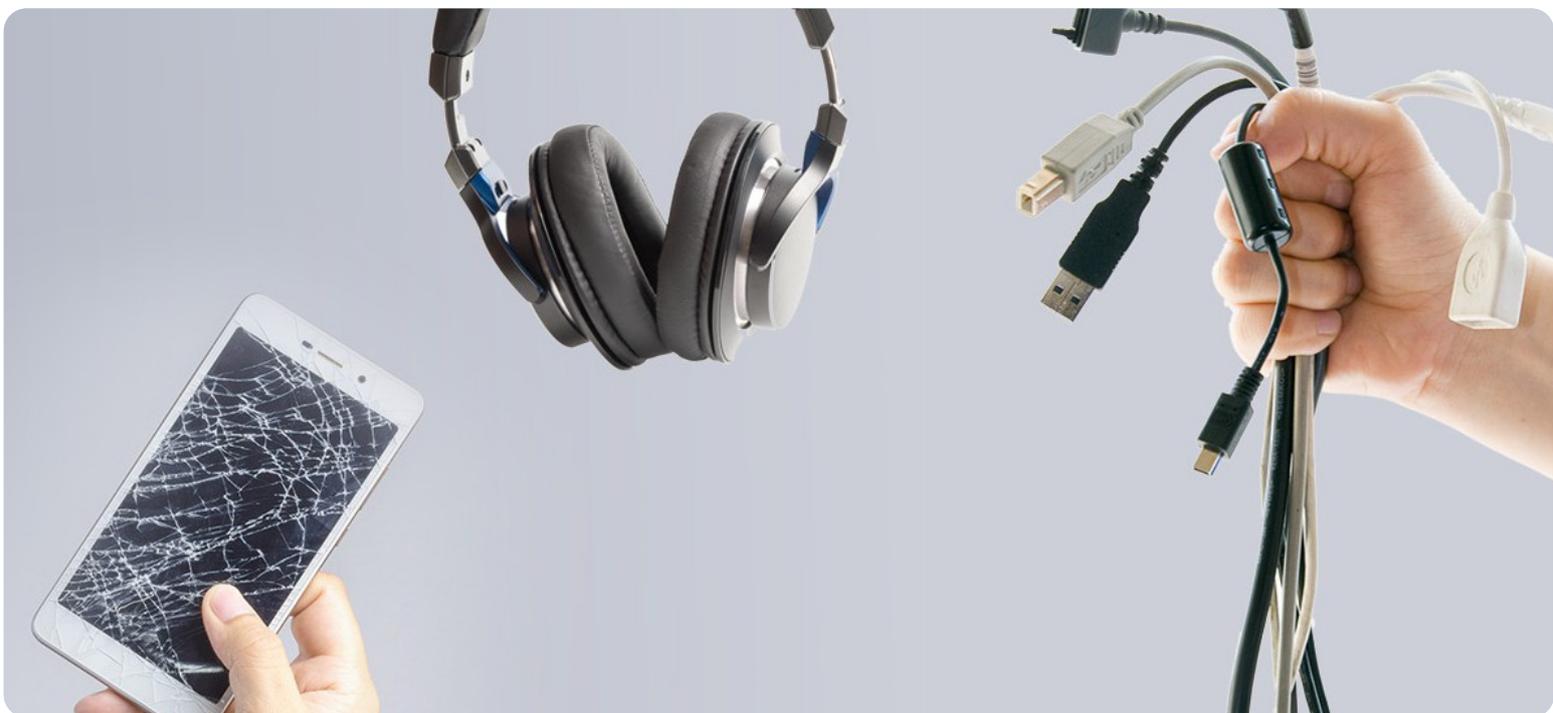




Research

Assessing completed e-waste project

August 2018



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Commissioned by: WEEE Fund/JTaC

Date: 30th August 2018

1 Introduction

In the UK, there are different mechanisms to ensure that obligated producers of electrical and electronic equipment (generally manufacturers, retailers and importers), take financial responsibility for the recycling of Waste Electrical and Electronic Equipment (WEEE), under the local interpretation of the EU WEEE Directive.

Retailers have the option to either offer direct take back for electricals, or instead to pay into the Distributor Takeback Scheme (DTS) to fulfil their Extended Producer Responsibility obligations (EPR). Other (non-retailer) producers, often use collective compliance schemes to manage their obligations. These compliance schemes arrange for the recycling of WEEE in the UK, in exchange for fees. Schemes must achieve a weight based target for recycling, based on the EU target set for the UK as a whole and then the market share of the producers that they represent. Compliance schemes missing their weight based targets for WEEE recycling, have the option to pay a so called WEEE Producer Compliance Fee instead, to compensate for the shortfall.

The combined money collected through the DTS and WEEE Producer Compliance Fee, provided over £1.4m of private sector funding to local authorities (LAs) in 2015, intended to fund projects to boost levels of WEEE collections, reuse and recycling, based on applications for specific projects. Participating LAs were required to submit an evaluation form on completion of their project, to report on progress. This report presents the outcome of a desk-based review and analysis of the WEEE Fund projects to date, drawing information from the completed project evaluation forms. The findings will be used to inform the future plans for managing the disbursement of the WEEE Fund.

2 Our approach

Our project team collated all the completed evaluation forms and then summarised the approach, performance and demographic characteristics for each of the projects, transposing them to an Excel database for analysis. This inventory of projects included codified metrics for quantitative, financial and qualitative project impacts, as well as standardised project classification categories for cluster analysis. This Excel based inventory has been made available to JTAC.

Quantitative, financial and qualitative performance data was analysed for the entire collective of projects, with a focus on clusters related to particular attributes (e.g. demographic of the council, type of project) and particularly high or low performing case studies (on an anonymous basis). Key findings were documented, including the project attributes most closely associated with success and failure, outcomes relevant to future bidders, future assessors and our recommendations for future areas of focus. All of the projects stated that their objective was to improve WEEE collections for recycling or reuse (or both) by weight. As such, this was the standard for success that our project team held the projects to, as well as value for money.

