, bulky, mobile, kerbside);
- Have a mandatory take-back obligation;
- Are exploring approaches to tackling free-riding related to online sales;
- Have adopted interesting approaches to increase collection rates, including consumer communication campaigns;
- Operate under one compliance scheme¹³;
- Have producers (rather than municipalities) operate primary collections.

In discussion with Valpak Retail WEEE Services and Defra, countries selected for research included:

- Belgium;
-

¹³ Selection of countries which operate under one compliance scheme was considered useful on the basis that access to data of relevance was more likely to be possible (due to reduced commercial confidentiality concerns).

- France;
- Finland;
- Germany;
- Ireland;
- The Netherlands;
- Sweden; and
- Switzerland.

A range of information sources have been reviewed and evaluated for usefulness and relevance to the research brief, including websites, reports, studies, grey literature, and electronic academic journals. Following literature research, interviews were undertaken with PROs and government representatives across target countries, with a view to clarifying literature findings and gathering performance data specific to different collection models and systems.

Site visits were also conducted in August 2019, with a view to understanding how municipal and retail WEEE collection systems work in practice. Those countries visited included Belgium, Ireland, the Netherlands and Switzerland.

2.0 The UK context: where we are today

2.1 Overview of the UK WEEE collection system

EU Directive 2012/19/EU is an “extended producer responsibility” directive, and the UK WEEE regulations follow this principle whereby the producers of electrical and electronic equipment (EEE) have responsibility for the environmental impact of their products when they become waste.¹⁴ The UK Waste Electrical and Electronic Equipment (WEEE) Regulations were first introduced in 2006 and also subsequently replaced to reflect the recast Directive in 2013¹⁵. The Regulations are designed to ensure that the UK meets the EU targets for addressing the environmental impact of WEEE, encouraging its separate collection, reuse, treatment, recovery and environmentally sound disposal.

WEEE collection and treatment from Designated Collection Facilities (DCFs) is the responsibility of Producer Compliance Schemes (PCSs), although not all PCSs collect. The UK has a form of market system, whereby evidence of WEEE reprocessing can be issued by an AATF (Approved Authorised Treatment Facility) or an AE (Approved Exporter) to a PCS (acting on behalf of an obligated business). Some PCSs only undertake contracting to acquire evidence from collections of others rather than actually collecting themselves trading.

2.2 UK WEEE collection performance

The WEEE Directive 2012/19/EU sets EU Member States a WEEE collection target of 45% of WEEE arisings (based on the average weight of EEE placed on the market (POM) in the three preceding years¹⁶) from 2016 to 2018, and this has risen to rise to 65% in 2019.¹⁷ The recast Directive changes the classifications of WEEE from 10 categories to only six (although the UK still uses the 14 for compliance purposes), and there are revised targets

¹⁴ Clarity (2019) The Waste Electrical and Electronic Equipment Regulations 2013 summary, accessed 8th July 2019, <https://weee.clarity.eu.com/legislation.php>

¹⁵ GOV UK (2018) Guidance - Regulations: waste electrical and electronic equipment (WEEE), accessed 8th July 2019, <https://www.gov.uk/guidance/regulations-waste-electrical-and-electronic-equipment>

¹⁶ Calculated on the basis of: - the total weight of WEEE collected; and - the average weight of EEE put on the market in the three preceding years.

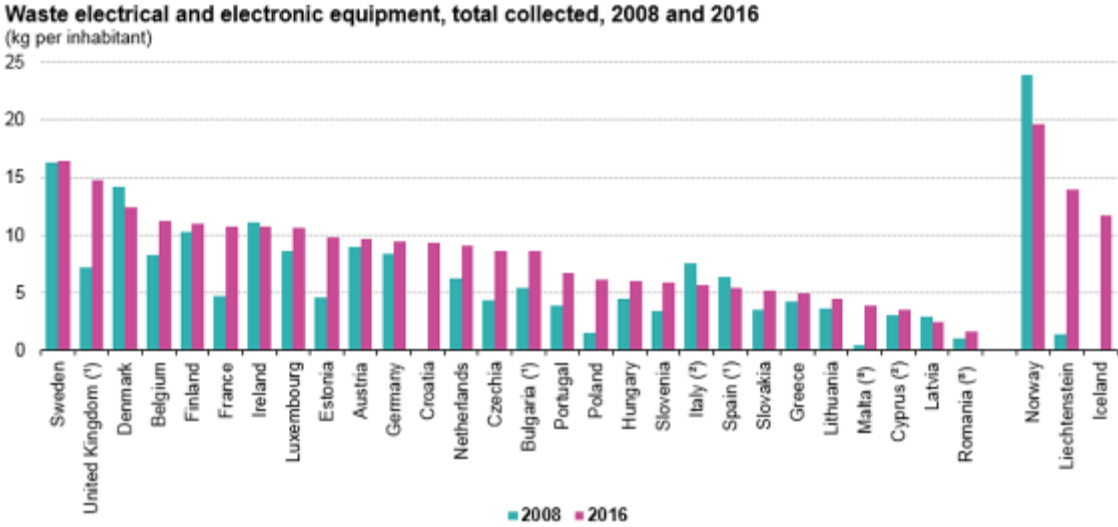
¹⁷ From 2019 onwards, the European Commission has given Member States two methods for reporting WEEE collection rates. Member States will be able to choose which one of these two equivalent ways to measure the target they wish to report. More information can be found here:

<https://ec.europa.eu/eurostat/documents/342366/351758/Target-Rates-WEEE/b92a549c-7230-47ba-8525-b4eec7c78979> accessed 9th October 2018.

for these categories in terms of recovery and recycling (of the separately collected WEEE) from January 2019 onwards.^{18 19}

Until recently the UK WEEE system has performed well, increasing WEEE collections dramatically since 2008 and becoming a leading nation in terms of WEEE per inhabitant, although also a leader in EEE consumption.

Figure 1: Eurostat data – collected WEEE per inhabitant



Recent statistics for separately collected household WEEE show that the UK collected a total of 493,323 tonnes in 2018²⁰, which falls short by 44,500 tonnes of the UK 2018 target for household WEEE of 573,065 tonnes set by Defra.²¹ This is a continued trend from recent years, and in 2017 the UK collected 522,901 tonnes of household WEEE, some 100,000 tonnes below the 622,033 tonnes household WEEE target for the year.²² The collected tonnages dropped in 2018 compared to 2017, thought to be the potential result of less EEE by weight being placed on the market (light-weighting and market saturation in some product categories) and consumer hoarding of some items (notably small ICT equipment).

¹⁸ Eurostat (2015) Summary document of the Waste electrical and electronic equipment rates and targets, <https://ec.europa.eu/eurostat/documents/342366/351758/Target-Rates-WEEE/b92a549c-7230-47ba-8525-b4eec7c78979>

¹⁹ GOV UK - The Waste Electrical and Electronic Equipment Regulations 2013, accessed 8th July 2019, <http://www.legislation.gov.uk/ukxi/2013/3113/schedule/11/made>

²⁰ GOV UK (2017) Statistical data set- Waste electrical and electronic equipment (WEEE) in the UK, accessed 8th July 2019, <https://www.gov.uk/government/statistical-data-sets/waste-electrical-and-electronic-equipment-weee-in-the-uk>

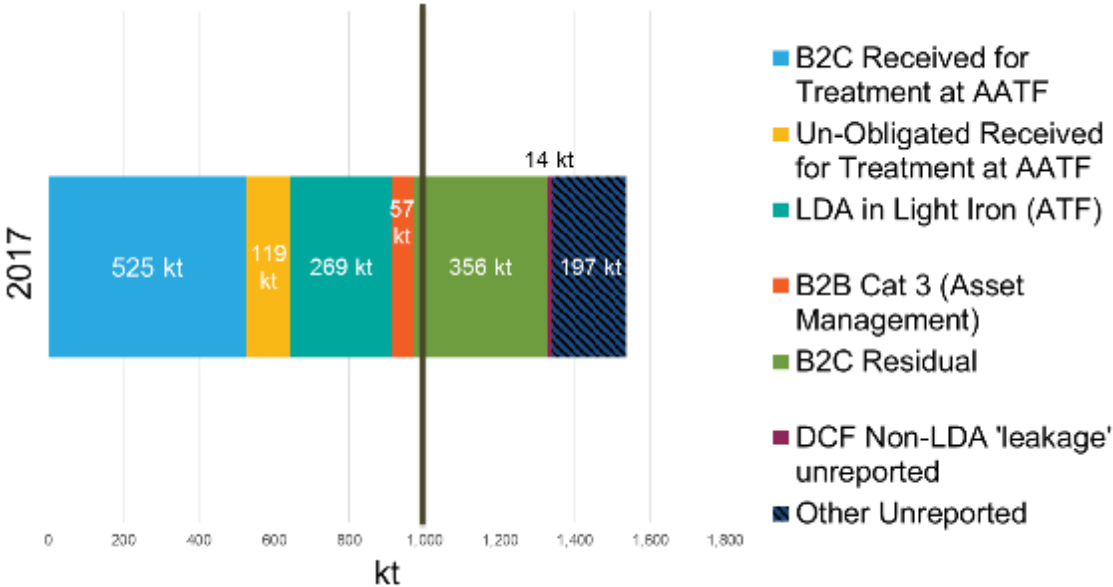
²¹ Environment Agency (2019) WEEE collected in the UK by PCS's Data, accessed 8th July 2019 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/786012/WEEE_collected_in_the_UK.ods

²² Resource (2018) WEEE Collections fall short of 2017 Targets, accessed 8th July 2019, <https://resource.co/article/weee-collections-fall-short-2017-targets-12450>

The Valpak/WRAP EEE Flow study²³ (as updated in 2018) noted that: “In order to achieve a 65% of EEE sales target the UK will need to collect 1,079kt of WEEE in 2019. Yet only including projected reported tonnage together with estimates of additional tonnage in which we have a high degree of confidence, namely LDA in light iron and B2B IT unreported treatment, will see the UK achieve a collection tonnage of 1,003kt collected. If there is a sufficient level of confidence in 44% of the other unreported tonnage (76kt) to allow it to be used as substantiated estimates, then the UK will meet its 2019 target.

Two studies commissioned as a consequence of the UK EEE Flow 2016 report, namely ‘Study on illegal WEEE thefts from DCFs’ and ‘Study on unreported treatment of Waste Electrical and Electronic Equipment (WEEE)’ may increase the confidence of a proportion of the unreported recycling which can help the UK achieve the 2019 target.”

Figure 2: WEEE Quantities as treated and remaining for separate collection (2017)



The overall PRO household collection target is set at 550,577 tonnes for 2019, which means that the UK actually has to collect 58,000 tonnes more than was collected in 2018. Whilst PROs can bridge any household target gaps using the Compliance Fee, that will not help the UK meet its obligations. The 2019 targets set by Defra show a particular need to target more small household appliances and small mixed WEEE in particular - an increase of 25% above the 2018 collection and 20,000 tonnes up on the 2018 target. A significant amount of this WEEE stream is thought to be currently hoarded or ends up in residual waste.

²³ EEE Flow 2018 Update Report (2018) Valpak on behalf of WRAP <https://www.valpak.co.uk/more/material-flow-reports>

3.0 WEEE collection performance

This section presents a summary and discussion around the collection performance across the countries studied. Collection performance by country is presented in Table 1, and represents the most up to date officially reporting statistics on collection rates as reported by Eurostat in 2019.

Table 1: Summary of relevant statistics - Eurostat 2019 (2016 data)

Country	PoM EEE (kg/inhabitant) 3-year average (2013-2015)	Collected WEEE (kg/inhabitant) 2016	Collection Rate WEEE (%) 2016
Belgium	26.7	10.7	42.6
Finland	23.3	9.7	47.3
France	24.1	10.8	45.3
Germany	21.1	8.63	44.9
Ireland	20.0	9.4	58.2
Netherlands	19.1	8.3	47.9
Sweden	25.7	14.0	66.4
Switzerland	26.8 ²⁴	16.0	~74.0 ²⁵
UK	25.18	14.66	59.7

Discussion with PRO representatives in each of the countries has sought to identify further progress on collection performance, since the officially reported 2016 figures. Whilst not all stakeholders were able to provide more recent data than the published Eurostat figures:

- Belgium – Recupel (which is the only PRO in Belgium) reported 10.3 kg/inhabitant in 2018 – reflecting a 0.4% decrease in kg/inhabitant overall – citing reasons for the overall reduction as being partially due to devices becoming smaller and lighter;
- France - ECO-systèmes (which holds a 75% share of the B2C WEEE collection market) delivered a collection rate of 52% in 2017;
- Ireland - WEEE Ireland delivered a 65% collection rate/10.2kg per inhabitant in 2018 (specific to collection it is responsible for - 75% of the B2C market share);
- Netherlands – in 2018 WEEE collection rates have increased to 49% (or 54% if excluding PV panels);

²⁴ Global E-Waste Statistics Partnership <https://globalewaste.org/countrystatistics/switzerland-2016/>

²⁵ Prospecting Secondary raw materials in the Urban Mine Project, 2017. . <http://www.prosumproject.eu>.

- Sweden – El-Kretsen (which holds a 99% share of the WEEE collection market) reported a collection performance of 14.29 kg per inhabitant in its 2018 Annual Report, and is still exceeding the 65% collection rate (around 69% in 2017).
- Switzerland – collects 74% of the POM according to the ProSum report²⁶. Swico claim a 90%+ collection rate for electronics/ICT equipment is calculated as the POM from 8 years ago (to reflect average ICT EEE life) for all ICT EEE POM vs. what Swico collect via the various channels. It is quite likely that the POM values are low across all categories since online sales are not well understood and imports from neighbouring countries are known to be substantial, particularly for white goods, TVs etc.

3.1 The importance of national context

The national context of individual countries is clearly important when comparing WEEE collection systems and performance. Often there is complementary legislation in place at a national level which helps to support and drive bring systems. In addition, many of the countries studied have a long tradition of the use of bring systems. Countries including Sweden have national WEEE collection and take-back legislation that pre-dates the WEEE Directive. This section therefore summarises some of the particular factors identified as being of particular relevance to individual countries WEEE collection systems and performance.

3.1.1 Methods used to calculate WEEE collection performance

Of particular significance is the fact that many of the countries studied do not use substantiated estimates, as the UK does, to take into account recycling and reuse outside the official system. In other words, if these countries studied were to do what the UK does, their collection rates would be significantly higher than declared as we know that there are similar issues with light iron and B2B being dealt with unofficially and unrecorded.

This is a particularly important point when benchmarking UK collection performance against its EU counterparts. Where the method of calculating WEEE collection performance is brought in line with protocols used by other EU countries (e.g. emitting the inclusion of WEEE in light iron), the UK is not doing as well as our figures suggest, with collection performance at around 42% in 2016. The reality in 2018 (i.e. reported EA data) was 502kt collected and treated at AATFs (B2C and B2B), versus a POM figure (average over 2015 to 2017) of ~1,707kt (B2C and B2B) i.e. a reported collection rate of just 29% (excluding substantiated estimates).

3.1.2 Pay-as-you-throw legislation

Pay-As-You-Throw (PAYT) schemes are used by local authorities in Switzerland, Belgium and the Netherlands, and the approach has been recently introduced in Ireland, in an

²⁶ Prospecting Secondary raw materials in the Urban Mine Project, 2017

effort to increase recycling and reduce residual waste collected from households. There are numerous different methods of applying PAYT schemes, with the part of the fee related to the choice / behaviour of residents linked either to:

- The size of container chosen by the household
- The frequency of collection of a given container
- The application of a fee per sack used
- The weight of waste set out for collection; or
- A combination of the above

In many cases, the variable element is applied only to residual waste collection. As a rule, those areas which have introduced PAYT have seen an increase in recycling and a reduction in residual waste when compared to neighbouring regions with flat fees for waste services. However, not all schemes perform in the same way; for example, schemes based solely on bin capacity do not bring about the same level of benefits as those based on weight or frequency of collection.

In Belgium, the PAYT includes spot checks and fines for householders failing to separate recyclables. In Germany, parts of the Netherlands and Belgium, PAYT charge less for recycling than for residual waste. In the Netherlands, the use of PAYT by municipalities has been shown to reduce the occurrence of WEEE in residual waste by 50 percent.²⁷ The Netherlands is also currently introducing new legislation which will come into force in 2021, and will require its citizens to handover WEEE via the official compliance scheme route. This change to Dutch law forms part of a broader series of actions for achieving a 65% collection rate for WEEE, under the Netherlands Action Plan²⁸.

Switzerland also operates a PAYT system, using 35 litre bags which are quite thin and not suitable for heavy items such as WEEE. In combination with a mandatory requirement for consumers to take back WEEE to a designated location, a Swiss eagerness to recycle, and 6000 collection points overall, this has resulted in close to zero WEEE being deposited via the municipal solid waste (MSW) route according to EMPA, the national laboratory.

Sweden reportedly has a WEEE composition in the residual waste of approximately 0.12% (60% of the hazardous fraction of 0.2%)²⁹ compared to ~2.0% for the UK³⁰.

3.1.3 Visible fee on new electrical product purchases

Whilst not used in the UK, visible fees are used in a number of countries including Belgium, France and Ireland (and the Netherlands previously). Separate identification of the fee means consumers is believed to help drive consumer awareness and increase

²⁷ Huisman, J., Maesen, M.V.D., Eijsbouts, R., Wang, F., Baldé, C., and Wielenga, C. (2012) The Dutch WEEE Flows

²⁸ Telephone interview with WEEE Nederland, July 2019

²⁹ Data from El-Kretsen, August 2019

³⁰ Update from Richard Peagam at Anthesis, September 2019

WEEE recycling via retailers since they feel they have pre-paid for the service at the point of sale. If consumers are more aware that there are costs associated with disposal, they may also possibly be more inclined to consider whether the item can be reused.

3.1.4 Mandatory and contracted requirements on retailers to handover WEEE

Countries including Ireland have introduced a mandatory requirement for retailers to handover all household WEEE via the compliance route. This is supported by a strong enforcement regime, with the Environmental Protection Agency (EPA) responsible for ensuring retailers provide correct documents and records of take-back (discussed in more detail in Section 5) with WEEE Ireland providing a financial contribution towards such enforcement activity. In Belgium, the Netherlands and Switzerland, retailers have to hand over WEEE under contract to the PRO (although not all retailers are necessarily contracted).

3.1.5 Drivers for reuse

Many of the studied countries have introduced policy and regulation with the objective of promoting and increasing WEEE collected for re-use.

In Finland, the Government Decree on WEEE stipulates that, for a PROPRO to be approved, it must make arrangements with operators to promote reuse and the preparation of reuse.³¹ It is consequently reported that PROs in Finland must have a contract with preparation for reuse organisations, which should mean there are formal connections to divert EEE from waste treatment.³² In Ireland, approved re-use organisations have a legal right of access to separately collected B2C WEEE at PROPRO collection points. Ireland's regulations seek to promote access to WEEE that has been appropriately stored and transported so that it is suitable for repair and re-use.³³ France requires its PROs to work with reuse operations such as the national federation of social enterprises, Envie³⁴.

This compares with the Region of Wallonia in Belgium, which has introduced a separate target for reuse. The Walloon Government Decree requires 2% of WEEE to be prepared for re-use annually from January 2020. The target covers six categories of waste appliances.³⁵ ³⁶ Reuse centres are located at a number of recycling parks, with visual

³¹ Decree 519/2014 - <https://www.finlex.fi/fi/laki/ajantasa/2014/20140519>

³² Bipro (2017) *WEEE Compliance and Promotion Exercise*. Final report for the European Commission. December 2017.

³³ Bipro (2017) *WEEE Compliance and Promotion Exercise*. Final report for the European Commission. December 2017.

³⁴ <https://www.envie.org/>

³⁵ <https://www.rreuse.org/belgian-region-sets-re-use-target-for-electricals/>

³⁶ <http://www.rreuse.org/wp-content/uploads/AGW-DEEE-publication-moniteur.pdf>

inspection of appliances to identify electrical equipment suitable for reuse, including items which can be repaired.

4.0 Municipal collection systems and performance

This section summarises analysis of municipal collection point performance across the countries studied. All countries operate manned municipal collection points for WEEE.

4.1 Municipal collection point density

Table 2 summarises the total number of municipal collection points across each of the countries studied, including collection points per inhabitant and per km².

Table 2: Municipal collection points across studied countries – per inhabitant and km²

Country	Country population 2019	km ² 2016	Total municipal collection points	Municipal collection points per 100,000 inhabitants	Municipal collection points per 1,000 km ²
Belgium	11,467,923	30,668	566	4.94	18.5
Finland	5,517,919	337,547	450	8.16	1.3
France	67,028,048	549,060	4,700	7.01	8.6
Germany	83,019,214	358,327	7,500	9.03	20.9
Ireland	4,904,226	70,601	90	1.84	1.3
Netherlands	17,282,163	37,824	500	2.89	13.2
Sweden	10,230,185	449,896	600	5.86	1.3
Switzerland	8,542,323	41,285	600	7.02	14.5
UK	66,647,112	247,763	1,130 ³⁷	1.70	4.6

³⁷ All municipal DCFs

Figure 3: Municipal collection sites per 100,000 inhabitants

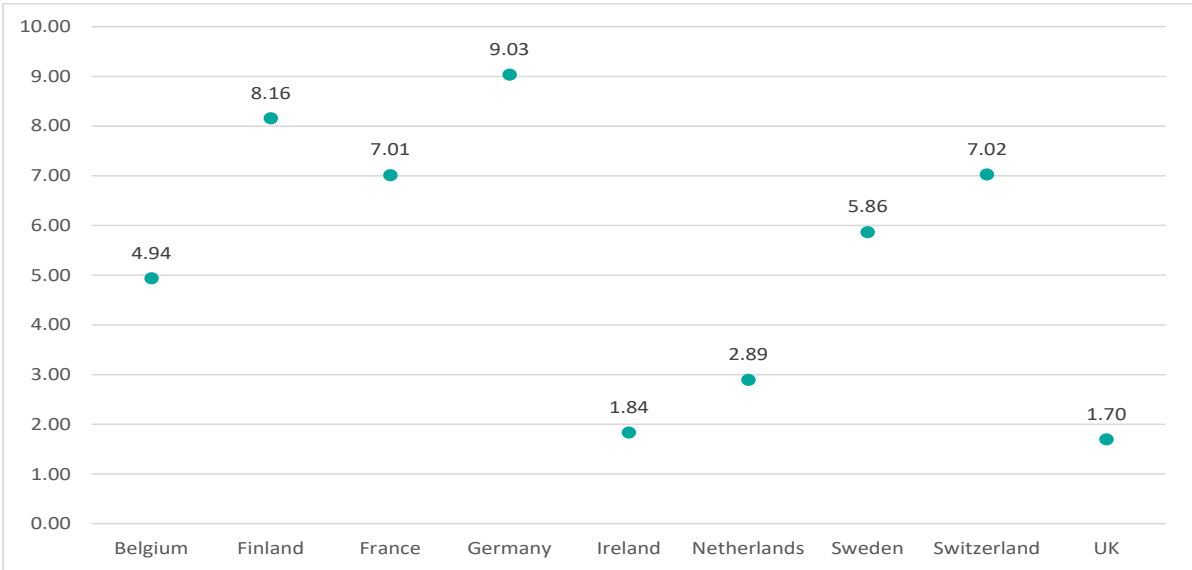
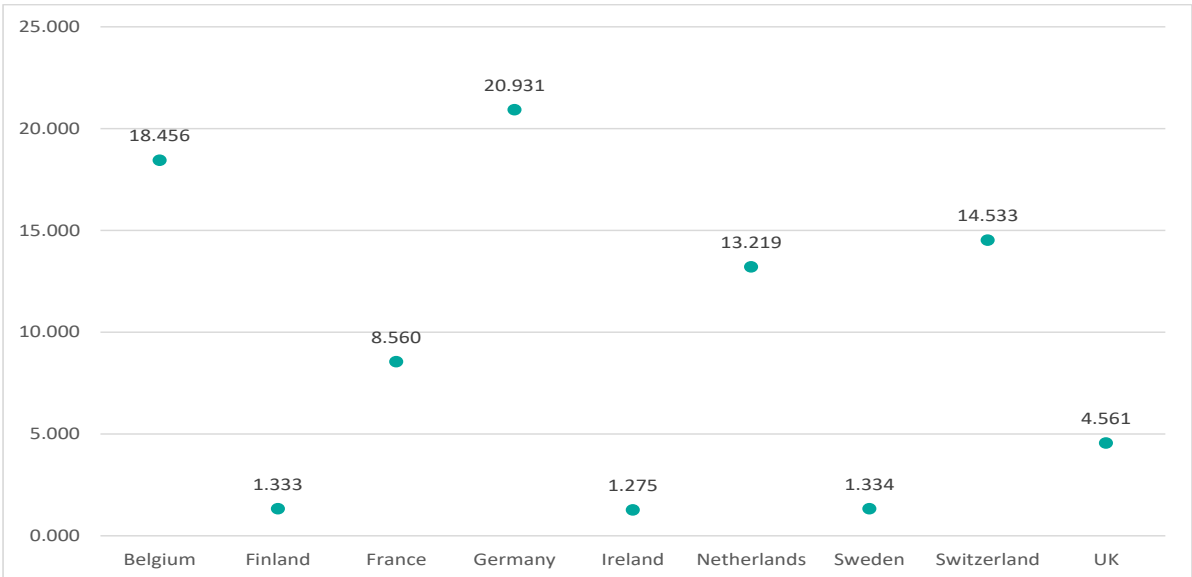


Figure 4: Municipal collection points per 1,000 km²



This analysis indicates:

- The UK has the lowest density of municipal collection points (DCF HWRCs) per 100,000 inhabitants (1.70), followed by Ireland (1.84) – however the Republic of Ireland has a much higher coverage and density of retail collection points (discussed in Section 5);
- France (which has a similar population to the UK), with 4,700 collection points, has approximately four times the number of municipal collection points (per habitant) than the UK;
- Germany has the highest coverage of municipal collection points – both in number (approximately 7,500) and per inhabitant (9.03) – and five time the number of the UK (per inhabitant);

- Whilst Belgium and Switzerland have approximately half the number of municipal collection points against the UK total, both countries outperform the UK on a per km² basis with Belgium providing four times the number of sites, and Switzerland providing three times the number of sites.

Many of the above countries also either mandate minimum levels of municipal collection point accessibility for inhabitants, or incentivise municipalities to set up additional collection points via financial compensation arrangements. For example:

- Belgium - Flanders' Waste Management Plan requires municipalities to ensure that 90% of municipality inhabitants have access to a recycling park within 5km, whilst a municipality of 10,000 inhabitants should ensure that recycling parks are accessible to all inhabitants. An additional recycling park is a requirement for municipalities of over 30,000 inhabitants³⁸.
- Finland - legislation requires a minimum of 450 permanent collection points, with at least one in each community, which helps ensure access to WEEE collection facilities for rural communities. Mobile collection systems for WEEE have also been established in Finnish municipalities with a low population density, which are potentially more convenient for consumers.
- France - municipalities can set up a separate collection scheme (drop-off centres, collection districts) by contracting with an existing PRO. They will receive compensation for collection costs. By the end of 2014, 97% of French citizens had access to such a selective collection system for WEEE through 4,700 treatment centres. The payment to the local authorities is calculated by taking into account the tonnages collected as well as all the costs related to communication operations³⁹.
- Sweden - every municipality is required to have 3-4 collection options available, where households can discard of WEEE. The majority of municipalities have several different collection systems for WEEE, including municipal recycling centres, retail collection points, mobile collection systems, and kerbside collection systems. The co-operation between local authorities and producers is considered to be the main success factor for the Swedish WEEE collection system. The majority of municipalities have several different collection systems for WEEE, including municipal recycling centres, retail collection points, mobile collection systems, and kerbside collection systems. Sweden currently achieves a collection rate of ~66%, which exceeds the 2019 EU target.

In summary, all of the countries studied have a higher density of municipal collection points - aside from Ireland, noting that it introduced national retail collection points in recognition of the limitations of national civic amenity site provision - with all countries

³⁸ WEEE Compliance Promotion Exercise (DG ENV 2016)

³⁹ file:///eun-fs01/company/Projects/Live%20Client%20Projects/Valpak%20-%20DTS/Stage%20%20-%20Literature%20review/France/WEEE%20France_vf.pdf

also offering additional forms of collection via retail and (in some cases) kerbside, bring site and mobile collection (discussed further in Section 5).

4.2 WEEE collected via municipal collection points

Table 3 summarises the contribution of municipal collection points to the overall WEEE collection performance in countries studied. Municipal collection point performance has largely been obtained through discussion with PRO representatives in each country.

Table 3: WEEE collection via municipal collection points in countries studied

	Total WEEE collected (all routes, tonnes 2016) ⁴⁰	% collected via municipal collection points	WEEE collected via municipal collection points (tonnes, 2016)	WEEE collected via municipal collection points – kg/inhabitant
Belgium	127,680	55%	70,224	6.12
France	721,949	57%	411,511	6.14
Germany	782,214	83%	649,238	7.82
Ireland	51,303	29%	14,878	3.03
Netherlands	154,675	43%	66,510	3.85
Switzerland	134,000	~74%	99,160	11.61
UK	971,321	65%	631,359	9.47

At the time of writing, it has not been possible to obtain accurate estimates of Finland’s WEEE collection performance via municipal collection points. Under the Finnish system, PROs rather than municipalities, have the responsibility to collect WEEE - although municipalities are contracted to manage approximately 80% of the country’s permanent collection point network. Under this system, WEEE collected 1:1 via home delivery (mainly LDA) is often returned to the country’s collection points (as opposed to retail transfer stations or stores). Finland stakeholders do not report on, and have been unable to estimate the proportion of WEEE collected via take back on delivery, from that collected by members of the public using permanent collection points directly.

Accurate estimates of WEEE collected via Sweden’s municipal collection points is also unavailable at the time of writing. In Sweden, WEEE collection via retailers is routed via the municipalities, and it has not been possible to obtain firmer estimates for WEEE collection via the Swedish Waste Management Association, Avfall Sverige, at the time of writing. In all other instances (other than Ireland), municipal collection points represent the main route through which WEEE is collected. Furthermore:


- Belgium – of the total 55% collected WEEE via this route, only 29% of this total is LDA, with the majority of LDA collected via official routes arising from 1:1 retail take back. Municipal collection points are also responsible for 73% of TVs (CRT and flat panel), with recycling park remaining the most predominant route for small WEEE collection, 70%.

⁴⁰ Eurostat http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_waselee&lang=en

- Netherlands - municipal collection performance (43%) reflects a higher proportion of WEEE collected via retail, but also the fact that approximately 40,000 tonnes of reported WEEE collection arising through private collection via WEEE recyclers directly.
- Germany – the 83% collection rate for municipal collection points reflects the most up to date figures as provided by the Germany Federal Ministry of the Environment. Germany was of the latest Member States to transpose the WEEE Directive 2012/19/EU, which came into force under national legislation in October 2015. Consequently, limited data is available on the impact of the introduction of take back requirements of collection rates via municipal collection routes.

4.3 Municipal collection point open hours

It is also worthy of note that many of the countries studied operate longer municipal collection point opening hours than the UK (typically 9am to 7pm in the summer and until 5pm in winter) - including Switzerland, where a proportion of its facilities are accessible 24 hours a day, seven days a week, and in some instances are privately run (i.e. on a commercial basis, as opposed to being contracted on behalf of a municipality).



24-hour access municipal collection points

In Switzerland, some municipal collection points can be accessed 24 hours a day, seven days a week. Outside of standard working hours, WEEE items can be deposited via a 'drive-by' system, including WEEE. Longer operating hours provide more convenience for citizens, with a proportion of these facilities privately run. Whilst privately run facilities do charge for certain waste streams (e.g. residual), there are no charges for WEEE, since collection and recycling costs are already 'pre-paid' through the Advanced Recycling Contribution (visible fee).

The level of municipal collection point accessibility and convenience can be compared to the UK position, whereby many local authorities are restricting HWRC opening hours as a consequence of austerity and cost-cutting measures.

4.4 Other municipal collection systems

4.4.1 Bring/special collection events

In addition to the more traditional forms of municipal collection infrastructure, the research has identified examples of mobile collection initiatives, and often operated by PROs in collaboration with municipalities, and the waste management and re-use sector. Examples include 'Recupel on Tour' (Belgium), with similar 'pop-up' events delivered by WEEE Ireland, and Eco-Logic and ECO-systèmes (France).

Bring events – “Recupel on Tour”

Recupel launched its mobile collection campaign in 2013 - ‘Recupel on Tour.’ In collaboration with municipalities, waste management companies and the third sector, Recupel has delivered approximately 40 events per year since the campaign launched,

The operational model is typically a container which visits different urban locations, including town centres and markets on a rotational basis. This is supported by a communication campaign, which informs inhabitants that a container will be available at a defined location and date, for depositing household WEEE.

Recupel has invested significantly in the communication campaign to raise awareness, and is considered to be a successful method of collecting household WEEE. The costs to Recupel include communication costs, with local authorities covering the cost of containers.

Equipment is tested at the location, to determine suitability for reuse, with reusable equipment segregated, and destined for resale via third sector. In 2015, these bring events delivered 94 tonnes of collected e-waste – a total 12,000 discarded items – of which 33 tonnes was deemed suitable for re-sale/re-use.



Year	Number of events	Tonnes collected
2013	38	122
2014	48	159
2015	36	97

“The difference compared to recycling parks is that the inhabitant can combine their weekly visit to the local market with the handover of WEEE.”

“If you invite the consumer to hand in, they are willing to do it. We learned that the higher the convenience to hand in, the better consumers use it.”

Peter Sabbe, Recupel CEO (July 2019)

Such initiatives only contribute to a small proportion of WEEE collected via the official system – typically less than 1% - and the system overall has comparably higher fixed costs, against both retail and municipal collection routes (discussed in Section 10). Yet the objective here is often to raise awareness and educate citizens, and forms part of

committed communication campaigns. In France, mobile collection events represent a significant proportion of its communications budget, and it considers the activity to be an effective method of providing information to the public.

In Belgium, many municipalities continue to deliver mobile collection events independently of Recupel (although it still covers communication costs) due to the perceived value it offers in engaging with citizens locally.

4.4.2 Mobile collection points

Mobile collection points are also used to service the collection of WEEE across rural and low density populated municipalities, in countries including:

- Finland - infrastructure includes a collection vehicle which picks up from rural/densely populated regions, including Islands once or twice a year. It typically services locations with 1,000 inhabitants (or tourist regions that may rise to 5,000 inhabitants in summer months), with collections occurring May – Sept (i.e. during the peak summer season). Collection vehicles also collect other waste streams including car batteries, oil and paint, which is popular with inhabitants, who are made aware of the collection rounds at certain times of the year. Vehicles typically stay in one location for two hours, before moving on to the next location (approximately 10-15km between each pickup point) and returning to a central collection point.
- France – whilst not uniform across all coastal and rural regions of France, research has identified examples of mobile collection point servicing rural and coastal locations including in Brest, on France’s north-west coast, which held a two-day event waste collection event was held in 2016⁴¹.
- Sweden – where mobile recycling centres are fairly common. These are manned mobile centres that accept hazardous waste, some bulky waste and also WEEE. These mobile centres visit permanent collection points according to a schedule.

Mobile collection systems only contribute a small proportion towards the overall total of WEEE collected via official routes (~1% or less), with such systems inevitably incurring higher logistics costs per tonne – yet for many communities in rural and coastal locations, these represent a means of accessing recycling points, which would otherwise be much less convenient, and require driving long distances to permanent municipal recycling points.

4.4.3 Kerbside systems

Kerbside collection is not a mandatory requirement under the WEEE Directive, and the research has identified limited examples of WEEE kerbside systems which are fully integrated within existing domestic kerbside collections, other than Sweden and the UK, and even here coverage is very sporadic. This is perhaps explained in part, by the fact that none of the countries studied during the course of the research make use of the

⁴¹ <http://test.collectors2020.eu/wcs-weee/brest-fr/>

derogation option within Article 5 (2) of the WEEE Directive, and hence, PROs in each of these countries have instead focused efforts towards establishing collection infrastructure via the retailer route. Identified examples of kerbside systems include:

- Belgium – In Flanders, Recupel financed a pilot kerbside initiative in 2015/16. During the pilot, citizens were issued with yellow bags through which books, textiles and toys could be deposited for collection alongside WEEE. Piloted over seven municipalities (44,000 households), the pilot yielded a total of 21 tonnes of WEEE, and has consequently ceased due to the system being considered too costly. Critically, collections were not integrated into the existing municipal collection round, with residents only offered two collections per year. Recupel is currently exploring options to re-test this model, which will include integrating the collection within existing kerbside collection rounds.
- Sweden - whilst WEEE collection from households is primarily via municipal recycling centres, the majority of municipalities have several different collection systems for WEEE, including kerbside⁴². Examples include the municipality of Aneby in southern Sweden, with a population of 6,800⁴³ and around 2,000 households. Waste is collected by Amaq, the Aneby Environment and Water Company, which is a wholly-owned municipal company. Aneby collects a range of household waste, including WEEE and batteries. All houses are provided with red boxes for kerbside collections. These have an opening and closing mechanism that is designed to be child-proof. Batteries and light bulbs must be placed in transparent plastic bags to make emptying the boxes easier for the driver.
- Netherlands - local authorities are like the UK in that there is no standard system in place, with each municipality doing things slightly differently. Kerbside collections have been trialled in some areas, in general involving the collection of textiles, books, CDs etc. as well as small WEEE. It was noted by WEEE Nederland that in the Apeldoorn area (a city of ~150,000 people), a total of around 2,000 tonnes of WEEE is collected annually of which 30% to 40% is small WEEE, i.e. a total of 600 to 800 tonnes. An extra 100 tonnes or so of small WEEE was gathered via the kerbside collection (around 15%), although it was considered too costly for the municipality to continue (not being funded by the compliance schemes directly).