3 Profile of the projects

Project evaluation forms were made available for 30 projects, accounting for £1,051,240 of funding (circa 75% of the DTS and Compliance Fee Fund). More than half of the projects were in LAs classified as either 'Urban' or 'Urban and Suburban' (Figure 1). Less than a third were in LAs with 'Rural areas' and no participating LAs were only 'Rural'.

Figure 1: Demographic profile of LAs undertaking funded projects

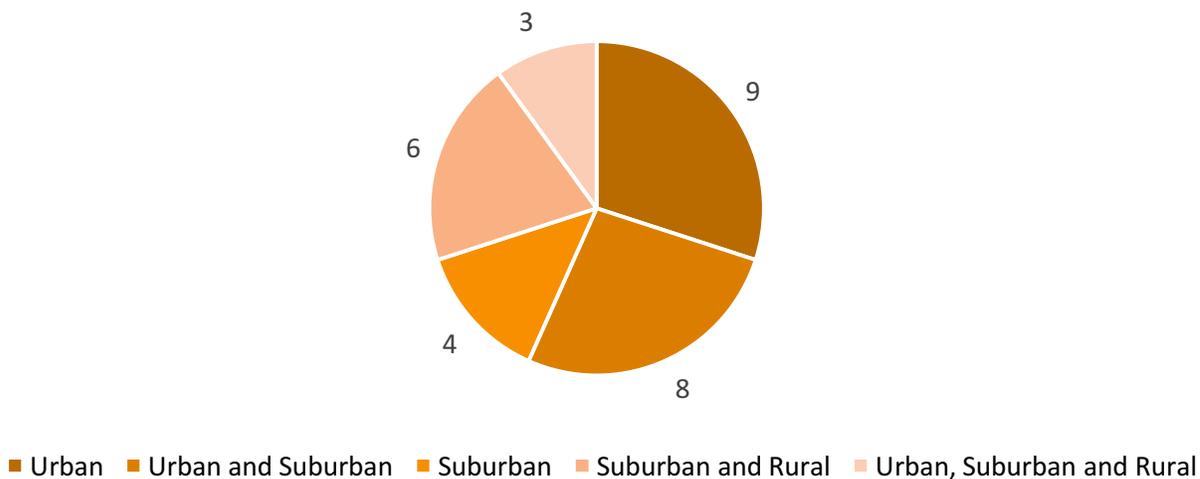


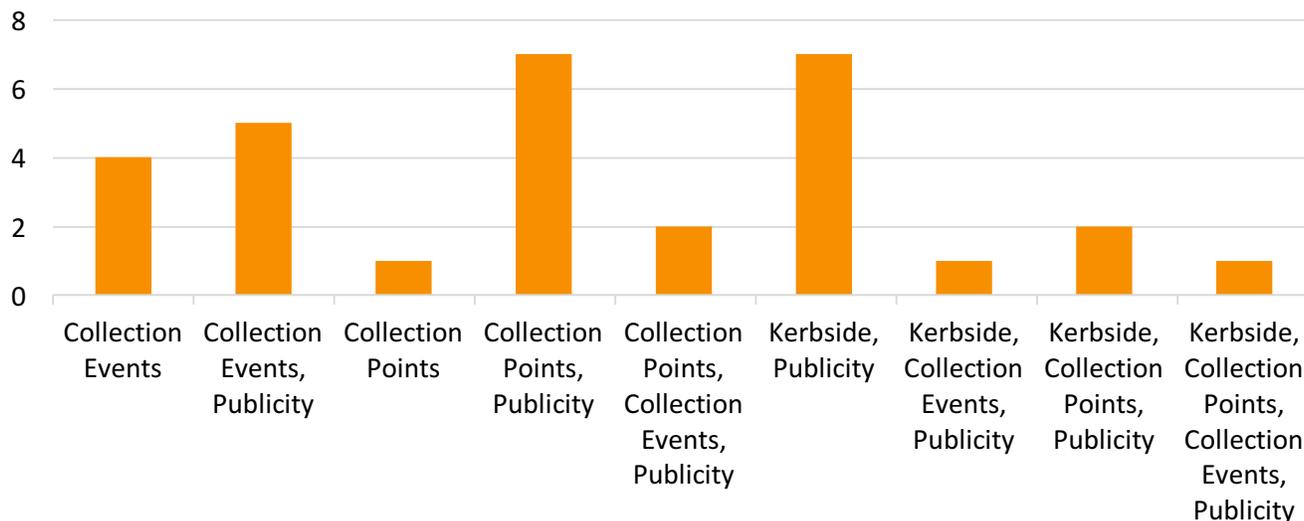
Figure 2 illustrates that the LA projects included:

- Collection Events, e.g. “Pop up collection events at schools, partnering with re-use organisation”.
- The establishment of Collection Points, e.g. “Opening a repair workshop and outlet for WEEE reselling”.
- The introduction of Kerbside Collections, e.g. “Modified collection vehicle to allow for milk round collections”.
- Publicity e.g. “Promotion to residents, schools and other organisations follow the principles of the ‘Waste Hierarchy’ through roadshows, school events, amnesty, door knocking and community events”

Some included a combination of these activities and publicity was always associated with another activity type. It is assumed that all projects employed publicity of some sort, but many did not mention this in their bid or their evaluation report, so it is assumed that it was not considered to be a priority or particularly strategic in its approach. This is why and how we have made the distinction between projects that had publicity (explicit, documented, strategic and a priority) and those which did not (no mention of it).

These classifications have been used throughout the report.

Figure 2: Profile of project types



The average amount of funding received by the 30 projects was £35,041. The maximum amount received was £96,690 and the minimum was £6,599, so the range in project scale was significant. Table 1 presents the average amount of funding received by different types of project.

Table 1: The average funding provided to each type of project

Project type	Average funding received
Collection Events	£36,700
Collection Events & Publicity	£40,166
Collection Points	£30,000
Collection Points & Publicity	£36,830
Collection Points & Collection Events & Publicity	£26,665
Kerbside & Publicity	£26,036
Kerbside & Collection Events & Publicity	£40,000
Kerbside & Collection Points & Publicity	£62,768
Kerbside & Collection Points & Collection Events & Publicity	£14,680

Fewer LAs delivered project types which included a variety of activities (e.g. Kerbside & Collection Points & Collection Events & Publicity, in the last row of Table 1), and some categories represent a single project; analysis of which generated outlier results which are discussed later in the report. Generally, the projects that included Collection Events received more funding, when compared with projects to introduce Kerbside Collections or Collection Points, and the addition of Publicity increased costs too. Analysis showed no correlation between the level of funding received and the amount of time the projects ran for. This is likely a function of the limited sample size and the high variation in project durations. Per Table 2, LAs representing more demographics received more funding, which is intuitive as the projects would likely need to cover a larger area.

Table 2: The average funding provided to each LA demographic

LA demographic	Average funding received
Urban	£30,875

Urban and Suburban	£36,329
Suburban	£31,520
Suburban and Rural	£39,635
Urban, Suburban and Rural	£39,615

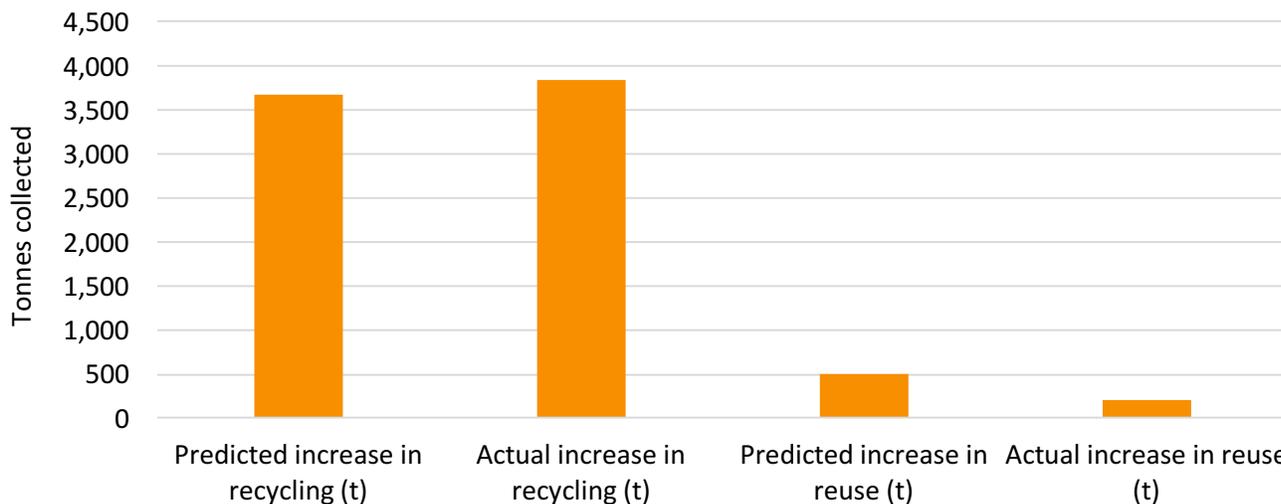
4 Quantitative and financial results

We analysed the quantitative and financial results of all of the projects benefiting from the WEEE Fund, firstly as a collective (taking all 30 into account) and then by segment (project type, LA demographic and WEEE type in focus), to identify key drivers of performance via cluster analysis.

4.1 Analysis of all projects as a collective

As per figure 3, the 30 projects over-performed on their forecast improvements in WEEE collection for recycling by 5% as a collective. An improvement of 3,670t of collected WEEE for recycling was expected and the projects delivered 3,837t in total. The amount of WEEE diverted for reuse, however, was lower than expected; with 195t collected of the expected 490t (40% of that expected).

Figure 3: Quantitative assessment, averages across all projects



It was expected that £286 of funding would yield one extra tonne of improved collection for recycling. The projects in fact delivered one extra tonne for recycling for every £274 of funding. There were fewer reuse projects and lower collection amounts were forecast, so the value for money appeared to be worse (circa £2,000/t forecast and >£5,000/t delivered). Given the limited sample size, this report provides a focus on qualitative analysis for the reuse projects later.

Despite what appears to be a good rate of return across all the projects, there was considerable variation in performance. The best performing projects over-collected by 600t which cost £26 for each tonne of extra WEEE recycled, and the worst performers missed predicted returns by 900t, and which cost £99,600/t. Eight projects collected less than 2 tonnes, inflating the £/t metric at the low performing end of the results considerably, to the point that we consider that this metric is not meaningful for these

particular projects . Figure 4 plots the quantitative performance of the projects and Figure 5 the financial.

NB. As there is a requirement for the LAs to remain anonymous the x axis in both the following graphs is intentionally blank.