In the absence of further evidence on the relative merit and contribution of kerbside collection towards overall collection systems and performance, discussion with a national UK waste management contractor, which currently offers an integrated WEEE

⁴² Swedish Waste Management

https://www.avfallsverige.se/fileadmin/user_upload/Publikationer/Avfallshantering_2018_EN.pdf

⁴³ <https://www.scb.se/en/finding-statistics/statistics-by-subject-area/population/population-composition/population-statistics/pong/tables-and-graphs/yearly-statistics--municipalities-counties-and-the-whole-country/population-in-the-country-counties-and-municipalities-on-31122017-and-population-change-in-2017/>

kerbside collection service (alongside existing collection rounds) has provided some further context. The view of this individual was that:

- Small WEEE collection via kerbside can be successfully implemented, and at marginal extra cost, where services are incorporated with dry recycling collections, but this can also work where integrated with residual waste collection days; and
- Whilst householders won't present small WEEE frequently, knowing that they can put it out with their next presentation of waste/recycling makes it really simple to participate.

This presents a case for consideration of WEEE collection via existing kerbside systems, and in particular, in locations where residents are poorly served by HWRC facilities.

Despite the UK's lower density of municipal recycling points and generally shorter opening hours the actual collections/inhabitant via this route are relatively high compared with some of the other countries studied – although WEEE collection performance across all of the countries is also supported via in-store and retail take back on delivery, which is discussed in more detail in the following section.

5.0 Retail collection systems and performance

This section presents a summary of the retail collection system performance and good practice across the researched countries.

5.1 WEEE take-back in line with WEEE Directive

Table 4 summarises the take-back obligations for retailers and distributors as set out within individual countries' WEEE regulations. All of the studied countries are implementing 1:1 (like for like on buying a new item of EEE) and 1:0 WEEE take back (without a new EEE purchase) in line with the WEEE Directive requirements. This illustrates that UK is unusual (perhaps unique) in that considerable use is made of the derogation option under Article 5 (2) of the WEEE Directive to allow distributors to help to finance local authorities via the DTS to collect WEEE free of charge, primarily through the HWRCs. None of the countries studied during the course of the research make use of the derogation set out within Article 5 (2) of the WEEE Directive.

Table 4: WEEE take-back requirements in studied countries

Country	1:0	1:1	Comment
Belgium	✓	✓	Retailers also have to take back WEEE 1:1 free of charge on delivery
Finland	✓	✓	1:0 take back obligations go further than the Directive – i.e. retailers with a sales area of <u>less than 200 m²</u> (rather than 400 m ²) are exempt
France	✓	✓	Retailers also have to take back WEEE 1:1 free of charge on delivery
Germany	✓	✓	1:0 limited to five old devices per device type
Ireland	✓	✓	Distributors additionally provide free 1:1 take-back for home deliveries Mandatory handover of WEEE collected via retail to a PRO
Netherlands	✓	✓	In store take-back in line with WEEE Directive; but in practice 1:0 on all small WEEE as containers are free to use by all without a purchase.
Sweden	✓	✓	In store take-back in line with WEEE Directive, plus WEEE collected by distributors is required to be handed over to a PRO
Switzerland	✓	✓	1:0 and 1:1 obligation extends to producer/manufacturers, which can be used as a take-back location (i.e. large equipment) ⁴⁴ . B2B is also treated like B2C.

5.2 WEEE collection performance via retail

Table 5 presents an overview of contribution of retail collection to overall WEEE collection performance in each of the countries studied. Retail performance has largely been obtained through discussion with PRO representatives in each country.

⁴⁴ https://weee-forum.org/ws_members_map/swico/

Table 5: Proportion of WEEE collected via retail route

	Total WEEE collected (all routes, tonnes 2016) ⁴⁵	% collected via retail	WEEE collected via retail (tonnes, 2016)	WEEE collected via retail – kg/inhabitant
Belgium	127,680	24%	30,643	2.67
France	721,949	17%	122,731	1.83
Germany	782,214	10%	78,221	0.94
Ireland	51,303	56% ⁴⁶	28,730	5.86
Netherlands	154,675	35%	54,136	3.13
Switzerland	134,000	16%	21,440	2.51
UK	971,321	9% ⁴⁷	92,664	1.39

Figures for the UK represent household WEEE returned by distributors to PROs under Regulation 43 of the WEEE Regulations, reported by the Environment Agency for the period January to December 2018.

The WEEE Directive was only transposed into Swedish legislation in 2014⁴⁸ and discussion with the PRO El-Kretsen confirmed that it is only responsible for a small proportion of retail collections directly (e.g. where directly contracted with large players such as IKEA) – circa. 3% - with the majority of retail collection organised through municipal collection points. As commented in earlier sections of this report, the Swedish Waste Management Association (Avfall Sverige) has been approached with a view to requesting further data on retail collection performance, however no data has been sourced at the time of writing.

As commented on earlier, neither the Finnish EPA nor the PRO Elker were able to estimate the proportion of collected WEEE collected via take back from the total arising at permanent collection points, which are also accessible to members of the public.

The overall contribution of retail/distributor take back to UK WEEE collection performance (9%) is perhaps surprising, given that the UK makes use of the derogation option under Article 5 (2) of the WEEE Directive – although the majority clearly relates to LDA and white goods, as opposed to small WEEE collected in-store.

Ireland collects the highest proportion of WEEE via the retail route (56%). As noted earlier, following the introduction of the WEEE Regulations, HWRC infrastructure across

⁴⁵ Eurostat http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=env_waselee&lang=en

⁴⁶ Figures relates to WEEE Ireland only

⁴⁷ Based on analysis of Environment Agency WEEE data Jan – Dec 2018, which states that household WEEE returned under Regulation 43 (by distributors to PCS) contributed so 91,000 out of 970,000 estimated – 9.4%

⁴⁸ Telephone interview with El-Kretsen, July 2019

Ireland was deemed to be insufficient to deliver the requisite capacity and convenience for collection, and hence the Irish EPA and WEEE Ireland, since 2015, have collaborated with retailers to provide additional collection and take-back provision.⁴⁹ It is notable that the UK has similar HWRC density to Ireland per head of population.

Figures provided by the German Federal Ministry for Environment suggest 10% of its overall WEEE collection is via retail – however (as stated earlier) these figures do not reflect likely changes to consumer behaviour arising from the transposition of the WEEE Directive in 2015, which saw the introduction of 1:1 and 1:0 take back in-stores and on delivery (with no more recent figures available via the Germany Federal Ministry for the Environment).

5.2.1 Take back on delivery

LDA take back on delivery represents a significant focus across each of the countries studied, representing over 75% of retail collection by weight. Of those countries studied:

- Belgium, France, Ireland, the Netherlands and Switzerland require mandatory 1:1 take back of WEEE on delivery free of charge under national legislation;
- Countries including Belgium and Ireland also extend take back on delivery to include small WEEE, which can be handed over to delivery drivers at the same time as 1:1 replacement items.

In some instances, retail chains have individually gone further, including Cool Blue (operational in Belgium and the Netherlands), which trains its drivers to offers its customers of the option to handover small WEEE items when a new electrical item is being delivered.

Discussions with WEEE Nederland also confirmed that are in discussion with retailers to offer small WEEE collections at the same time as a product is delivered. This can be compared against the current situation in the UK, whereby the majority of retailers charge for take back. In addition, Dixons Carphone (operating as Currys PC World) now offers free-take-back of small WEEE on delivery of large appliances (although it still charges for take back of large appliances).

5.2.2 WEEE collection via courier service

In addition to take back on delivery, countries including Belgium and the Netherlands have explored the use of courier services to take back WEEE. WEEE Nederland's courier collection pilot is summarised below.

⁴⁹ Telephone interview, WEEE Ireland July 2019

Courier WEEE take back – The Netherlands



In 2016, WEEE Nederland in partnership with PostNL and the Dutch online sales platform Thuiswinkel.org launched a pilot to test the viability of WEEE take back via courier delivery services. Under the pilot, households throughout Amsterdam, Dordrecht and Groningen were able to handover WEEE items to a PostNL parcel deliverer free of charge.

Citizens were able to handover items, with no requirement to pre-register, or package the item. All devices with a plug or batteries, up to a maximum diameter of 50 centimetres, to a maximum weight of 10 kilograms were accepted. To overcome data security concerns, WEEE Nederland issued assurances that all devices collected via the scheme would be wiped. WEEE Nederland note that the system worked well in that the delivery van was able to accommodate the small amount of small WEEE handed over on each collection and the depot also had no problems in bulking up the WEEE in the large container provided.

Despite a commitment to roll out the courier collection system nationally, challenges still need to be overcome in respect of the financial model, and in particular, the level of compensation to PostNL, which has reportedly requested €2 per item collected; in line with the pre-paid postal costs of returning a WEEE item to an online seller.

Belgium's experience of piloting take back via courier compares with the Dutch experience, with the pilots logistic partner confirming that there are no plans to roll out the service nationally, due to challenges in implementation of a cost-effective reverse logistics model. End-to-end return processes resulting in a cost of between €4 to €8 per returned package⁵⁰. Whilst the Netherlands' courier collection pilot is currently on hold, discussion with WEEE Nederland confirmed it is still exploring the potential for such a system, and considers that the service could be financially sustainable where logistics partners are willing to accept nearer €0.5 per item.

5.3 In-Store take back

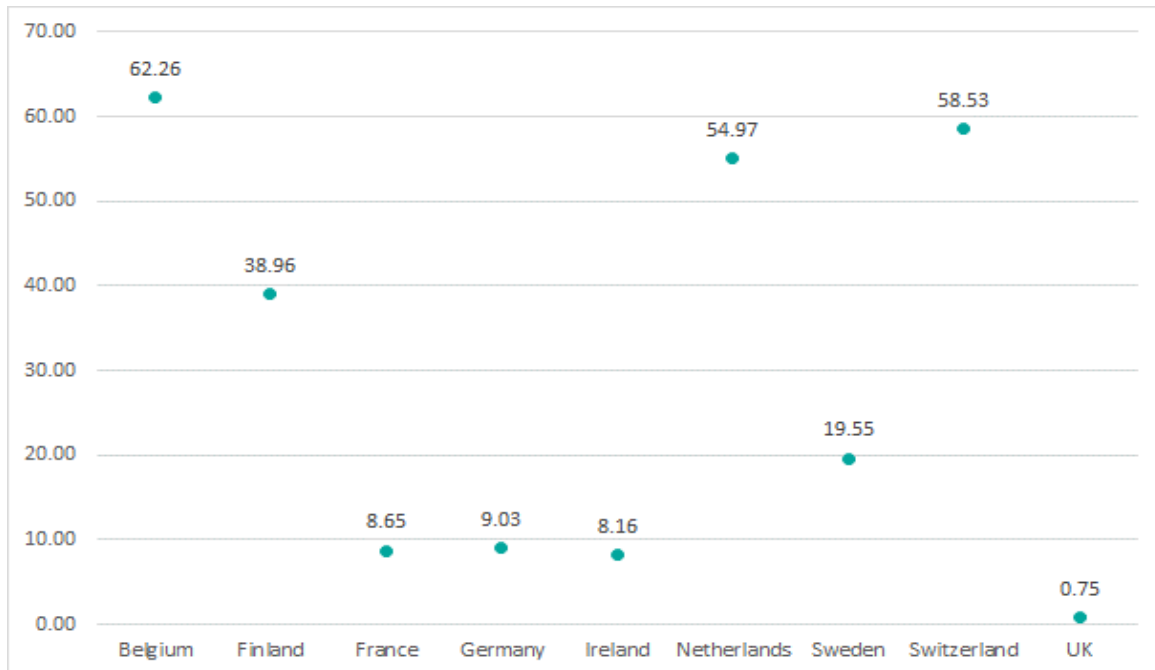
Analysis of retail collection point density across each of the studied countries is presented in Table 6. As started earlier, none of the countries studied during the course of the research make use of the derogation within Article 5 (2) of the WEEE Directive, with all countries implementing 1:1 and 1:0 requirements in line with the WEEE Directive take back requirements, and operate a national network of retail collection points.

⁵⁰ Confidential communication with Peter Lagey, VIL Belgium

Table 6: Retail collection points across studied countries – per inhabitant and km²

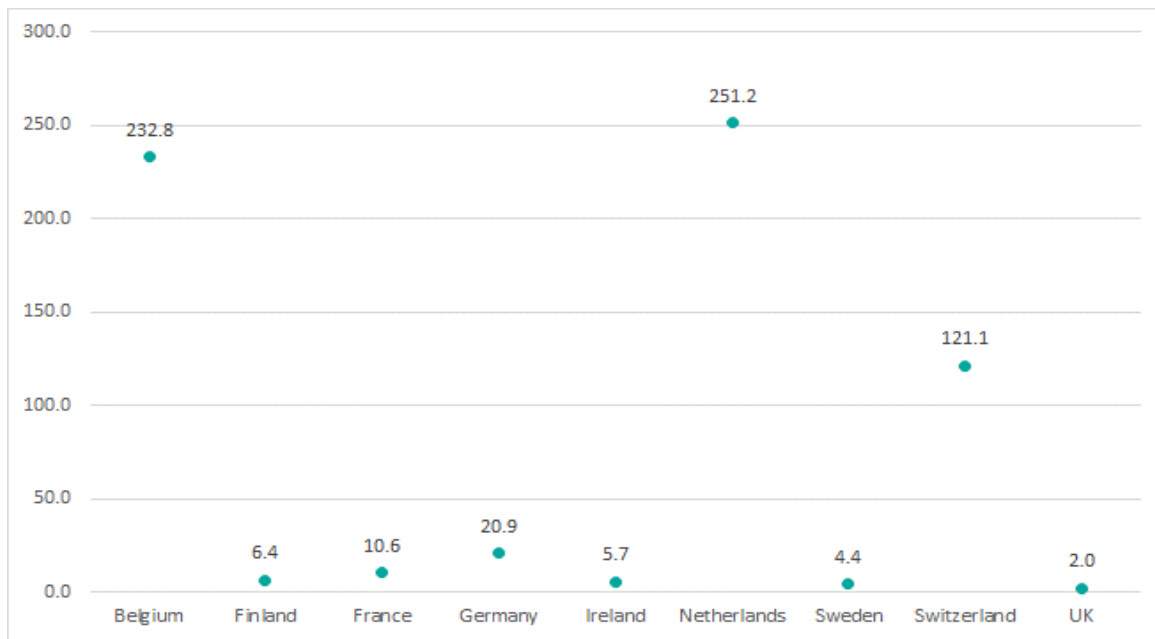
Country	Country population 2019	km ² 2016	Total retail collection points	Retail collection points per 100,000 inhabitants	Retail collection points per 1,000 km ²
Belgium	11,467,923	30,668	7,140	62.26	232.8
Finland	5,517,919	337,547	2,150	38.96	6.4
France	67,028,048	549,060	5,800	8.65	10.6
Germany	83,019,214	358,327	7,500	9.03	20.9
Ireland	4,904,226	70,601	400	8.16	5.7
Netherlands	17,282,163	37,824	9,500	54.97	251.2
Sweden	10,230,185	449,896	2,000	19.55	4.4
Switzerland	8,542,323	41,285	5,000	58.53	121.1
UK	66,647,112	247,763	500 ⁵¹	0.75	2.0

Figure 5: Retail collection points in countries studied - per 100,000 inhabitants



⁵¹ No reliable data on the number of UK retail collection points available. Dixons take back small WEEE via ~400 outlets nationally, hence an estimate of 500 retail collection points is used for analysis purpose.

Figure 6: Retail collection points in studied countries per km²



Analysis shows that the UK has the lowest number of official retail collection points (~500⁵¹) - both in terms of per inhabitant and per km². The density of retail points per km² in Belgium, the Netherlands and Switzerland are significantly higher than the UK and most of the other countries studied. France (which has a similar population to the UK) has twenty times the number of retail points per inhabitant – as does Ireland, which has a much smaller population than the UK.

The UK context can be compared with:

- Belgium - where Recupel maintain approximately 600 contracts with the Belgian retail sector, with over 3,000 retail collection points. Evidence suggests that in-store retailer recycling points have generally been well received by consumers, with a study showing that 40% of consumers find them to be a good supplement to a recycling park⁵². Stores over 400m² are required to have a collection box in front of the sales counter. A high proportion of Belgium's food retail sector have introduced collection boxes at the front of store – even though there are very few over 400m² in size – since this is considered to be an essential part of delivering customer expectations and service. The expansion of the in-store retailer collection points correlates with an increase in the quantity of collected small WEEE of several thousand tonnes in 2016 compared to the previous year, with the overall collection rate for small WEEE increasing by 3.5%. This is largely attributed to these food retail collection points (discussed below).⁵³

⁵² Communication with Recupel June 2019

⁵³ Recupel Annual Report (2016)

- France – where French distributors (including retailers) host more than 24,000 collection points for WEEE, with 15,500 for lamps. There are also 5,800 ‘green counters’ in stores for 1:0 take back of WEEE, which means that it is very convenient for consumers to bring their WEEE to be recycled/ reused and that the options are very visible. All large stores have WEEE collection points.
- The Netherlands – where around 3,000 retailers have contracts with compliance schemes which enable consumers to hand in old equipment when they buy a new item (‘old-for-new’ or 1:1). WeCycle reports it collects from approximately 9,500 retail locations – of which 6,600 retail locations provide WEEE containers, 2,000 of which only offer lamp collection, with the remaining 900 including other locations (e.g. petting zoos) which also accept batteries and lamps. Collection boxes (‘Jekko’ boxes) are also issued to households in the Netherlands, with the intention of supporting organisation and segregation of WEEE within the household.
- Switzerland where there are over 6,000 retail collection points that take over-the-counter deposits 1:0.

In Belgium a proportion of small corner shops (Carrefour) also offer collection boxes for lamps and bulbs, however this represents approximately 2% of the total network (by number).

In-store collections – Belgium

Belgium’s retail sector offers over 3,000 in-store WEEE collection boxes – with the majority of stores (89%) providing lamp boxes, and around half of stores providing tube (40%) and small WEEE (44%) boxes. Recupel is responsible for organising collections via its logistics partner. Recupel has invested in the establishment of collection points across both food retail and DIY stores due to the frequency in which consumers visit these stores. Recupel’s own evidence is that electrical in-store take back performs less favourably against food retail and DIY chains.

“This is considered to be in part, a reflection of the fact that consumers do not always remember to bring old devices with them whilst shopping for new equipment in electrical stores. Furthermore, since consumers do not visit electrical retail outlets on a weekly basis, the message to return WEEE when buying new consumer products is not yet fully established in the consumer mentality⁵⁴.”

Food retailers in particular have been keen to participate, and consider this to represent part of its customer service, whilst recognising the potential for increased footfall. Almost all food retail brands are participating, including Aldi, LIDL, and also the majority of DIY chains. Discussion with Recupel confirmed a strong correlation between EEE sales by retail store and WEEE arising – for example, DIY stores account for a higher proportion of bulbs and tubes (Table 7) and also power tools, with the latter arising less frequently at food retail outlets. Figures do not include high rotation collection points which require more frequent emptying (including EEE retail stores), which Recupel estimate as an additional 100 tonnes to the figures reported in Table 8 – i.e. approximately 250 tonnes collected via front of store per year.

Table 7: Number of in-store collection boxes across Belgium retail sector

Retail	Lamp boxes	Tube boxes	Small WEEE boxes	No. sites
DIY	575	476	262	575
Electrical	2	1	57	57
Food	1,156	203	213	1,156
Other	418	162	383	707
Independents	718	436	494	736
Total	2,869	1,278	1,409	3,231
% of total no. sites	89%	40%	44%	

Table 8: Tonnes of WEEE collected from retail – 12-month estimate⁵⁵

	Lamps	Tubes	Small WEEE	Total
DIY	22.2	20.4	11.6	54.2
Electrical	0.0	0.0	0.1	0.1
Food	20.8	8.2	9.5	38.4
Other	3.1	2.4	6.9	12.4
Independent	20.9	7.8	7.8	36.5
DIY	67.0	38.8	35.9	141.6

The expansion of the in-store retailer collection points correlates with an increase in the quantity of collected small WEEE in 2016 compared to the previous year, increasing by 3.5%.

5.3.1 In-store container systems

This section highlights the practices and approaches observed for the collection on WEEE in-store, including types of receptacles and boxes. Figure 7 illustrates the various types of containers observed.

Figure 7: In-store WEEE containers used in studied countries

Belgium – lamps, chargers and batteries



France – lamps, bulbs and cartridges



Netherlands – bulbs, batteries, small WEEE



Ireland – unbranded small WEEE containers



⁵⁴ Interview with Recupel - July 2019

⁵⁵ Based on estimated weight data per container provided by Recupel – 16.4kg for lamp bins, 16.8kg for tube bins, 18.6kg for small WEEE bins

All observed in-store collection containers were located inside retail stores – either in the front entrance, or at the checkout – as opposed to being located in exterior locations, such as car parks - to ensure containers were highly visible and convenient for customers to access. Furthermore:

- Belgium – boxes in larger retailer chains are co-branded alongside Recupel logos, to ensure customers are aware it represents an official form of collection. Each box includes guidance and instructions to ensure retail staff understand how to inform Recupel of a requirement to collect. This includes a Freephone number, as well as a QR code on box to allow retail staff to report the requirement and location for collection. Many of the observed collection points included a residual bin located in close proximity to the WEEE collection containers to reduce instances of contamination. Recupel indicates that front of store boxes typically requires collection every two days to avoid overfilling and front of store reception areas becoming unkempt (which typically compares with a collection frequency of every three days for WEEE collected back of store).
- Finland - WEEE collected in store is organised through different systems, including 'recycling walls' (for depositing small WEEE and lamps) and over the counter systems. Retailers are required to collect WEEE in 'reasonable' volumes to warrant collection and are also required to separate WEEE into categories appropriate for transportation.
- Ireland – there are no regulations prescribing how retailers are required to collect WEEE in-store, hence retailers provide a range of variable types of containers, including cages and boxes. Visits to retail stores also observed WEEE Ireland branded boxes at checkouts for batteries, bulbs and lamps.
- Netherlands – containers observed in-store included a box with individual slots for batteries, bulbs, lamps and small WEEE. It was noted that the size of the small WEEE container was proportionally much smaller than the container for lamps, bulbs and batteries, meaning the container would most likely only hold a small number of items before becoming full. WEEE Netherlands commented that due to the design and specification of the containers it sourced, the system is very expensive at €1000 per tonne, as a consequence of the need for more frequent container collections.
- Sweden – many grocery stores in Sweden feature a 'Samlaren' container for the collection of WEEE, where the public can deposit bulbs, batteries and small WEEE. WEEE is collected at a cost of £1.30/kg using this collection system. Trials in Gothenburg showed that the system collected 4.5 tonnes of WEEE in its first year of operation, compared to 5 tonnes of WEEE collected across 16 WEEE collection points over the same period.

5.3.2 Back of store collection

Back of store arrangements typically include storage of WEEE via different forms of pallet box or crate. Recupel introduced changes to collection systems, including WEEE pallet boxes, following amendments to European guidelines for the transport of dangerous substances and articles, whereby bulk transport of WEEE products that contain lithium batteries are no longer permitted.

Transparent pallet boxes (Figure 8) introduced by Recupel are deemed suitable for the collection of small devices containing a lithium battery such as mobile telephones, tablets and small domestic equipment. Transparent plastic panels attached to the inside of the wooden frame prevent small parts from falling out, while still remaining visible.

Figure 8: Back of store collection (left to right: Belgium and Switzerland retail stores)



The simple, foldable box can be transported and stored compactly when empty. This translates into low transport and storage costs⁵⁶.

Many retailers operate centralised hub locations or waste transfer stations for WEEE, as in the case of Belgium and Ireland.

⁵⁶ <https://news.cision.com/ipp-logipal/r/with-a-new-weee-receptacle-from-pooling-partners--recupel-is-the-first-to-offer-a-solution-that-full,c9793083>

6.0 B2B collections

This section summarises observed services and approaches to B2B collection across selected countries. Many of the countries studied offer free B2B WEEE collection, as summarised in Table 9.

Table 9: Collection systems for B2B WEEE in studied countries

Country	Service
Belgium	Provides free collection points for B2B WEEE, including designated collection points at the rear of DIY stores
Finland	B2B can be deposited via network of 400 permanent collection points available free of charge
Netherlands	Up to 7 items of WEEE allowed at municipal collection centres free of charge
Sweden	400 collection points are available for businesses to discard WEEE, with at least one collection point per municipality
Switzerland	B2B WEEE accepted at collection centres free of charge, including retail

Furthermore:

- Belgium – Recupel provides an online directory of collection points for businesses, and also issues specific communications and mailing information to trade services (e.g. plumbers, electricians) aimed at increasing collection rates via DIY stores and other collection points. Recupel also launched ‘Smartloop’ – an online platform (see below) to provide free disposal of B2B WEEE for businesses.
- Finland - Elker has launched reception points for B2B WEEE, which are also open for private consumers with larger batches of WEEE. B2B producers are not charged based on their volumes placed on the market, but per product returned.^{57, 58}
- Netherlands – municipalities are obligated to take back small quantities of WEEE free of charge, and hence, businesses can dispose of up to seven items of WEEE per trip at a municipal collection point free of charge, with producers responsible for organising the collection of larger quantities. It is seen to be important to encourage B2B collection in the formal system so as to gather the data and allow more B2B WEEE to contribute to the overall 65% collection target.

⁵⁷ <http://www.elker.fi/en/producers/producer-organisations/self-association/regulations-self>

⁵⁸ <http://www.elker.fi/tuottajalle/tuottajayhteisot/ict-tuottajaosuuskunta/liittyminen-ict>

- Sweden - approximately 400 collection points are available for businesses to discard WEEE, with at least one collection point per municipality. In Sweden, WEEE disposal services are free of charge for businesses. Any business making use of the collection system must complete paperwork to confirm the number of units being returned⁵⁹, Error! Bookmark not defined.

B2B Collection – Belgium

Recupel has recently launched a new B2B WEEE collection service, targeting SMEs across Belgium. As a virtual marketplace, it connects businesses seeking to dispose of WEEE with a certified waste collector. The service:

- Requires SMEs to register with the platform;
- Allows users to post pictures and/or a description of WEEE;
- Connects SMEs with registered waste collectors and certified reprocessors;
- Allows SMEs to select the best commercial offer and arrange a suitable collection date.

Screen shot of Smartloop platform

SMEs using the service are charged only logistics cost, with Recupel paying waste collectors €110 per tonne. The service is being officially launched in throughout Belgium by November 2019⁶⁰.

⁵⁹ Differences in E-waste collection results between Sweden and the Netherlands, Association NVMP 2010

⁶⁰ <https://www.recupel.be/en/why-recycle/looking-for-a-smart-way-to-eliminate-e-waste-in-your-sme/>

7.0 WEEE collected via unofficial routes

As in the UK, a large proportion of WEEE arisings (often over 50%) are unobligated or obligated and 'leaks' from the official system. WEEE NL estimate that approximately 40% of WEEE is processed outside the official routes. According to the CWIT (Countering WEEE Illegal Trade) Project 2015, the knowledge gap in France is around 33%, so the final destination of a third of WEEE is unknown. In the UK the figure is similar, around 34% counted as treated or reused but unreported through the official channels, and this excludes WEEE in residual waste and otherwise unreported.

'Leakage' often occurs through the informal collection of WEEE (especially large appliances) and treatment through general scrap metal routes, reuse and export. Some of this results in perfectly legal but unreported recycling and reuse (e.g. of ICT equipment by asset management companies) while some results in illegal/inappropriate treatment in the EU or overseas.

Scavenging (often by informal collectors) of refrigerators and freezers is widespread in the EU in general and anecdotal evidence suggests that the UK is unlikely to be any different. Only 48% is reported as collected in the EU, and although that is not to say that 52% is illegally dealt with, the WEEE Forum has estimated that this results in unnecessary emission of approximately 8,000,000 tonnes of CO₂ per year in the EU⁶¹. The problem here is that the price of copper drives people to cut off the compressor and cooling matrix, releasing the gases in an uncontrolled fashion.

The Netherlands makes an interesting case study. This is partially a consequence of retailers being able to sell WEEE (where not under contract to a PRO) and municipalities currently being free to sell WEEE or dismantled fractions to scrap metal recyclers. Householders are also not obligated at present to hand over WEEE and can place it in the residual waste. Research by Hoffmann Bedrijfsrecherche in the Netherlands in 2016 used GPS to track 89 washing machines and 11 cooling appliances. The devices were sold to scrap metal dealers all over the Netherlands. After 3 to 6 months just 3 devices ended up at WEEELABEX certified operators. The rest was shipped to Turkey, Portugal or processed at non-WEEELABEX shredders in the Netherlands.

Proposed changes to Dutch law will require citizens to hand over WEEE via official collection routes. Further efforts to reduce leakage and deliver progress against the 65% collection target includes an agreement reached between producers and the Dutch Metal Recycling Federation, which under a one-year agreement, will require every member of the trade body required to handle and treat WEEE in accordance with WEEELABEX standards. Metal recyclers will receive an additional compensation of €50 per tonne, for every tonne treated in accordance with WEEELABEX standards and reported via the PRO.

⁶¹ WEEE Forum presentation – Bridging the Distance to Target, May 2019

Leakage also occurs via retail take back channels, where retailers (particularly small retailers) fail to maintain appropriate record keeping. In France, a recent study analysed the competency of systems for tracking the flow of WEEE and concluded that few retailers have IT systems to track the flow of WEEE they collect in store or during delivery of new EEE. The one retailer they interviewed that did use a tracking system recorded a three-fold increase in its collection volumes following the implementation of this tracking system.

This indicates that collected WEEE could be under-reported and/ or lost, and the study consequently estimated that poor tracking resulted in between 0.1 and 0.8kg/year/inhabitant (5,000 to 50,000 tonnes) of WEEE 'leakage' at retailers.⁶² The UK retailers often use local collectors, including legitimate social enterprise reuse organisations (e.g. Envie in France), and so-called 'jobbers' for returns under warranty. These companies take the used EEE and sell it on, potentially overseas for reuse (legally or illegally), and some of may ultimately be scrapped as WEEE in the UK or overseas and inappropriately treated. There are also exemptions in place in some countries that facilitate the handling of EEE, which may become WEEE, outside the official system.

In Ireland, mandatory handover of WEEE collected by retailers to the PRO, requirements to maintain accurate records combined with enforcement activity via the Irish Environmental Protection Agency has, according to WEEE Ireland, served to significantly reduce 'leakage' from the official system via the retail collection route⁶³.

As mentioned earlier in this document, countries including Belgium, Ireland and the Netherlands do not use substantiated estimates for scrap metal or other flows, or include WEEE collected via this route in official reported collection performance figures. This of course differs to the UK approach, which includes LDA in light iron processed via Authorised Treatment Facilities in official collection performance figures, which in 2017 represented a total of 269,000 tonnes.

⁶² Ademe (2013) Study on the Quantification of Waste of Electrical and Electronic Equipment (WEEE) in France. December 2013. https://www.ademe.fr/sites/default/files/assets/documents/91257_report-weee-arising-france.pdf

⁶³ Telephone interview, WEEE Ireland July 2019

8.0 Progress tackling free riders

This section summarises the progress of particular countries studied over the course of the research in tackling free riders. Progress is certainly not uniform, with countries including France, Ireland and Finland in particular demonstrating proactive approaches through a combination of regulation and enforcement.

Whilst no hard evidence has been identified during the course of the research, it can be argued that the use of the visible fee system (used by Belgium, France and Ireland) may have a role to play in tackling free riding within the system. Where fees are not visible on certain product sales (for example, online sales), it could prompt consumers (and authorities) to consider why this is, and hence, whether particular producers are fulfilling their legal obligations. Free-riders are generally unlikely to display the fee if it is not charged, this will help the authorities to identify un-registered producers.

Traditional ‘bricks and mortar’ retailers are at a commercial disadvantage, as they have to bear the costs of compliance, while overseas retailers selling through online marketplaces such as Amazon often avoid this. Perhaps the most significant steps taken towards addressing this problem is found in France, when in 2019, it announced new obligations for online platforms, as part of the French Circular Economy Roadmap.⁶⁴ These obligations require online multi-seller platforms such as Amazon to ensure that the collection and recycling of WEEE arising from products marketed and sold on such websites is properly financed. The online platforms will, by default, be held responsible if they cannot prove that a business that sells a product on their site makes an ‘eco-contribution’.⁶⁵ It is not yet clear how effectively this law will be enforced.

In Finland, producers including distance sellers must notify the Pirkanmaa Regional Environment Centre (the Centre) annually with data on the volumes placed on the market in the previous year.⁶⁶ The Centre works to identify free-riders, with the assistance of the PROs; there are fines for failing to register (1% of turnover); failing to report; and failing to arrange proper waste management.

It is worth noting that having a de-minimis can make enforcement against free-riding difficult, identifying whether a producer falls under the de minimis or not. As in the UK, Finland has a de-minimis but only to make compliance easier for small producers not to exempt them from participating. ERP Finland charges a fixed fee for producers under a certain threshold.

The Irish WEEE Regulations are more stringent than those typically found in other EU Countries. They require online websites to list its individual EEE producer Registration

⁶⁴ <https://www.ecologique-solidaire.gouv.fr/sites/default/files/FREC%20anglais.pdf>

⁶⁵ <https://resource.co/article/france-force-online-retailers-tackle-compliance-free-riding-13061>

⁶⁶ https://ec.europa.eu/environment/archives/waste/reporting/pdf/Final_Implementation_Report_2013_2_015_WEEE.pdf

Number and require distance sellers to fulfil take-back obligations and retain records for at least two years of the amount of WEEE taken back each year.¹¹

The Irish EPA is responsible for investigating non-compliant distance sellers and obtains some of its funding to do this from PRO contributions. To date it has only prosecuted one company in Ireland relating to free-riding and online sales as an act of deterrence to others.¹¹ The Irish EPA also stated that they would generally only consider investigating online sales originating in the EU. The EPA is prepared to investigate non-Irish, EU-based distance sellers where appropriate; an example of a willingness to conduct cross-border investigations.

German online sellers are legally obliged to take back WEEE in the same way as stationary distributors. Compliant producers can report non-compliant competitors. The Federal Environment Agency (FEA) can also request the payment of a fine equivalent to the profit gained through unfair competition. The FEA has also set up a network to share information on free-rider prosecutions.¹¹

In Switzerland, EEE purchased online or abroad is not subject to the advanced recycling contribution (ARC). Consumers who purchase EEE from non-Swiss based sellers can now voluntarily pay a retrospective ARC by text message, although this seems like a very weak approach that would be unlikely to work in the UK.⁶⁷ The Swiss argue that the system is self-regulating to a degree in that producers that are not affiliated with a PRO also have their non-compliance highlighted by PRO websites.⁶⁸ The system is voluntary in any case in Switzerland which undermines enforcement.

In Belgium, Recupel, works in partnership with each of the three regional governments to monitor the impact of free riders.⁶⁹ Recupel undertakes cross-border auditing in Luxembourg and the Netherlands among others. The Flemish EPA (OVAM) work with German and Dutch counterparts who assist investigations. OVAM can impose fines on a Belgian legal entity⁷⁰. They have also investigated 51 companies and instructed them to become compliant. However, after 6 months only 14% became compliant.⁷¹ This shows the challenges facing the relevant authorities in terms of enforcing the regulations.

In the Netherlands, distance sellers must provide options for WEEE take-back and communicate these to consumers.⁷² In 2017 the Human Environment and Transport

⁶⁷ <https://www.erecycling.ch/en/e-kreislauf/freiwillige-vrg.html>

⁶⁸ <https://www.erecycling.ch/en/vrg-partner/nicht-systemteilnehmer.html>

⁶⁹ <https://www.recupel.be/en/about-recupel/legislation-authorities/>

⁷⁰

[http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP\(2019\)1&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP(2019)1&docLanguage=En)

⁷¹

[http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP\(2019\)1&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP(2019)1&docLanguage=En)

⁷² The State Secretary for Infrastructure and the Environment (2016) Government Gazette of the Kingdom of the Netherlands: Regulation of the State Secretary for Infrastructure and the Environment, of 27

Inspectorate (ILT) requested 400 companies to register with the Netherlands (W)EEE Register under sanction of financial penalties and injunctions.⁷³ In general however, tackling free-riding is primarily the responsibility of the PRO.

There is an acknowledgement across the countries studied that addressing the impact of free-riding is complex and challenging in the absence of further EU regulation, with no legal tools to fully address the issue. The Authorised Representative approach is thought to be of limited use, only being used by those that actively seek representation in a Member State.

January 2016, no. IENM / BSK-2015/262541, laying down / amending the Regulation on waste electrical and electronic equipment in connection with the methods of collection of waste equipment and some other amendments, accessed 3 May 2019, <https://zoek.officielebekendmakingen.nl/stcrt-2016-4066.html>

⁷³ Take-e-way GmbH (2017) WEEE Execution: The Netherlands are in search for free riders | take-e-way GmbH, accessed 9 May 2019, <https://www.take-e-way.com/news-press/news/news-singleview/article/weee-execution-the-netherlands-are-in-search-for-free-riders/>

9.0 Communication campaigns in studied countries

This section discusses the role, execution and impacts of various communication campaigns deployed across the countries studied to support WEEE collection performance. Desk research and stakeholder consultation has identified Belgium, France, Ireland, and the Netherlands as being countries which place greater emphasis on communication activities – and hence, many of the particular examples of campaigns discussed in this section focus upon these specific countries.

9.1 Communication expenditure

Whilst not all PROs publish or were able to divulge detailed information relating to the level of expenditure on consumer communication campaigns:

- France – PROs are required to allocate 0.3% of revenue towards communication related activities;
- Ireland – WEEE Ireland dedicated 5.5% of its expenditure to general communication in 2018, and a further 5.9% to the specific ‘We’ll Take it Back’ campaign over the same period – approximately €0.9million⁷⁴;
- Netherlands - WEEE Netherlands estimates it allocated €1million WEEE of total of €40million revenue towards communication activities.

Whilst French PROs must allocate at least 0.3% of contributions to national information campaigns, the PRO Eco-systèmes reports that it spent 4% (€6million) on communications in 2016. Every PRO organises communication and awareness raising campaigns. OCAD3E (co-ordinating agency and Clearing House) also coordinates regular communication campaigns on household WEEE, either at municipality level or at the national level for larger campaigns jointly launched by the three PROs.

Swico (Switzerland) commented that (due to a perception that WEEE collection rates were already high) financial allocations towards communication activities and campaigns were relatively limited. Whilst El-Kretsen (Sweden) and Elker (Finland) were both unable to quantify the financial contributions towards communication activities, both indicated the viewpoint that whilst expenditure on communication activities was important, collection systems already benefit from a strong cultural awareness amongst its citizens, in respect of the importance of recycling, which is already well established within consumer mentality.

9.2 Impact of the visible fee

While the UK does not currently use visible fees, these are used in Belgium, France and Ireland. Separate identification of the fee means consumers are more aware of the costs

⁷⁴ Based on a 2017 turnover of €9million

of treating their waste products and may, potentially, give more consideration to how they dispose of it if they feel they have paid for a service. If consumers are more aware that there are costs associated with disposal, they may possibly be more inclined to consider where and how to recycle the item - and indeed, whether the item can be reused.

9.3 National campaigns

The Irish non-profit PRO WEEE Ireland named 2017 “The Year of Small WEEE” – a concerted campaign to increase the collection of small WEEE. This correlated to 32% of small household compliances being collected for recycling in 2017, compared to 26% the previous year. The campaign focused on the message that “small things matter”.

In 2016, Recupel invested concerted efforts to increase awareness amongst Belgian’s citizens of the role it plays in delivering WEEE collection and treatment performance. As a consequence of increased communication activities, the volume of separately collected WEEE increased significantly across all three regions of Belgium, which is thought to be linked to the public becoming more informed about end-of-life WEEE management. The experience in Belgium suggests in-store collection points can have a significant impact when comprehensively rolled out nationwide in collaboration with media campaigns.

In France, PROs collaborate with municipalities (which are also required to deliver campaigns to inform citizens on available WEEE recycling channels) and producers, with PROs. Eco-systèmes provides communication tools for EEE producers free of charge, aimed informing consumers about the recycling routes of their old devices. The collection of small WEEE increased by 18.4% between 2013 and 2014, and by 23.7% between 2010 and 2014. This was attributed to enhanced awareness raising campaigns and the designation of new collection points.⁷⁵

The research has also identified examples of national government campaigns, in addition to those delivered by PROs and municipalities. Examples include campaigns delivered by the French Ministère de la Transition Ecologique et Solidaire (MTES), which covers various messaging across various waste streams, and links to the broader EPR policy and legislation across France. In the Netherlands (2005-2006) the Dutch Ministry for Infrastructure and Environment ran awareness raising campaigns across different stakeholders in the WEEE chain, including retailers, collectors and waste exporters. Dutch municipalities, for instance Gemeente Voorst, have also provided information to the public informing them about municipal level WEEE management.

9.4 Retail specific campaigns

Launched in 2014, Ireland’s “We’ll Take it Back” campaign supports electrical retailers deliver on the mandatory take-back requirement. Key messaging included conveying the

⁷⁵ https://www.ademe.fr/sites/default/files/assets/documents/eee-donnees-2014_8584_en-v2.pdf

retail sector as recycling centres for WEEE. Approximately 200 retailers participate in this campaign.

The We'll Take It Back campaign also supports retailers to promote WEEE recycling in-store as a service to their customers. Through the programme retailers are able to go beyond like-for-like, one-for-one take back obligations and include free recycling of all household WEEE and batteries in-store as part of their offering. Evidence provided by WEEE Ireland suggests that participating retailers who go beyond the like-for-like/one-for-one take back in store have delivered approximately three times the yield of WEEE in-store⁷⁶.

Since its introduction in 2014 there has been a significant increase in WEEE retail take back volumes, with Ireland collecting proportionally more WEEE from retail collection points than any other scheme in Europe. There has been a 4% increase in WEEE take-back from retail partners compared to the previous year (2018)⁷⁷.

9.5 Competitions

The research has identified examples of campaigns which seek to increase general awareness and engender participation through competitive and incentive driven activities. Examples include:

- 'Environmental street' competitions (the Netherlands) – delivered by Wecycle, it awarded a €1,000 voucher to a club or local charity. Prizes are awarded for creative collection campaigns for small electrical appliances.
- "Recycleville" (Belgium) – a consumer campaign where cities and municipalities competed to achieve the highest collected weight of WEEE per inhabitant. Recupel awarded the winning municipality a free breakfast for each of its residents. 248 communities took part (177 in Flanders, 65 in Wallonia, 6 in Brussels), with 8,642 tonnes of WEEE collected across Belgium during the competition. Discussion with Recupel confirmed that the competition was a one-off campaign, with approximately 80-90% of WEEE collected via the competition representing additional tonnage.

9.6 Pop-up events

Recupel has also initiated communication activities targeting students. This includes Café Recupel, a pop-up café that visits colleges and universities. Students who bring in a piece of WEEE along to the café receive a free drink or meal in exchange⁷⁸.

Mobile collection - In 2015, the mobile campaign initiative 'Recupel on Tour', conducted in collaboration with municipalities, waste management companies and reuse shops,

⁷⁶ Telephone interview, WEEE Ireland July 2019

⁷⁷ <http://www.weeeireland.ie/wordpress/wp-content/uploads/2019/06/WEEE-Ireland-environmental-report-2018.pdf>

⁷⁸ <https://www.recupel.be/nl/waarom-recyclage/caf%C3%A9-recupel-voor-mij-een-pintje-en-voor-recupel-4-elektroapparaten>

accounted for 36 local collection actions during which 12,000 electronic and electrical appliances were picked up. Of the 97 tonnes of collected e-waste, 33 tonnes of it could go to recycling shops for re-sale, while 64 tonnes were processed and recycled by Recupel⁷⁹.

9.7 School campaigns

Many of the PROs and governments studied place an emphasis on engagement with schools as part of efforts to educate the next generation of citizens. In Finland, PROs have paid for the print and distribution of a series of children's books written by a Finnish author, which covers a range of topics including WEEE recycling.

In the Netherlands, WEEE Netherlands launched a competitive WEEE collection campaign with schools. Each year classes in each school compete to achieve the highest WEEE collection rate, with the winning class receiving a fully funded school trip. Pupils reach out to families (to identify hoarded items) and neighbourhoods to raise awareness and collect WEEE. Interactive website and Facebook page allows students to check progress against other schools. Each race collects 1.5 tonnes of WEEE, with Germany seeking to launch a similar campaign due to the perceived educational benefits.

In Ireland, the "Recycle for Good" campaign is focused on supporting WEEE Ireland's battery collection targets. The WEEE Ireland-funded campaign directly supports Ireland's Children's Hospice Charity, LauraLynn, which receiving charitable donations in return for batteries collected via schools, businesses, consumers and participating retailers. The charity has supported an increase in battery recycling across Ireland since 2011, with schools in particular showing the largest growth in waste battery collections in 2016. Whilst focused on batteries, the scheme is a good transferable example of how community engagement in combination with a strong marketing message can increase collection performance.

9.8 Campaigns led via other actors

In Finland, Elker also delivers and supports awareness campaigns run by wider stakeholders and organisations. This includes campaigns delivered with the Rural Society for Agriculture and with the Guides and Scouts of Finland.

9.9 Use of technology and social media

Many examples of the use of technology have been identified throughout the course of the research – including websites, apps and social media and as a means of both informing citizens on routes for WEEE disposal, but also improving awareness and more generally as to the importance of recycling WEEE. In France, it is mandatory for PROs to develop and maintain a geo-localised database of WEEE collection points available.

⁷⁹ Recupel Annual Report (2017)

In Ireland, WEEE Ireland has recently invested in the development of an interactive map to allow consumers to find their nearest electrical retailer that accepts WEEE or batteries.⁸⁰ This followed market research commissioned by WEEE Ireland, which indicated that there was a lack of consumer knowledge on how and where to deposit WEEE. Since the launch of the new website, WEEE Ireland has seen a 93% increase in online traffic as a result of Facebook promotions of the map.⁸¹ Social media more broadly represents a mechanism for WEEE Ireland to reach its target audience, with its own research suggesting it reached 1.8million individuals via social media platforms in 2017.⁸²

Whilst websites and social media represents the most common formats for raising awareness and providing information on recycling locations, Recupel also uses newspaper articles, radio interviews and TV reports to raise attention to the importance of responsible end-of-life management of WEEE⁸³.

9.10 The importance of communications - Ipsos Mori Consumer Attitudes Survey

9.10.1 Introduction

A study into consumer attitudes towards the use, reuse, recycling and repair of WEEE has been carried out by market research specialists Ipsos MORI, and funded by the 2017 WEEE Compliance Fee Fund. The research provides the current baseline in terms of public attitudes and behaviours towards WEEE, and aims to provide the foundation for further WEEE Fund communication activities.⁸⁴

The research programme involved a research and campaign review, stakeholder workshop, and qualitative and quantitative research. The qualitative research was conducted in person at various locations across the UK, with 52 participants taken from a spread of demographics. This took the form of in-depth interviews and focus groups. The quantitative research was based on an online survey, with 2,049 participants, again taken from a spread of demographics to give a nationally representative sample.

⁸⁰ <https://www.wееeireland.ie/household-recycling/where-can-i-recycle/>

⁸¹ <https://annualreport.wееeireland.ie/key-projects#role-of-retailers>

⁸² <https://annualreport.wееeireland.ie/2017-results#wееe-collection-results>

⁸³ Recupel Annual Report (2014)

⁸⁴ WEEE Fund and Ipsos MORI (2019) Waste Electrical and Electronic Equipment: Public attitudes and behaviours in the UK; Qualitative and Quantitative Findings, May 2019

9.10.2 Main findings

9.10.2.1 General attitudes and behaviour

86% of respondents agreed that recycling is worth taking the time and effort to do properly, and 64% would like to recycle more of their household waste than they currently do. However, 39% agreed it is difficult to determine what can and can't be recycled in their household recycling bins. This confusion may be a factor in why people do not recycle as much as they'd like. Of this 39%, 18-34 year olds, those newer to an area, and those who are less satisfied with either their local recycling service or their council's guidance on recycling were most likely to respond that it is difficult to determine what can be recycled.

Behaviour inertia can make changing habits a challenge. For example, 42% stated that whilst they know recycling is a good thing, they don't spend too much time worrying about it, and the same things go in their recycling every week.

Other findings included:

- Plastic and cardboard are foremost in respondents' minds when thinking about recycling; electrical items receive less attention.
- 49%, 28% and 16% reported that the majority of their lightbulbs, batteries and small EEE respectively go into general waste.

9.10.2.2 Small WEEE: Usage and awareness of disposal options

85% of respondents think that small EEE can be recycled in their local area, although there is less clarity when this is broken down into specific WEEE categories. Over 2 in 5 said that they, or someone in their household, has thrown WEEE into general waste in the past 12 months. It is not clear from the study whether this is due to the lack of clarity over which items can be recycled, or due to other factors.

In terms of what respondents were most likely to do with their WEEE, respondents reported that they have: put it into general waste (43% of respondents); taken it to the HWRC (27%); hoarded in homes (22%); taken it to a recycling bank for electrical items (22%); or sold/given away (10%). Repair and reuse rates amongst respondents were very low.

Younger people are more likely to hoard, sell/give away and repair WEEE, and are significantly less likely to take it to be recycled compared to older people. Older people are less likely to hoard than younger people.

- Small, low-value WEEE is the most likely to be put in general waste.
- High-value WEEE with data is the least likely to be disposed of in general waste.

The most commonly hoarded items are mobile phones, batteries, accessories and computers. 18 to 24 year olds are the most likely to have hoarded each type of item: 53% responded that they hoard accessories, 51% hoard mobile phones and 29% hoard household items without batteries.

Reasons for hoarding varied item by item, but a lack of knowledge on how to correctly dispose of the item, or knowing what else to do with it, were common for most, as was not getting round to dealing with the WEEE. Data security was a top issue for computers and mobile phones.

9.10.2.3 Small WEEE: What would motivate people to recycle?

The three key factors for increasing small WEEE recycling were:

- **Capability:** increase the public's knowledge of how and where to recycle WEEE, and provide reassurances around data security;
- **Motivation:** increase the public's knowledge of the benefits of recycling WEEE; build on the public's existing engagement with, and understanding of, commonly recycled materials; build on the public's existing personal recycling values; and identify the personal benefits of recycling WEEE. It should be noted that deterrents can generate ill-feeling, and that Council-ownership of the issue relies on a positive relationship between the public and the council; and
- **Opportunity:** recycling of WEEE needs to be more convenient and should build on people's existing routines.

These factors need to work in combination in order to have maximum impact.

Convenience, communication/information, and rewards/charges/incentives were the most popular responses that would make people more likely to recycle small WEEE. More specifically, mention of communications/information largely related to practical information on where, how and what to recycle. It should be noted however that solely raising awareness may not be enough for some consumers, as some will still throw WEEE into general waste even with full knowledge of where to recycle it. Accessories were the item most commonly placed into general waste, followed by batteries, appliances (both with and without built-in batteries), and lightbulbs.

Reducing landfill, and stopping pollution or harm to the natural world, were the two most significant reasons to recycle, although all reasons resonated with respondents. The other motivating reasons to recycle were (in descending order): to conserve resources; to prevent carbon and other GHG emissions; to save the additional energy needed to source virgin materials; to reduce the need to import materials from other countries; the cost of recycling is covered by the producer (as opposed to the LA bearing the costs if the WEEE is placed into general waste); and recycling means the data on the device is securely destroyed. Each of these were given as motivating reasons by at least 65% of respondents.

Less than half of respondents were previously aware of most of these key reasons for recycling WEEE, with the exception of reducing landfill and stopping pollution or harm to the natural world. Only 16% were aware that the cost of recycling is covered by the producer rather than the LA, only 19% were aware that data is securely destroyed, and 38% were aware that recycling electricals prevents the release of carbon and other

GHGs. So whilst all these factors would motivate the general public to recycle WEEE/EEE, there was limited awareness of them.

9.10.2.4 Communications

When asked whether they had seen, heard, or read any advertising, publicity or information about recycling small electrical items, 25% responded that they had, with signs at HWRCs the most common channel. The other channels mentioned had broadly similar response rates (ranging from 6% that had received leaflets delivered to home, to 3% that had heard information on the radio).

52% wanted to know more about how to recycle small WEEE/EEE; this was highest among 18 to 34 year olds. 52% stated that their preference for receiving information on WEEE recycling was for it to be delivered via leaflets to their homes – this was greatest for those aged 55+. There was also a strong preference for information online, signs on bins, and information on the products themselves. 81% responded that they would like this information to come directly from their local council; this was by far the most popular channel.

9.10.3 Survey conclusions

WEEE recycling rates and awareness is slightly lower in urban areas compared to rural. Compared to older age groups, 18 to 34 year olds are: less likely to have recycled WEEE; more likely to hoard; more likely to not know how small WEEE/EEE can be recycled in their area, or about items that cannot be recycled; and more likely to want to know about how to recycle small EEE/WEEE.

18 to 34 year olds therefore are less likely to recycle EEE/WEEE, but are more likely to want to gain an understanding about how to recycle small EEE/WEEE – they may therefore be more open to behaviour change with the right knowledge and awareness.

Lightbulbs, accessories and batteries are most likely to be thrown into general waste after becoming unusable. Accessories and lightbulbs also have the highest rate of uncertainty over if and how they can be recycled. This may be a contributing factor to the prevalence of throwing these items into general waste. Mobiles, batteries, accessories and computers categories are most likely to be hoarded. This is most common among households with teenage children, which could be due to the high ownership rates of these devices among teenagers.

Communications should have practical information on where and how to recycle, and include motivating reasons to recycle. In particular, these should relate to reducing the harm caused by WEEE to wildlife and the natural environment, and reducing landfill. A priority should be to make people aware of where the convenient collection and drop-off points are in their local area. As data security is a key barrier to recycling WEEE and is a common reason for hoarding devices, this should also be addressed in communications. There is a clear preference for information to come from local councils, as well as environmental organisations, national government, and

retailers/manufacturers. There was less preference for the information to come from the workplace, a child's school or a celebrity.

The responses to whether the public currently use, or would use, potential WEEE collection locations are summarised below, with the net response also given. The net response is calculated as the total percentage of respondents who already use this collection point plus the percentage who do not currently use it but would if it was available, minus the percentage who do not currently use and would not use even if it was available. 'Don't know' responses are counted as neutral. A positive value indicates that, for the majority of respondents, this collection point is either currently or would be used.

- HWRCs: net response +82%
- Supermarkets and shops (including car parks): net response +72%
- In-store drop off points: net response +67%
- Free post-back services to return broken/unused items: net response +62%
- The street / outside housing estates: net response +56%
- At the workplace: net response +23%
- Public buildings such as libraries and churches: net response +30%
- Petrol stations: net response +28%
- Schools: net response – 2%

It is also worth noting that WRAP research⁸⁵, prior to the Ipsos Mori survey, also disclosed interesting factors relating to recycling and reuse. This quantitative WRAP research into UK household behaviours, including over 4,000 participants, showed that:

- Over 60% of customers have WEEE items at home they no longer use.
- Two thirds of consumers are concerned about personal data on devices they've used, such as smartphones and computers.
- Over half would be discouraged from disposing of data-bearing items, but a further 15% have not considered personal data issues. Concerns around personal data have discouraged 35% of households from disposing of a product.
- Take-back, trade-in and service business models can provide customers with reassurance that data will be protected and eradicated from their devices by professionals.

It is not too surprising perhaps that people would rather hand in a data-bearing device to a person at a retailer rather than drop it into a recycling bank or a kerbside collection where it could potentially fall into the wrong hands. It is interesting to note that in France (and Switzerland) the EEE retailers offer over the counter return, approximately

⁸⁵ Switched in to Value (2): Powering Business Change, 2017

5,800 staffed ‘green counters’ (5000 in Switzerland, a far smaller country), as well as simple containers for small WEEE and lamps, normally at the store entrance.

9.11 Impact of in-store communications and take back

The important role of communications has been further evidenced through discussions with one large specialist UK electrical retailer, which notes that in-store take back works most effectively where there is a national mandatory involvement of EEE retailers (as is the case across all countries studied) and national communication campaigns. This ensures that consumers are familiar with the possibility of returning WEEE to the retail outlets and that they know that any will take back WEEE, rather than just certain retailers as in the UK.

To illustrate the point, one of the UK’s largest specialist electrical retailers takes back just 350 tonnes of WEEE in store from ~400 UK outlets whilst data obtained from Norway indicate retailers collect 3,500 tonnes from ~150 stores; a factor of ~23 greater. Data on lamp return from Recolight also indicates the importance of consumer awareness campaigns as well as the physical in-store infrastructure, Table 10.

Table 10: Impact of in-store lamp collection and related communications (Source: Recolight)

Country	Proportion/no. of retail collection points vs. total number of collection points	Proportion of lamp WEEE collected from retail collection points	Consumer communication programme?
Finland	2,200	3% (30 tonnes)	No
France	18% (4,000 of 22,000)	14% (698 tonnes)	Large consumer awareness campaigns
Germany	45% (4,000 of 8,900)	2% (140 tonnes)	No
The Netherlands	6,605	17.4% (376 tonnes)	Large consumer awareness campaigns

10.0 WEEE collection costs

This section summarises relevant financial information and collection cost data obtained during the course of the research, and should be treated as commercially sensitive. It has only been possible to determine the cost performance of different collection systems at a high level, due to commercial sensitivities expressed by PROs consulted during the course of the research. Commercial sensitivities are more significant in countries where competition exists between PROs, and in particular, those PROs that operate on a for-profit/commercial basis. In some instances, individual PROs declined to participate in the research, citing commercial sensitivities associated with disclosing collection performance and cost data.

It is important to note that collection cost efficiency will inevitably vary according to a number of factors, not limited to:

- The extent to which economies of scale exists, for example to deliver efficiencies in collection logistics;
- Competition in relation PROs (i.e. more than one PRO operates within a country), and more importantly in regard to the collection, sorting and treatment costs. It is important to note that where collectors (e.g. municipalities and retailers) are paid compensation, and PROs need the WEEE to meet targets, the compensation fee can escalate unless fixed nationally;
- Collection methods – including collection container dimensions, which can have a significant bearing on efficiency – for example, smaller containers require emptying more frequently;
- The number and density of WEEE collection points available within a defined geographic area; and
- Population density within each of the countries studied – including proportion of urban to rural population.

These factors introduce challenges in respect of comparing the different collection costs across the countries studied.

10.1 Financial compensation paid to collectors

Table 11 summarises details of financial compensation paid by PROs to relevant stakeholders through different country schemes. In all instances, PROs provide a financial incentive to retailers on a cost per tonne basis, although some variation is noted between the level of compensation offered to small vs large retailers – for example, in Switzerland, large retailers receive no compensation, whereas small retailers receive a payment per pallet load collected. This is the reverse in Belgium, where large retailers receive a payment per tonne but small retail stores receive no direct payment for WEEE collected - although collection costs are free of charge, with the retail sector paying nothing to support the wider collection system.

Table 11: Financial compensation paid by PROs to municipalities and retailers

	Municipal	Retail
Elker, Finland	€60/tonne	-
Recupel, Belgium	€75/tonne to recycling parks	€110/tonne (large/medium retail only)
Swico, Switzerland	€151/tonne	Small retailers receive €15 per pallet (nothing to large retailers)
Ireland, WEEE Ireland	Details provided but omitted due to commercially confidentiality	Details provided but omitted due to commercially confidentiality
The Netherlands, WEEE NL	€90/tonne to municipalities (mixed WEEE in single ISO container)	€140/tonne large retail

The compensation paid by WEEE NL to retailers for WEEE collection is higher than that offered to Dutch municipalities, at €90 per tonne of WEEE collected, since there is no statutory requirement for municipalities to collect WEEE according to category in the Netherlands, and hence the disparity in price reflects additional sorting costs via the municipal collection route.

Financial incentives are also offered to Irish retailers, which are considered to represent one of the success factors in delivering high rates of take-back via the retail route - in combination with other mechanisms, namely, mandatory handover to the compliance route, expansive retail communications programme, and enforcement activity with retailers to ensure adequate storage infrastructure and records of take-back.

Retailers in Belgium are required to enter into a contract with Recupel, with financial compensation paid to retailers based on an agreed volume, and calculated according to market share. Financial compensation arrangements contained within Recupel’s retail contract agreement is summarised in Table 12.

Table 12: Recupel retailer contract financial agreement for collected WEEE

Number of collected units⁸⁶	Rebate to retailer

⁸⁶ 1 piece LDA = 1 unit, 1 pallet box of TVs and monitors = 7 units, 1 pallet box of small WEEE = 2 units

0-49 units	€0
50-99 units	€500
100-299 units	€1,000
300 and more	€2,000

Under the terms of the contract, retailers are required to hand over 100% of WEEE volumes collected, but in practice this is not always the case. When retailers reach the contracted amount, any volumes collected over and above the contracted agreement is typically sold to scrap dealers. Desk research has also suggested some disquiet amongst retailers in Belgium, in regards to the lack of participation in the collection fee setting procedure⁸⁷.

In Belgium and the Netherlands, there is also agreed financial arrangements with other collection partners. In Belgium, Recupel also pays €110/tonne to the WEEE reprocessing sector (only those that treat WEEE in accordance with WEEELABEX standards) and also compensate the re-use sector at a rate of €110/tonne. In the Netherlands, PROs provide a financial payment to scrap metal reprocessors that hand over WEEE to WEEELABEX reprocessors by way of compensation for lost scrap value.

10.2 Additional costs

Other financial arrangements include payment for retail infrastructure, which again, differ across those countries studied. Whilst in Belgium, Recupel compensates retailers for loss of store space arising from the introduction of in-store/warehouse WEEE take-back infrastructure (according to number square metres), retailers in Finland, are required to cover the costs of in-store infrastructure, which is also the case in Ireland.

As described earlier, variances in density of collection points and population, and competition between PROs have a significant bearing on collection efficiencies, and hence, introduce challenges when comparing WEEE collection systems across different countries. This is particularly the case in regards to logistics costs; whilst Swico (Switzerland) indicated that logistic represents an approximate cost of €143/tonne, Elker (Finland) suggested a logistics cost of €120/tonne, noting that it considers logistics costs to be higher for mobile and retail collection, since loads are typically smaller and hence, require more frequent collection. Recupel suggested a logistics cost of €30/tonne for collection of front-of-store WEEE collection boxes from retailer, however it should be noted that the density of retail collection points (which also includes food retail) across Belgium are relatively high compared to other countries studied.

Retailer WEEE is generally collected in a van or lorry on a collection round. For WEEE Nederland this means 5 or 6 collections per day, each filling a large van (around 500kg to 600 kg of WEEE per collection), i.e. perhaps 3 tonnes or so per day. This involves one

⁸⁷ WEEE Compliance Promotion Exercise (DG ENV 2016)

paid staff member and a trainee from a disadvantaged group. Cost for a manned vehicle are around €60 euro per hour., Hence the cost per tonne is in the region of €150 per tonne for this type of relatively efficient collection. The retailer receives a compensation of €6 per large appliance or per 240 litre branded wheeled bins with small appliances.

WEEE Nederland note that the collection of lamps and very small WEEE from small collection bins at retail shops as it is undertaken currently is not efficient as the quantities per collection point are very small, perhaps as little as 10kg, and hence can cost over €1,000 per tonne. WEEE Nederland intend to use 240 litre branded wheeled bins for their collections, ideally aggregated with over the counter WEEE, to make collection more efficient and lower cost.

10.3 Collection cost comparison by collection route

As stated earlier, not all PROs were willing to divulge specific cost information due to sensitivities. In light of these sensitives, and in order to provide some level of benchmarking, PROs were asked to indicate (in percentage terms) how the costs for different collection systems compare against WEEE collection costs via the traditional municipal (permanent) collection point route.

Table 13: Indicative cost for different WEEE collection systems against HWRC

Collection	Indicative costs
Retail take back	<p><i>“Approximately 50% more expensive than HWRC – although collection via larger retail stores (where volumes are higher) can be closer to the cost of HWRC.”</i></p> <p><i>“HWRC and retail routes are broadly similar, with the only real difference being treatment costs associated with the different mix of WEEE collected via these routes.”</i></p> <p><i>“Retail infrastructure costs typically much lower compared with HWRC costs, although retail logistics costs are higher, as a consequence of smaller and more frequent collection loads.”</i></p> <p><i>“Retail collection can be cost effective, particular for larger retail establishments – although smaller shops represent a more costly option compared with HWRC.”</i></p>
Kerbside - not integrated	<p><i>“Pilot kerbside collection approximately 400% the cost of HWRC -not considered to be not a cost-effective method of collection.”</i></p> <p><i>“WEEE kerbside collection approximately 300% more expensive than HWRC.”</i></p>
Bring events	<p><i>“Public/workplace collection events approximately 100% more expensive than HWRC”</i></p>
Courier collection	<p><i>“The cost of organizing an end-to-end return process would simply be too high (between €4 – 8 per return package) compared to the average value of the new items sold.”</i></p>

This suggests that retail collection can be cost effective, particular for larger retail establishments, although the context in which retail collection systems are deployed within those countries studies is important, namely highly visible collection points, together with targeted communications and collection of bulked up WEEE quantities to maximise logistics efficiencies.

The higher costs for mobile/bring event collections reflect higher fixed costs associated with running each event – i.e. a minimum of two staff per event. These costs remaining consistent. Operating costs are therefore not optimised due to the temporary nature of bring events, which remain consistent regardless of the quantities of WEEE collected (varying from 0.6 to 10 tonnes per event).

WEEE collection via courier in Belgium and the Netherlands have so far been shown to be commercially challenging to implement. In the case of the Netherlands, this is due to logistics partner Post NL seeking €2 per item collected, in line with online postage return costs in the Netherlands. This may mean that a small item, weighing say 150g, costs the equivalent €13,000 per tonne which is clearly very costly. WEEE Nederland suggested that €0.5 per item may be acceptable but still extremely costly compared to all other means of collection.

In the absence of available cost data relating to the integration of small WEEE collection into existing domestic kerbside collections, discussion with a national UK waste management company (currently offering this service to UK local authorities) confirmed the following:

- Integrating WEEE collection on a single pass basis with refuse/recycling collections is the most cost effective and in the long term is it very much at marginal cost in additional to the core collection service;
- There is often an initial burden on collection staff due to an initial spike of WEEE (i.e. clearing of household hoarding) however long term, there is rarely an impact on productivity, to the extent additional staff are required;
- Additional cost and productivity impacts can be managed by avoiding the introduction of WEEE kerbside during any major service change or re-route.

This presents a case for consideration of WEEE collection via existing kerbside systems, and in particular, in locations where residents are poorly served by HWRC facilities.

11.0 Summary and Recommendations

Until recently the UK WEEE system has performed well, increasing WEEE collections dramatically since 2008 and becoming a leading nation in terms of WEEE collected per inhabitant. The UK reported a WEEE collection rate in 2016 above the EU average and has met all WEEE collection targets up to 2017, exceeding the 45% target, based on the previous three years placed on the market (POM). The UK's EPR system is also relatively low-cost, when compared to some other systems in Europe.

The UK also uses substantiated estimates to help meet collection targets, whereas the research has identified that other EU countries only count WEEE dealt with through the official systems towards such targets. Where the method of calculating WEEE collection performance is brought in line with protocols used by other EU countries (i.e. emitting the inclusion of LDA in light iron), the UK is not doing as well as the figures suggest, with collection performance at around 42%.

The more demanding 65% collection target for 2019 is more challenging, particularly given a decline in EEE POM and declining WEEE generation (in part due to hoarding and informal reuse and because consumers may be buying new EEE products in addition to their existing EEE, rather than as replacements).

There is concern, therefore, about the UK's ability to meet the 65% collection target in 2019 and beyond. Defra has therefore set targets for 2019 that mean that the UK has to collect 58,000 tonnes more than was collected in 2018. Defra's targets show a particular need to target more small household appliances and small mixed WEEE in particular - an increase of 25% above the 2018 collection figure and 20,000 tonnes up on the 2018 target. A significant amount of this small WEEE stream is thought to be hoarded or disposed of in residual waste.

The UK is unusual (perhaps unique) in that considerable use is made of the derogation option under Article 5 (2) of the WEEE Directive, to allow distributors to help to finance local authorities via the DTS to collect WEEE free of charge, primarily through the HWRCs. None of the countries studied during the course of the research make use of the derogation set out within Article 5 (2) of the WEEE Directive.

Article 5 states that derogations may only be applied in regard to retailer take back ...

"..provided that they ensure that returning the WEEE is not thereby made more difficult for the final holder and that it remains free of charge for the final holder" ... and where ... " alternative existing collection schemes are likely to be at least as effective. Such assessments shall be available to the public."

It is not unreasonable to suggest that taking WEEE to a relatively distant (often out of town HWRC), where the UK density is low as noted above, is often less convenient for consumers than taking WEEE to an in-town retailer, and impossible for those without cars. Consequently, they may be more likely to hoard or dispose of WEEE (and small WEEE in particular) in their residual bin as a result.

All countries considered as part of the research are implementing 1:1 and 1:0 WEEE take back in line with the WEEE Directive requirements, and operate a national network of in-store retail collection points. Against the countries studied, the UK has the lowest number of official retail collection points.

Alternative collection routes therefore seem necessary and many of these may well be more expensive, per tonne, than the current arrangements and it seems this is something that may well need to be accepted to meet the higher targets. Some of the additional cost will fall on producers, however it seems that the distributors also need to take a more active role in allowing free take back in the spirit of the WEEE Directive – and as demonstrated across those countries studied during the course of this research.

This section provides an overview of recommendations suggested as providing the basis for increasing WEEE collection performance through the current UK system and support the higher 65% collection target.

11.1 Primary collection options

11.1.1 Small mixed WEEE integrated with domestic kerbside collection

Evidence obtained during the course of the research presents a strong case for wider integration of mixed WEEE collection via existing kerbside systems, and in particular, in locations where residents are poorly served by HWRC facilities. Discussions with UK waste management contractors already offering this service to UK local authorities suggests that integrating WEEE collection on a single-pass basis with refuse/recycling collections is the most cost effective, and that over the long term, is it very much at marginal cost in additional to the core collection service.

Anecdotal evidence indicates that where WEEE kerbside collection systems have been introduced, this results in an initial spike of WEEE performance (i.e. households having a 'clear-out' and hence, positively addressing issues of hoarding) upon introduction of the service - although it may only be suitable for items that are not data sensitive, such as lamps and small appliances. Household boxes to support segregation of WEEE (as the case in the Netherlands) may help to support households by providing a central in-house container for organising the storage of end-of-life devices and cables.

Small WEEE collections, for selected items, should therefore be integrated into existing domestic kerbside collections nationally. Furthermore, local authorities should be incentivised to introduce kerbside collection services and collect more, by being paid a compensation sum per tonne of WEEE (by category), as is the case in many of the countries studied.

11.1.2 Increased retailer involvement in WEEE collection

Some of the more successful approaches identified during the course of the research include the mandatory involvement of retailers, including those in the grocery sector as well as the EEE retailers per se. As noted earlier in this report, at present retailer

initiatives are restricted. Dixons Carphone are not members of the DTS and do undertake in-store take-back as required by the Directive, and collect small WEEE free of charge on delivery of large items to homes, although they still charge for large appliance collections. Dixons are an exception with most retailers being members of the DTS, hence avoiding in-store take-back obligations, and charging for collection of WEEE on delivery.

Discussion with European stakeholders has indicated that in store take back works most effectively where there is a national mandatory involvement of EEE retailers (as is the case in most EU countries) and national communication campaigns. This means that consumers are familiar with the possibility of returning WEEE to the retail outlets and that they know that any will take back WEEE, rather than just certain retailers as in the UK.

As noted earlier in this report, the recent IPSOS Mori poll indicated that 42% of respondents said that they would use a retail WEEE collection point if available, supermarkets being the most preferred option. Evidence from Sweden, the Netherlands, Belgium and Switzerland also indicates that supermarket collections are reasonably well utilised since they are somewhere that people go regularly.

Having very large and well-branded collection containers at the front of stores, and for the smallest WEEE by checkouts (often mixed lamps, batteries and other very small WEEE), provide a simple and convenient drop off point for consumers, particularly urban dwellers without a car.

To compliment kerbside collections, or substitute for them where they are not deemed possible, it seems most cost-effective to require:

- Free 1:1 take-back on delivery of new EEE, going beyond the Directive requirements, and offering consumers the greatest convenience and also potentially avoiding the loss of LDAs to less-well controlled waste routes (particularly the refrigeration equipment);
- Free 1:1 in all EEE stores and free 1:0 take-back of lamps and other small WEEE on delivery of new EEE in all EEE stores and grocery stores (in lobbies rather than in car parks) and potentially other outlets such as petrol stations that people visit very regularly. This seems to be logical in terms of fulfilling Article 5 requirements (re. convenience vs HWRCs), consistent with battery collection and particularly useful for the collection of lamps and data devices, the latter where people are more willing to deposit with a retailer than risk theft from a public collection, and while a small tonnage, will have a disproportionate value; and
- Combine the above with a strong and consistent national communication campaigns.

Clearly it does not make sense to have every store that sells just a few items of EEE per year (such as a clothing store selling watches) to have to collect WEEE, and hence it is suggested that a de-minimis should be applied in a similar fashion to the UK Batteries

Regulations⁸⁸, i.e. but perhaps in regard to the value of EEE sales per year by store rather than weight, which could be burdensome to calculate for each store.

Given an increase in retailer collection it would also be helpful for all retailers to be required to:

- Hand over WEEE to a PRO, with an appropriate compensation arrangement; or, as a minimum;
- Provide a central body with data on WEEE collected and passed on to AFTs or other bodies (such as secondary sellers or non-AATF re-use organisations) to minimise data 'leakage' from the formal system.

As in a number of EU countries, the retailer could be treated in a similar fashion to other collectors, with a nationally agreed payment schedule. This could be set to:

- compensate for a loss of sales space where going beyond the minimum legal take back requirements under the WEEE Directive, i.e. taking back 1:0 when having less than 400m² of EEE sales area; and
- compensate for the residual value of the products (e.g. scrap value or resale value), where handing over WEEE to a PRO.

11.1.3 B2B WEEE collection

Whilst a significant proportion of B2B WEEE is reused or properly treated, very little is obligated and data availability and quality is limited. It would be beneficial to drive more UK B2B waste into the official system via PROs, and hence allow evidence to be issued, helping to provide greater data certainty and physically capturing more items.

The majority of those countries studied place particular emphasis on targeting B2B WEEE through existing collection systems. Countries including Belgium, Finland, the Netherlands, Sweden and Switzerland offer free or low cost B2B WEEE disposal to encourage greater quantities of WEEE (particularly Cat 3) to be collected through the 'official' PRO channels. In the case of Switzerland, there is no distinction between B2C and B2B WEEE in its collection and financing arrangements. All the above countries accept B2B WEEE at municipal collection points, free of charge, with municipalities financially compensated via PROs per tonne collected (i.e. in addition to financial compensation received for collected B2C WEEE).

Opening up existing HWRCs to businesses would significantly increase the available capacity and disposal options for B2B WEEE in the UK, and should be supported via targeted local and national communications, as in the case of Belgium, which provides

⁸⁸ Distributors and retailers that sell or supply more than 32 kg of batteries a year must participate in the take back scheme. This involves providing a free collection point for waste portable batteries at their premises and arranging their transport to an ABTO or ABE, usually through a BCS.

information to businesses and trade services (plumbers, electricians etc.) to increase awareness and provide guidance on collection points available locally.

As above, local authorities should be incentivised to introduce B2B WEEE collection via HWRC, by paying a nationally agreed sum per tonne of WEEE (by category), as is the case in many of the countries studied.