Figure 4: Deviation from forecast WEEE improvement across all projects

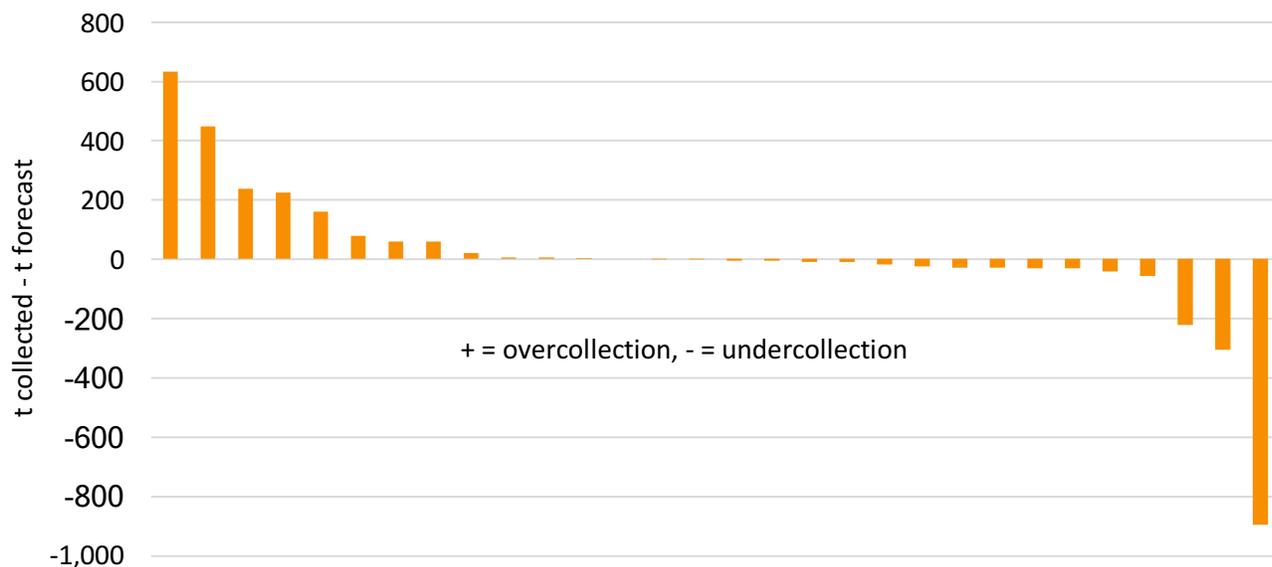
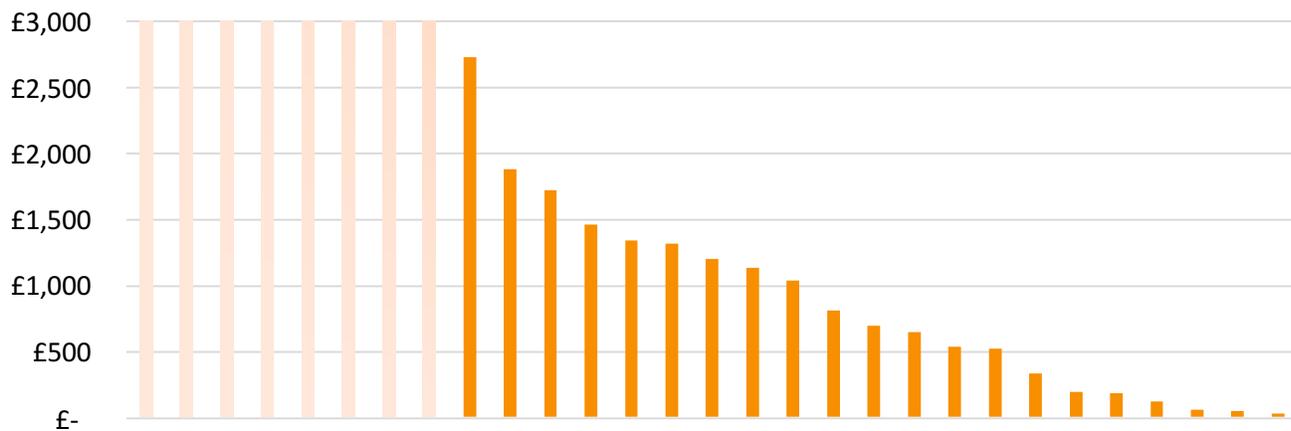


Figure 5: Funding recived per one tonne improvement in collection for recycling



NB the most expensive 8 projects collected <2t, inflating the results considerably*

Project*	£ / t	Project	£ / t	Project	£ / t	Project	£ / t	Project	£ / t	Project	£ / t
Project 1	£99,600	P6	£23,580	P11	£1,721	P16	£1,129	P21	£531	P26	£11
P2	£67,885	P7	£18,723	P12	£1,456	P17	£1,034	P22	£519	P27	£5
P3	£51,533	P8	£12,305	P13	£1,338	P18	£805	P23	£330	P28	£4
P4	£48,804	P9	£2,727	P14	£1,315	P19	£689	P24	£189	P29	£2
P5	£26,170	P10	£1,880	P15	£1,200	P20	£643	P25	£178	P30	No d

4.2 Analysis of individual clusters

Given the considerable variation in quantitative data (exclusively defined as an improvement in WEEE collections by the projects) and financial performance, the Anthesis team evaluated the differences in performance between LAs with different demographics, different activity types and the types of WEEE in focus. Given the relatively small sample size of 30, some of the clusters around the different segments in the data are small. This has produced outlier results, which are highlighted in the commentary below. Further sub analysis to cross refer the segments, e.g. comparing the performance of introducing kerbside collection schemes between rural and urban LAs would not be meaningful, as there are not enough projects to make a credible comparison.