Convenient and low cost collection options for B2B WEEE should be investigated more broadly. Options may include pilots funded via the WEEE Fund. The ‘Smartloop’ collection service currently being piloted in Belgium provides one example of a collection system where businesses are only required to cover the costs of logistics.

11.1.4 Postal/courier take back for online sales

Whilst courier take back pilots in Belgium and Netherlands have (so far) not been considered to be cost effective, this is largely due to the courier partners involved not having the appropriate collection and reverse logistics systems in place at the point of trial – and critically, the level of financial compensation sought by courier partners (in the case of the Netherlands, Post NL were requesting €2 per item collected (i.e. in line with the cost of online postage return cost. Feedback from WEEE Netherlands suggests that courier collection services could be financially sustainable where courier partners were willing to accept a lower financial rebate of €0.5 per item.

A UK WEEE courier/Royal Mail collection pilot is recommended to assess and evaluate the potential effectiveness and role in supporting WEEE collection, with a particular focus on online sales.

It is recognised that carriers may require waste carrier licenses and licenses and driver training for the carriage of dangerous good (e.g. equipment containing batteries and hazardous substances). In the trials undertaken in the Netherlands the quantities per round are small and hence small secure containers on the outside of delivery vehicles can be used to help minimise the risk.

11.2 Complimentary activities to support collection performance

11.2.1 National WEEE communication campaign

Many of the high performing countries studied during the course of the research place significant emphasis on the role of communication campaigns and activities to support collection efforts. Evidence from WEEE Ireland’s 2017 “The Year of Small WEEE” campaign correlated to 32% of small household compliances being collected for recycling in 2017, compared to 26% the previous year.

In France (where PROs are required to allocate a minimum of 0.3% of revenue to national communication campaigns and activities), enhanced communication campaigns was largely attributed to the collection of small WEEE increasing 18.4% between 2013 and 2014, and by 23.7% between 2010 and 2014.

The experience in Belgium suggests in-store collection points can have a significant impact when comprehensively rolled out nationwide in collaboration with media campaigns. PRO campaigns are also often supported by national government campaigns, in addition to those delivered by municipalities (e.g. in France and the Netherlands).

The expansion and investment in targeted national communications campaigns represents a prerequisite to support primary collection options discussed in the previous section. This should be led by Defra, and consider minimum financial contributions from PROs, in order to:

- Provide practical information on where and how to recycle, and include motivating reasons to recycle – including product category specific guidance;
- Make people aware of where the convenient collection and drop-off points are in their local area;
- Address data security to overcome barriers to the hoarding of data devices.

It is worth noting that ‘Visible Fees’, used in Belgium, France and the Netherlands, are helpful in making consumers more aware of the costs of treating their waste products and may (potentially) help to ensure consumers give more consideration as to how they dispose of WEEE, if they feel they have paid for a service. If consumers are more aware that there are costs associated with disposal, they may possibly be more inclined to consider where and how to recycle the item - and indeed, whether the item can be reused.

Whilst it should be noted that no evaluation studies evaluating the impact of visible fees on consumer behaviour have been identified during the course of the research, further consideration should be given as to the merits and potential role of the visible fee in delivering communication benefits, to support UK WEEE collection performance more broadly.

11.2.2 Enhanced role of Point of Sale communications

Point of sale communication campaigns have been demonstrated to increase awareness amongst consumers of the ability to return WEEE back to retailers in store. Examples of successful communication campaigns include WEEE Irelands “We’ll Take it Back” campaign, which supports electrical retailers deliver on the mandatory take back requirement. Key messaging included conveying the retail sector as recycling centres for WEEE. Approximately 200 retailers participate in this campaign, with evidence suggesting that participating retailers delivered approximately three times the yield of WEEE in-store.

Since its introduction in 2014 there has been a significant increase in WEEE retail take back volumes – and a 4% increase in WEEE take-back from retail partners since 2018 - with Ireland collecting proportionally more WEEE from retail collection points than any other scheme in Europe.

Enhanced Point of Sale WEEE take back service communications introduced across all retail stores in the UK, ensuring communications are highly visible to consumers – including messaging adjacent to electrical appliances sold in store, on sales brochures and literature, websites and sales receipts.

11.2.3 Expanded communications focus with schools

Many of the PROs and governments studied (including Germany, the Netherlands and Finland) place emphasis on engagement with schools as part of efforts to educate the next generation of citizens. WEEE Ireland’s “Recycle for Good” has demonstrated that schools represented the largest growth in waste battery collections in 2016, and represents a good transferable example of how community engagement in combination with a strong marketing message can increase collection performance.

In Finland, PROs have paid for the print and distribution of a series of children’s books which covers a range of topics including WEEE recycling, whereas in the Netherlands, competitive WEEE collection competitions are delivered in schools, with a focus on tackling hoarding, with Germany seeking to launch a similar campaign due to the perceived educational benefits.

Expanded communication activities to include a focus on schools, including:

- Funding the development of materials which can be used as part of the national curriculum (as seen in Finland); and
- A national WEEE collection competition aimed at encouraging school children to compete for prizes.

11.2.4 Communications and incentives for students

Whilst charities including the British Heart Foundation already work with a number of UK colleagues and universities to provide collection banks in communal areas such as halls of residence, countries including Belgium have gone further by actively targeting the student population through the offer of incentives to encourage handover of old devices – with a particular focus on small WEEE and data devices.

Pilots (potentially funded via the WEEE Fund) to evaluate the effectiveness of communications and incentives targeted at the UK student population on increasing small WEEE collections.

11.2.5 Bring collection events

Bring events in town centres and markets, such as those organised by ECO-systèmes and Eco-Logic in France, and Recupel in Belgium, typically contribute to a small proportion of WEEE collected via the official system – less than 1%. Yet the objective of these events more focused on awareness raising and educating citizens. In France, mobile collection

events represent a significant proportion of its communications budget, and it considers the activity to be an effective method of providing information to the public.

In Belgium, many municipalities continue to deliver mobile collection events independently of Recupel, due to the perceived value it offers in engaging with citizens locally. These are often effective where delivered with third sector partners in the WEEE re-use sector, to ensure items collected are tested for suitability for re-use.

PROs fund and deliver bring collection events in partnership with local authority and re-use partners as part of an expanded programme of local communication activity, aimed at improving awareness and encouraging reuse and repair.

11.2.6 Mobile collection points for rural and low population density areas

The UK has the lowest density of HWRCs than any of the countries studied, with the exception of Ireland, although Ireland has a much higher density of retail collection points available nationally. Many rural and densely populated areas of the UK are likely to be underserved and without a convenient disposal point for WEEE.

A number of the studied countries including Sweden, France and Finland offer rural and low densely populated communities mobile collection services, which aside from WEEE, also offer collection of items such as paint, oil and textiles. Whilst mobile collection systems inevitably incur higher logistics costs, for many communities across Europe, these represent a means of accessing recycling points, which would otherwise be much less convenient, and require driving long distances to permanent municipal recycling points.

Develop mobile collection pilots for WEEE and other waste streams in order to evaluate the effectiveness and role in supporting rural and densely populated communities to recycled WEEE.

APPENDICES

Literature review of selected countries

A.1.0 Introduction

A.1.1 Purpose

This document represents the findings of literature research to support an assessment of WEEE collection systems and their effectiveness in other European countries. Prior to undertaking the literature research, a preliminary rapid review of publically available material was undertaken, as part of an exercise to shortlist and prioritise EU countries of specific focus.

A.1.2 Country selection

Criteria used to support prioritisation including those countries which:

- Are achieving higher than average collection rates for WEEE;
- Are making progress towards the WEEE Directive 2019 collection target of 65%;
- Have collection systems other than via municipal collection points (e.g. retail, bulky, mobile, kerbside);
- Have a mandatory take-back obligation;
- Are exploring approaches to tackling free-riding related to online sales;
- Have adopted interesting approaches to increase collection rates, including consumer communication campaigns;
- Operate under one compliance scheme;
- Have producers (rather than municipalities) operate primary collections.

In discussion and agreement with Valpak and Defra, the following countries were prioritised, and form the focus of the literature review:

- Belgium;
- France;
- Finland;
- Germany;
- Ireland;
- The Netherlands;
- Sweden; and
- Switzerland.

A.1.3 Approach

For each country, the focus of the literature review research has sought to gather data and information on:

- WEEE legislation and regulation, with a specific focus on collection and take-back;
- Principles of collection and take-back system;
- WEEE collection performance;
- WEEE collection and take-back infrastructure;
- WEEE collected outside the official system;
- Collection and take-back costs;
- Approaches to consumer engagement; and
- Progress with tackling online traders and free riders.

A range of information sources have been reviewed and evaluated for usefulness and relevance to the research brief, including websites, reports, studies, grey literature, and electronic academic journals.

A.1.4 Limitations of the research

Whilst anticipated at the outset, the most significant information gaps identified during the course of undertaking the literature review exercise relate to financial information. Information gaps are anticipated to be filled during the stakeholder interviews and site visits which will follow the desk-based research.

The following sections present the findings of literature review research undertaken for each of the target countries.

A.2.0 Belgium

Table 1: Summary of relevant statistics (Eurostat, 2016)

Key figures	
Number of WEEE producer compliance schemes	1
Products put on the market - 3 year average 2013 – 2015 (tonnes)	299,906
Products put on the market - 3 year average 2013 – 2015 (kgs/inh)	26.7
WEEE collected (tonnes 2016)	127,680
WEEE collected per inhabitant (kg/inh)	10.7
WEEE collection rate (% 2016)	42.6%

- 1 PRO (Recupel) - hence, no competition exists between compliance schemes
- Requires visible fee to be shown in stores and on paperwork
- Recycling points located in supermarkets for small WEEE
- Kerbside collection pilots launched in Flanders in 2017
- Strong focus on consumer campaigns
- Retailers required to include communication on new EEE, explaining how consumers can dispose of WEEE
- Take back system in existence prior to the Directive
- Progress with tackling free riders
- Research on WEEE collected outside the official system.

A.2.1 WEEE legislation and regulation

WEEE management responsibilities within Belgium fall under the responsibility of each of the three regions of Flanders, Wallonia and Brussels Capital Region (BCR) with each region operating its own regional waste management plan.

Environmental conventions (developed in consultation within industry) ensure clarity and consistent implementation and application of WEEE regulation across the three

regions, aligned to the requirement set out within individual regional waste management plans⁸⁹.

Flanders transposed the 2002 Directive through the Flemish Waste Prevention and Management Ordinance II (the 'VLAREA II') which entered into force on 5th December 2003. In Wallonia the 2002 Directive was transposed through amendments adopted on 9th November 2010, with the Environmental convention on take-back obligation for WEEE, adopted on 11th May 2010. The Brussels Region transposed the 2002 Directive and implemented through an amendment of the Ordinance of 14th June 2012 on Waste and the Order of BCR Government of 1st December 2016 on waste management as well as the Environmental convention of 28th February 2012 on take-back obligation for WEEE⁹⁰.

Flanders is the most advanced of the three regions, in respect of the development and implementation of its waste management plan, having transposed the WEEE 2012 Directive in 2014, with BCR and Wallonia transposing the Directive in 2016 and 2017, respectively⁹¹.

Each region's environmental agency is responsible for WEEE management, including:

- OVAM (Flemish EPA);
- DSD (Walloon Soil and Waste Department, former Walloon Office of Waste); and
- IBGE (Brussels Institute for Environment Management).

A.2.2 Principles of system

Recupel is the only compliance scheme for household WEEE in Belgium, managing WEEE collection, take-back and recycling. It works closely with distributors, municipalities, reuse centres, regional authorities and recyclers as part of its remit to maintain an effective supply chain for the collection and treatment of WEEE. The Recupel system is used by the majority of producers and importers, is funded based on environmental contributions paid by consumers when purchasing new EEE (a 'visible fee'). Recupel has seven sectoral non-profit entities, each representing producers and importers of different types of electric and electronic appliances.

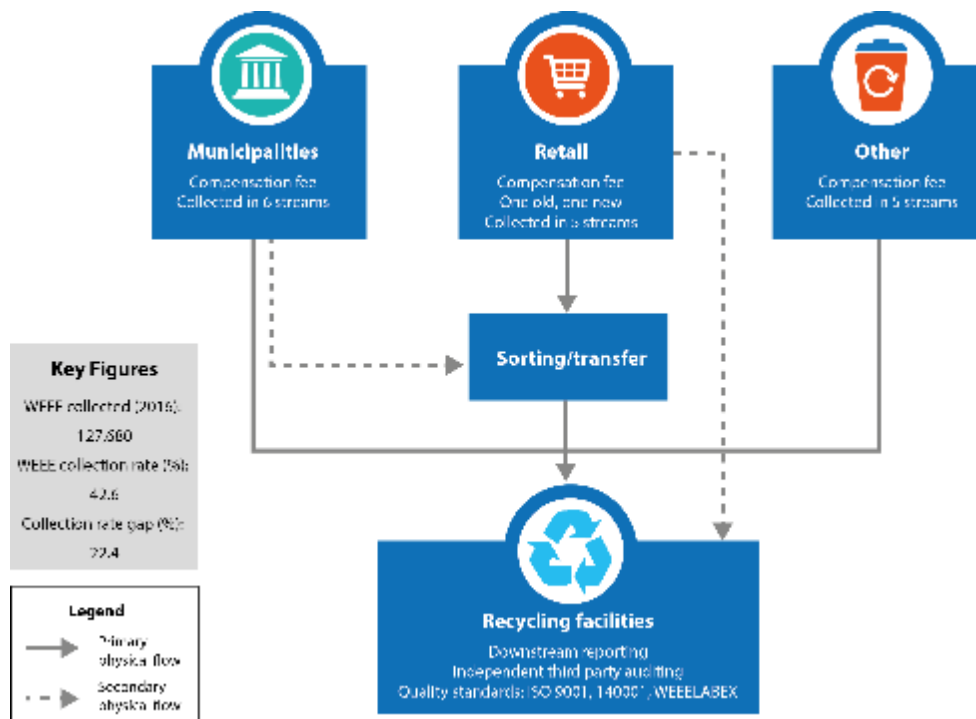
⁸⁹ DG ENV – WEEE Compliance Promotion Exercise <https://publications.europa.eu/en/publication-detail/-/publication/09c7215a-49c5-11e8-be1d-01aa75ed71a1/language-en>

⁹⁰ DG ENV - Final Implementation Report for Directives 2002/96/EC and 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE): 2013 – 2015 (Eunomia 2018)
https://ec.europa.eu/environment/archives/waste/reporting/pdf/Final_Implementation_Report_2013_2015_WEEE.pdf

⁹¹ ⁹¹ DG ENV – WEEE Compliance Promotion Exercise <https://publications.europa.eu/en/publication-detail/-/publication/09c7215a-49c5-11e8-be1d-01aa75ed71a1/language-en>

Self-compliance is possible, however only a limited set of producers organise the take-back of WEEE themselves (mostly B2B equipment)⁹².

Figure 1: Belgium WEEE collection and take-back system



A.2.3 WEEE mass balance

WEEE mass balance research undertaken by Recupel⁹³ is summarised below in Table 4. The mass balance consists of four main parts; including EEE placed on market (POM), registered streams and unregistered documented streams, and finally, unregistered undocumented streams.

The 128,940 tonnes of WEEE collected via registered channels in 2016 correlates closely with the official figures reported via Eurostat (Table 3) of 127,680 tonnes. 119,050 tonnes (44.7% of POM) was collected and recycled via the licensed Recupel channels in 2016.

In addition, 1,700 tonnes (0.64% of POM) of WEEE was collected by 10 companies that report WEEE via individual plans (see section 2.4.5.1). Companies that are not a Recupel Approved Recycler, but are involved in the collection and treatment of WEEE, can report

⁹² Mobius (2013) – Benchmark WEEE Systems in Europe

<https://www.nvmp.nl/uploads/pdf/research/2013%2003%2004%20Benchmark%20European%20WEEE%20systems%20final.pdf>

⁹³ WEEE Mass Balance and Market Structure in Belgium – Deloitte and Recupel (2018)

<https://i.unu.edu/media/unu.edu/news/39523/Recupel-Report-FINAL.pdf>

via the BeWeee tool⁹⁴. The Deloitte study shows that an additional 4,740 tonnes (1.78% of POM) of WEEE was reported via this route.

Table 2: Belgian WEEE mass balance 2016

<i>Weight in kton</i>	LHA	C&F	SHA (incl. IT)	SCREENS	LAMPS	PROF	TOTAL	
POM	52,73	37,68	117,51	13,55	3,27	41,48	266,21	100,00%
Target	34,27	24,49	76,38	8,81	2,13	26,96	173,04	65,00%
-> Registered	28,23	19,70	57,94	15,92	1,51	5,63	128,94	48,44%
--> Recupel	27,11	19,04	51,95	15,39	1,46	4,10	119,05	44,72%
--> Individual plans	0,00		0,29			1,41	1,70	0,64%
--> Complement BeWeee	0,33	0,11	4,20	0,09	0,01	0,00	4,74	1,78%
--> Waste registers	0,79	0,55	1,51	0,45	0,04	0,12	3,45	1,30%
-> Not registered	24,50	17,98	59,57	-2,38	1,76	35,84	137,27	51,56%
--> Documented	15,14	3,90	21,93	4,21	0,01	7,58	52,78	19,83%
---> WEEE in scrap	14,48	1,21	4,83	0,00	0,00	3,62	24,13	9,06%
---> Export EEE			13,54			3,74	17,29	6,49%
---> Export WEEE	0,46	2,69	0,80	3,29	0,01	0,22	7,48	2,81%
----> Notified export	0,46	0,82	0,12	1,42	0,01	0,20	3,04	1,14%
----> Unnotified export	0,00	1,87	0,68	1,87	0,00	0,02	4,44	1,67%
---> WEEE in municipal waste	0,20	0,00	2,76	0,92	0,00	0,00	3,89	1,46%
--> Undocumented	9,35	14,08	37,63	-6,59	1,75	28,26	84,49	31,74%

The mass balance researched also indicates that a significant part of the documented stream includes WEEE via the scrap metal management route, representing 24,130 tonnes (9.06% of POM). Exported WEEE accounts for equipment repaired by reuse centres destined for overseas markets.

A.2.4 WEEE collection

The total weight of WEEE collected through the Recupel network in 2016 amounted to 127,680 tonnes, representing 10.7 kg per inhabitant. Large household appliances represents nearly half of all WEEE collected, with ICT equipment, consumer equipment and PV panels each representing approximately 22,000 tonnes.

Table 3: WEEE collected by category (Eurostat, 2016)

Total WEEE	Large hh appliances (LHA)	Small hh appliances (SHA)	ICT equipment	Consumer equipment and PV panels	Other
127,680	56,831	15,199	21,933	22,804	10,913

⁹⁴ BeWeee is a tool hosted by OVAM through which is used by companies involved in the collection and treatment of WEEE to comply with their reporting obligation

Table 4 shows the collection rate for WEEE in Belgium is growing each year, which is considered in part, to be correlated to the market price of raw materials⁹⁵. Flanders achieved slightly higher WEEE collection rates, 11 kg per inhabitant in 2016⁹¹.

Table 4: Belgium WEEE collection – kg/inhabitant (Eurostat, 2018)

Year	2010	2011	2012	2013	2014	2015	2016
WEEE collected kg/inhabitant	9.3	10.0	10.1	10.3	9.9	9.6	10.7

Across all regions of Belgium, WEEE is predominantly collected via four channels – municipalities, retailers and distributors, reuse centres and metal recyclers. Recupel organizes the collection of WEEE through the following channels:

- Recycling parks where consumers can dispose of their WEEE (1:0 principle)
- Retailers and distributors via recycling points – 1:1 (and 1:0 for stores greater than 400 m²)
- Reuse centres, which process and repair used EEE for the second-hand device market (1:1 and 1:0 principle)

Table 5 illustrates the total collection points, for each of the main collection routes.

Table 5: Recupel collection points

	2011	2012	2013	2014	2015	2016	2017
Recycling parks	545	547	553	558	558	558	566
Retailers/ Distribution	3,916	4,117	4,407	4,869	5,050	6,961	7,140
Reuse centres	22	22	22	22	22	22	22
Total	4,834	4,686	4,982	5,449	5,630	7,541	7,728

Recycling parks account for 62% of the volume of WEEE collected, compared with retailers, which account for 24%, with other locations (mainly reuse centres) accounting for the remaining 14% of WEEE collected.

A.2.4.1 Recycling parks

Often described as ‘container parks,’ these facilities are operated by municipalities, which reserve space (e.g. pallet boxes) to accept WEEE, which is collected in six

⁹⁵ DG ENV - Final Implementation Report for Directives 2002/96/EC and 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE): 2013 – 2015 (Eunomia 2018)

individual streams - large appliances, cooling and freezing appliances, small appliances, televisions, lamps and smoke detectors. In return, municipalities receive a compensation fee from Recupel of €75/tonne. Recupel organises the collection of WEEE for onward treatment. Whilst municipalities operate the majority of recycling parks, additional collection points are operated under contract with Recupel. Flanders' Waste Management Plan requires municipalities to ensure that 90% of municipality inhabitants have access to a recycling park, whilst a municipality of 10,000 inhabitants should ensure that recycling parks are accessible to all inhabitants. An additional recycling park is a requirement for municipalities of over 30,000 inhabitants⁹¹.

A.2.4.2 Retailers and distributors

Retailers are obliged to accept WEEE in accordance with the 1:1 principle. For lamps and small WEEE, stores also take-back items in accordance with the 1:0 principle. Recupel organises the collection of WEEE from retail and distribution stores (including supermarkets) and transports material on to sorting and transshipment centres. In some instances, retailers transport WEEE directly to treatment centres. Retailers receive a fee directly from Recupel. Research suggests that some disquiet amongst retailers, in regards to the lack of participation in the collection fee setting procedure⁹⁶.

A.2.4.3 Re-use centres

Reuse centres are located at a number of recycling parks. Visual inspection identifies EEE deemed to be suitable for reuse, where it is either repaired or sold on directly (and hence not counted as WEEE). Any equipment determined to be unsuitable for reuse enters the WEEE stream, and is transported from site via Recupel onwards to the appropriate treatment facilities.

The criteria for reusability has been determined by Recupel and the reuse sector in a common agreement. Reuse centres are typically operated by third sector organisations, with financial assistance via Recupel. Recupel is required to grant access to third sector/reuse organisations based on specific agreements it concludes with the latter. Municipalities must conclude an agreement with a re-use organisation, if agreed by OVAM. The rate of preparation of reuse of WEEE delivered to reuse centres was 3.4% in 2014, calculated as a share of WEEE prepared for reuse, compared to the total tonnage of WEEE collected. Approximately 30 reuse centres report data to Recupel with the remainder reporting performance via BeWeee⁹⁷.

⁹⁶ WEEE Compliance Promotion Exercise (DG ENV 2016)

⁹⁷ Mass balance and Market Structure in Belgium (2016)

<https://i.unu.edu/media/unu.edu/news/39523/Recupel-Report-FINAL.pdf>

A.2.4.4 Kerbside

In Flanders, Recupel recently launched a pilot kerbside initiative. During the pilot, customers receive a collection box, with the objective of encouraging households to hand in small WEEE. Dependent on the scheme success, Recupel will consider expansion of the pilot to cover Brussels and Wallonia in 2019 as part of efforts to lower the threshold of WEEE.⁹⁸ Kerbside collection is not a mandatory requirement under the WEEE Directive. No further details which point to the reasoning for which Recupel has funded collection systems over and above the mandatory requirement has been identified in the literature.

A.2.4.5 WEEE collected outside of the official system

Individual waste prevention and management plans

WEEE (both B2C and B2B) collected outside of the official Recupel compliance scheme route also occurs, in accordance with individual regional waste prevention and management plans. A limited number of Belgian companies – 10 companies in 2016 – opt to organize their own individual system of collection of WEEE via this route⁹³.

Those companies who are not registered members of the compliance scheme are required to file individual waste prevention and management plans with regional governments. Regional governments monitor the implementation individual companies' waste prevention and management plans.

Registered waste collectors and brokers manage WEEE collection via this route. These companies are obliged to report yearly through an individual waste prevention and waste management plan on the weight of EEE they have put on the market and the weight of WEEE they have collected from the market⁹⁷.

Table 6 summarises the total tonnage collected via the individual plan route.

Table 6: WEEE collected outside of Recupel compliance scheme – 2014 - 2016Error! Bookmark not defined.

	2014	2015	2016
EEE on the market (tonnes)	4,490	4,200	4,250
WEEE collected (tonnes)	1,840	2,110	1,700
% collected	41%	50%	40%

⁹⁸ http://annualreport.recupel.be/index-en.html?_ga=2.2293877.412192566.1557156775-2011675435.1556273341

WEEE collected via scrap metal dealers

A significant part of the documented stream can be found in WEEE in scrap. This stream represents approximately 24,000 tonnes (9% of EEE POM), mainly through unauthorized dismantling of equipment by scrap dealers⁹⁷.

A.2.4.6 B2B WEEE

Recupel gives companies the option of returning B2B WEEE when buying new appliances or contacting Recupel Certified collector. If desired, a Recupel certified collector can also collect a companies' household/B2C WEEE.

A.2.4.7 Progress and investment to meet 2019 collection target

Belgium is currently exploring new initiatives aimed at improving intelligence on specific WEEE streams, with further communication and engagement of householders and businesses planned as part of efforts to deliver the 2019 target⁹⁰.

Current investments are focused more on circular economy related projects, including emphasis on facilitating wider reuse of electrical appliances. In Brussels this includes the Programme Régional en Economie Circulaire and in Flanders the Materialenprogramma⁹¹.

A.2.4.8 Product charges

Collection activities are financed by the Recupel-fee, an environmental fee that is included within B2C product prices⁹⁹. The income from these contributions is used by Recupel to organise the collection, sorting, treatment and recycling of electrical waste in Belgium. Each year Recupel publishes the tariffs levied on specific EEE goods placed on the market. The appliance list is divided into the ten main categories of WEEE identified in the European Directive 2002/96/3G, and are further categorised according to charges specific to B2C and B2B.

Table 7: Recupel fee per unit (including VAT)

Product	2002	2016
Refrigerator	€20	€10
Washing machine	€10	€1
Iron	€1	€0.05
Laptop	€2	€0.05

⁹⁹ <http://govsgocircular.com/cases/e-waste-collection-and-recycling-through-a-producer-responsibility-organisation/>

TV	€11	€1
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Recupel has reduced fees since 2002 as a consequence of efficiency gains, the introduction of new recycling technologies and changes in material values on commodity markets.

For household appliances, an ‘all-in’ contribution is charged. For professional/B2B EEE, an ‘administrative’ contribution is charged when the product is placed on the market. This contribution covers the costs incurred by Recupel for administration and reporting, but not for collection and treatment. The costs for transporting and processing these appliances are calculated once the discarded appliance is supplied for processing¹⁰⁰.

Whilst Recupel’s financial strategy in earlier years was focused on building up a provision to cover future waste management costs, over the last decade the financial strategy has shifted towards a “pay-as-you-go” system, whereby the Recupel contribution levied against an individual appliance fully covers the costs of collecting, transporting and recycling.¹⁰¹

Recupel does however, still hold large financial reserves, however reserves for EEE without a clear allocation will be phased out in the medium term¹⁰². In 2016 a total of around €17 million in contributions were collected from producers. The total operating costs amounted to around €42 million. Most of the costs could still be financed with the reserves¹⁰³.

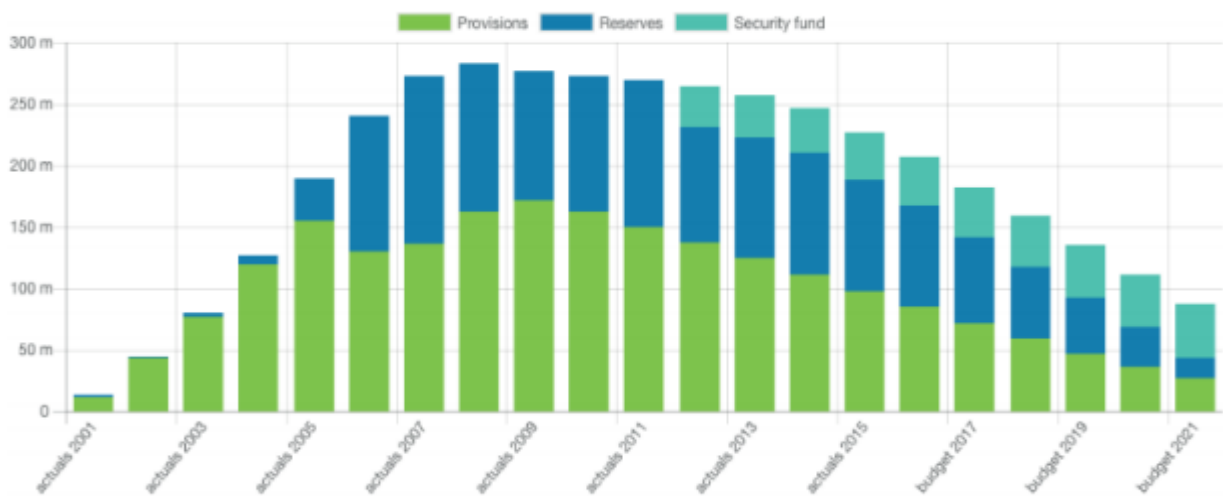
¹⁰⁰ <https://www.recupel.be/media/1632/2016-appliance-list-starting-from-1-july-2016.pdf>

¹⁰¹ Recupel Annual Report (2017) <https://www.recupel.be/en/about-recupel/annual-reports-csr-reports/>

¹⁰² The role of Producer Responsibility Organisations for batteries and EEE in the Flemish waste market (OVAM 2016)

¹⁰³ Recupel Annual Report (2017) – note that the security fund is collected in order to guarantee Recupel’s continuity in the event of a worsening market situation, such as disadvantageous fluctuations in raw material prices, falling sales figures or other external factors.

Figure 2: Recupel provisions, reserves and security fund – 2018¹⁰¹



A.2.5 Consumer communication

The volume of separately collected WEEE has increased significantly across all three regions of Belgium, which is considered a consequence of the public is successfully becoming more informed, in respect of end-of-life WEEE management⁹⁰.

Across of regions, seller of EEE must display a message explaining how it complies with the relevant legislation, and in what ways the consumer can dispose of the end-of-use product⁹⁰. A visible fee is displayed on the receipt of all EEE products purchased, communicating to buyers the associated cost of WEEE management at end-of-life. This requirement also covers EEE purchased online⁹¹.

Awareness raising is carried out by Recupel. It manages a searchable website, including listings of collection points (container parks, re-use shops, small WEEE recycling points, lightbulb collection points) across Belgium¹⁰⁴.

Recupel has also initiated communication activities targeting students. This includes Café Recupel, a pop-up café that visits colleges and universities. Students who bring in a piece of WEEE along to the café receive get a free drink or meal in exchange¹⁰⁵.

Recupel launched a consumer campaign in the form of a 'Recycle-Ville' competition in which the city or municipality that achieved the highest collected weight of WEEE per inhabitant received a free breakfast for each of its residents. 248 communities took part,

¹⁰⁴ https://www.recupel.be/en/where-to-go/town/brugge/?search_collectionPoints=8000+-+Bruges&categories=1%2C2%2C3%2C4

¹⁰⁵ <https://www.recupel.be/nl/waarom-recyclage/caf%C3%A9-recupel-voor-mij-een-pintje-en-voor-recupel-4-elektroapparaten>

(177 in Flanders, 65 in Wallonia, 6 in Brussels). 8,642 tonnes of WEEE were collected across Belgium during the Recycle-Ville competition¹⁰⁶.

Mobile collection - In 2015, the mobile campaign initiative 'Recupel on Tour', conducted in collaboration with municipalities, waste management companies and reuse shops, accounted for 36 local collection actions during which 12,000 electronic and electrical appliances were picked up. Of the 97 tonnes of collected e-waste, 33 tonnes of it could go to recycling shops for re-sale, while 64 tonnes were processed and recycled by Recupel¹⁰⁷.

Newspaper articles, radio interviews and TV reports devoting attention to Recupel's important role in electro-recycling in Belgium¹⁰⁶.

A.2.6 Online traders and free riders

WEEE take-back requirements are also applicable to online traders and distant sellers, and hence, this group is obligated to contribute towards the cost of WEEE collection and treatment. Part of Recupel's remit includes working in partnership with each of the three regional governments to monitor the impact of free riders¹⁰⁸.

Recupel commissioned research in 2013⁹³, which sought to quantify the share of manufacturers and importers that act as free riders. It concluded that since the amount of EEE introduced to the Belgium market (26kg per inhabitant) is similar to the amount of EEE reported by Recupel in combination with EEE reported via Individual Plans (25.8 kg per inhabitant), it concluded that the impact of free riders is relatively minimal. Belgium recognises however, the challenge of continued growth in online EEE sales, in respect of monitoring and enforcement of the provisions of the WEEE Directive⁹⁰.

Recupel report that they are able to undertake auditing in Luxembourg and the Netherlands for example, and that all of the biggest online players are registered, including Amazon, although it is understood that some do not fulfil their takeback obligations.

The Flemish authorities work with German and Dutch counterparts who assist investigations. OVAM cannot shut down a website in Belgium for non-compliance but they can impose fines on a Belgian legal entity¹⁰⁹. OVAM have investigated around 51 companies recently and sent letters setting out what they need to do to be compliant.

¹⁰⁶ Recupel Annual Report (2014) <https://www.recupel.be/en/about-recupel/annual-reports-csr-reports/>

¹⁰⁷ Recupel Annual Report (2017) <https://www.recupel.be/en/about-recupel/annual-reports-csr-reports/>

¹⁰⁸ <https://www.recupel.be/en/about-recupel/legislation-authorities/>

¹⁰⁹ Extended Producer Responsibility and the Impact of Online Sales (OECD 2019)

[http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP\(2019\)1&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=ENV/WKP(2019)1&docLanguage=En)

Six months later, only 7 (14%) are now compliant, six have chosen to withdraw from the Flemish market, and 38 (75% of the 51) remain non-compliant^{Error! Bookmark not defined.}.

A.2.7 Summary

Belgium is achieving a relatively high collection rate, currently delivering 10.7 kg per inhabitant. Recycling parks account for 62% of the volume of WEEE collected, compared with retailers, which account for 24%. The national network of EEE reuse centres are considered to represent an example of particular good practice, accounting for 14% of WEEE collected.

A widespread network of municipal recycling centres across Flanders before the implementation of the WEEE policy in 1999, and hence, consumers have long recognised collection systems for EEE at end-of-life/WEEE. The impact of communicating the environmental fee at the point of purchase has also played an important role in raising awareness amongst consumers. In addition to consumer cooperation, the positive dialogue that existed between the government and producers helped achieve agreements on the nature of the policy.

Belgium achieved a collection rate of 46.6% in 2016. Although Recupel coordinates a vast network of collectors and recyclers in Belgium, they do not cover the whole market of collectors and recyclers as there is no obligation for collectors and recyclers to hand over WEEE to Recupel¹¹⁰.

¹¹⁰ WEEE Mass Balance and Market Structure in Belgium (Recupel 2016)
<https://cdn.uc.assets.prezly.com/bf5e2629-88dd-46cb-823a-6fded84644f5/-/inline/no/>

A.3.0 Finland

Table 8: Summary of relevant statistics (Eurostat, 2016)

Key figures	
Number of WEEE producer compliance schemes	3
Products put on the market - 3 year average 2013 – 2015 (tonnes)	127,260
Products put on the market - 3 year average 2013 – 2015 (kg/inh)	23.3
WEEE collected (tonnes 2016)	60,216
WEEE collected per inhabitant (kg/inh)	9.71
WEEE collection rate (%)	47.3

- No requirement for visible fee to be shown in stores or on paperwork.
- Three PROs all charge their members the same fees, which reduced the level of competitiveness within the Finnish WEEE compliance scheme market.
- Small WEEE can be returned to electronics shops with area larger than 200m² or to grocery shops of 1000m² minimum.
- Mobile collection of WEEE across low density populated municipalities of Finland.
- Less focus on the role of consumer campaigns identified through literature review.
- Take back system in existence prior to the Directive.
- Limited progress with tackling free riders identified through literature review.
- No research on WEEE collected outside the official system identified through literature review.

A.3.1 WEEE legislation and regulation

In Finland, the 2002 Directive has been implemented by the following pieces of legislation:

- The Waste Act 646/2011: the purposes of which is to prevent harm to human health and the environment posed by waste and waste management, to reduce the amount and harmfulness of waste, to promote the sustainable use of natural resources, to ensure functioning waste management and to prevent littering; and
- Government Decree 852/2004 on Waste Electrical and Electronic Equipment with amendments 423/2008, 793/2009 and 932/2010. This decree, in addition to the provisions of the Waste Act, concerns the waste management of WEEE, for the purpose of reducing the quantity and harmfulness of waste from EEE, promoting re-

use, recycling and other forms of recovery of discarded EEE (and components thereof), and improving the standard of environmental protection in treatment and disposal of waste electrical and electronic equipment.

The 2012 Directive is transposed by the Waste Act mentioned above, the Environmental Protection Act 527/2014 and Government Decree 519/2014 on Waste Electrical and Electronic Equipment.

A.3.2 Principles of system

Finland has transposed full producer (financial) responsibility for the collection and treatment of WEEE arising from the products placed on the market, hence producers cover the cost of the whole value chain (including collection points, transport and onwards treatment), thereby not transferring these (or other) costs on to municipalities¹¹¹. There is both a 1:1 and a 1:0 take back obligation, however retailers with a sales area of less than 200 m² (or 1,000 m² for grocery stores) are exempt.

B2C producers must join a PRO which handles the obligation on behalf of the producer. There are five PROs, which co-operate with each other to provide collection points, based on market shares, including:

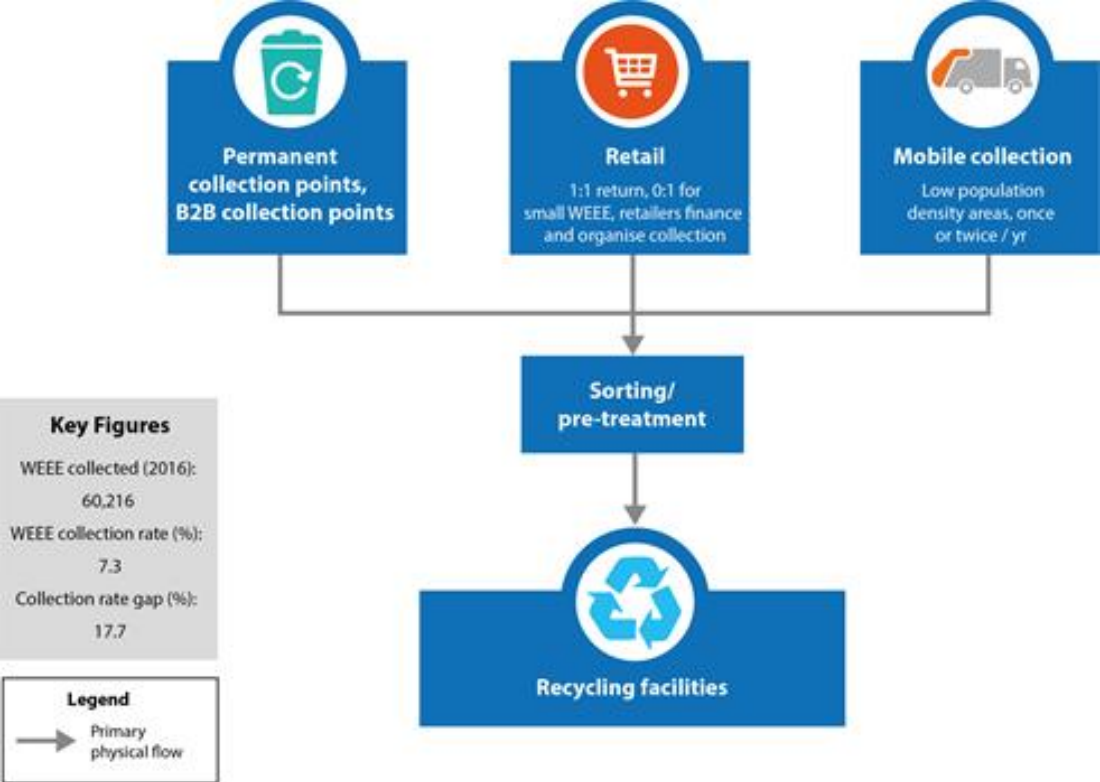
- Serty (Society of WEEE Producers) – covering all household WEEE categories, and operates as a not-for-profit entity.
- Elker Ltd – a service company established by three producer organisations, for the purpose of organising the collection and recycling of WEEE from consumers and businesses:
 - SELT Association - all household WEEE categories.
 - ICT Producer Co-operative – ICT and consumer equipment.
 - FLIP Association – fluorescent tubes, gas discharge lamps.
- ERP Finland – formerly the Nordic Electronics Association, this scheme manages mainly household appliances, but also batteries and accumulators (unlike those PROs listed above).

Each PRO contracts directly with municipalities for the collection of WEEE. The allocation of collection duties is agreed periodically between the PROs and the municipalities. Individual municipal collection sites inform the relevant PRO of its collection performance periodically.

¹¹¹ DG ENV (2014) Guidance on Extended Producer Responsibility

Individual compliance is possible, but only exists for B2B producers, which are required to apply to be included on the producer register, organised by the Pirkanmaa Centre for Economic Development, Transport and the Environment (the Centre).¹¹²

Figure 3: Finland WEEE collection and take-back system



A.3.3 Current collection rates

Whilst there has been limited progress towards the 2019 WEEE Directive collection target, Finland was already delivering high collection rate of 66.4% performance (Eurostat 2016 figures, as reported in 2019) – one of the highest collection rates in Europe.

Table 11: WEEE collected by category (Eurostat, 2016)

Total WEEE	Large hh appliances (LHA)	Small hh appliances (SHA)	ICT equipment	Consumer equipment and PV panels	Other
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¹¹² https://www.ymparisto.fi/en-US/Consumption_and_production/Waste_and_waste_management/Producer_responsibility/Waste_electrical_and_electronic_equipment

60,216	32,505	2,298	9,512	12,234	3,667
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Table 12: Finland WEEE collection – kg/inhabitant (Eurostat, 2018)

Year	2010	2011	2012	2013	2014	2015	2016
WEEE collected kg/inhabitant	9.11	9.23	9.25	9.78	11.18	9.84	9.71

A.3.4 Collection infrastructure in place

WEEE collection is organised through the following predominant routes:

A.3.4.1 Permanent collection points

Arranged mainly via permanent collection points, with approximately 450 collection points in place. Permanent collection points are mostly operated by municipalities, although in third sector and private operators also operate a minority. A number of permanent collection points across Finland also accept B2B WEEE. Whilst private companies are typically excluded from using permanent collection points, Elker has launched reception points for B2B WEEE, which are also open for private consumers with larger batches of WEEE. The three PROs co-operate and provide permanent collection points which is calculated based on market share.

A.3.4.2 Retailers

End-of-life EEE can also be returned to the retailers in association with buying a new, corresponding device. Further, since 2013, small WEEE including lighting equipment (any dimension no more than 25 cm) can be also returned with no purchase obligation to electronics shops with area larger than 200m² or to grocery shops larger or equal to 1000m². There are no exact guidelines for the implementation of in-store reception in Finland; however, shops are required to finance and organise the place, the requisites, and the work contributions needed to receive WEEE¹¹³. According to SERTY, around 1,500 distributors and shops were enrolled in the distributors' register of Finland in the beginning of 2014. It is estimated that around 1,000 shops are still missing from the register, partly due to challenges to arrange a physical space for instore collection or due to low amounts of received WEEE¹¹³.

¹¹³ Ylä-Mella *et al* (Journal of Waste Management, 2014) Overview of the WEEE Directive and Its Implementation in the Nordic Countries: National Realisations and Best Practices

A.3.4.3 Mobile collection points

Mobile collection points are also used to service the collection of WEEE across low density populated municipalities of Finland. Collection and recovery of WEEE is organised by Elker through collections once or twice a year. Limited information has been identified within literature sources, in respect of the costs, funding and impacts arising from mobile collection points.

A.3.5 Collection and take-back costs

The PROs pay for collection services including collection points, transport and treatment⁸⁹. While fees are not modulated, they must be based on the actual waste management costs. To make these costs more representative, there are more than 30 product categories with different fees to reflect the associated recycling costs⁸⁹. The three PROs all charge their members the same fees, which are set by Elker, which reduces the level of competitiveness within the Finnish WEEE compliance scheme market.

Elker undertakes competitive tendering for logistics and treatment costs. Since Elker represents the collective interests of three producer organisations, this effectively reduces the level of competition, as a consequence of organising the collection for the combined market share. Indirect costs (e.g. overheads) are allocated to producers based on volumes of collected streams and each producer's POM-share per collected stream. Elker fees are not visible¹¹⁴. B2B producers are not charged based on their volumes placed on the market, but per product returned^{115, 116}.

In addition to the recycling fees set by Elker, the PROs charge joining or subscription fees. ICT has fees for three categories, depending on the value of sales¹¹⁷. In the case of SELT, these fees depend on the companies' turnover (€250 if turnover is less than €150,000 or €500 for higher turnovers. B2B producers pay an annual fee of €300¹¹⁸.

Fees vary per WEEE category based on logistics network, treatment process and materials contained by the products in the category. Some of the categories are more exposed to raw material price developments than others. In some categories the transportation cost is significantly higher than the others.

¹¹⁴ <http://www.elker.fi/en/producers/producer-organisations/flip-association/joining-flip>

¹¹⁵ <http://www.elker.fi/en/producers/producer-organisations/selt-association/regulations-selt>

¹¹⁶ <http://www.elker.fi/tuottajalle/tuottajayhteisot/ict-tuottajaosuuskunta/liittyminen-ict>

¹¹⁷ <http://www.elker.fi/ict-tuottajaosuuskunta>

¹¹⁸ <http://www.elker.fi/en/producers/producer-organisations/selt-association/joining-selt>

A.3.6 Consumer communication

Producers support a website, run by municipal waste companies, to provide information to consumers on collection points for a range of items, including WEEE¹¹⁹. Producers have also developed an information site for WEEE specifically¹²⁰.

Information to end users is also provided via retail networks, waste operators, local authorities, including guidance on the nearest local collection points. Public information appears to be limited to consumer pages on PRO websites, with little further evidence of consumer campaigns being delivered.

A.3.7 Online traders and free riders

The overwhelming majority of electronic devices sold on the Finnish market are imported and, therefore, the representatives of foreign and domestic producers may transfer responsibility over discarded electronics to a producers association^{Error! Bookmark not defined.}. In accordance with the WEEE Directive, distance sellers can appoint an authorised representative to join a PRO on their behalf⁸⁹.

PROs (and registered producers if not members of a PRO) report annually to the Centre with data on the volumes placed on the market in the previous year¹²¹. Producers failing to comply are given a formal notice to comply; if they subsequently fail to comply, they can be banned from placing products on the market or fined⁸⁹.

As the national centre responsible for the implementation of the WEEE Directive, the Centre relies on self-regulation by industry. The Centre has previously undertaken initiatives aimed at identifying free-riders and requesting registration under an appropriate PRO, however further information on the success of these initiatives is not known.

Finland has not introduced any specific regulations to address the issue of free-riding. Views expressed by relevant stakeholders indicates an acknowledgement that addressing the impact of free-riding is complex and challenging in the absence of further EU regulation, with no legal tools to fully address the issue.

¹¹⁹ <https://www.kierratys.info/>

¹²⁰ Opportunities of a circular economy for Finland - Sector-specific opportunities
<http://www.serkierratys.fi/en/frontpage>

¹²¹ https://www.ymparisto.fi/en-US/Consumption_and_production/Waste_and_waste_management/Producer_responsibility/Waste_electrical_and_electronic_equipment

A.3.8 Summary

Finland has transposed full producer responsibility for the collection and treatment of WEEE arising from the products placed on the market. It operates mobile collection points to service the collection of WEEE across low density populated municipalities of Finland, which is organised by the PRO.

The level of competitiveness in the Finnish WEEE compliance scheme market is considered to be low, on account of the fact that three PROs all charge their members the same fees, which are set by Elker.

Finland is delivering a relatively high rate of WEEE collection, however based on the level of detail available in literature, it is difficult to fully substantiate what specific success factors have contributed towards this.

A.4.0 France

Table 11: Summary of relevant statistics (Eurostat, 2016)

Key figures	
Number of WEEE producer compliance schemes	4
Products put on the market - 3 year average 2013 – 2015 (tonnes)	1,595,140
Products put on the market - 3 year average 2013 – 2015 (kg/inh)	24.1
WEEE collected (tonnes 2016)	721,949
WEEE collected per inhabitant 2016 (kg/inh)	10.84
WEEE collection rate (%)	45.3%

- 4 PRO's (2 generalist) hence, competition exists between compliance schemes
- Eco-systèmes (PRO with 75% of market share) provides a breakdown of its costs, with financial support for collection representing 22% of total costs
- 1:0 and 1:1 DTS obligation for WEEE
- Requirement for visible fee to be shown in stores or on paperwork
- Small WEEE can be returned to retail stores with area larger than 400m², with 5,800 'green counters' in stores for 1:0 take back of WEEE
- Mobile collection of WEEE in certain regions, including Brest, North-West France
- Dedicated collection stands for small WEEE operated by PROs, in addition to municipal recycling parks
- Strong focus on consumer campaigns - PROs must also allocate 0.3% of contributions to national information campaigns.

A.4.1 WEEE legislation and regulation

France transposed the 2002 Directive through Decree No. 2005-829 on the composition of EEE and disposal of related WEEE, including the consumables that form an integral part of the product. It is complemented by a number of ministerial orders. Decree 2014-928, codified in articles R543-172 – R543-206 of the Environment Code, transposed the revised 2012 Directive, which entered into force on the 19th August 2014. The Decree is also complemented by a number of ministerial orders⁹⁰.

Decree 2014-928 introduces the differentiation between B2B and B2B EEE; defines which categories of WEEE are the responsibility of each PRO, introduces the obligation for 1:1 take-back by retailers, and the requirement for producers and retailers to inform the purchaser of the cost of household WEEE disposal on the invoice (so-called "visible fee"). All EEE devices, whether household or professional, are classified into one of the

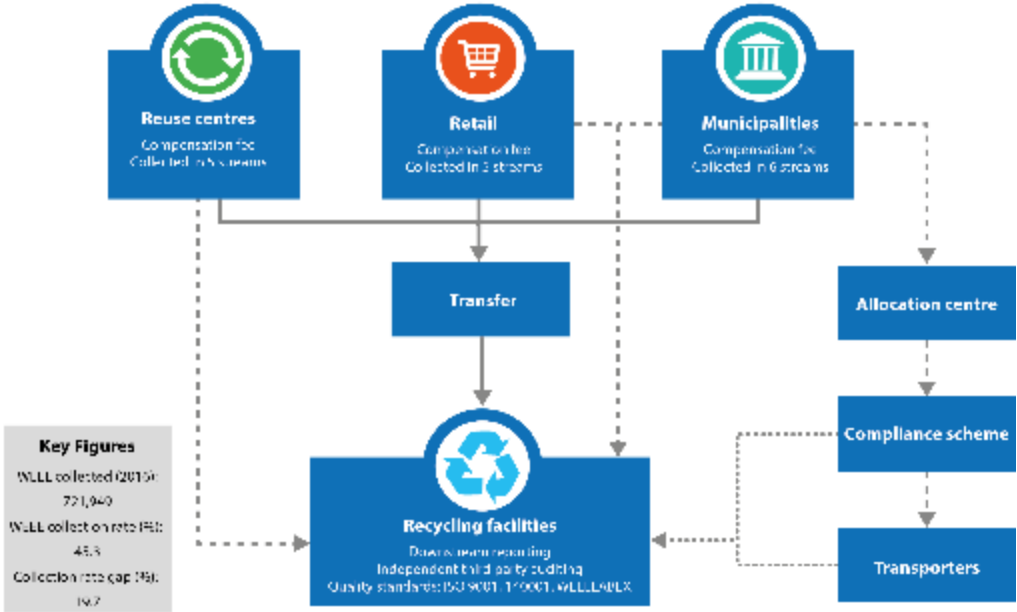
categories defined by the Directive. For B2B WEEE, the right to delegate the end-of-life management to the final user of the equipment was abolished by Decree 2014-928. The law requires all producers of EEE to submit reporting to the French national WEEE Register, managed by ADEME, stating the quantities put on the French market and the quantities of waste subsequently collected and treated¹²².

The national waste prevention and recovery plan 2014-2020 defines general national targets in terms of waste prevention and recovery. There are also regional waste prevention and management plans, which outline targets and measures for specific waste on a more local level⁸⁹.

A.4.2 Principles of system

There are four approved WEEE PROs in France. OCAD3E serves as a coordinating agency and acts as the Clearing House in France, owned by the four PROs, and is responsible for coordinating the collection of household WEEE, including compensation fees. OCAD3E also allocates the municipal collection points to the compliance schemes according to the level of collection requested to fulfil the obligation related to their member’s market share^{123 124}.

Figure 4: France WEEE collection and take-back system



¹²² ADEME - Electrical and electronic Equipment in France, 2014 Data Summary (2015)

https://www.ademe.fr/sites/default/files/assets/documents/eee-donnees-2014_8584_en-v2.pdf

¹²³ <https://www.ecologique-solidaire.gouv.fr/dechets-dequipements-electriques-et-electroniques>

¹²⁴ Möbius, On behalf of Eco-systèmes NVMP Recupel - Benchmark WEEE systems in Europe (2013) <https://www.nvmp.nl/uploads/pdf/research/2013%2003%2004%20Benchmark%20European%20WEEE%20systems%20final.pdf>

PROs are required to be non-profit organisations, and are approved by public authorities.¹²⁵ They receive visible fees from consumers through the retailers and they provide financial support for local governments, refurbishers, and logistics and treatment operators.¹²⁶

The approved compliance schemes organise the collection and treatment of WEEE according to the PoM percentage share of their members. The collection of Household WEEE is organised in five separate waste streams:

- GEM F - Large cooling appliances;
- GEM HF - Large household appliances (except for cooling appliances);
- Écrans – Screens;
- PAM - Other small appliances, and
- Lampes - Lamps¹²⁷

Table 14: French PROs for WEEE

PRO	Scope	Additional Information
Ecologic ¹²⁸	All types of B2B and B2C WEEE, apart from lamps	Collected 162,000 tonnes in 2016 1,784 members Nearly 2,500 collection points and 141 waste treatment providers. Ecologic organises meetings and workshops with stakeholders
Eco-Systemes ¹²⁹	B2C WEEE	Collected 533,640 tonnes in 2017 Over 4,000 members 75% of the market share - 52% collection rate in 2017. Collected 533,640 tonnes.

¹²⁵ Bio Intelligence Service (2015) - Guidance on Extended Producer Responsibility: Case study on WEEE in France

¹²⁶ Jean-Baptiste Bahers and Junbeum Kim, (2018). Regional approach of waste electrical and electronic equipment (WEEE) management in France. Resources, Conservation and Recycling Vol 129.
<https://reader.elsevier.com/reader/sd/pii/S092134491730335X?token=97704F3A64C00B3C5E99EFC5F0166A4EF1423B11804CD739107DB1FBCEF5795398932B42BF9595CF45F4ABFAAE79D0B>

¹²⁷ ADEME - Electrical and electronic Equipment in France, 2014 Data Summary (2015)
https://www.ademe.fr/sites/default/files/assets/documents/eee-donnees-2014_8584_en-v2.pdf

¹²⁸ <https://www.ecologic-france.com/>

¹²⁹ <https://www.eco-systemes.fr/>

PRO	Scope	Additional Information
Recylum¹³⁰ (now ESR – merged with Eco-Systemes)	B2B WEEE and B2C energy saving lamps	19,000 collection points, including retailers and 3,500 waste collection centres
PV Cycle¹³¹	Photovoltaic solar panels	Over 200 collection points

While producers have the option of individual compliance, the Environment Ministry reports that all household WEEE producers have so far opted to join a collective scheme¹³². B2B EEE producers may implement an individual scheme for collection and treatment of WEEE (no approval is necessary, unlike for the household sector), or join an approved PRO¹³³.

B2B WEEE is characterised by highly varying waste flows, which has led to the development of specific offers by service providers and PROs, including on-site collection on request, adapted logistics, and internet services. 53% of the professional WEEE tonnage collected in 2014 was achieved through individual schemes set up by producers (compared to 97% in 2012 and 74% in 2013). This increase has been more significant since the user management system was eliminated and producers started implementing the solutions proposed by PROs (as well as PROs taking action to increase their presence in the B2B sector)¹³⁴.

Eco-systèmes have 75% of the compliance schemes' market share. It has been found that there is a greater amount of evidence available for Eco-systèmes, likely because of its large market share. Therefore, some of the discussion here relates explicitly only to Eco-systèmes; it may also relate to the other PRO's but there is a lack of available evidence for these.

France already has modulated fees, meaning a bonus/ malus approach is used to incentivise and reward producers for eco-design characteristics.¹³⁵ Reparability, recycled plastic content, hazardous substances, the provision of technical documentation and the availability of spare parts are taken into consideration⁸⁹. Producer fees also take into

¹³⁰ <https://www.recylum.com/recycler/producteurs-eee/>

¹³¹ <https://www.pvcycle.fr/>

¹³² <https://www.ecologique-solidaire.gouv.fr/dechets-dequipements-electriques-et-electroniques>

¹³³ ADEME - Electrical and electronic Equipment in France, 2014 Data Summary (2015)

https://www.ademe.fr/sites/default/files/assets/documents/eee-donnees-2014_8584_en-v2.pdf

¹³⁴ ADEME - Electrical and electronic Equipment in France, 2014 Data Summary (2015)

https://www.ademe.fr/sites/default/files/assets/documents/eee-donnees-2014_8584_en-v2.pdf

¹³⁵ <https://www.ecologic-france.com/images/medias/document/14655/ecologic-household-eee-price-list-on-20180815.pdf>

account the type of WEEE (and hence the recycling costs), the return rate and the recycled material prices. OCAD3E provides technical guidance on eco-design and on the application of modulation criteria¹³⁶.

A.4.3 Current collection rates

Table 13 summarises the amount of WEEE collected by collection route.

Table 13: WEEE collection rates

	2012	2013	2014	2015	2016
WEEE collected from households (tonnes)	452,732	455,214	491,535	575,050	666,682
WEEE collected from other sources (tonnes)	17,824	24,480	31,258	42,351	55,267
Total WEEE collected (tonnes)	470,556	479,694	522,793	617,401	721,949
Collected WEEE per inhabitant (kg/inh)	6.88	6.92	7.44	8.64	9.97

Source: EUROSTAT (2019) Waste electrical and electronic equipment (WEEE) current collection rate¹³⁷

In 2017, Eco-systèmes (which is responsible for the collection of around 76% of the total WEEE), collected 533,640 tonnes – an overall collection rate of 52%.

Table 14 summarises total WEEE collected by EEE category.

Table 14: WEEE total collected by EEE category, 2016 (tonnes)

Total WEEE	Large household appliances	Small household appliances	ICT and telecoms	Consumer equipment and PV	Lighting and gas discharge lamps	Electrical and Electronic tools	Other
721, 949	418,499	40,337	94,008	118,968	8,126	17,029	24,981

Source: EUROSTAT (2016) Waste electrical and electronic equipment (WEEE) total collected by EEE category

¹³⁶ <https://www.ecologic-france.com/>

¹³⁷ EUROSTAT (2019) Waste electrical and electronic equipment (WEEE) by waste management operations

A.4.4 WEEE take-back and collection

The distribution of the total tonnage of household WEEE collected in 2015 by type of collection point is:

- Waste collection centres: 64%
- Store collection points or one-for-one take-backs at delivery: 20%
- Other channels: 12%
- Third sector: 4%

The collection through 'other channels' has increased significantly due to the efforts of PROs to diversify the collection channels in anticipation of increased collection targets. This includes the national partnership signed between Eco-Systèmes and FEDEREC at the end of 2014, which takes into account the household WEEE treated by reprocessing operators¹³⁸.

A.4.4.1 Retailers and distributors

Distributors (including retailers) are obliged to accept WEEE in accordance with the '1:1' principle. For retailers with a sales area over 400m² they must take back small WEEE on a 1:0 basis¹³⁹.

By the end of 2014, there were more than 24,000 collection points for WEEE set up by distributors, with 15,500 for lamps¹⁴⁰. In 2012, there were 19,808 pick-up points (where waste flows are taken by WEEE Compliance Schemes, including for example the logistics platform of the group). Of these 19,808 pick-up points, 8,855 were active¹⁴¹. As for collection points provided for professionals and which are usually installed on the premises of specialised retailers, there were 2,107 in 2012, and very few were active¹⁴².

There are also 5,800 'green counters' in stores for 1:0 take back of WEEE⁸⁹.

PROs organise collections of WEEE from the retailers and transport it to the consolidation centres. Retailers then obtain a fee from the Compliance Schemes.

¹³⁸

https://www.ademe.fr/sites/default/files/assets/documents/electrical_electronic_equipment_in_france-2015_8910.pdf

¹³⁹ <https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000029387124&categorieLien=id>

¹⁴⁰ https://www.ademe.fr/sites/default/files/assets/documents/eee-donnees-2014_8584_en-v2.pdf

¹⁴¹ Active is classed as they have had at least one pick-up request per year

¹⁴² <http://www.weee->

forum.org/sites/default/files/documents/2014_study_on_the_quantification_of_weee_in_france.pdf

Retailers are eligible for a higher fee for the collection of sorted appliances in containers¹⁴³.

Retailers are also obliged to inform buyers about the legislation prohibiting the disposal of WEEE with regular household waste, the availability of collection systems, and the potential effects of hazardous substances contained in EEE on the environment and human health. They must also inform purchasers of the cost of WEEE disposal (so-called 'visible fee'), and must indicate the value of the eco-contribution¹⁴⁴. It is worth of note that visible fees for same product can differ, dependent on the fee set by the individual compliance scheme.

A recent study sought to analyse the competency of systems for tracking the flow of WEEE collected from retail stores in France. It identified that IT systems for monitoring WEEE flows from the point of collection in stores and during deliveries by customers was underdeveloped, and hence, estimates of the amount of WEEE "leakage" at retailers, as a consequence of poor tracking was estimated between 0.1 and 0.8kg/year/inhabitant (5,000 to 50,000 tonnes)¹⁴⁵.

A.4.4.2 Municipal waste collection centres

All municipalities accept WEEE. They receive a fee for this, paid by the OCAD3E coordinating body. The WEEE is collected by the compliance schemes and transported to consolidating centres where it is loaded by stream and sent to the relevant treatment facilities. From some collection points, where the volume is significant, the WEEE is directly transported to the treatment plants¹⁴³.

Municipalities can set up a separate collection scheme (drop-off centres, collection districts) by contracting with an existing PRO. They will receive compensation for collection costs. By the end of 2014, 97% of French citizens had access to such a selective collection system for WEEE through 4,700 treatment centres. The payment to the local authorities is calculated by taking into account the tonnages collected as well as all the costs related to communication operations¹⁴⁶.

¹⁴³ Möbius, On behalf of Eco-systèmes NVMP Recupel - Benchmark WEEE systems in Europe (2013) <https://www.nvmp.nl/uploads/pdf/research/2013%2003%2004%20Benchmark%20European%20WEEE%20systems%20final.pdf>

¹⁴⁴ Guidance on Extended Producer Responsibility: Case study on WEEE in France, (2015) Bio Intelligence Service

¹⁴⁵ http://www.weee-forum.org/sites/default/files/documents/2014_study_on_the_quantification_of_weee_in_france.pdf

¹⁴⁶ https://www.ademe.fr/sites/default/files/assets/documents/eee-donnees-2014_8584_en-v2.pdf

Eco-systèmes also installed locked storage containers for Large Household Appliances (LHA) at 40 sites in 2012, to help protect WEEE at collection point level¹⁴⁷.

A.4.4.3 Reuse centres

In 2014 France delivered a preparation for re-use rate of 9.5% for household WEEE⁸⁹. There is no waste prevention and/or separate preparation for re-use target, but PROs are obliged to participate in the general waste reduction target of 7% of household waste by 2020 compared to 2010. On PRO websites, they instruct holders of EEE to re-use any EEE that are functional by giving re-use and repair options and information. Only if the consumer indicates that the equipment is not fit for re-use are they directed to separate collection options⁸⁹.

Charities are granted preferential to municipality WEEE stocks, and special collection points for WEEE intended for re-use have been set up⁸⁹. Charities and third sector actors play a significant role, and PROs such as Eco-Systèmes contract with such actors (e.g. Emmaüs France, Envie) in order to give a second life to collected EEE¹⁴⁸. Other stakeholders, such as companies that contribute to the social economy of urban areas, are expected to contribute to WEEE management by recovering used appliances. They repair, re-use, and refurbish waste, including WEEE, in order to sell to other consumers.¹⁴⁹

Reuse centres also provide WEEE (donations from consumers) to Eco-systèmes. These locations deliver the WEEE in four sorted streams (excluding lamps) and receive a compensation fee. Eco-systèmes then transports the WEEE either to the consolidation centres or to the treatment facilities (bulk transport)¹⁴³.

¹⁴⁷ Eco-systemes, Christian Brabant and Pierre-Marie Assimon: The role of clearing houses in enforcement policies. [http://www.acrplus.org/images/events/5 -
_Brabant_Assimon_The_role_of_clearing_houses_in_enforcement_policies_.pdf](http://www.acrplus.org/images/events/5_-_Brabant_Assimon_The_role_of_clearing_houses_in_enforcement_policies_.pdf)

¹⁴⁸ Guidance on Extended Producer Responsibility: Case study on WEEE in France, (2015) Bio Intelligence Service

¹⁴⁹ Jean-Baptiste Bahers and Junbeum Kim, (2018). Regional approach of waste electrical and electronic equipment (WEEE) management in France. Resources, Conservation and Recycling Vol 129. <https://reader.elsevier.com/reader/sd/pii/S092134491730335X?token=97704F3A64C00B3C5E99EFCA5F0166A4EF1423B11804CD739107DB1FBCEF5795398932B42BF9595CF45F4ABFAAE79D0B>

A.4.4.4 Dedicated collection stands for small

Eco-Systèmes have set up dedicated collection stands for small WEEE. In 2013 there were 130 SHA stands deployed nationally¹⁵⁰. Collection stands are deployed in convenient locations, including community centres and neighbourhoods.

A.4.4.5 Mobile bring collections

In Brest city centre, on France's north-west coast, a two-day event waste collection event was held in 2016. 10.7 tonnes of waste, including WEEE, were collected¹⁵¹. It is unclear whether this event was part of the national WEEE collection days run by OCAD3E¹⁵².

A.4.4.6 Kerbside collection

Households can place packaging, paper and small electrical appliances into their yellow recycling bin. These door-to-door collections are carried out regularly, where municipalities organise its collection at certain fixed dates and times. They can also be arranged upon request (i.e. bulky collection), where an individual calls the municipality to ask for the services of a pick-up van to collect the equipment^{153 154}.

A.4.4.7 B2B WEEE

Owners of professional EEE are responsible for the end-of-life of products placed on the market before 13 August 2005, except when such equipment has been replaced by new devices (taken back by the supplier).

The end-of-life of professional EEE put into circulation after 13 August 2005, or of older equipment that has since been replaced, is the responsibility of the producer. The right to delegate the EOL management to the final user of the equipment was abolished by Decree 2014-928 transposing Directive 2012/19/EU (Art. 5). The producer therefore has two options:

- Implementing an individual scheme for collection and treatment (no approval is necessary, unlike for the household sector)

¹⁵⁰ Eco-systemes, Christian Brabant and Pierre-Marie Assimon: The role of clearing houses in enforcement policies [http://www.acrplus.org/images/events/5 - Brabant Assimon The role of clearing houses in enforcement policies .pdf](http://www.acrplus.org/images/events/5_-_Brabant_Assimon_The_role_of_clearing_houses_in_enforcement_policies_.pdf)

¹⁵¹ <http://test.collectors2020.eu/wcs-weee/brest-fr/>

¹⁵² <https://www.eco-systemes.fr/documentation>

¹⁵³ <http://www.weee->

forum.org/sites/default/files/documents/2014_study_on_the_quantification_of_weee_in_france.pdf

¹⁵⁴ <http://test.collectors2020.eu/wcs-weee/brest-fr/>

- Joining an approved Producer Responsibility Organisation accredited for the collection and treatment of certain types of professional WEEE.

There are four accredited PROs for the B2B WEEE sector:

- Eco-systèmes,
- Ecologic,
- ERP and
- Récylum.

These four schemes are accredited to collect and treat certain categories of B2B equipment. The collection of B2B WEEE, compared to the collection of household WEEE, is characterised by highly varying waste flows, which has led to the development of specific offers by service providers and PROs; including on-site collection on request, adapted logistics, internet services, etc.¹⁵⁵

There has been a significant increase in B2B WEEE collection rates between 2006 and 2015, with a rapid increase from 2014 to 2015. In 2006, 10,000 tonnes of B2B WEEE were reported as collected, in 2015 this had increased to 43,630 tonnes. This was an increase of 35% compared to 2014. 48% of the professional WEEE tonnage collected in 2015 was achieved through individual schemes set up by producers (compared to 74% in 2013 and 53% in 2014).¹⁵⁶

There has therefore been a significant increase in the proportion of B2B WEEE managed by PRO's compared to individual schemes, and along with the abolition of the right to delegate EOL management to the final user of the equipment, corresponds to the significant increase seen in B2B WEEE collection rates. However, when implementing an individual scheme for collection and treatment, no approval is necessary, unlike for the household sector.¹⁵⁷

A.4.4.8 IT and Office Equipment refurbishment

The resale sector of second-hand equipment is made up of 80% independent actors, resulting in a scattered sector. For B2B WEEE, the refurbishment actors responsible for recovering ICT equipment are the IT retailers, service providers and leasers who most often resell the equipment to brokers. French brokers also obtain supplies from businesses that own their own equipment. Social enterprises can also be involved in refurbishment and often have contracts with businesses.

¹⁵⁵ https://www.ademe.fr/sites/default/files/assets/documents/eee-donnees-2014_8584_en-v2.pdf

¹⁵⁶

https://www.ademe.fr/sites/default/files/assets/documents/electrical_electronic_equipment_in_france-2015_8910.pdf

¹⁵⁷ https://www.ademe.fr/sites/default/files/assets/documents/eee-donnees-2014_8584_en-v2.pdf

If the collected equipment is too old to be reused, it is dismantled and cannibalised for key pieces of equipment such as hardware or electronic cards, which can be sold separately. Some refurbishers can manage (dismantle, and sometimes, depollute) the obsolete materials by themselves, or they otherwise subcontract the recycling process.¹⁵⁸

A.4.5 WEEE collected outside of official system

Research¹⁵⁹ to quantify the volume of WEEE collected outside of the official compliance scheme route estimated the following:

- Volumes officially reported: 36%
- Disposed in residual waste: 4%
- Recycled in non-compliant scrap facilities: 27%
- Exported for re-use: 0%

The difference between the estimated total WEEE volumes and the sum of the different estimated treatment routes is classed as the 'knowledge gap', which represents 33% of the total volume of WEEE.

A.4.6 Progress and investment to meet 2019 collection target

Based on its current performance of 45.3% (2016), and against the 65% collection target for 2019, France's collection gap is currently 19.7%. France, and in particular Eco-systèmes, have outlined the steps they are taking to help achieve this target.

Eco-systèmes are developing new collection channels, which already represent over 14% of the collection rate, and are forecast to account for 20% by 2017 and 30% in the longer term. As a result of the French NOTRe Act¹⁶⁰ and Energy Transition for Green Growth Act (ETA),¹⁶¹ Eco-systèmes worked to increase its contacts with collection partners to assist them through the developments of the new channels, either by ensuring a continuity of service or by fulfilling new regulatory obligations. The Energy Transition for Green Growth Act requires companies with WEEE to contract with an eco-organisation. In the

¹⁵⁸ http://www.weee-forum.org/sites/default/files/documents/2014_study_on_the_quantification_of_weee_in_france.pdf

¹⁵⁹ <http://www.cwitproject.eu/wp-content/uploads/2015/08/CWIT-Final-Summary1.pdf>

¹⁶⁰ The NOTRe Act provides for a reorganisation of territorial divisions in France, aiming to strengthen inter-municipal co-operation and help deliver economies of scale.

¹⁶¹ <https://www.gouvernement.fr/en/energy-transition>

longer term, Eco-systèmes is committed to developing a network of eco-organisation partners to help reach the representative share of 30% of collection in 2019.^{162 163}

These new collection channels include scrap dealers, reprocessors, the ETA partners and waste collectors. In 2016, these new channels represented more than 14% of Eco-systèmes' WEEE collection, compared to 11% in 2015.¹⁶⁴

A.4.7 Collection and take-back costs

Producers cover 100% of the cost of the whole value chain: collection, sorting, recycling and treatment. The fees paid by producers for household WEEE is €384 per tonne collected, or €2.8 / inhabitant.¹⁶⁵

PROs must also allocate 0.3% of contributions to national information campaigns⁸⁹.

Visible fees are also mandatory. These fees are without the possibility of a reduction along the chain of intermediates, and is where the cost for treatment of the EEE is shown to the consumer. Producers have to inform buyers on the invoice for new electrical and electronic equipment on the costs for management of the historical WEEE, where the costs shall not exceed the actual costs incurred. This visible fee has now been made permanent until 2020, allowing consolidation of the scheme in France⁹⁰.

The benefits of visible fees include:

- Same fee from consumers to logistics and treatment operators (no margin at any step)
- Beneficial against online free-riding
- Educational tool
- Guarantee of a long-term financing, in a context of increasing substance regulation and standardization.¹⁶⁶

The fee contributes to maintaining levels of collection within the sector, and helps ensure quality treatment. In the Final Implementation Report for Directives 2002/96/EC and 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE): 2013 – 2015, a of summary and analysis of the replies provided by Member States to the Implementation

¹⁶² <https://www.eco-systemes.fr/annual-report-2016/developpementcollecte>

¹⁶³ <https://www.eco-systemes.fr/annual-report-2016/canauxcollecte>

¹⁶⁴ <https://www.eco-systemes.fr/annual-report-2016/canauxcollecte>

¹⁶⁵ Bio Intelligence Service (2015) - Guidance on Extended Producer Responsibility: Case study on WEEE in France

¹⁶⁶ Eco-systèmes (2017): WEEE forum conference Malta- The EPR journey in France, Alain Grimm-Hecker, President of Eco-systèmes http://www.weee-forum.org/system/files/news/day_two_alain_grimm-hecker_epr_journey_in_france.pptx

Questionnaire regarding WEEE is provided⁹⁰. In this, France states that having the visible fee enables the development of sustainable WEEE re-use, and the environmental contribution allowed for awareness-raising communications for consumers regarding issues related to managing household WEEE. It was stated that the visible fee also helped encourage distributors and local authorities to establish separate collection points for such waste in order to meet private demand. The contribution also appears to have acted as an incentive for producers, who quickly signed up to the scheme⁹⁰.

The average financial support provided to municipalities from OCAD3E to cover the costs of collection facilities, charges, dedicated staff etc. is €60/ton.