4.2.1 Project type cluster

Figure 6: Average improvement in WEEE collection by project type

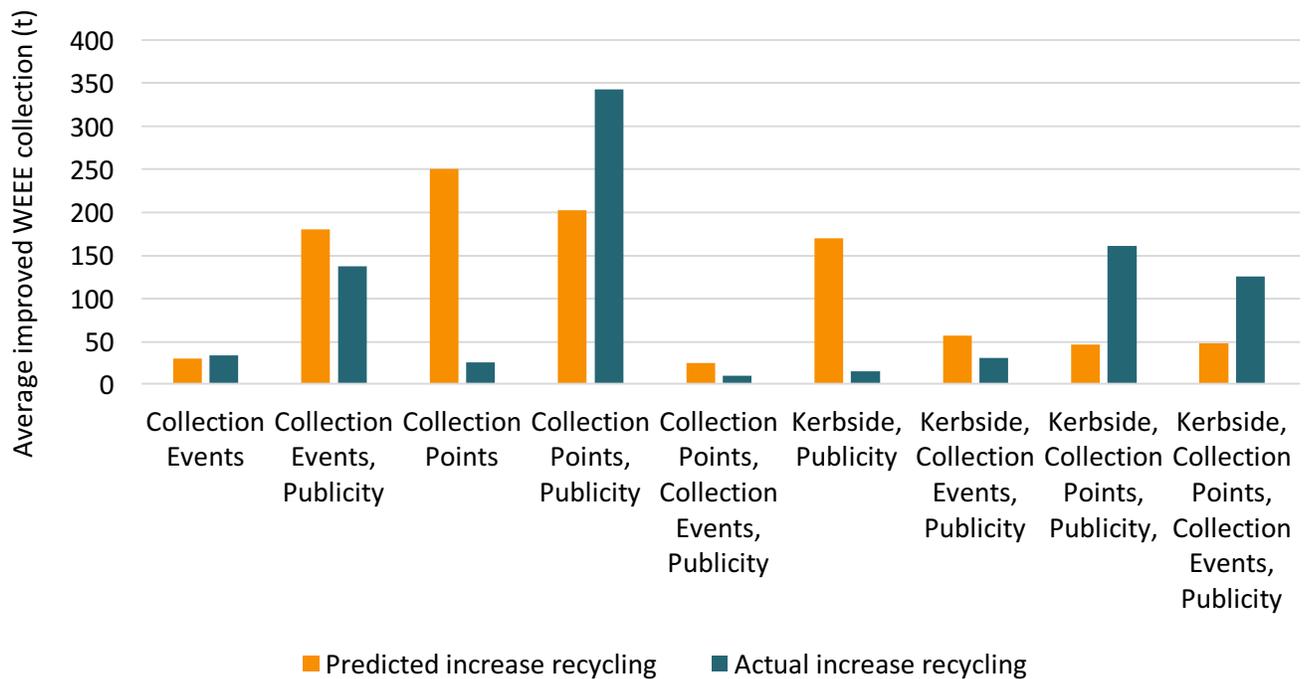
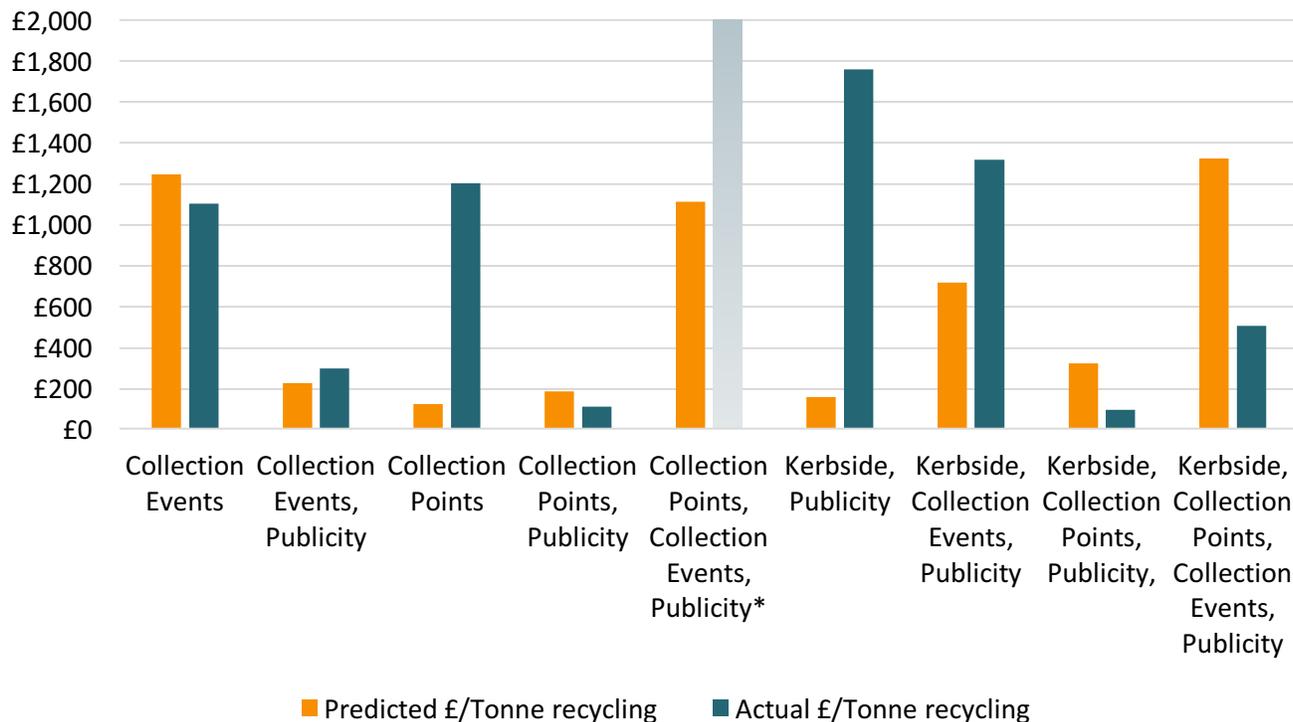


Figure 6 compares the actual performance of collections for WEEE recycling for different types of project, with the forecast. Nine collection event projects were funded and five of these chose to use publicity too. The publicised events were more ambitious in their forecast improvements than those that were not, but they also underperformed. Only one of the funded collection points did not use publicity, and this underperformed considerably. The seven collection points that did use publicity outperformed their forecast. The two combined collection points and collection events were small in scope and both underperformed.

There were seven publicised introductions of kerbside collections and as a collective, they substantially underperformed. Two projects combined the new kerbside collection with collection points and performed very well.