Eco-systèmes provide a breakdown of their costs:

- 69% operating costs
- 22% Financial support to collection / solidarity networks
- 5% Overhead (development, organisation, control)
- 4% Information and R&D¹⁶⁷

A.4.8 Consumer communication

PROs must also allocate 0.3% of contributions to national information campaigns and 1% to R&D⁸⁹. They must also provide a geo-localised database of collection points.¹⁶⁸

Every PRO organises communication and awareness raising campaigns. OCAD3E also coordinates regular communication campaigns on household WEEE, either at municipality level or at the national level for larger campaigns jointly launched by the four PRO's¹⁶⁵. Municipalities are also required to provide campaigns to inform citizens about WEEE management and related disposal channels.¹⁶⁹

In addition, Eco-systèmes produce information schematics on different household appliances, as well as teaching sheets aimed at informing children on the process of recycling WEEE.¹⁷⁰

¹⁶⁷ Eco-systèmes (2017): WEEE forum confernece Malta- The EPR journey in France, Alain Grimm-Hecker, President of Eco-systèmes http://www.weee-forum.org/system/files/news/day_two_alain_grimm-hecker_epr_journey_in_france.pptx

¹⁶⁸

<https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000029583069&dateTexte=&categorieLien=id>

¹⁶⁹ Jean-Baptiste Bahers and Junbeum Kim, (2018). Regional approach of waste electrical and electronic equipment (WEEE) management in France. Resources, Conservation and Recycling Vol 129. <https://reader.elsevier.com/reader/sd/pii/S092134491730335X?token=97704F3A64C00B3C5E99EFC5F0166A4EF1423B11804CD739107DB1FBCEF5795398932B42BF9595CF45F4ABFAAE79D0B>

¹⁷⁰ <https://www.eco-systemes.fr/documentation>

PRO websites also advise householders to re-use any EEE that is functional by giving re-use and repair options and information. The consumer can select whether they want to donate, recycle or exchange their EEE/WEEE. If they decide to donate the product, the website provides nearby 'Social and Solidarity' collection points where the consumer can donate the item. Only if the consumer indicates that the equipment is not fit for re-use are they directed to separate recycling options.¹⁷¹

Eco-systèmes provides communication tools for EEE producers free of charge. These tools are free of charge and are designed to help producers promote their environmental commitment both internally and with their customers, as well as informing the consumers about the recycling routes of their old devices. Posters, language elements, bill footers or leaflets are available for free download.¹⁷²

The collection of small WEEE increased by 18.4% between 2013 and 2014, and by 23.7% between 2010 and 2014. This was attributed to enhanced awareness raising campaigns and the designation of new collection points.¹⁷³

A.4.9 Online traders and free riders

In France, take-back based on the 1:1 principle includes in the case of distance selling.¹⁷⁴

Visible fees are a mechanism for showing consumers which producers are part of the compliance schemes and are therefore not free-riding.

The French Government is set to introduce new rules obligating online multi-seller platforms such as Amazon, to ensure that the collection and recycling of WEEE arising from products marketed and sold on such websites is properly financed. The new obligations, announced in January 2019, will require online retailers to prove that all of the products sold through their platforms have had an 'eco-contribution' paid on their behalf.¹⁷⁵

As a result of these new obligations for online platforms which will be included in France's Circular Economy Roadmap,¹⁷⁶ Amazon and other online platforms will, by default, be held responsible if it cannot prove that a business that sells a product on its site makes an 'eco-contribution'¹⁷⁵.

¹⁷¹ <http://www.rreuse.org/wp-content/uploads/Eco-systemes.pdf>

¹⁷² <https://www.eco-systemes.fr/partenaires-et-professionnels/producteurs/vos-outils-de-communication>

¹⁷³ https://www.ademe.fr/sites/default/files/assets/documents/eee-donnees-2014_8584_en-v2.pdf

¹⁷⁴ <https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000029387124&categorieLien=id>

¹⁷⁵ <https://resource.co/article/france-force-online-retailers-tackle-compliance-free-riding-13061>

¹⁷⁶ <https://www.ecologique-solidaire.gouv.fr/sites/default/files/FREC%20anglais.pdf>

A.4.10 Summary

France is generally considered to have a competent and effective WEEE system. The factors that contribute to this success are outlined here. Nearly 100% of French citizens have access to a selective collection system for WEEE through over 4,700 treatment centres. Large stores must include 1:0 take-back, and all stores must include 1:1 take-back. This excellent coverage greatly increases the likelihood that consumers will dispose of their WEEE through the correct channels.

Visible, modulated fees are a useful tool in raising consumer awareness around the ease of recycling of different EEE products, and in incentivising producers to include eco-design in their EEE. The fact these are included for online sellers helps customers to distinguish those online sellers that are part of a compliance scheme, and those that are free-riding. OCAD3E offer incentives for those municipalities that invest in secure storage for the high-risk items (LHAs). They are compensated at a higher rate per tonne than those that do not. This helps reduce leakage as less of these high-value items are stolen.

Although there is no separate re-use collection target, there is an obligation for PROs to be in contract with social economy actors to help improve prevention and re-use, and bring a value to these social enterprises.

France has also recently announced that it will look to reduce the prevalence of online free-riders, particularly from online multi-seller platforms, by making the platform itself responsible if it cannot prove its sellers have made the appropriate eco-contribution. This will help reduce the costs for those organisations that are complying and are part of a PRO, and will help increase the accuracy of the data regarding collection and recycling rates.

France also faces a number of key challenges. Firstly, gaps in reporting data and WEEE 'leakage' still exist. According to The CWIT Project 2015, the knowledge gap in France is around 33%. As part of implementing an individual Compliance Scheme for the collection and treatment of B2B WEEE, no approval is necessary when implementing these individual schemes, unlike in the household sector. This could potentially open up the system to misuse.

A.5.0 Germany

Table 15: Summary of relevant statistics (Eurostat, 2016)

Key figures	
Number of WEEE producer compliance schemes	0
Products put on the market - 3 year average 2013 – 2015 (tonnes)	1,740,205
Products put on the market - 3 year average 2013 – 2015 (kg/inh)	21.4
WEEE collected (2016) (tonnes)	782,214
WEEE collected per inhabitant 2016 (kg/inh)	8.6
WEEE collection rate (%)	44.9

- Germany does not use a PRO system but has a clearing house, Stiftung ear, authorised by the German Environment Agency and formed by producers
- The public waste disposal authorities created municipal collection points to which WEEE from private households can be delivered
- Prior to the introduction of retail and distributor take-back in 2016, approximately 87% of WEEE was collected via municipal collection points
- Producers do not pay per item placed on the market, but for the transport and treatment costs of the WEEE that is collected. Stiftung ear allocating costs according to producers' market share for each product category
- 1:0 and 1:1 DTS obligation for WEEE introduced late, following the transposition of the WEEE Directive in 2016
- Widespread non-compliance with in-store and online take-back rules, prior to introduction of penalties under the amended Electrical and Electronic Equipment Act 2017
- Only 33% of WEEE reaches producer recycling systems
- Germany has been successful in addressing the free-riding by making all distributors obligated and giving powers for reporting and for fines to be enforced

A.5.1 WEEE legislation and regulation

Germany was one of the last Member States to transpose the WEEE Directive 2012/19/EU, which came into force under national legislation in October 2015 under the Electrical and Electronic Equipment Act. Some of the new requirements, such as appointing an Authorised Representative for foreign based producers, or WEEE take-back obligations for large retail and online shops, came into effect in stages throughout 2016.

The latter provision to take back WEEE either on 1:1 or 0:1 basis affects distributors and retailers with a sales or storage and distribution space above a certain size, and was met with significant resistance by obligated companies in the lead up to the transposition¹⁷⁷. This is discussed further in Section 5.5.2.

A.5.2 Principles of system

Germany does not use a PRO system, with co-ordination of WEEE collection and take-back organised by the German Clearing House (Gemeinsame Stelle der Hersteller) under the Electrical and Electronic Equipment Act (ElektroG). Stiftung ear was founded by producers in conjunction with the incorporation of the WEEE Directive into national law. The Stiftung ear ensures the correct implementation of the ElektroG, as it performs the following functions:

- Registration of producers that place electrical and electronic equipment on the market in Germany.
- Collection of data on the amounts of electrical and electronic equipment placed on the market.
- Co-ordination of the provision of containers and the take-back of waste electrical and electronic equipment at the public waste disposal authorities (öffentlich-rechtliche Entsorgungsträger, öRE).
- Report of the annual flow of amounts to the Federal Environment Agency.
- Ensuring that all registered producers have an opportunity to participate in the setting of rules.
- Identification of free-riders and the reporting of these to the Federal Environment Agency.

Operational tasks, such as the taking-back of WEEE and disposal, or logistics, sorting, dismantling and recycling, are not performed by Stiftung ear. The producers have been responsible for these themselves since 24th March 2006. They are economically and functionally responsible for the recycling and disposal of WEEE. The collection of WEEE is executed by the communities, which have been doing so for many years and have always provided take-back sites.

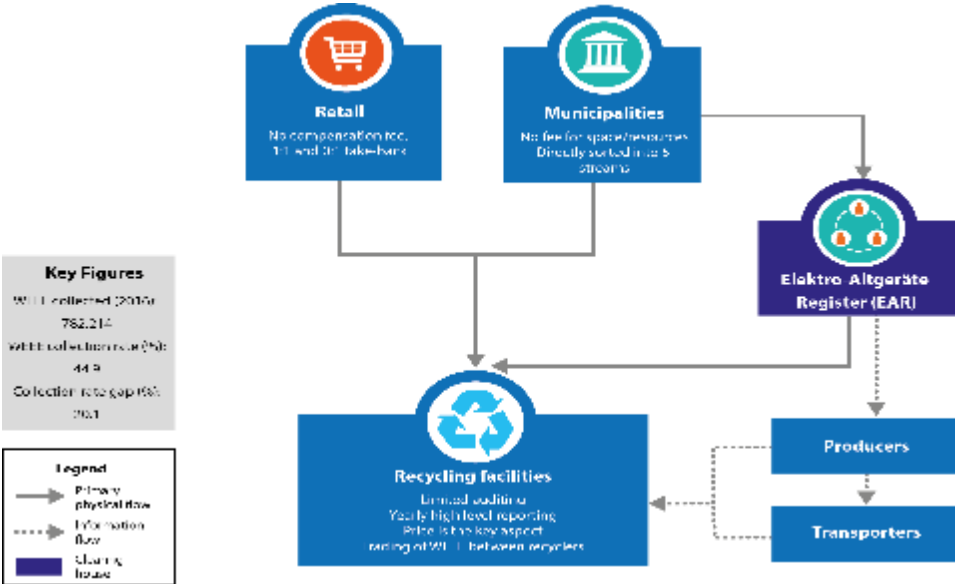
Stiftung-ear is run exclusively to cover the costs and is explicitly non-profit-making. Its work is financed by fees and expenses which are determined by the costs regulated by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (Bundsumweltministerium, BMU).

Whilst certain Member States (such as France) levy a charge per item placed on the market (often clearly visible on purchased EEE), under the German system, producers do

¹⁷⁷ Ecosurety: WEEE legislation changes in Germany to address retailer take-back non-compliance (2016) <https://www.ecosurety.com/news/weee-legislation-changes-in-germany-to-address-retailer-take-back-non-compliance/>

not pay per item placed on the market, but for the transport and treatment costs of the WEEE that is collected. Stiftung ear allocating costs according to producers’ market share for each product category⁸⁹. This may mean that producers’ costs increase as the return rate increases, with the potential to create perverse incentives. The German approach may mean that producers’ costs are more strictly limited to the actual costs, but it also means they are not contributing towards the costs of WEEE that is not collected.

Figure 5: German WEEE collection and take-back system



A.5.3 Current collection rates

Germany collected 782,214 tonnes of WEEE in 2016, representing a collection rate of 44.9%, or 8.63 kg per inhabitant.

Table 16: WEEE Collected in Germany in 2016 (tonnes)¹⁷⁸

Total WEEE	Large Household Appliances	Small Household Appliances	IT and Telecommunications Equipment	Consumer Equipment and PV	Other
782,214	323,011	140,177	114,668	132,176	72,182

The figures above do not fully reflect any impact arising from the introduction of WEEE take-back obligations for large retail and online shops, since these came into effect in stages throughout 2016.

¹⁷⁸ Source: Eurostat https://ec.europa.eu/eurostat/statistics-explained/images/4/44/Table1_Waste_electrical_and_electronic_equipment%2C_total_collected%2C_by_EEE_category%2C_2016_%28tonnes%29.png

Whilst Germany is the largest collector of WEEE from households of the EU member states (with an average of 618,416 tonnes over the 2013-2015 period), unaccounted material flows are significant, with only 29% of WEEE reaching producer recycling systems (either via municipalities or producer collection systems)¹⁷⁹. This is due to cherry picking profitable WEEE, lack of reporting, illegal collections, unaccounted/illegal treatment, illegal shipments amongst countries.

A.5.4 WEEE collection and take-back

A.5.4.1 Municipal collection points

The public waste disposal authorities (öffentlich-rechtliche Entsorgungsträger, örE), communities and towns have created collection sites to which WEEE from private households can be delivered from the area. In these collection sites the waste equipment is collected in containers in 5 different collection groups.

1. Large household appliances, automatic dispensers;
2. Refrigerators and freezers;
3. IT and telecommunications equipment, consumer equipment;
4. Gas discharge lamps; and
5. Small household appliances, lighting equipment, electric and electronic tools, toys, sports and leisure equipment, medical products, monitoring and control instruments¹⁸⁰.

When such a container is full, the public waste disposal authority reports this to Stiftung ear. The Stiftung ear then applies a calculation method in order to determine which of the registered producers of EEE from private households is obliged to pick up the container and to provide a new, empty one.

Stiftung ear issues two authority orders to this producer, namely a pick-up and a provision order, in which it is visible for the producer where, when and which container is to be picked up or respectively an empty container is to be provided.

The paperwork for collections includes a code or ID to collect and record relevant data, including transfer point, category to be collected, volume of devices, and the date and time for collection.

¹⁷⁹ Ökopol (2011) WEEE Flows in Germany. Short Analysis for Hewlett Packard.

http://ec.europa.eu/environment/waste/weee/pdf/WEEE%20workshol%20february%202017/All%20WEE%20flows%20workshop_Introduction.pdf

¹⁸⁰ ISW Institute for Structural Policy and Economic Development (2014) Analysis of European Best Practice Solutions for Logistics of WEEE

When the producer has fulfilled these duties, the public waste disposal authority sends a confirmation of the transaction to Stiftung ear. The producer should then immediately report the actual amount of taken-back waste equipment to the ear-system. The process described above is called the 'pick-up co-ordination'.

What is not part of the pick-up co-ordination is the logistics of taking back. This is the producers' responsibility and that of the disposal company which normally has been assigned the task by them.

The process may sound complicated but in practice it is fairly simple. The producer will generally have instructed a waste disposal company. The waste disposal company will also be registered in the ear online system, and so the pick-up and provision order will be sent automatically to the disposal company. The waste disposal company will then invoice the producer. Costs depend on the amount per year and the collection group.

Prior to the introduction of retail and distributor take-back in 2016, approximately 87% of WEEE was collected via municipal collection points. Research has not identified any specific data that highlights the impact of retail and distributor take-back, against the volume of WEEE collected via municipal collection points.

Conflicting viewpoints were identified in the literature, in respect of the overall level of efficiency of established structures for the collection of WEEE in Germany. Member State interviews conducted in 2017⁹⁰ suggested WEEE collection systems were considered to be relatively efficient, however in other sources, commentary suggests challenges, in respect of optimising collection quotas and WEEE handling during collection and transport,⁸⁹ with scope to improve collection more broadly to prevent breakages⁹⁰.

A.5.4.2 Retail

Since Germany was one of the latest Member States to transpose the WEEE Directive 2012/19/EU, requirements including WEEE take-back obligations for large retail and online shops, only came into effect in stages throughout 2016¹⁷⁷. Until this time, retailers were not obliged to take back appliances, although could offer this on a voluntary basis. The introduction of retail and distributor take back requirements was met with significant resistance by obligated companies in the lead up to the transposition.

The following obligations to take back WEEE now impacts both distributors and retailers with a sales or storage and distribution space larger than 400m²:

- 1:1 - when a new EEE is supplied to an end user, a WEEE of the same type of equipment that performs substantially the same functions as the new equipment, free of charge at the place of supply or in the immediate vicinity, and
- 1:0 - At the request of the end user, take back old appliances which are not larger than 25 cm in any external dimension, free of charge at the retail store or in the

immediate vicinity. The return must not be tied to the purchase of an electrical and electronic device and is limited to five old devices per device type¹⁸¹.

Despite the introduction of the retail and distributor take-back requirement, spot-checks performed by the not-for-profit and consumer protection association, Deutsche Umwelthilfe (DUH), found widespread non-compliance with in-store and online take-back rules. Auditing identified:

- The right to return WEEE, either when purchasing a new item or free of charge when returning small equipment, was in most cases insufficiently communicated or not advertised at all, and in several cases take-back was simply refused in stores.
- Staff at retail stores including IKEA, Amazon and Apple (and other well-known retail names in Germany, such as Karstadt, Obi and Galeria Kaufhof) were unaware of the requirements, no information was provided on websites or was hard to find and often incorrect¹⁷⁷.

Following discovery of extensive non-compliance with the new take-back rules, the German government announced on 14 December 2016 that it will adopt changes to the Electrical and Electronic Equipment Act effective from 2017:

- Reiteration that WEEE with a size limit of 25 cm corner length must be taken back by a retailer or in his near vicinity (“on request by an end-consumer”) and this may not be tied to the purchase of a new electronic or electrical equipment.
- New introduction of limiting the right to return WEEE to five items per equipment type¹⁷⁷.

Under the amendments to the Electrical and Electronic Equipment Act, it is an offence if the obligated seller (either intentionally or through negligence) does not correctly, or not promptly or not fully takes back WEEE. The offence is punishable by fines of up to €100,000.

A.5.4.3 B2B

WEEE arising from businesses cannot be sent to municipal collection points, and must instead be dealt with by the owner. They are required to take the items to a certified waste disposal company, pay the costs and report data back to Stiftung ear. Collection of large WEEE from industry is subject to individual contracts. There is very little data available on the collected quantities of WEEE from B2B sources.

¹⁸¹ Electrical and Electronic Equipment Act – ElektroG – Federal Ministry of Justice and Consumer Protection https://www.gesetze-im-internet.de/elektrog_2015/BJNR173910015.html

A.5.5 Collection and take-back costs

Producers (or their authorised representative, if based outside Germany), must register with Stiftung ear for a fee, which is levied in accordance with the amount of EEE placed on the market. Producers do not pay per item placed on the market (which is arguably more in line with the producer responsibility principle and means costs are more predictable) but for the transport and treatment costs of the WEEE that is collected. Stiftung ear allocates costs according to producers' market share for each product category⁸⁹. This may mean that producers' costs increase as the return rate increases, with the potential to create perverse incentives.

Under the scheme, the municipality provides space for at least five containers for free, with producers covering costs associated with containers, transport and treatment. A small fee is paid by the waste disposal carriers. WEEE which has a negative treatment cost (e.g. LHA) is not collected through the Clearing House system, but is directly marketed by the municipalities¹²⁴.

Producer logistic costs were previously significantly lower, as a consequence of retail take-back being a voluntary requirement¹²⁴. It is considered however, that logistics costs will have inevitably increased, as a consequence of the introduction of retail take-back. No specific information relating to the cost implications of introducing retail take-back have been identified through the course of undertaking the literature review.

A.5.6 Consumer communication

As part of a legal mandate, Stiftung ear initiates various communication and engagement activities, with the objective of raising awareness amongst consumers to increase the collection rate of WEEE over the longer term. Examples of consumer information and engagement activities initiated by Stiftung ear are summarised below.

A.5.6.1 The G² information platform

The G² information platform¹⁸² provides a number of functions:

- Information material has been developed for both local authorities and traders and is made available free of charge. Individual businesses can access consumer information through brochures or posters and various producer associations, in order to support publicity campaigns.
- Content aimed at municipalities, educational centres and NGOs, including text for press releases, and a photo library.

¹⁸² <https://www.stiftung-ear.de/en/herstellerbevollmaechtigte/kommunikations-und-bildungsinitiativen>

- Downloadable app for consumers and private businesses to support with locating the nearest WEEE collection point, with an approximately 15,000 collection points available across Germany. The portal provides a location map and opening hours.
- Information for trade association's members, in the form of documents containing frequently asked questions, in order to raise awareness and to address practical and interpretation-related questions linked to carrying out their duties.
- Advice on how to contact Stiftung ear and provide information on illegal disposal.

Figure 6: Example content download from the G² information platform



A.5.6.2 G² school case old electrical appliances

Used successfully in Austria for many years, the G² school case initiative was adapted for use in Germany in collaboration with Elektroaltgeräte Koordinierungsstelle Austria GmbH. The case contains visual materials such as a mobile phone dismantled into components, batteries and raw materials used for the production of EEE. Waste consultants were commissioned to deliver a pilot project in 2017, with the objective of raising awareness amongst school children of the importance and value of recycling WEEE¹⁸³. This is combined with educational tours across schools and kindergartens.

No evaluation or impact data following the delivery of the pilots has been identified during the course of the research.

¹⁸³ http://www.grs-batterien.com/fileadmin/user_upload/Download/Englisch/Erfolgskontrolle/GRS_Annual_Report_2016_WebPDF.pdf

Figure 7: G² school case



No evidence of any studies to evaluate the impact of communication campaigns on WEEE collection rates in Germany has been identified during the course of undertaking the literature review.

A.5.7 Online traders and free riders

Selling EEE in Germany without a valid registration with Stiftung ear is illegal, and can result in fines and trade bans. This applies to both B2B and B2C producers. Producers can be fined €100,000 by the Environment Agency, while reporting offences can mean a fine of €10,000. Additionally, under German competition law, producers can take direct action against unregistered competitors.¹⁸⁴

The obligation to register begins when a company offers a product for sale, including advertising or offering it for delivery. Also, the emphasis is on specific products being registered, rather than producers. If foreign suppliers have no presence in Germany, it is up to the national importer to fulfil the producer obligation, with the expectation that the foreign producer will eventually register through an Authorised Representative.¹⁸⁵

Online sellers are legally obliged to take back WEEE in the same way as stationary distributors, and have to install a take-back infrastructure (i.e. collection points) in reasonable distance to the consumer. In practice, online sellers often use the service points of parcel service providers as collection points for consumer WEEE which is then

¹⁸⁴ Bipro (2017) *WEEE Compliance and Promotion Exercise*. Final report for the European Commission. December 2017.

¹⁸⁵ *What you need to know about WEEE compliance in Germany – Part one*, Eco Surety website, accessed 24/04/2019, <https://www.ecosurety.com/news/what-you-need-to-know-about-weee-compliance-in-germany-part-one/>

transported to the distributor/a treatment facility.¹⁸⁶ In addition, competitors are permitted by law to act directly against non-registered producers under competition law.

The German Environment Agency has set up a network to share information on free-riders and the actions that are being taken against them (the European WEEE Enforcement Network). It has been suggested that the European Environment Agency could be better placed to act in this co-ordinating role at the level of the EU while, for wider geographic coordination, the OECD could potentially be suitably placed. It is also worth noting that in Germany, under the “Gesetz gegen den unlauteren Wettbewerb – UWG” law, a competitor can issue a “warning” (effectively a cease-and-desist letter) and demand compensation from a non-compliant producer, stop the producer from selling non-registered EEE (injunction), and request disclosure of sales and their recipients. The Federal Environment Agency can also request the payment of a fine equivalent to the profit gained through unfair competition.¹⁸⁷

A.5.8 Summary

Germany operates a system of one central clearing house (Stiftung ear) to manage the administrative, registering and reporting of WEEE collection. Producers do not pay per item placed on the market, but instead for the transport and treatment costs of the associated market share of WEEE that is collected. Literature sources suggest continued challenges consist in WEEE optimising collection, including managing quotas and WEEE handling during collection and transport.

Germany collected 8.63 kg of WEEE per inhabitant in 2016, however these figures do not fully reflect any impact arising from the introduction of WEEE take-back obligations for large retail and online shops, since these came into effect in stages throughout 2016. Germany experienced significant challenges in respect of the introduction of retail and distributor take back requirements following the transposition of the WEEE Directive 2012/19/EU. Resistance amongst obligated companies in the lead up to the transposition was followed by widespread non-compliance with in-store and online take-back rules. Changes to the Electrical and Electronic Equipment Act (effective from 2017) have introduced penalties to ensure obligated sellers comply with take back requirements.

Germany has also been successful in addressing the issue of free-riding and online selling by making all distributors obligated, giving powers to other companies to report free riders and for fines to be enforced - items are considered illegally sold if not registered.

¹⁸⁶ BIPRO, and Deloitte (2018) *WEEE Compliance promotion exercise*, April 2018, <https://publications.europa.eu/en/publication-detail/-/publication/09c7215a-49c5-11e8-be1d-01aa75ed71a1/language-en>

¹⁸⁷ Hilton, M., Sherrington, C., McCarthy, A., and Börkey, P. EXTENDED PRODUCER RESPONSIBILITY (EPR) AND THE IMPACT OF ONLINE SALES – ENVIRONMENT WORKING PAPER N° 142, p.58

A.6.0 Ireland

Table 16: Summary of relevant statistics (Eurostat, 2016)

Key figures	
Number of WEEE producer compliance schemes	2
Products put on the market - 3 year average 2013 – 2015 (tonnes)	88,219
Products put on the market - 3 year average 2013 – 2015 (kg/inh)	18.9
WEEE collected (tonnes 2016)	51,303
WEEE collected per inhabitant (2016 kg/inh)	9.4
WEEE collection rate (% 2016)	58.2%

- 2 PRO's: WEEE Ireland (~75% market share), and ERP Ireland (~25% market share).
- 65% collection target (of WEEE Ireland's producers share of the POM) achieved by WEEE Ireland in 2018 is exclusively WEEE collected via the official collection route.
- All retailers must offer take-back of WEEE in store of a similar type on a 1:1 basis for free, and for retailers with a sales area of EEE that is greater than 400m², they must also provide 1:0 take back free of charge.
- WEEE must also be taken back free of charge 1:1 on delivery
- Mandatory handover of household WEEE by retailers via the compliance route.
- Retailers are financially incentivised and compensated for WEEE collected.
- Strong enforcement regime, with the Environmental Protection Agency responsible for ensuring retailers display the correct signage, have adequate storage facilities, and provide correct documents and records of take-back.
- Strong focus on consumer campaigns – WEEE Ireland named 2017 “The Year of Small WEEE” - a concerted campaign to increase the collection of small WEEE. This led to a 6% increase in small household WEEE collected.
- Ireland operates a ‘Visible Environmental Management Costs (vEMC) system which funds 40% of the collective activities of the two PROs. The remaining funds come from producer fees (40%) and reserves (20%) built up in previous years.
- Producers cover 100% of the costs of transportation and treatment, and partially cover the costs of collection points in conjunction with retailers and municipalities.

A.6.1 WEEE legislation and regulation

Ireland transposed the 2002 WEEE Directive into national law in 2005. The recast 2012 WEEE Directive was implemented into Irish regulations in 2014.¹⁸⁸ The Waste Management Act (1996) outlines the general framework for waste management in Ireland, including establishing a legislative basis for producer responsibility initiatives in the country.¹⁸⁹

Following the introduction of the WEEE Regulations, HWRC infrastructure across Ireland was deemed to be insufficient to deliver the requisite capacity and convenience for collection, and hence the Irish EPA and WEEE Ireland since 2015, have collaborated with retailers to provide additional collection and take-back provisions¹⁹⁰.

Further contextualisation includes high levels of fly tipping in the years leading up to the introduction of the WEEE Regulations. As a consequence, the Ministry for the Environment introduced obligations for mandatory and free take-back of WEEE by retailers within the WEEE Regulations.

Whilst Ireland introduced a 'Pay-as-you-Throw' waste system in 2017, discussions with WEEE Ireland suggests that it is too early to assess any impact on WEEE collection performance, with the system continuing to be introduced across a number of locations.

A.6.2 Principles of system

There are 2 PROs in Ireland:

- WEEE Ireland – not-for-profit, with approximately 75% of the market, targeting B2C;
- ERP Ireland – for-profit, responsible for the remaining 25% of the market, targeting B2C/B2B.

Both cover all WEEE categories, and while there is competition between the two PROs for producers, the collection split is straightforward since the two schemes divide their responsibilities on a county-by-county basis under a voluntary agreement. Ireland is a relatively small country, and hence, responsibilities can be distributed bi-laterally without the need for a clearinghouse.

As per the Directive, household WEEE producers must finance the “environmentally sound management” of their WEEE (directly or through a third party). This applies to their products placed on the market post 13th August 2005, and an amount of products

¹⁸⁸ EPA (2019) Waste from Electrical and Electronic Equipment and Batteries, accessed 13/08/19
<http://www.epa.ie/enforcement/weee/>

¹⁸⁹ Bio Intelligence Service (2013) Guidance on Extended Producer Responsibility – WEEE in Ireland

¹⁹⁰ Telephone interview, WEEE Ireland July 2019

placed on the market before 13th August 2005 in proportion to their current market share.¹⁹¹

Ireland operates a visible fee system – with the ‘Visible Environmental Management Costs (vEMC) representing standard charges applied at the point of sale to the price of certain B2C electrical goods, and hence automatically paid by consumers without the involvement of the producers per se. These fees fund 40% of the collective activities of the two PROs, while 40% of the funding is from direct producer fees (for the categories not covered by the vEMC) and 20% from reserves built up in previous years. These vEMCs were re-introduced in July 2014 and apply to large household appliances, large televisions and specified lighting equipment.¹⁹² ¹⁹³ The vEMC is set by the Government, in collaboration with the various stakeholders including the two PROs.

Under Ireland’s WEEE regulations, the ‘historic WEEE’ arrangements (placed on market pre 13th August 2005) are as set out in the Directive (and largely are dealt with by the end user), but for products sold after August 2005, distributors are legally required to provide details to the purchaser of the producer responsible for funding the environmentally sound management of the product so that end-users can call on them for free take back.¹⁹⁴ ‘Dual-use’ items such as laptops can be counted towards the collection targets.

Figure 8: Irish WEEE collection and take-back system



¹⁹¹ Bio Intelligence Service (2013) Guidance on Extended Producer Responsibility – WEEE in Ireland
¹⁹² <https://www.epa.ie/pubs/advice/waste/weee/Retailers%20WEEE%20Battery%20Regulations%20Guidance%20Leaflet.pdf>
¹⁹³ <https://www.weeeireland.ie/producers/producers-faq/>
¹⁹⁴ Statutory Instrument No. 149 of 2014:
<http://www.epa.ie/pubs/legislation/waste/weee/SI%20149%20of%202014.pdf>

To gain authorisation, PROs are required to submit an operational plan for approval. The Department for Communications, Climate Action and the Environment (DCCA) chairs a WEEE and Battery Group for stakeholders to discuss key issues and DCCA similarly has a National Stakeholder Forum on waste management. B2B producers, or PROs acting on their behalf, are required to prepare a WEEE waste management plan every three years for the Irish EPA. The EPA is responsible for enforcing and auditing B2B compliance as well as B2C.¹⁹⁵

A.6.3 Current collection rates

In 2016 the WEEE collection rate in Ireland was 58.2%; 9.4kg per inhabitant. This included collection from individual producers, collective systems and collection operators. Collection quantities for 2012-2016 are shown in Table 16.

Table 16: Ireland WEEE collection rate 2012-2016

	2012	2013	2014	2015	2016
Waste collected from households (tonnes)	34,581	33,241	37,275	39,835	44,699
Waste collected from other sources (tonnes)	6,633	9,388	7,636	8,791	6,604
Total collected (tonnes)	41,214	42,629	44,911	48,626	51,303

Source: EUROSTAT (2019) Waste Electrical and Electronic Equipment (WEEE) 196

More recent WEEE collection data has been obtained through discussion with WEEE Ireland, which in 2018, achieved a collection rate of 65% in relation to the proportion of POM their producer members placed on the market; 10.2kg per inhabitant, for

¹⁹⁵ Bipro (2017) *WEEE Compliance and Promotion Exercise*. Final report for the European Commission. December 2017.

¹⁹⁶ EUROSTAT (2019) *Waste Electrical and Electronic Equipment (WEEE) by waste management operations*, accessed 2 May 2019, http://appsso.eurostat.ec.europa.eu/nui/show.do?query=BOOKMARK_DS-185466_QID_-7E908AF_UID_-3F171EB0&layout=TIME,C,X,0;WASTE,L,Y,0;GEO,L,Z,0;WST_OPER,L,Z,1;UNIT,L,Z,2;INDICATORS,C,Z,3;&zSelection=DS-185466WST_OPER,COL;DS-185466GEO,AT;DS-185466UNIT,T;DS-185466INDICATORS,OBS_FLAG;&rankName1=WST-OPER_1_2_-1_2&rankName2=INDICATORS_1_2_-1_2&rankName3=UNIT_1_2_-1_2&rankName4=GEO_1_0_0_1&rankName5=TIME_1_0_0_0&rankName6=WASTE_1_0_0_1&sortR=ASC_-1_FIRST&sortC=ASC_-1_FIRST&rStp=&cStp=&rDCh=&cDCh=&rDM=true&cDM=true&footnes=false&empty=false&wai=false&time mode=ROLLING&time most recent=false&lang=EN&cfo=%23%23%23.%23%23%23%2C%23%23%23

household and ‘dual use’ WEEE in their collection areas. Whilst ERP Ireland declined to participate in the research, desk research suggests that it delivered a collection rate of 56%; 8.9kg per inhabitant over the same period. It is worthy of note that WEEE Ireland takes a lead role with the retail sector in Ireland which may help them to achieve these higher collection rates. Table 17 presents WEEE collection data for Ireland by category.

Table 17: WEEE total collected by EEE category, 2016 (tonnes) ¹⁹⁷

Total waste	Large household appliances	Small household appliances	IT and ICT	Other
51,303	29,810	2,242	7,933	11,318

WEEE Ireland has shared more recent WEEE collection data for 2018. Whilst this is not fully representative of Ireland as a whole (WEEE Ireland maintain ~75% of the market share) it is a useful indication of how the 65% collection rate is being achieved across individual categories, summarised in Table 18.

Table 18: WEEE Ireland collection rate by EEE category 2018 – 36,131 tonnes ¹⁹⁸

Fridges/freezers	72%
Large household appliances	76%
Small household appliances	32%
ICT	64%
Monitors	44%
Consumer equipment	56%
TVs	153%
Lamps	27%
Luminaries	58%
Tools	49%
Toys	9%
Total	65%

It is also worth noting that the 65% collection target achieved by WEEE Ireland in 2018 is exclusively WEEE collected via the official collection route, without substantiated estimates.

¹⁹⁷ Eurostat (2019) Waste statistics - electrical and electronic equipment

¹⁹⁸ <http://www.weeireland.ie/wordpress/wp-content/uploads/2019/06/WEEE-Ireland-environmental-report-2018.pdf>

A.6.4 WEEE collection

The two Irish PROs coordinate the collection of WEEE via three core channels; civic amenity sites, retailers and other collection points, and ‘special collection events’ which include public collection days, as well as WEEE collected through waste industry partners, workplace events and through the education sector.¹⁹⁹ The percentage of collected WEEE taken back through WEEE Ireland’s retail collection route is 56%; this is higher in Ireland than any other European country. WEEE Ireland’s collection performance data by collection route is summarised in Table 19.

Table 19: WEEE Ireland – WEEE collection by route 2018

Collection route		Tonnage
Retail	56%	20,272
Civic amenity sites	29%	10,362
Special collections	15%	5,498
Total	100%	36,131

For the fourth year in succession there has been an increase in the weight of WEEE collected from Retailer collection points, from 19,251 tonnes in 2017 to 20,272 tonnes in 2018²⁰⁰.

A.6.4.1 Civic amenity sites

Free WEEE collection points are provided in each of the 31 local authority areas through the civic amenity site network⁸⁹ representing 90+ sites in total (against around 400 retail collection points).²⁰¹ The 2 PROs pay €1.2 million per annum to support the operational costs associated with running these facilities.²⁰² Producers therefore partially cover the costs of collection points in conjunction with municipalities, with municipalities incurring a proportion of the set up and management costs for their own network of collection points.

Whereas bulky waste collection services are commonplace in the UK, in Ireland such services are limited, with options including civic amenity sites, or private skip hire from private waste collection operators.

A.6.4.2 Retailers and distributors

Ireland’s retail sector is characterised by five or six large retail groups. Whilst both PROs members are representative of the retail sector, WEEE Ireland has a larger proportion of

¹⁹⁹ <https://www.mywaste.ie/wp-content/uploads/2019/07/WEEE-Ireland-environmental-report-2018.pdf>

²⁰⁰ <http://www.weeeireland.ie/wordpress/wp-content/uploads/2019/06/WEEE-Ireland-environmental-report-2018.pdf>

²⁰¹ <https://annualreport.weeeireland.ie/key-projects#role-of-retailers>

²⁰² Bio Intelligence Service (2013) Guidance on Extended Producer Responsibility – WEEE in Ireland

the retail sector, and therefore has a vested interest in developing a collection system that is effective and practical. The system benefits from two PROs maintaining long-term relationships with senior/CEO representatives from across the Irish retail sector²⁰³. In addition, WEEE Ireland employs a dedicated Operations Executive to liaise with retail stores to help address operational issues and ensure the correct separation, segregation and quality management of WEEE material on site.

Retailer and distributor obligations under the Irish WEEE Regulations are summarised as follows:

- Retailers have both a free of charge 1:1 and 1:0 take-back obligation in accordance with the provisions of the WEEE Directive.²⁰⁴
- All retailers must offer take-back of WEEE of a similar type on a 1:1 basis for free, and for retailers with a sales area of EEE that is greater than 400m², they must also provide 1:0 take back free of charge (as per the WEEE Directive).
- Distributors additionally provide free 1:1 take-back for home deliveries.
- Retailers are required to display visible fees, and to display information on the WEEE return and collection systems available to the customer. This includes WEEE taken back in-store and also on delivery.^{205 201}
- Retailers must register their premises with the local authority, with the Irish EPA responsible for enforcing retailer obligations²⁰² - including ensuring retailers display appropriate in-store signage, have adequate storage facilities, and maintain robust monitoring and reporting of data back to the PRO.

The EPA's enforcement activities is partially funded by revenue generated by the visible fee.

Producers partially cover the costs of collection points in conjunction with retailers, paying retailers by collected tonnage.

The WEEE Regulations do not prescribe how retailers are required to operate collection systems for WEEE, and hence, different in-store systems are operated by retailers²⁰⁶. In-store collection infrastructure operated by retailers includes both large cage/containers within stores with appropriate signage, as well as over the counter return systems²⁰⁷.

Mandatory handover of WEEE collected by retailers to the PRO, requirements to maintain accurate records combined with enforcement activity and free take-back for

²⁰³ Telephone interview, WEEE Ireland July 2019

²⁰⁴ <http://www.epa.ie/pubs/advice/waste/weee/Retailers%20WEEE%20Battery%20Regulations%20Guidance%20Leaflet.pdf>

²⁰⁵ EPA, WEEE and Battery Regulations – What do Retailers need to know?

<http://www.epa.ie/pubs/advice/waste/weee/Retailers%20WEEE%20Battery%20Regulations%20Guidance%20Leaflet.pdf>

²⁰⁶ Telephone interview, WEEE Ireland July 2019

²⁰⁷ Telephone interview, WEEE Ireland July 2019

consumers has, according to WEEE Ireland, served to significantly reduce 'leakage' from the official system via the retail collection route²⁰⁸.

Approximately 95% of LHA's that are taken back via retailers are collected from a household upon delivering a new appliance. The product mix of WEEE that comes back via retailers tends to be mostly LHA, compared to civic amenity site collections, which are characterised by a higher yield of small electrical appliances.²⁰⁹

A.6.4.3 Re-use centres

Ireland's preparation for reuse rate in 2014 was 1.3%. National legislation requires that reuse organisations have access to separately collected WEEE directly from producer's designated collection hubs, to help ensure the WEEE has been adequately stored and transported which in turn will maximise its reparability/reusability⁸⁹. Registered preparation for reuse operations can access WEEE for free from designated scheme hubs, in association with WEEE Ireland, to support their reuse programme²⁰¹.

A.6.4.4 Kerbside

Recycle IT is a WEEE recycling social enterprise in Dublin, Kildare and Wicklow, and a partner of WEEE Ireland. They offer kerbside collection services of WEEE to around 100,000 homes a year in the Greater Dublin area, as well as business collection services for all WEEE²⁰¹. WEEE Ireland compensate RecycleIT for each tonne of WEEE collected, the money from which is used to support community groups and fund the activities delivered by the social enterprise.²¹⁰ Services are not integrated within existing municipal waste collections. Volumes collected via this route are extremely low, and there are no proposals to expand or introduce further WEEE collection via kerbside across Ireland.²¹¹

A.6.4.5 Special collections

As stated earlier, special collections accounted for 5,498 tonnes (15%) of all WEEE collected through WEEE Ireland's collection network in 2018. This includes collection points and special collection days targeting educational institutions, workplaces/offices and the general public in towns and cities. Ireland's waste management sector also supports special collection events. Both of the PROs organise and promote public collection events, which are typically located in areas where the general public cannot easily access civic amenity or retail locations, namely rural locations. Marketing and

²⁰⁸ Telephone interview, WEEE Ireland July 2019

²⁰⁹ Telephone interview, WEEE Ireland, July 2019

²¹⁰ Telephone interview, WEEE Ireland July 2019

²¹¹ Telephone interview, WEEE Ireland July 2019

communication materials are used to promote collection events to ensure higher levels of participation.²¹² Special collection events are promoted through local schools, local press, social media and radio²¹².

Statistics made available via WEEE Ireland indicate that 2017 saw:

- A 65% increase in WEEE collected per event;
- 30% decrease in cost per tonne at public collection events;
- 44 public collection events delivered;
- 920 radio adverts, 50 print adverts and paid social media promotion to promote the events.

Increased engagement with community groups also serves to increase awareness amongst the general public and target stakeholder groups.

A.6.4.6 WEEE collected outside of the official system

‘Leakage’ of WEEE from the official system, particularly via scrap metal, and improving the regulation of the scrap metals sector, are being tackled by a number of measures. The Department of Environment, Community & Local Government is a member of a national inter-agency Strategic Taskforce on Metal Theft. The PRO’s are examining new methods of securing collected WEEE, and examining how metal dealers and scrap metal merchants can be better regulated through new legislation²¹². Scrap and other unofficial collection do not contribute to the overall collection figure reported by WEEE Ireland.²¹³

A.6.5 Collection and take back costs

When the original WEEE Directive was transposed into Irish legislation in 2005 it required all producers currently in the market to finance their existing market share of the historical WEEE liability (i.e. the costs of takeback and recycling of waste appliances placed on the market prior to 2005). WEEE Ireland projected that an €80million finance package was required to cover this liability and that it would need to be managed over a 15-year lifecycle as the related appliances would be arising as WEEE until at least 2020. This fund has resulted in WEEE Ireland maintaining a historical WEEE Reserve to finance producer responsibility, around £2m of which currently being drawn down each year²¹⁴.

²¹² Bio Intelligence Service (2013) Guidance on Extended Producer Responsibility – WEEE in Ireland

²¹³ Telephone interview, WEEE Ireland July 2019

²¹⁴ <https://www.weeeireland.ie/wordpress/wp-content/uploads/2017/docs/WEEE-Ireland-annual-environmental-report-2016-published-june2017.pdf>

A.6.5.1 Collection cost by route

Discussion with WEEE Ireland has sought to understand variances in collection costs by route. Whilst civic amenity site collection represents the most cost effective collection route, retail collection (combined with other factors, including mandatory and free take-back, enforcement) contributes the greatest element of WEEE Ireland's overall performance, with this infrastructure playing an importance role in supporting WEEE Ireland to deliver a collection rate of 65%.²¹⁵

The cost efficiency of WEEE Ireland has been estimated by Bio Intelligence Service's 2013 Guidance on Extended Producer Responsibility – WEEE in Ireland report,²¹² as €1.4 per inhabitant per annum and €160/tonne collected. This is compared to the fees paid by producers in France for household WEEE of €384 per tonne collected, or €2.8 / inhabitant. In France, producers cover 100% of the cost of the whole value chain: collection, sorting, recycling and treatment²¹².

A.6.6 Consumer communication

WEEE Ireland dedicated 5.5% of its expenditure to general communication in 2018, and a further 5.9% to the specific 'We'll Take it Back' campaign over the same period.

A.6.6.1 We'll Take it Back campaign

Launched in 2014, the We'll Take it Back campaign supports electrical retailers deliver on the mandatory take-back requirement. Key messaging included conveying the retail sector as recycling centres for WEEE. Approximately 200 retailers participate in this campaign.

The We'll Take It Back campaign also supports retailers to promote WEEE recycling in-store as a service to their customers. Through the programme retailers are able to go beyond like-for-like, one-for-one take back obligations and include free recycling of all household WEEE and batteries instore as part of their offering. Evidence provided by WEEE Ireland suggests that participating retailers who go beyond the like-for-like/one-for-one take back in store have delivered approximately three times the yield of WEEE in-store²¹⁶.

²¹⁵ Telephone interview, WEEE Ireland July 2019

²¹⁶ Telephone interview, WEEE Ireland July 2019

Figure 9: WEEE Ireland ‘We’ll Take it Back’ campaign



Since its introduction in 2014 there has been a significant increase in WEEE retail take back volumes, with Ireland collecting proportionally more WEEE from retail collection points than any other scheme in Europe. There has been a 4% increase in WEEE take-back from retail partners compared to the previous year (2018)²¹⁷.

A.6.6.2 Small things matter campaign

Other examples of communication efforts include WEEE Ireland’s ‘Small Things Matter’ campaign – a national campaign to support the growth of the scheme’s collections towards the 2019 target of 65%. Encouraging Irish householders to return waste lighting, small electrical household items and batteries to civic amenity sites or participating electrical retailers, the campaign is supported with a consumer PR strategy, including radio, digital and social media. In 2018 the Small Things Matter campaign supported WEEE Ireland in achieving an increase of 5% (293 tonnes) of take back on small WEEE from Local Authority recycling centres and retailers²¹⁸.

A.6.6.3 Recycle for Good

Whilst the Recycle for Good campaign is focused on supporting WEEE Ireland’s battery collection targets, the scheme is a good transferable example of how community engagement in combination with a strong marketing message can increase collection

²¹⁷ <http://www.weeeireland.ie/wordpress/wp-content/uploads/2019/06/WEEE-Ireland-environmental-report-2018.pdf>

²¹⁸ <http://www.weeeireland.ie/wordpress/wp-content/uploads/2019/06/WEEE-Ireland-environmental-report-2018.pdf>

performance. WEEE Ireland supports Ireland's Children's Hospice Charity, LauraLynn, which receiving charitable donations in return for batteries collected via schools, businesses, consumers and participating retailers.

The charity has supported an increase in battery recycling across Ireland since 2011, with schools in particular showing the largest growth in waste battery collections in 2016. encouraged to be a key motivator for the people of Ireland to recycle their waste batteries with donations of over €390,000 since 2011.

A.6.6.4 WEEE Ireland website

WEEE Ireland has recently invested in the development of an interactive map to allow consumers to find their nearest electrical retailer that accepts WEEE or batteries.²¹⁹ This followed market research commissioned by WEEE Ireland, which indicated that there was a lack of consumer knowledge on how and where to deposit WEEE. Since the launch of the new website, WEEE Ireland has seen a 93% increase in online traffic as a result of Facebook promotions of the map²⁰¹. Social media more broadly represents a mechanism for WEEE Ireland to reach its target audience, with its own research suggesting it reached 1.8million individuals via social media platforms in 2017.²²⁰

A.6.7 Online traders and free riders

The Irish WEEE Regulations include specific clauses relating to distance sellers, requiring online websites to list its individual EEE producer Registration Number as a mechanism to identify non-compliance. Distance sellers are also required to fulfil take-back obligations and retain records for at least two years of the amount of WEEE taken back each year¹⁰⁹.

The EPA have only prosecuted one company in Ireland relating to free-riding and online sales as an act of deterrence to others. Since 2015, 80 websites have been investigated, and these were all B2B EEE. The EPA also reacts in instances where non-compliant websites have been highlighted by legitimate and registered EEE sellers in Ireland, or by other EU country authorities¹⁰⁹.

The EPA has also issued guidance for government departments, state bodies, local authorities and publicly funded organisations for procuring EEE and disposing of WEEE correctly.²²¹ It states that when procuring EEE, it is necessary to check whether the producer is validly registered at www.weeeregister.ie Producers are obliged by law to print a valid WEEE Registration Number on their invoices, credit notes, dispatch and delivery dockets, as well as on their websites as previously mentioned.

²¹⁹ <https://www.weeeireland.ie/household-recycling/where-can-i-recycle/>

²²⁰ <https://annualreport.weeeireland.ie/2017-results#weee-collection-results>

²²¹ <https://www.epa.ie/pubs/advice/waste/weee/EPA%20Procurement%20Guidance%20Note.pdf>

The Guidance also states that products bought online are covered by the WEEE Regulations, and those supplying them do have obligations under the WEEE Regulations. The distance seller should be registered as a producer or be able to prove they are purchasing EEE from registered producers.

A.6.8 Summary

Ireland collects proportionally more WEEE from retail collection points than any other scheme in Europe. This is supported by a strong regulatory regime, which includes mandatory take-back of WEEE of a similar type on a 1:1 basis for free, and for retailers with a sales area of EEE that is greater than 400m², they must also provide 1:0 take back free of charge. This includes WEEE taken back in-store and also on delivery.

Historically there has been a lack of uniform bulky waste collections in Ireland and a relatively small number of CA sites. Significant importance has therefore been put onto retail collection and take-back provisions.

A strong focus on communications, including efforts to promote retail take-back services and specific efforts to promote small WEEE collection has yielded positive results and contributed towards WEEE Ireland delivering a collection rate of 65%. Expenditure on communications is higher than many other EU PROs, such as France where PROs are required to allocate 0.3% of budgets towards communication activities, as against over 5% in Ireland.

The system is characterised by a combination of both carrot and stick approach in which EPA enforcement ensures retailers display the correct signage, have adequate storage facilities, and provide correct documents and records of take-back, with financial incentives for retailers of €80 per tonne of WEEE collected.

A.7.0 Netherlands

Table 21: Summary of relevant statistics (Eurostat, 2016)

Key figures	
Number of WEEE producer compliance schemes ²²²	5
Products put on the market 3 year average (2013-2015)	322,742
Products put on the market - 3 year average 2013 – 2015 (kg/inh)	19.1
WEEE collected (tonnes 2016)	154,675
WEEE collected per inhabitant 2016 (kg/inh)	8.3
Collection rate (%)	47.9

- 5 PRO's, hence, competition exists between compliance schemes (in particular the two B2C schemes – Wecycle and WEEEE Nederland).
- No visible fee allowed – although there has been in the past.
- Wecycle provided around 1 million 'Jekko' boxes free of charge to households, to facilitate in-house WEEE segregation / handling.
- WEEE take back at all retailers that sell EEE – including small mixed WEEE at grocery stores – containers provided by WEEE cycle and include/next to containers for lamps, batteries, cartridges.
- B2B free collection (up to seven items) at municipal collection centres.
- Other collection points including schools, children's farms etc.
- Overall, there is a network of 10,000 collection points including municipal collection points and in shops.
- WEEE is also taken back free of charge on retailer delivery.
- Retailers and municipalities paid a compensation fee – although not under a duty to hand over WEEE (or report in the case of retailers).
- Strong focus on consumer campaigns (Wecycle) and education for children (WEEEE Nederland).
- Online sellers have to provide free post back to meet take-back obligations.
- Thuiswinkel/PostNL door-step pilot allows householders to hand-over small WEEE with every delivery of a new item (e.g. from online sales), to the delivery driver – currently dormant
- Kerbside collections have been run successfully by some municipalities

²²² Including producer collectives and collective collection systems

- Scrap metal recyclers are being paid an extra €50 per tonne to report all WEEE and treat via the official system / WEELABEX sites

A.7.1 WEEE legislation and regulation

The Dutch State Secretary of Infrastructure and the Environment has implemented WEEE legislation through the Regulation on Waste Electrical and Electronic Equipment ('Regeling AEEA'). Further relevant articles are contained in the Environmental Management Act and the General Environmental Conditions Decree. The regulation was introduced in 2014 and amended in 2016.

Under Regeling AEEA producers and importers of EEE are responsible for financing the collection and logistics of WEEE. Producers can fulfil their obligations individually or through a collective/compliance scheme.). Producers can also set up and operate their own take-back scheme, provided they conform to the Directive 2012/19/EU. The Dutch system uses a 'chain responsibility' approach in which producers, municipalities, retail stores and treatment facilities have responsibilities for WEEE.²²³

Article 4 of the Regulation outlines the take-back obligations for distributors of new electrical products. Under the regulation, distributors are required to take back a WEEE item (from private households) which is of a similar type and function as the supplied equipment (1:1). This must be provided free of charge, as should take back on delivery (going beyond the Directive requirement).

In addition, Article 5 obliges retailers with sales areas relating to EEE of at least 400 m², to ensure that their distributors, or the immediate vicinity of the retail business, are responsible for the collection of WEEE. This must also be free of charge, but there is no requirement for an equivalent EEE type (1:0 obligation).

The regulation further stipulates that WEEE which is to be re-used should be separated, where appropriate, from other separately collected WEEE at the point of collection. What is more, in 2015 the Netherlands made the quality standard for the treatment of WEEE mandatory through WEEELABEX (the Waste Electric and Electronic Equipment LABEL of Excellence).²²⁴ Collectors are only allowed to deliver WEEE to WEEELABEX-certified treatment operators which record the quantities delivered in the National WEEE Register. That said, it is thought that in 2018 over 100,000 tonnes of WEEE was processed in non-WEEELABEX scrap metal facilities.

²²³ Börner, L., and Hegger, D.L.T. (2018) Toward design principles for sound e-waste governance: A research approach illustrated with the case of the Netherlands, *Resources, Conservation and Recycling*, Vol.134, pp.271–281

²²⁴ WEEELABEX (2011) *Normative document: WEEELABEX Collection*, accessed 9 May 2019, https://www.weeelabex.org/wp-content/uploads/2015/10/968606_841245d6de816ba82bf6cf82af30ce4b.pdf

The Netherlands has established a National (W)EEE Register for EEE producers, importers, retailers, compliance schemes and recyclers who are legally required to register. Finally, local municipalities also devise their own waste collection plans which include WEEE.

A.7.2 Principles of the system

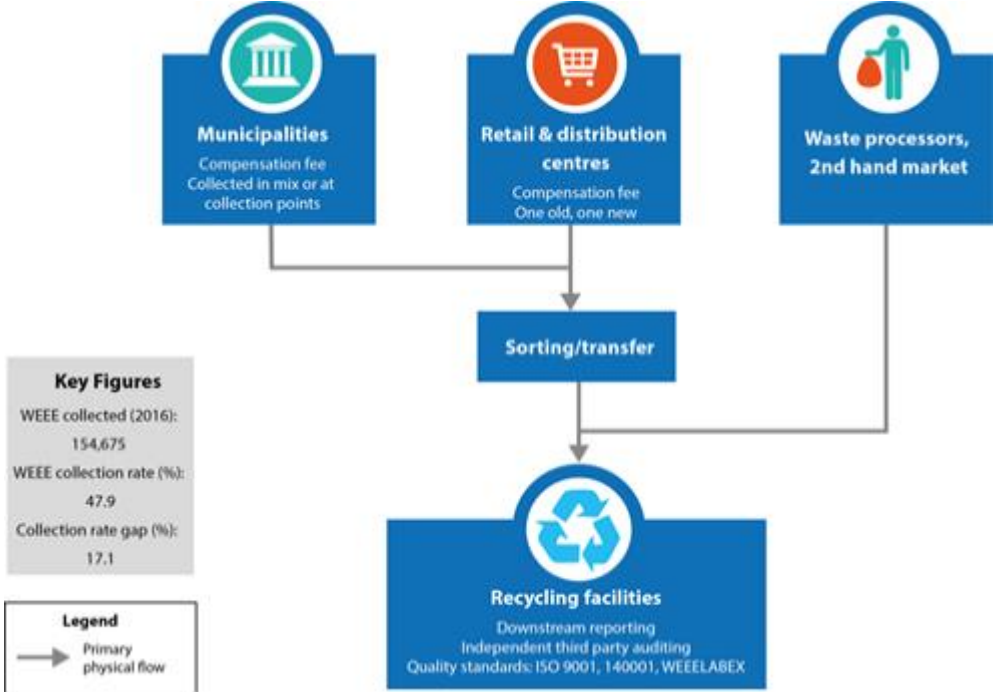
In the Netherlands five PRO schemes exist:

- Wecycle
- WEEE Nederland
- PV Cycle
- Recycling Technologische Apparatuur (RTA)
- Verenigin NVMP

Wecycle was founded by EEE producers and importers to direct all logistic and processing activities related to the take-back of WEEE from consumer flows, and represents the largest compliance scheme for B2C WEEE (with around 75% market share by tonnage). WEEE Nederland was started in 2014 to challenge the monopoly of Wecycle and provide a cost-effective alternative for B2C producers. The other schemes are for B2B and specialist streams.

Self-compliance is possible, however, only a very small number of producers organise the take-back of WEEE by themselves, and this mainly relates to specialist equipment such as vending machines.

Figure 10: Dutch WEEE collection and take-back system



A.7.3 Current collection rates

The Dutch Regulation on WEEE states the following targets:

- 1) From 2016 onwards at least 45% of the average weight quantity of EEE that the producer has placed on the market in the Netherlands in the previous three years will be collected and processed annually on their behalf;
- 2) From 2019 annually:
 - a. at least 65% of the average weight quantity of EEE that the producers have placed on the market in the Netherlands in the previous three years is collected and processed annually on their behalf; or
 - b. at least 85% of WEEE generated on the territory as foreseen in Article 7(1).

In 2016 around 155kt of WEEE was collected and the collection rate was 47.9% or 8.3 kg per inhabitant. Collection quantities for the previous five years are shown in Table 22. In 2018 this had increased to 185,000 tonnes, a collection rate of 49%, 54% if excluding PV panels. The Placed on Market figure has been increasing broadly in step with the WEEE collection meaning that the collection rate is quite static. It is important to note that the Netherlands does not use any sort of estimates for scrap metal WEEE reprocessing or B2B WEEE reprocessing that does not go via the WEEELABEX facilities.

Table 22: WEEE collection quantities - tonnes

	2012	2013	2014	2015	2016
Collected from households	116,847	110,058	134,013	132,315	140,879
Collected from other sources	6,837	7,441	7,792	12,877	13,796
Total collected	123,684	117,499	141,805	145,192	154,675

Source: EUROSTAT (2019) *Waste Electrical and Electronic Equipment (WEEE)*²²⁵

Table 23 shows total WEEE collected in 2016, disaggregated by EEE category.

Table 23: WEEE total collected by EEE category, 2016 (tonnes)²²⁶

Total waste	Large household appliances	Small household appliances	IT and ICT	Consumer equipment and PV	Other
154,675	76,274	13,352	28,275	25,057	11,717

²²⁵ EUROSTAT (2019) [Waste Electrical and Electronic Equipment \(WEEE\) by waste management operations, accessed 2 May 2019](#),

²²⁶ Eurostat (2019) Waste statistics - electrical and electronic equipment

A.7.4 Collection infrastructure

A.7.4.1 Municipal collection points

Municipalities are legally required to have at least one location where the public can discard waste, including WEEE, free of charge. There are currently around 450 municipal collection points (equivalent to UK HWRCs) in the Netherlands for 17 million people, i.e. 1: 38,000 people on average, plus 950 'other' collection sites at various public sites such as children's petting zoos and other family attractions. The UK has 1,130 HWRC WEEE collection points for around 66 million, i.e. 1:58,000.

A voluntary agreement has been set up with nearly all municipalities to collect and recycle the WEEE. From these collection points or 'waste transfer stations', WEEE is passed to the B2C compliance schemes, namely Wecycle and WEEE Nederland. Wecycle and WEEE Nederland provide the containers for collections used at HWRCs (ISO shipping containers).²²⁷ Of the 185kt collected via the official system in 2018, only 80,000 tonnes (43%) is from the municipalities²²⁸. This appears to have decreased as a proportion, around 2/3^{rds} being reported from municipalities previously.²²⁹

Furthermore, the municipality can sell WEEE or dismantled fractions to scrap metal processors. National waste management companies also collect mainly B2B WEEE, around 40.000 tonnes in 2018, of which around 50% is ICT equipment.

Some WEEE is also passed to re-use/repair centres. Charity initiatives often work closely with businesses and municipalities to collect and sell second hand EEE.

For B2B WEEE, municipalities are obligated to take back small quantities of WEEE free of charge (up to seven items), with producers responsible for organising the collection of larger quantities. It is seen to be important to encourage B2B collection in the formal system so as to gather the data and allow more B2B WEEE to contribute to the overall 65% collection target.

A.7.4.2 Retailers

Over 3,000 retailers have contracts with compliance schemes which enable consumers to hand in old equipment when they buy a new item ('old-for-new' or 1:1). Wecycle provides various types of collection boxes for small equipment and LED/energy-saving lamps, in some cases combined with the battery and printer cartridge collection units.

²²⁷ BIPRO WEEE enforcement - addressing leakage in the take-back scheme (NL)

²²⁸ Data provided by WEEE Nederland

²²⁹ Huisman, J., Maesen, M.V.D., Eijsbouts, R., Wang, F., Baldé, C., and Wielenga, C. (2012) The Dutch WEEE Flows

There are approximately 6,600 retail points (of which it is estimated that 1,200 or so are dedicated EEE stores), and a further 2,115 installer collection points (mainly used for used lamps) as well as the aforementioned public points at petting zoos etc. Consequently there are many more retailer points than municipal.

Retailers who supply EEE and which have a store floor space of over 400 m² must provide a collection point for small WEEE without any purchase (1:0) as per the Directive. In effect, however, any store that has a small WEEE collection container is offering 1:0 as these containers are at the front of store and not supervised, hence any small WEEE can be deposited without a purchase. The key stores include EEE specialist retailers, DIY/building merchants and larger grocery stores.

In addition, take back 1:1 on delivery of EEE is also free of charge and WEEE Nederland noted that discussions are being held to offer small WEEE collections at the same time as a product is delivered (as is being done by Dixons Carphone in the UK). As in the UK, the larger appliances are being effectively collected and treated while small appliances are often disposed of via residual waste by residents or hoarded.

Figure 11: WEEE collection points: Supermarket and DIY store respectively



It is notable that the supermarket small WEEE, as well as lamps, is often mobile phones and chargers, which can often otherwise be hoarded. The DIY stores, not surprisingly, often collect broken power tools and other items sold in the store (e.g. a small fan heater).

Figure 12: WEEE observed in the collection bins shown above



In terms of WEEE Nederland (which operates very few supermarket collection points, these mainly being WeCycle run), their split by collected WEEE weight is as follows:

- Dedicated EEE sales (mainly large appliances): 97.5%
- DIY stores: 1.7% (mainly DIY tools)
- Other stores: <1% (mainly small appliances and lamps)

A.7.4.3 Door-to-door collections

Local authorities in the Netherlands are like the UK in that there is no standard system in place, with each municipality doing things slightly differently. Kerbside collections have been trialled in some areas, in general involving the collection of textiles, books, CDs etc. as well as small WEEE. It was noted by WEEE Nederland that in the Apeldoorn area (a city of ~150,000 people), a total of around 2,000 tonnes of WEEE is collected annually of which 30% to 40% is small WEEE, i.e. a total of 600 to 800 tonnes. An extra 100 tonnes or so of small WEEE was gathered via the kerbside collection (around 15%), although it was considered too costly for the municipality to continue (not being funded by the compliance schemes directly).

Aside from such trials, households can deliver WEEE to a number of different collection points as noted earlier – both municipal (mainly CA sites) and retail. Wecycle has provided around 1 million ‘Jekko boxes’ to householders to help them collect small WEEE items in the home, as shown in Figure 13. Once full, Jekko boxes can be returned to Wecycle via the normal bring collection routes (they are not collected on the kerbside).

Figure 13: Wecycle` Jekko collection box for households



Households also give WEEE to door-to-door collectors including charities, local scrap processors and waste companies. Such collection often includes cables separated from equipment due to the value of copper cables. Generally, this stream never enters into the compliance scheme system.

In 2017, Wecycle launched a doorstep collection programme for small WEEE with Thuiswinkel and PostNL. The programme enables consumers in several cities to hand-over WEEE with every delivery of an item, without needing to package it or to pre-inform the collector⁸⁹. WEEE Nederland noted that this was successful in the sense that the post office were not inundated with WEEE items once the initial clear-out had occurred, there often only being 5 or 6 items per delivery round which was easily managed. There was also no difficulty finding room for a bulk collection container at the depot. The sticking point has been cost, PostNL wanting a similar amount to the cost of posting back small WEEE to an online seller; around €2 per item. This may mean that a small item, weighing say 150g, costs €13,000 which is clearly very costly. WEEE Nederland suggested that €0.5 per item may be acceptable but still very costly compared to all other means of collection.

Some WEEE, especially small equipment, is known to be discarded with household waste which is largely sent to incineration plants.

A.7.5 Collection and sorting costs

The Netherlands used to operate a visible fee system with Wecycle as the only scheme, however large quantities of money were accumulated (reportedly €250m at one stage)

and hence the visible fee was dropped and a producer charge introduced based on market share by category²³⁰. Producers have responsibility for covering the full costs of transport and treatment and partial costs of collection points. They also finance information provision and reporting obligations. Producer foundations set individual product fees. The tariff list for 2018 is provided on the Wecycle website.²³¹

Over recent years, total costs have increased due to an overall increase in volume of WEEE. However, the costs per kilo have reduced with improved processes, efficiencies and scale. The cost to Wecycle of implementing its services amounted to €34 million in 2016.

A compensation payment is made to every retailer. Small retailers get a 'per unit' payment, for example for every flat-screen TV delivered to PROs, €3 is paid. Separated WEEE is granted a reimbursement of €140 per tonne⁸⁹. Municipalities also receive compensation of €90 per tonne (paid by both Wecycle and WEEE Nederland).²³² Compensation is subject to the following conditions:

- I) Compensation is based on the current 'bring it yourself' system and cannot be expanded unilaterally to cover the costs of collecting WEEE house-to-house;
- II) Municipalities and retailers provide all the WEEE they collect to Wecycle/WEEE Nederland and a legally mandated delivery regulation is put in place to guarantee this;
- III) The compensation is based on the actual costs that the collectors incur and is not influenced by the intrinsic value of the WEEE; and
- IV) Municipalities make efforts to prevent WEEE from 'leaking away' to dumps, scrap dealers or other uncontrolled channels.²³³

Retailer WEEE is generally collected in a van or lorry on a collection round. For WEEE Nederland this means 5 or 6 collections per day, each filling a large van (around 500kg to 600 kg of WEEE per collection), i.e. perhaps 3 tonnes or so per day. This involves one paid staff member and a trainee from a disadvantaged group, and the cost for a manned vehicle of around €60 euro per hour. The cost per tonne is in the region of €150 per tonne for this type of relatively efficient collection. The retailer receives a compensation of €6 per large appliance or per 240 litre branded wheeled bins with small appliances.

²³⁰ NVMP (2019) *Wecycle for Dummies*, accessed <https://www.nvmp.nl/over-nvmp/vereniging-nvmp/w4d-en.html>

²³¹ Wecycle (2019) *Tariff list*, accessed 2 May 2019, <https://www.wecycle.eu/producers/tariff-list>

²³² BIPRO WEEE enforcement - addressing leakage in the take-back scheme (NL)

²³³ NVMP (2012) *Position Paper Costs of initial collection*, accessed 9 May 2019, <https://www.nvmp.nl/uploads/pdf/responsibility/Position%20Paper%20Costs%20of%20initial%20collection.pdf>

Figure 14: WEEE collection in the Netherlands



WEEE Nederland note that the collections of lamps and very small WEEE from small collection bins at retail outlets are not efficient as the quantities per collection point are very small, perhaps as little as 10kg, and hence can cost over €1,000 per tonne. WEEE Nederland intend to use 240 litre branded wheeled bins for their collections to make collection more efficient and lower cost. WEEE is also collected at large retail depots. Here the WEEE is sorted by the retailer into streams, placed in large ISO shipping containers and transported directly from the site to a treatment centre. The retailer receives €140/tonne for this.

HWRC WEEE is delivered mixed in a large closed ISO shipping container by a contracted waste contractor (Suez in the case of WEEE Nederland) and incurs a far lower logistics cost (not identified), but it costs around €130 per tonne to sort. The mostly pre-sorted retailer WEEE, while relatively expensive to collect on a round, is far easier to sort.

In the Netherlands it is seen as a right for consumers to return WEEE to a retailer, which may result from the fact that a visible fee was used for many years.

Finally, although not a direct WEEE collection cost, the use of pay-as-you-throw (PAYT) by municipalities has been shown to reduce the occurrence of WEEE in residual waste by 50 percent.²³⁴

A.7.6 Consumer communication

As one of the largest compliance schemes in the Netherlands, Wecycle is instrumental in promoting information for users of EEE. Wecycle provides a number of communication tools to consumers:

- An online tool for consumers to find the nearest available WEEE collection point;
- Provides materials on electronic waste recycling for primary and secondary schools, also running a national ‘large collection campaign’ with primary schools; and
- Campaigns which offer consumers vouchers or prizes when returning their WEEE. For instance, in the ‘environmental street’ competition, Wecycle awards a €1,000 voucher to a club or local charity specified by the winning community. Prizes are awarded for creative collection campaigns for small electrical appliances, handing in such

²³⁴ Huisman, J., Maesen, M.V.D., Eijsbouts, R., Wang, F., Baldé, C., and Wielenga, C. (2012) The Dutch WEEE Flows

https://ec.europa.eu/environment/waste/weee/pdf/Report_Dutch_WEEE_Flows%202012%2003%2015.pdf

appliances and uploading photographic evidence. The aim is to promote and encourage local collection.

WEEE Netherlands has also developed two education and communication schemes: the E-waste race and EcoSupporter 'Help give new life to waste'. The E-Waste race is for schools and occurs annually. Ten classes compete to collect as much WEEE as possible in order to win a free school trip.

A further example is Stibat, the battery EPR PRO. For around 15 years Stibat has implemented collection and communication strategies, from TV and radio, to internet and social media. The campaigns included:

- Win Campaign - a prize draw for each returned collection bag. The first prize was €2,000 in travel vouchers, with other prizes worth about €50. Users visiting the campaign site were encouraged to send the link to friends. Between 2006 and 2010, the number of bags returned increased from 1.8 million to 2.2 million;
- Batteryworld - provides information to primary school children. For each kilo of waste batteries collected, a school earns points that can be exchanged for toys, skipping ropes, scooters, computer games, DVD players and musical instruments. This was supported by a 'webshop' online tool and teaching materials and educational games;
- 'What do you do with your battery?' campaign - which ran from May 2016 and awarded monthly prizes to those handing in waste batteries at collection points; and
- Stibat regularly participates in fairs and events, such as by distributing bags containing household battery boxes.²³⁵

Additionally, the original introduction of visible disposal fees involved extensive information communication throughout stores and across mass-media. This raised awareness about what happens to products after they have been discarded.²³⁶ Furthermore, in 2005-2006 the Dutch Ministry for Infrastructure and Environment ran awareness raising campaigns across different stakeholders in the WEEE chain, including retailers, collectors and waste exporters. Dutch municipalities, for instance Gemeente Voorst, have also provided information to the public informing them about municipal level WEEE management.

²³⁵ Perchards (2016) *The collection of waste portable batteries in Europe in view of the achievability of the collection targets set by Batteries Directive 2006/66/EC*, December 2016, <https://www.epbaeurope.net/wp-content/uploads/2017/03/Report-on-the-portable-battery-collection-rates-Update-Dec-16-full-version-FINAL.pdf>

²³⁶ NVMP (2019) *Producer Responsibility*, accessed 3 May 2019, <https://www.nvmp.nl/producer-responsibility/>

A.7.7 Online traders and free riders

2016 amendments to the Regulation on WEEE state that distance sellers must give consumers three options for returning WEEE:

- I) Directly pick up the WEEE when delivering new EEE to the consumer;
- II) Collect the WEEE from the consumer's home at a later point of time; and
- III) Allow the consumer to send the WEEE to the retailer free of charge.

These options must be clearly communicated on the retailer's website/terms of sale.²³⁷ Implementation is overseen by the Human Environment and Transport Inspectorate (ILT). Furthermore, the ILT is responsible for enforcing compliance with the Regulation. The ILT conducts checks on market data from manufacturers and importers. Companies can also pass on information about free-riders via the ILT website. Moreover, in 2017 the ILT requested 400 companies to register with the Netherlands (W)EEE Register under sanction of financial penalties and injunctions.²³⁸

Whilst the ILT will get involved with free riders when required, identifying, reporting and tackling free-riding is primarily the responsibility of the PROs. For instance, ICT-Milieu sets producer fees based on a current market share system. Previously, the fees were based on the actual costs of collection, sorting and treatment. However, a high number of 'orphan' and free-rider products were entering the system, in a proportion close to 44%. Under the new fee system, which aims to address producers collectively, estimates of free-riders are 10% to 20%.²³⁹

In addition, the National (W)EEE Register outlines on their website that while reported numbers of producers and treatment operators are handled confidentially, the Dutch Inspection Authority views a published database which shows names of producers who have registered. A reason for the publication is to track down free-riders.

A.7.8 Summary

In summary, the Netherlands is generally considered to have a strong and relatively well functioning WEEE system. There are several main elements to its success. One of the

²³⁷ The State Secretary for Infrastructure and the Environment (2016) *Government Gazette of the Kingdom of the Netherlands: Regulation of the State Secretary for Infrastructure and the Environment, of 27 January 2016, no. IENM / BSK-2015/262541, laying down / amending the Regulation on waste electrical and electronic equipment in connection with the methods of collection of waste equipment and some other amendments*, accessed 3 May 2019, <https://zoek.officielebekendmakingen.nl/stcrt-2016-4066.html>

²³⁸ take-e-way GmbH (2017) *WEEE Execution: The Netherlands are in search for free riders | take-e-way GmbH*, accessed 9 May 2019, <https://www.take-e-way.com/news-press/news/news-singleview/article/weee-execution-the-netherlands-are-in-search-for-free-riders/>

²³⁹ Marbek Resource Consultants Ltd (2007) *Analysis of the free-rider issue in extended producer responsibility programs*, 2007, https://www.ccme.ca/files/Resources/waste/extended/free_riders_1.0_1380_e.pdf

most notable strengths is the governance structure of the system through the National (W)EEE Register and Monitoring Council. Not only do these bodies enable and conduct effective monitoring, but they form a platform which represents a variety of stakeholders. The Council also gives advice on how to meet collection targets, research and how to report to the ILT. Moreover, capturing the flows of WEEE through the country as well as the various actors in the system is important as this enables gaps, leakages and problems to be identified. For instance, inspection authorities found that large quantities of TV's were leaving the country 'illegally' due to not handing in products at certified compliance schemes.²⁴⁰ Improvements in regards to the quality of WEEE treatment is also pursued in the Netherlands, through the implementation of quality standards, including WEEELABEX.

What is more, the incumbent WEEE compliance schemes have an extensive coverage across the country. Wecycle in particular has also run a number of awareness campaigns targeted at both the general public and schools. Initiatives led by Wecycle for the collection of small WEEE, including its doorstep collection programme for small WEEE with PostNL, and the Jekko box scheme to enable householders to collect and return small WEEE, also represent innovative approaches.

However, the Netherlands faces a number of key challenges. Firstly, although progress has been made, gaps in reporting data and WEEE 'leakage' still exist. Principally, the destination of around 15-19% of EEE put-on-the market remains unknown,²³⁴ and small devices in particular continue to be disposed of in general waste bins. Monitoring the export of used EEE is also an issue, and the implementation of the distance seller take-back obligation is making slow progress.