Figure 7: Average value for money by project type



*Metric inflated by very low weight of collections, the result is a £3,500 / t outlier and not meaningful

Figure 7 shows the value for money delivered by the different types of project, and how this compared with the forecast. Within the collection events, it is clear that the anticipated rate of return for publicised events was better than those which were not publicised. While the publicised collection events underperformed in terms of total collection, they still provided a much better rate of return than the projects that were not publicised. One of the projects based on collection points did not use publicity and this project did not perform well, making it expensive. The seven collection points that used publicity, however, returned the best value for money overall. There were only two combined collection points and events, which didn't perform well in terms of the overall collections resulting in a £3,500+/t value for money outlier. The kerbside based projects did not perform well and despite receiving the lowest average amount of funding as a project type, they provided poor value for money.

4.2.2 LA demographic clusters

Figure 8 shows the average WEEE collection improvement for recycling, across the LA demographics. The nine urban projects forecast quite a low level of improvement in WEEE collections for recycling by weight, and as a collective fell short of their targets by 40%. The eight urban and suburban LA projects were much more ambitious than those focussing on urban areas only, and over-delivered. The four suburban LAs fell short considerably, with marked variability in performance within all categories, suggesting factors other than LA demographic were contributing to project success and failure.

Figure 8: Average improvement in WEEE collection by LA demographic

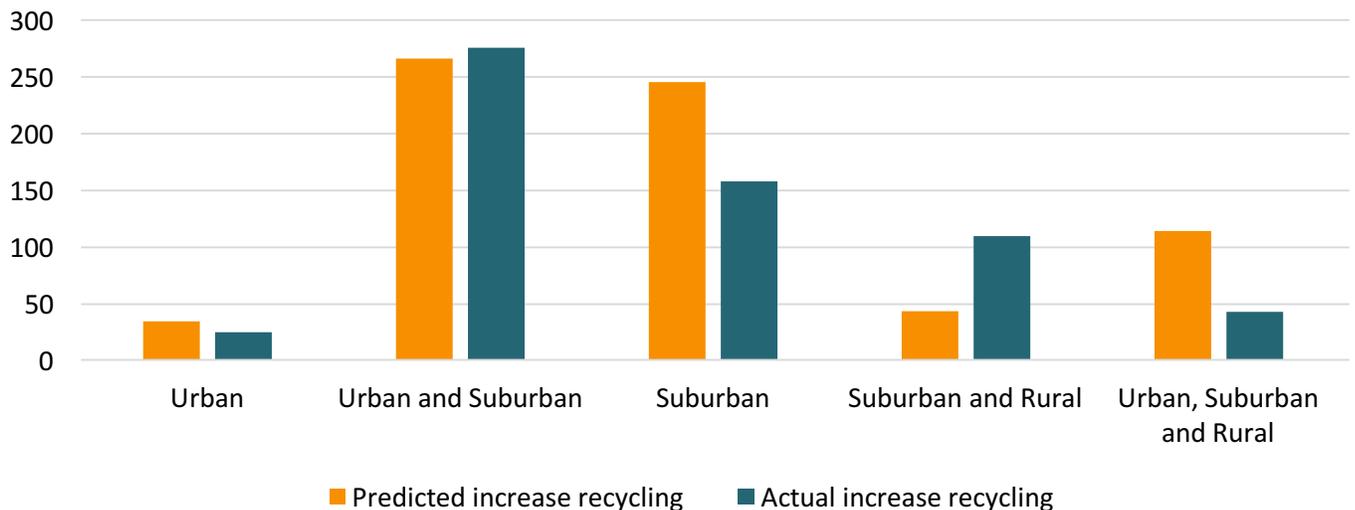
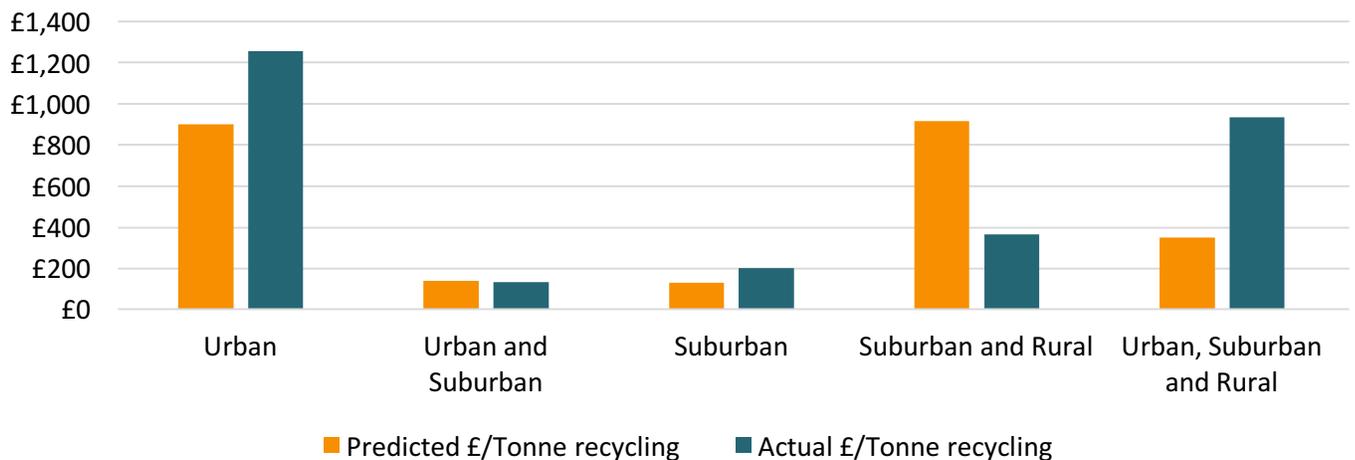


Figure 9 shows the value for money (£s of funding for one tonne improved collection) across the LA demographic types. These results do not follow the quantitative performance of the WEEE collections (e.g. the suburban projects missed their collection targets but delivered better value for money on average). This is due to the considerable variation in performance within the categories themselves, underlining our conclusion that demographic was not a factor contributing to success or failure, across these 30 projects.

Figure 9: Average value for money by LA demographic



4.2.3 WEEE stream type clusters

Twenty of the projects focussed on Small Mixed WEEE (SMW) only and as shown in Figures 10 and 11, they over-delivered in terms of WEEE collected and value for money. The remaining 10 projects also collected Large Domestic Appliances, Cooling and Display WEEE streams. These wider scope projects generally forecast worse value for money than projects collecting SMW only (£s funding for 1t improvement in WEEE collections for recycling) and under-delivered on this, as well as overall weight of improved collections.

Figure 10: Average improvement in WEEE collection by WEEE type

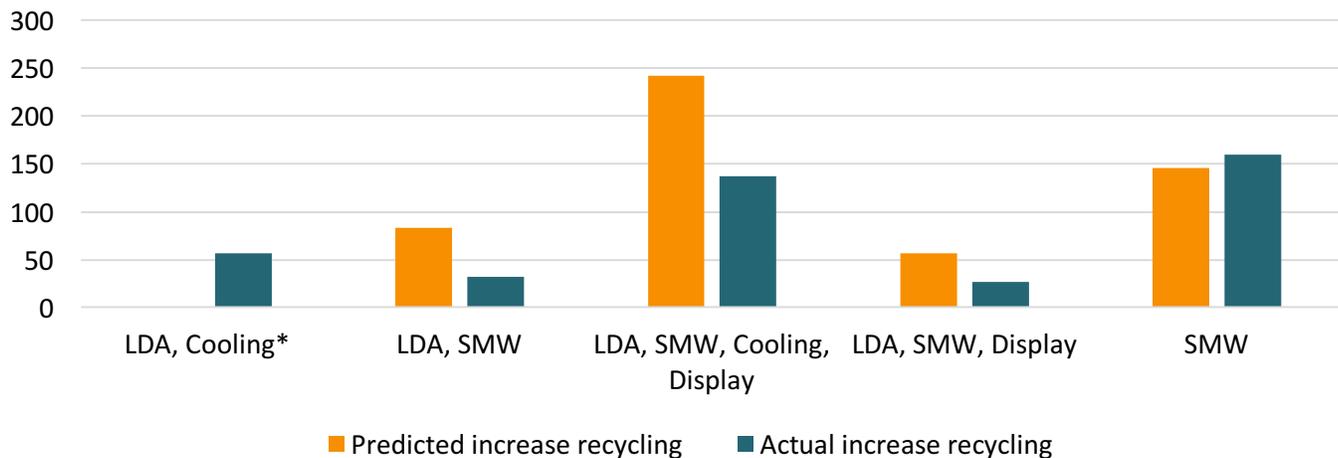
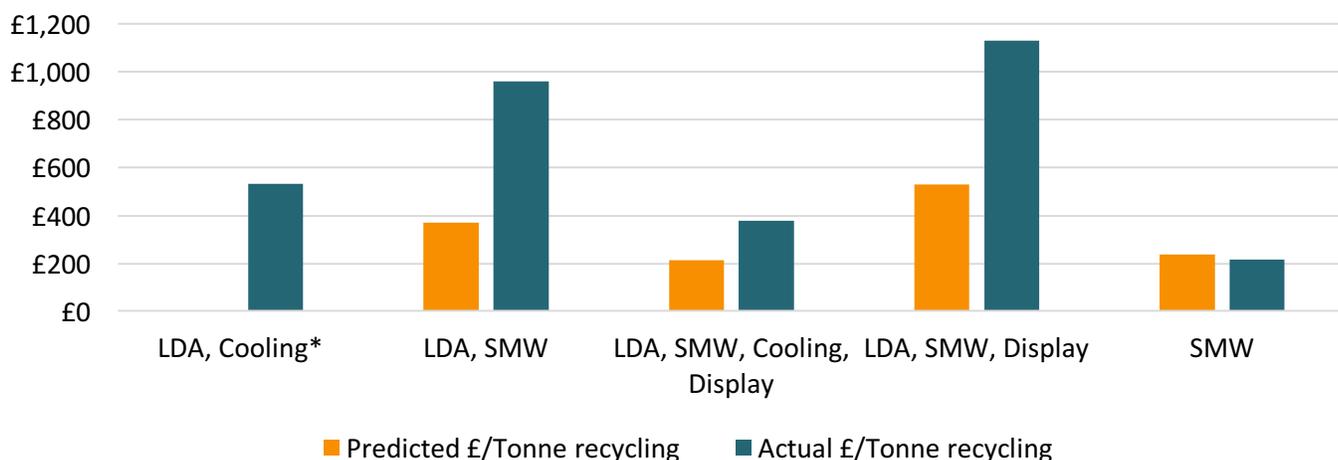


Figure 11: Average value for money by WEEE collection type



* No forecast data available for the only project in this category

5 Qualitative results from the projects

The quantitative analysis highlighted that there was considerable variation in collection and value for money performance, across the projects. There were some performance trends in the quantitative data, e.g. particular project type and WEEE type clusters performed better than others, but some of these clusters were small and there were successful project examples within lower performing clusters. As such, the qualitative evaluation of the projects is particularly important in better understanding the factors contributing to success and failure.

This section of the analysis evaluates the performance of the reuse focused projects, the success stories within high performing projects (recycling and reuse), as well as the explanations given for projects with low value for money or which did not deliver on their forecast collections.

5.1 Projects focussed on reuse

Only one of the 20 projects with a reuse element focussed on reuse exclusively. The maximum predicted collection for reuse was 166t (though this particular project missed the target) and the lowest was 0.008t. Per section 4.1, on average, the projects missed their reuse collections target by 40%. Projects types with a reuse element included collection events, new collection sites and the introduction of kerbside collections. There were successes and failures across all these types of projects. Similarly, there were no key trends across LA demographics or WEEE type when it came to reuse.

The most successful reuse projects showed innovation e.g. profit share systems via charity shops, the use of YouTube, novel business models where items were loaned and well run campaigns based on engagement with the local community. Only five reuse projects over-delivered on collections. For most the reuse target was very small compared with the recycling target, making a value for money calculation difficult. One project focussed on WEEE collections for reuse exclusively (the rest combined it with recycling). This project cost £2,849/t of improved collections, note the revenue generated through reselling units was not made available to assessors.

A variety of factors were cited for the under-delivery of the 15 other reuse projects, with the following themes:

- Projects overestimated the quality of the equipment that would be returned, which in reality was too old or too damaged for economic repair and sale. Many cited a particular WRAP report¹ for their forecast and found this to be overly ambitious.
- Partnerships with LAs, reuse organisations, repair partners and charities did not operate as intended, or momentum was lost.
- Publicity campaigns were poorly timed, did not resonate with the public or were poorly executed.
- Items collected from the kerbside were prone to damage, including by rain.

5.2 Profile of projects that performed well

The five best performing projects, in terms of both collections and over delivery, are shown in Table 3.

Table 3: The five best performing projects in terms of improved collections

Increased collection		Over-delivery	Type	Demographic	Funding	Streams	(£/t)
Predicted	Actual						
969	1,600.4	631	Collection Points, Publicity	Urban and Suburban	£68,100	SMW	£42.55
111	558	447	Collection Points, Publicity	Suburban and Rural	£30,000	SMW	£53.76

¹ <http://www.wrap.org.uk/sites/files/wrap/WRAP%20WEEE%20HWRC%20summary%20report.pdf>

56.078	293.13	237	Kerbside, Collection Points, Publicity,	Urban and Suburban	£96,690	SMW	£329.85
30.02	253.09	223	Collection Events, Publicity	Urban and Suburban	£6,599	SMW	£26.07
0*	159	159	Collection Points, Publicity	Suburban	£30,000	SMW	£188.68

*This project had poor data management, so is an outlier

All these projects had an element of publicity, most showed strong engagement in the community and had well run campaigns. There is variation in project type, though most included a collection point, and there is a variety of demographics.

As shown in Table 4, the projects demonstrating best value for money were varied in terms of; budget size, demographics, project type and collection stream (though most were focussed on small mixed WEEE). The best value for money projects were those which over-performed, which is an intuitive finding but an important one to highlight. While there are projects types that are more expensive than others, the best value ones are those which succeed, so the quality of the delivery and execution is critical for future funding decisions. One of the best value projects, albeit the worst of the top five, actually missed target for collections, but was a big scale project, which meant that it could afford a deviation where smaller projects could not.

Table 4: The five best performing projects in terms of value for money

Increased collection Predicted	Actual	Type	Demographic	Funding	Streams	Over-delivery
£220	£26	Collection Events, Publicity	Urban and Suburban	£6,599	SMW	223
£70	£43	Collection Points, Publicity	Urban and Suburban	£68,100	SMW	631
£270	£54	Collection Points, Publicity	Suburban and Rural	£30,000	SMW	447
£309	£118	Kerbside, Collection Points, Collection Events, Publicity	Suburban	£14,680	SMW	77
£89	£178	Collection Events, Publicity	Suburban	£54,402	LDA, SMW, Cooling, Display	-308

5.3 Profile of projects that did not perform well

The five worst performing projects, in terms of missed collections targets, are presented in table 5. There is considerable variation in the types of activity funded, WEEE types and LA demographics across the worst performers, however the following characteristics were clear from a qualitative perspective:

- Partnerships, specialist resourcing and infrastructure were not available as planned.
- Difficulty in accessing material of sufficient quality or volume (with little further explanation, but we suspect over-ambition on application).
- Lower than expected participation rate in response to publicity campaigns, some of which were mistimed or not executed as planned.

These factors are all related to the execution of the projects, rather than being a function of the type of project in question and there was considerable variability in performance within the different activity types. The qualitative variation within these clusters is discussed in the next section.

Table 5: The five worst performing projects by deviation in weight of collections from forecast

WEEE collected (t)			Project type	LA demographic	Funding	WEEE type	(£/t)
Forecast	Actual	Difference					
44.6	1.37	-43	Collection Points, Publicity	Urban	£35,853	SMW	£26,170
70	11	-59	Kerbside, Publicity	Urban and Suburban	£30,000	SMW	£2,727
250	25	-225	Collection Points	Urban, Suburban and Rural	£30,000	LDA, SMW	£1,200
613	305	-308	Collection Events, Publicity	Suburban	£54,402	LDA, SMW, Cooling, Display	£178
900	0.26	-900	Kerbside, Publicity	Urban and Suburban	£17,650	SMW	£67,884

5.4 Qualitative analysis of variations between activity types

The quantitative analysis showed that projects to introduce collection points, when supported with publicity, delivered the best collection results and value for money. Also, that the introduction of kerbside collections provided the worst returns. However, qualitative comparisons within these clusters showed that there were successes and failures across all project types and in fact, one of the kerbside projects over-performed. Our analysis is summarised in Table 6.

Table 6: Qualitative comparisons of performance across collection types

Activity type	Collection events	Collection points	Kerbside
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Success factors	<ul style="list-style-type: none"> • Use of incentives encouraged participation • Greater availability of facilities prompted uptake • Strong community engagement 	<ul style="list-style-type: none"> • Innovative sales models • Community partnerships • Good publicity • Capacity building 	<ul style="list-style-type: none"> • Offering collections to regions with low HWRC access • Good public engagement
Failure factors	<ul style="list-style-type: none"> • Poorer quality equipment returns than expected • Confused publicity campaigns • Failed partnerships 	<ul style="list-style-type: none"> • Failed partnerships • Insufficient skilled resource • Poor quality equipment • Poor data management 	<ul style="list-style-type: none"> • Failed publicity campaigns • Failed partnerships • Poor quality equipment returns

6 