Secondly, municipal collection sites can sell the WEEE to licensed waste collectors or dispose of it to re-use/repair centres. Although legal, this heightens the risk of 'leakage' as waste collectors typically take out the valuable materials and sell the rest of the waste to waste traders for example. This could also undermine the polluter pays system, in which consumers pay a fee for the collection, recycling and recovery of WEEE by the producers represented by take-back organisations. However, the voluntary agreements between take-back organisations and municipalities goes some way in addressing this.

²⁴⁰ Huisman, J., and Magalini, F. (2007) Where are WEEE now? Lessons from WEEE: Will EPR work for the US?, paper given at 2007 IEEE International Symposium on Electronics and the Environment, Orlando, FL, USA, May 2007, <https://ieeexplore.ieee.org/document/4222873/>

A.8.0 Sweden

Table 23: Summary of relevant statistics (Eurostat, 2016)

Key figures	
Number of WEEE producer compliance schemes	2
Products put on the market - 3 year average 2013 – 2015 (tonnes)	245,828
Products put on the market - 3 year average 2013 – 2015 (kg/inh)	25.3
WEEE collected (tonnes 2016)	163,237
WEEE collected per inhabitant (2016) (kg/inh)	13.97
WEEE collection rate (% 2016)	66.4%

- Municipalities and producers have cooperated in the collection of WEEE since 2001
- Municipalities undertake to be responsible for the collection of WEEE from households, financed by producers
- The PRO El Kretsen, is owned by the trade association with over 1600 member producer members, and represents a 99% share of collection
- Sweden is currently achieving a collection rate of 66.4%, which represents an exceedance of the 2019 target by 1.4%
- WEEE from households is primarily through a network of 600 municipal recycling centres throughout the country
- Other types of collection system in place, including retail, grocery and small stores, mobile collection, and kerbside collection
- WEEE disposal services are free of charge for businesses
- No requirement for visible fee to be shown in stores and on paperwork
- No evidence of progress with tackling free riders

A.8.1 WEEE legislation and regulation

The Ordinance 2005:209 of August 2005 transposed EU WEEE Directive 2002/96/EC on waste electrical and electronic equipment (WEEE) into Swedish Law. The Ordinance implements provisions for collection, recovery and recycling quota, includes provisions to reduce the content of hazardous substances in the equipment, and aims to reduce the volumes of WEEE through re-use. The Swedish regulations obligate any company that:

- Manufacture and sell EEE under their own brand;
- Rebrand EEE for onward sale which has been produced by others; and
- Import EEE into Sweden.

Non-resident companies which sell EEE directly to consumers in Sweden i.e. distance sellers are also obligated under the regulations²⁴¹.

A.8.2 Principles of the system

Since Sweden's introduction of producer responsibility for WEEE in 2001, municipalities and producers have cooperated in the collection of WEEE. This cooperation between local municipalities and producers is considered to be the main success factor for the Swedish collection system for WEEE.²⁴²

The Swedish Association of Local Authorities and Regions (Avfall Sverige), and the electrical producers' service company (El-Kretsen), collaborate on the "El-retur" system.²⁴³ El Kretsen, is owned by the trade association with over 1600 member producer members, and represents a 99% share of collection.

The municipalities undertake to be responsible for the collection of WEEE from households, in return for remuneration, while the producers are responsible for its treatment. Avfall Sverige and El-Kretsen collaborate with several municipalities on different projects to develop and deliver WEEE collection systems.

El-Retur is the only nationwide collection system in Sweden²⁴³ through which households can dispose WEEE together with other waste at the collection facilities. Producers benefit from the system, since they are able to make use of the established public collection infrastructure.

In addition there is a second PRO, Swedish Electronics Recycling Association (EAF). It is owned by 69 EEE producers and has a 1% collection share.²⁴⁴ In 2014 the European Recycling Platform (ERP) signed a cooperation agreement with the EAF to provide its full range of take-back services in the Swedish market. The ERP, which operates in 15 countries, offers producer compliance for WEEE, batteries and packaging materials²⁴⁵.

The Swedish EPA states that the obligation for retailers to accept waste is as follows:

- When supplying a new product, distributors are responsible for ensuring that similar waste can be returned to the distributor free of charge on a 1:1 basis as long as the equipment is of equivalent type and has fulfilled the same functions as the supplied equipment.
- Distributors at retail shops with sales areas relating to EEE of at least 400 m² provide for collection of small WEEE (with no external dimension more than 25 cm) free of

²⁴¹ A Quick Guide to WEEE Legislation in Sweden, Valpak

²⁴² Analysis of European Best Practice Solutions for Logistics of WEEE, ISW (2014)

²⁴³ Swedish Waste Management 2018, Avfall Sverige (2018)

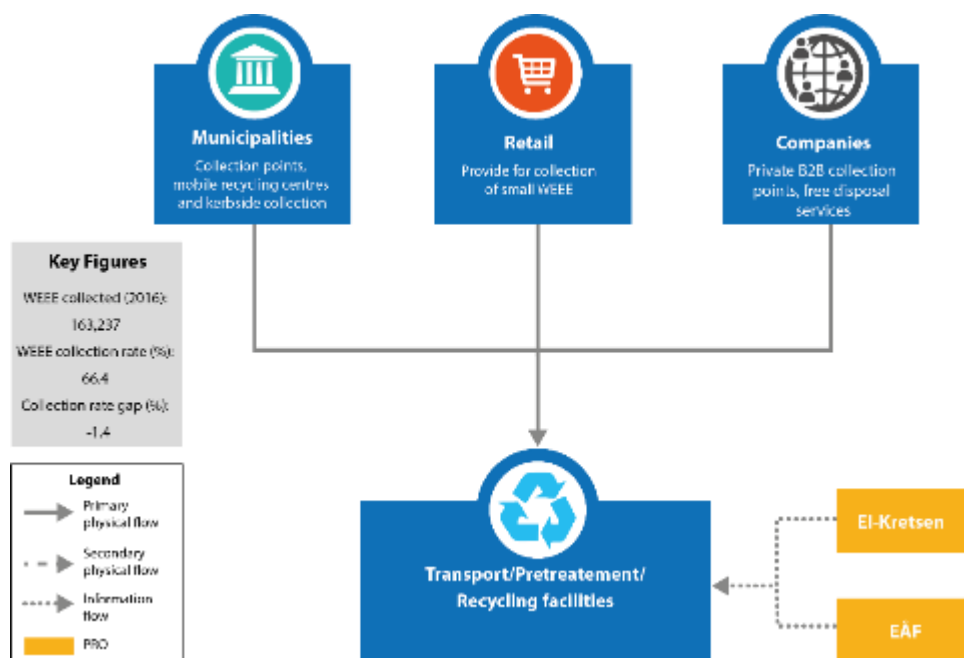
²⁴⁴ WEEE system setup a comparison of Sweden, Norway and Denmark, IVL (2015)

²⁴⁵ <https://www.recyclingtoday.com/article/erp-era-sweden-weee-producer-responsibility/>

charge to end-users and where there is no obligation to buy EEE of an equivalent type.

- The WEEE collected by distributors shall be handed over to a collective scheme with permit to collect household WEEE.
- The distributor shall inform end users of the possibility to return WEEE.

Figure 15: Swedish WEEE collection and take-back system



A.8.3 WEEE Collection

The total weight of WEEE collected was 163,237 tonnes in 2016, representing 13.97 kg per inhabitant. Large household appliances represent nearly half of all WEEE collected.

Table 24: WEEE collected by category (Eurostat, 2016)

Total WEEE	Large hh appliances (LHA)	Small hh appliances (SHA)	ICT equipment	Consumer equipment and PV panels	Other
163,237	81,510	7,409	26,268	33,122	38,378

In 2013, 88% of the tonnes of EEE placed on the Swedish market was EEE for consumers, with the remaining 12% for professional use. Of the tonnes collected 94% was WEEE from private households, with 6% coming from sources other than private

households²⁴⁶. The collection rate (WEEE from private households/ EEE used by consumers) was calculated at 77%, compared with the country wide collection rate (in 2016) of 66.4%, demonstrating that less professional EEE is collected as WEEE.

A.8.4 Collection infrastructure

The El Kretsen's system allows every municipality to have 3-4 collection options available, where households can discard unwanted electrical equipment. The majority of municipalities have several different collection systems for WEEE, including municipal recycling centres, retail collection points, mobile collection systems, and kerbside collection systems.

A.8.4.1 Municipal recycling centres

Collection of WEEE from households is primarily via 600 municipal recycling centres found throughout the country, for all WEEE categories and further. There is a further 2,000 smaller collection stations for small electronics, batteries, and lighting equipment in Swedish municipalities.

The collection of WEEE is mainly managed at the municipal recycling centres. EL-Kretsen and the municipalities have agreed on the categories of equipment that WEEE should be sorted into at municipal collection sites. The collections categories coincide with products that require similar end-of-life treatment routes. They are as follows:

- Large Household Appliances
- Cooling and freezing appliances
- Diverse Electronics²⁴⁷
- Lamps: Fluorescent Tubes
- Lamps: Compact Fluorescent bulbs and other discharge lamps
- Lamps: Light bulbs (incandescent) (under separate ordinance)²⁴⁸

A.8.4.2 Retail

More than half of the municipalities have some form of consumer-oriented collection of hazardous waste, for example in shops or other public places. Since 1 October 2015, shops and retail stores have responsible for accepting WEEE. Large stores (>400m²) that sell EEE are required to accept all types of consumer electronics smaller than 25 cm, on a 1:0 obligation basis. Smaller stores accept WEEE on a 1:1 obligation basis.

²⁴⁶ WEEE system setup a comparison of Sweden, Norway and Denmark, IVL 2015

²⁴⁷ As of March 2007, this category has been divided into 2 sub-categories) Screens (CRT, LCD, Plasma - TVs and monitors) and Diverse Electrical and Electronic Equipment

²⁴⁸ The Producer Responsibility Principle of the WEEE Directive

EAF has provided WEEE collection points in retail stores nationwide since 2008. Since not all municipalities have an EAF reception point in retail stores, EAF pays a fee for the part of its members' WEEE that is collected by El-Kretsen²⁴⁹.

Many grocery stores also feature a 'Samlaren', a container designed for the collection of electronic waste placed in stores for the public to hand in light bulbs, low-energy bulbs, small batteries and smaller WEEE.

Monitoring and evaluation of the impact of the Samlaren collection system identified that WEEE could be collected at a cost of 16kr (£1.30)/kg), with the system subsequently being rolled out across grocery and small retail establishments across Sweden. Trials in Gothenburg identified that the Samlaren collection system collected 4.5 tonnes of WEEE in the first year of operation. This was compared to just over five tonnes of WEEE collected across 16 WEEE collection points over the same period²⁵⁰.

A.8.4.3 Kerbside collection systems

Whilst the majority of WEEE collection from households is primarily carried out at municipal recycling centres, the majority of municipalities have several different collection systems for WEEE, including kerbside²⁵¹. Examples include the municipality of Aneby in southern Sweden, with a population of 6,800²⁵² and around 2,000 households. Waste is collected by Amaq, the Aneby Environment and Water Company, which is a wholly-owned municipal company. Aneby collects a range of household waste, including WEEE and batteries.

All houses are provided with red boxes for kerbside collections. These have an opening and closing mechanism that is designed to be child-proof. Batteries and light bulbs must be placed in transparent plastic bags to make emptying the boxes easier for the driver (bags are not provided by Amaq).

²⁴⁹

https://www.academia.edu/20826653/Overview_of_the_WEEE_Directive_and_Its_Implementation_in_the_Nordic_Countries_National_Realisations_and_Best_Practices

²⁵⁰ Lund University (2015) Closing Light Loops <https://closedloops.blogg.lu.se/meet-the-collector/>

²⁵¹ Swedish Waste Management

https://www.avfallsverige.se/fileadmin/user_upload/Publikationer/Avfallshantering_2018_EN.pdf

²⁵² <https://www.scb.se/en/finding-statistics/statistics-by-subject-area/population/population-composition/population-statistics/pong/tables-and-graphs/yearly-statistics--municipalities-counties-and-the-whole-country/population-in-the-country-counties-and-municipalities-on-31122017-and-population-change-in-2017/>

The red boxes are collected at the same time as normal householder/domestic waste, for which there are fortnightly collections.

It is understood that the electrical items may be loaded separately, but generally, all the household waste is mixed on the vehicle and subsequently separated at the sorting facility²⁵³.

A.8.4.4 Mobile recycling centres

Mobile recycling centres are fairly common. These are manned mobile centres that accept hazardous waste, some bulky waste and also WEEE. These mobile centres visit a number of permanent collection points according to a schedule.

A.8.4.5 B2B collection

Approximately 400 collection points are available for businesses to discard WEEE, with at least one collection point per municipality. In Sweden, WEEE disposal services are free of charge for businesses. Any business making use of the collection system must complete paperwork to confirm that the number of units being returned corresponds with the purchase of new equipment²⁵⁴.

Collection is partly organised in cooperation with municipal authorities and partly through directly contracted waste contractors. In addition, collection services for certain types of products, such as light sources, are provided by El-Kretsen.

A.8.4.6 Other collection systems

Other types of WEEE collection systems piloted in Sweden include the introduction of recycling stations which allow householders to dispose of WEEE outside of normal operational hours. To gain access, the householder registers a valid driving license, which is used to open the facility electronically. This system has been piloted in in Skövde, however no further details or evaluation research has been identified during the course of the literature review.

²⁵³ COWI/Eunomia (2019) Mapping of international experience on collection of Hazardous waste, WEEE (small) and Batteries

²⁵⁴ Differences in E-waste collection results between Sweden and the Netherlands, Association NVMP 2010

A.8.5 Collection and take-back costs

Limited data identified to data on the costs of the schemes. Payments consist of a fixed annual membership fee and a variable price depending on the quantities of EEE placed on the market within the different categories²⁵⁵.

It is understood that there is some Eco-modulation of the producers' contributions. The contribution paid to the PROs depends on the recycling costs for some specific products, with adjustment costs depending on the level of difficulty to recycle at end-of-life. It appears that there is an ongoing challenge and trade-off between a true-cost system and increased administrative burdens this brings, associated with the gathering of waste data at specific product sub-category level²⁵⁶.

A.8.6 Consumer communication

Municipalities both finance, and are responsible for information provided to private households. Communication includes information on the importance of separating WEEE from the residual stream, guidance on how it should be separated, and where it can be disposed. The municipalities also communicate the collection and recycling results. In 2010 a study stated that no publicity campaigns were run in Sweden, but benchmarking between local authorities did occur²⁵⁷.

A.8.7 Online traders and free riders

Limited information to date has been identified on online traders and free riders. The Swedish EPA states that for online sellers, it is inappropriate to send WEEE by mail and therefore distant sellers of EEE are instructed to meet their obligation to accept WEEE, by providing guidance to consumers on the nearest available recycling centres, and where possible, accept discarded WEEE at any site that the distributor possess, such as a sales office or a storage site.

A.8.8 Summary

Sweden is achieving a high collection rate, currently delivering 13.4 kg per inhabitant. Municipal household recycling centres along with a mix of mobile recycling centres, kerbside and retail collection points support these high collection rates.

Sweden is currently achieving a collection rate of 66.4%, which represents an exceedance of the 2019 target by 1.4%. The vast majority of collection is through the El-

²⁵⁵ Differentiated payment, The Danish Voluntary Agreement on WEEE, NIRAS (2015)

²⁵⁶ Differentiated payment, The Danish Voluntary Agreement on WEEE, NIRAS (2015)

²⁵⁷ Differences in E-waste collection results between Sweden and the Netherlands, Association NVMP 2010

retur system operated in collaboration by Avfall Sverige, the Swedish Association of Local Authorities and Regions, and the electrical producers' service company, El-Kretsen.

A.9.0 Switzerland

Key figures ²⁵⁸	
Number of WEEE producer compliance schemes	3
Products put on the market - 2016 (tonnes)	223,000
Products put on the market – 2016 (kg/inh)	26.8
WEEE collected (tonnes 2016)	134,000
WEEE collected per inhabitant (kg/inh)	16kg
WEEE collection rate (%)	74% ²⁵⁹

- WEEE collection, take back and recycling systems pre-date the WEEE Directive and are well-engrained for Swiss citizens.
- Voluntary system - not all producers or retailers participate, however there are around 600 individual stores and over 6,000 retail chain outlets that operate as collection points, and also accept B2B WEEE.
- There are around 600 municipal collection points for just 8.6m people – these also accept B2B WEEE and offer long opening hours (of which a proportion are privately run and accessible 24 hours a day).
- Collection performance is supported by a PAYT system for household waste, and a ban on WEEE in residual, which incentivises citizens to recycle.
- An Advanced Recycling Contribution ('visible fee') funds the entire system.
- Collection responsibilities split across three PROs by WEEE category.

A.9.1 WEEE legislation and regulation

WEEE collection, take back and recycling systems in Switzerland pre-date the WEEE Directive. Switzerland introduced the Ordinance on the Return, Taking Back and Disposal of Electrical and Electronic Equipment (ORDEE) in 1998.

²⁵⁸ Baldé, C.P., Forti V., Gray, V., Kuehr, R., Stegmann, P. : The Global E-waste Monitor – 2017, United Nations University (UNU), International Telecommunication Union (ITU) & International Solid Waste Association (ISWA), Bonn/Geneva/Vienna <https://globalewaste.org/countrystatistics/switzerland-2016/>

²⁵⁹ Prospecting Secondary raw materials in the Urban Mine Project, 2017

It has since been amended to include tighter regulations, with five overarching responsibilities:

- i. Consumers are obligated to return end-of-life appliances. The disposal of used equipment through municipal solid waste or bulky waste collections is banned, although periodic collections and campaigns are possible.
- ii. Distributors/retailers and manufacturers are obligated to take back any appliances that they deal in, free of charge on a 1:0 and 1:1 basis. The requirement only includes appliances that they deal in so as to promote the use of reverse logistics where possible.
- iii. Distributors, retailers and manufactures must dispose of equipment that is taken back in a professional manner.
- iv. Recycling companies must hold an export license issued by the federal authorities.
- v. Exporters must hold a license issued by the federal authorities.

The Ordinance does not, however, define how producers and retailers are to fulfil their responsibilities in regards the management and financing of WEEE collection and treatment²⁶⁰. Furthermore there is no legal requirement for producers or distributors to join a PRO, with membership instead on a voluntary basis.

Consumers in Switzerland were historically required to pay for the take-back of WEEE, which resulted in a high level of fly-tipping. As a consequence, the Swiss government amended the ORDEE to require mandatory 1:0 free take back and mandatory consumer returns. This, combined with the Swiss pay-as-you-throw (PAYT) system for household waste (whereby households are required to pay CHF2 per 35litre bag for residual waste disposal) has contributed to the high collection rate seen in Switzerland.²⁶¹ A study found that in 2003 approximately 2.6% of the total MSW stream comprised of WEEE,²⁶² but is now thought to be negligible (far less than 1%) according to EMPA.²⁶³

A.9.2 Principles of system

Switzerland is characterised by a system in which responsibilities for collection of WEEE is divided across the three PROs by category. This monopoly by category is thought necessary to allow economies of scale in a small country with high logistics costs associated with the high density of collection points. By splitting responsibility for the

²⁶⁰ Federal Office for the Environment (2019) Electrical and electronic equipment, accessed 05/08/19 <https://www.bafu.admin.ch/bafu/en/home/topics/waste/guide-to-waste-a-z/electrical-and-electronic-equipment.html>

²⁶¹ Waste Management & Environmental Compliance (2018) The Swiss approach to electrical and electronic equipment recycling – the introduction of the advance recycling fee

²⁶² SAEFL (2004) Development of Municipal Solid Waste in Switzerland since 1932

²⁶³ Swiss Federal Laboratories for Materials Science and Technology

collection and treatment of different categories of WEEE, this has enabled each PRO to focus on achieving maximum efficiency in their collection and treatment operations²⁶⁴.

Table 25: Switzerland PROs including WEEE categories each scheme covers

PRO	WEEE categories covered
SENS	Category 1, 2, 6, 7 (appliances)
Swiss Lighting Recycling Foundation	Category 5 (lamps and luminaires)
Swico	Category 3, 4, 8, 9 (mainly electronics / ICT)

Switzerland’s uses an Advanced Recycling Contribution (ARC, a ‘visible fee’) which is charged at the point of sale in retail and utilised by the PROs. This means that consumers pay for the collection and recycling costs of WEEE (rather than producers), and fund the entire system – including retail and municipal collection points (and the monitoring of these), logistics and treatment costs.^{266, 267} The ARC also finances the disposal of packaging material for new EEE, as well as the recycling of batteries.²⁶⁸

The ARC value varies depending on the product and category, which reflects the current treatment cost by category, and is occasionally adjusted to reflect the changing costs of recycling and treatment. It should be noted that the producers only involvement in the system is via setting the ARC in consultation with PROs – they have no operational involvement and don’t ‘see’ the cost directly as the consumers pay what is generally a small extra charge per item. The ARC is thought to be paid by more than 90% of manufacturers and importers in terms of Swico products, although this is an estimate and SENS are very concerned about online and cross border purchases that result in free-riding and a loss of fees to fund their system.

Producers who chose not to join a PRO must set up their own system that honours all obligations under the ORDEE. This includes demonstration of a logistics operation network which can cover the 6,000+ collection points across Switzerland.²⁶⁹

²⁶⁴ JRC and the European Commission (2006) Technical Report series: Implementation of the Waste Electric and Electronic Equipment Directive in the EU

²⁶⁵ SENS run collections for SLRS.

²⁶⁶ Swico, SENS and SLRS (2019) Technical Report https://www.swico.ch/media/filer_public/24/e6/24e6ddea-743f-4e8d-b91a-106804438364/technical_report_swico_sens_slrs_2018.pdf

²⁶⁷ Federal Office for the Environment FOEN (2019) Electrical and Electronic Equipment, accessed 06/08/19 <https://www.bafu.admin.ch/bafu/en/home/topics/waste/guide-to-waste-a-z/electrical-and-electronic-equipment.html>

²⁶⁸ Waste Management & Environmental Compliance (2018) The Swiss approach to electrical and electronic equipment recycling – the introduction of the advance recycling fee

²⁶⁹ The Swico Recycling system at a glance <https://www.swico.ch/de/>

A.9.3 Current collection rates

Switzerland is one of the highest performing European countries, with the latest figures indicating a WEEE collection rate of 16kg/inhabitant²⁶⁶. The overall WEEE collection rate is thought to be around 74%²⁷⁰. Discussion with Swico (which reports a 90% collection rate) confirmed that it calculates collection performance as the POM from eight years ago (to reflect average ICT EEE life) for all EEE POM (including Swiss online sales) vs. what Swico collect via the various channels. This is very high, and of course a very different method compared to how the EU calculates WEEE collection rates.

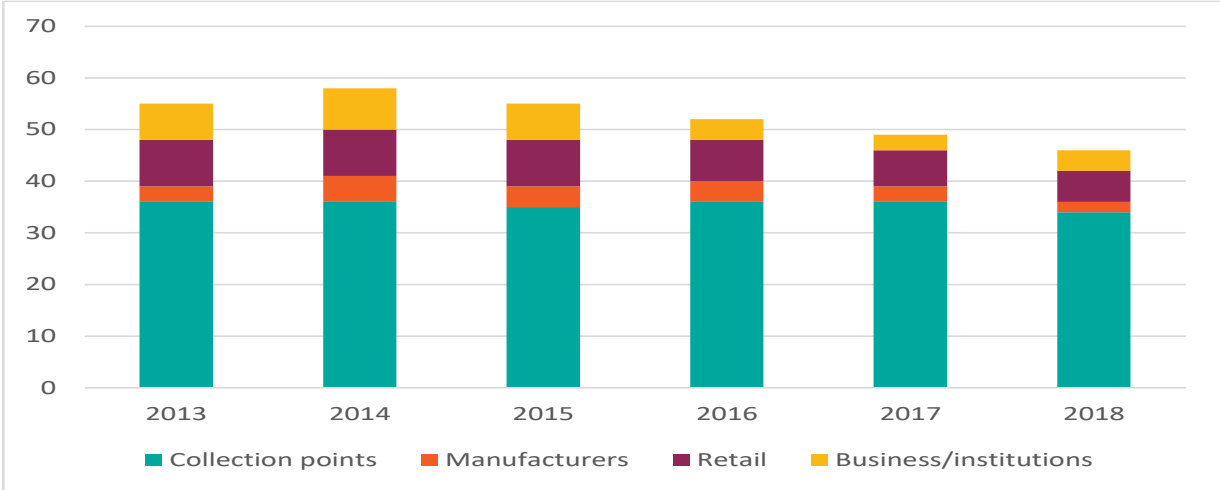
Table 26 shows the total WEEE processed by Swico and SENS PROs in 2018, by category **Error! Bookmark not defined.**

Table 26: Tonnes of WEEE processed by Swico and SENS in 2018

Total WEEE (tonnes)	Large hh appliances (LHA)	Refrigerators, freezers and air-conditioning appliances	Small hh appliances (SHA)	ICT equipment	Lighting equipment	Other
125,900	34,200	19,900	27,600	41,900	1,100	1,300

The two PROs were responsible for treating 125,900 tonnes of WEEE in 2019, up 3% on the previous year. Figure 16 summarises Swico’s WEEE collection performance by route for 2018 – a total of 45,760 tonnes (Categories 3, 4, 8, and 9).

Figure 16: WEEE collection by Swico by route - 45,760 tonnes in 2018.²⁷¹



²⁷⁰ Prospecting Secondary raw materials in the Urban Mine Project, 2017

²⁷¹ Communication with Swico, August 2019

Whilst SENS declined to participate in the research, its 2018 Annual Report provides an indication of WEEE collection performance by collection route, summarised in Table 27.

Table 27: SENS WEEE collection by route - 2018

	Municipal collection points	Retail collections	Returned direct to recyclers	Total
Large hh appliances (LHA)	72%	20%	8%	53,309
Small hh appliances (SHA)	81%	15%	4%	27,697
Lighting equipment	45%	2%	53%	1,057
Lamps	-	-	-	3,401
PV	-	-	-	227
Total				85,691

Large household appliances contribute over half of the total tonnage of WEEE collected, which is predominately via SENS collection points (surprising for large heavy appliances), with retail collections only accounting for 20% of large household appliance collections. Small household appliances are also mainly collected through collection points, with retail accounting for 15% of collections. Swico report that around 16% of the electronics and ICT equipment comes back through retail. It is interesting that over half of all lighting equipment collected through SENS is returned to recyclers direct. SENS and Swico also offer direct WEEE collection for businesses to its network of accredited treatment facilities²⁷².

A.9.4 Collection infrastructure in place

With over 600 municipal collection centres and approximately 6,000 retail collection points, this ensures citizens in Switzerland have many disposal options for end of life items.²⁷³ This, combined with the Swiss PAYT system, ensures that disposing of WEEE via the residual route is limited.

The PROs also share operation of collection points in order to manage and deliver an efficient logistics network.²⁷⁴ However, this extensive network is very cost intensive, and brings expensive logistics due partly to Switzerland’s topography²⁶⁹.

²⁷² https://weee-forum.org/ws_members_map/sens/

²⁷³ Swico (2018) Recycling 2018

²⁷⁴ <https://waset.org/publications/10009626/comparison-of-e-waste-management-in-switzerland-and-in-australia-a-qualitative-content-analysis->

A.9.4.1 Permanent collection points

Collection points in Switzerland are accessible to both citizens and businesses, and account for approximately 75% of the total tonnage of WEEE collected via the Swico and SENS collection system. These collection points are manned and fenced, but often smaller than UK sites, being more neighbourhood facilities. These have pallet box containers rather than UK style WEEE skips. There is also often a reuse shop on site.

Figure 17: Municipal collection points and containers



It is also worthy of note that the collection point opening hours are often longer than the UK – with a proportion of facilities being privately run by waste companies (as opposed to being contracted on behalf of a municipality) and accessible 24/7.

Figure 18: 24 hour access municipal collection points



Outside of standard working hours, WEEE items can be deposited via a 'drive-by' system, with individual deposit boxes for different types of WEEE. Longer operating hours

provide more convenience for citizens. Whilst privately run facilities do charge for certain waste streams (e.g. residual), there are no charges for WEEE, since collection and recycling costs are already 'pre-paid' through the ARC.

A.9.4.2 Retail collection

Retailers are obliged to accept all WEEE that they stock in their product range, on both a 1:0 and 1:1 basis. This is done on delivery and 'over the counter' rather than via collection bins. The item of WEEE must be a product that the retailer sells so that the retailer can make use of a reverse logistics system²⁶⁶. In addition, retailers have to hand over WEEE collected under contract to the PRO – although not all participate due to the voluntary nature of the scheme.

There are around 600 individual stores and over 6,000 retail chain outlets that operate as collection points in conjunction with Swico and SENS, which also includes grocery retail. Swico and SENS jointly run these collection points which helps ensure an efficient system.

Evidence from Switzerland indicates that supermarket collections are reasonably well utilised since they are somewhere that people go regularly²⁷⁵. Other collection routes

As mentioned earlier, SENS (and Swico) offering direct WEEE collection for businesses to its network of accredited treatment facilities²⁷⁶. Businesses are able to place an order for collection via the two PRO websites which is collected free of charge – however SENS notes that between 2017 and 2018 there was a 7% fall in customer numbers, and a 22% fall in collection orders made via this system.²⁷⁷

Schools and educational establishments are also able to access a WEEE collection service from the two PROs free of charge (in the case of Swico, items weighing over 250kg, or large WEEE appliances measuring at least 80cm tall)²⁷⁸. This accounts for approximately 4,000 tonnes of WEEE, or 9% of the total WEEE collected in 2018.

Electrical manufacturing premises are also used as a take back location for large B2B equipment, such as industrial refrigeration equipment²⁷⁹. In 2018 this route accounted for 2,000 tonnes of WEEE (or 5% of the total) collected via Swico.

²⁷⁵ Communication with Swico, August 2019

²⁷⁶ https://weee-forum.org/ws_members_map/sens/

²⁷⁷ <https://www.erecycling.ch/en/wissenswertes/geschaeftsbericht/overview-2018/geschaeftsjahr-2018.html>

²⁷⁸ <https://www.swico.ch/en/recycling/recycling-and-disposal/companies-and-institutions/>

²⁷⁹ https://weee-forum.org/ws_members_map/swico/

A.9.5 System costs and funding

Literature sources²⁸⁰ suggest that WEEE collection and treatment costs in Switzerland are higher than other European countries due to a number of factors including:

- A high density of collection points and relatively small collection containers at each;
- Challenging topography in some areas (e.g. the alps), which increases transportation logistics costs;
- The multi-lingual nature of Switzerland which increases communication costs;
- The focus on manual disassembly prior to the main treatment (shredding), although this is mainly done via social enterprises using subsidised labour through the intermediate labour market (i.e. disadvantaged groups); and
- Higher cost of living and wages in Switzerland.

Table 28 below summarises the cost of WEEE treatment per tonne for electronics/ICT, which has been informed through discussion with Swico.

Table 28: Breakdown of total WEEE treatment costs per tonne

Cost type	Cost per tonne
Payment to municipalities	CHF 164
Logistics	CHF 156
Recycling and treatment	CHF 110 - 200
Total cost	CHF 430 - 520

Swico pays municipalities for each tonne of WEEE collected - representing 38% of total cost of WEEE management per tonne. Small retailers receive a nominal payment of CHF 15 per pallet load of WEEE collected, however large retailers receive no payment (although containers and collection is free of charge). Logistics cost (36% of the total cost per tonne of WEEE) represents the cost for transporting WEEE from either municipal, retail, or other collection points to recycling and treatment facilities.

The WEEE management costs have reduced as a result of producer concerns that prices offered by Swico were more expensive than some other EU countries, and hence greater efforts were made during retendering. This demonstrates that producer run schemes, with a monopoly in a given product group, can reduce costs through careful competitive procurement of collection and treatment contracts.

²⁸⁰ <https://www.swico.ch/en/recycling/recycling-and-disposal/manufacturers-and-importers/#general-information>

A.9.6 Consumer communication

SENS and Swico both allocate approximately 1% of its budget towards communication activities, which includes publicity and campaigns²⁸¹. Swico's main communication activity focuses on guidance to citizens on how and where to recycle, such as its website, which provides on retail and collection point locations. It also publishes educational literature and books (collaboration with PUSCH²⁸²) for schools and other interested groups, with a focus on promoting and increasing environmental literacy amongst children.

Discussion with Swico indicates that communication activities are relatively limited, due to the perception that the Swiss system is already a high performing system and characterised by strong consumer awareness combined with drivers such as PAYT. Swico has since launched a consumer campaign which focuses on tackling hoarding, which is perhaps at odds with the PROs reported 90% recycling rate.²⁸³

Consumer campaigns delivered by SENS includes:

- Fair ARC' – delivered via a Facebook campaign, whereby end consumers who have purchased EEE abroad or from a foreign online retailer (and did not pay the ARC) can pay this fee (CHF 5) voluntarily to SENS. This transaction is undertaken via text to SENS. This campaign has resulted in greater online traffic to the SENS online platforms (website, Facebook, YouTube)²⁸⁴;
- Free comic books aimed at children that share the message on why recycling is so important²⁸⁵;
- 'Bring it Back!' campaign - aimed at 20-35 year olds, to raise awareness of the importance of WEEE recycling. The campaign media was placed in the commuter newspaper 20 Minuten. Short films were also released for younger target groups, and the media was offered to municipalities and schools in the form of posters²⁸⁶.

A.9.7 Online traders and free riders

EEE purchased online or abroad is not subject to the ARC. It is estimated that the scheme loses between CHF 2 and 3 million due to this lack of fee collection from online and foreign sellers.²⁸⁷

²⁸¹ Swico (2018) Recycling 2018

²⁸² <https://www.pusch.ch/>

²⁸³ <https://www.swico.ch/de/news/detail/internationaler-e-waste-day-2019>

²⁸⁴ <https://www.erecycling.ch/en/wissenswertes/geschaeftsbericht/overview-2018/sens.html>

²⁸⁵ <https://www.erecycling.ch/en/wissenswertes/geschaeftsbericht/overview-2018/sens.html>

²⁸⁶ <https://www.erecycling.ch/en/wissenswertes/geschaeftsbericht/overview-2018/zukunft.html>

²⁸⁷ Waste Management & Environmental Compliance (2018) The Swiss approach to electrical and electronic equipment recycling – the introduction of the advance recycling fee

SENS estimate that 5% of EEE placed on the market in Switzerland is non-compliant, although the real figure is not well understood. Swico claim that free-riding is small. They receive data on overseas sales (through IHA/Gfk (e.g. of laptops, TVs etc.) noting it is cheaper to get a mobile phone via the Swiss networks. Consumer purchasing outside of Switzerland has always been common due to the proximity of neighbouring countries. Switzerland has also seen a considerable appreciation of its currency recently, with overseas/online shopping becoming more attractive as a result.

The share of EEE purchases that are made online has been growing significantly, reaching 30% in 2016²⁸⁸. As a consequence, the funds generated by domestic PROs have been falling, whilst the amount of EEE waste has not. This has created a situation where there are insufficient funds available to meet recycling targets. Increasing the ARC fees payable is one possible solution, but would only increase the propensity to purchase products from abroad.

Efforts to tackle the issue for free riding in the system include PROs publishing the names of producers who are not affiliated with the voluntary take back system operated by SENS and Swico, which clearly states that such organisations make no financial contribution to the nationwide collection system.²⁸⁹ This list includes Amazon's German website www.amazon.de and 73 other companies.

SENS has also run a 'close the circle' consumer campaign, designed to raise awareness of what the ARC represents, and to encourage consumers to purchase their EEE only from producers and retailers that levy the ARC.²⁹⁰ There is also the option for consumers to pay the ARC voluntarily when buying overseas, although this would probably not be very effective in the UK context.

SENS are therefore keen on changes to the Swiss laws to make participation mandatory by all producers and retailers, including distance sellers.

A.9.8 Summary

Switzerland reports a very high WEEE collection rate (thought to be over 70%), which is in part supported by incentive mechanisms for residents including PAYT for residual waste, a ban on WEEE in residual waste and the ARC at the point of sale of a new item – which ensures consumers are aware of the contribution paid towards recycling, and hence, are thought to be more aware of the retail return option than they would be otherwise and hence more likely to return WEEE into the official system.

The high number of retail and municipal collection points available across Switzerland (approximately 600 municipal and around 6,000 retail) for a population of only 8.6m in a

²⁸⁸ Swiss Retail Federation, 2017 – cited in <https://www.oecd.org/environment/waste/policy-highlights-extended-producer-responsibility-and-the-impact-of-online-sales.pdf>

²⁸⁹ <https://www.erecycling.ch/en/vrg-partner/nicht-systemteilnehmer.html>

²⁹⁰ <https://www.erecycling.ch/en/e-kreislauf/kommunikation/kampagne-2017.html>

small country), often within a neighbourhood and accessible even on foot and by bike, ensures that WEEE collection is convenient to both citizens and businesses, with some collection points operating long opening hours, with a proportion accessible 24/7. Both SENS and Swico have made a concerted effort to ensure B2B WEEE is captured through existing collection systems, with a particular focus on Category 3 (ICT) WEEE.

Switzerland is perhaps unique in that there is no legal requirement for producers or retailers to participate in the WEEE system, with membership instead on a voluntary basis. Whilst not all retailers participating in the system, most do through over-the-counter collection. Evidence from Switzerland indicates that supermarket collections are reasonably well utilised since they are somewhere that people go regularly²⁹¹. B2B WEEE is also collected via retail stores.

WEEE is bulked up at the back of the store until the container is almost full at which point Swico and SENS collect the WEEE. Participating retailers are contractually obligated to hand-over WEEE to the PRO or their logistics provider, to ensure the material is properly treated (to WEELABEX standards).

²⁹¹ Communication with Swico, August 2019

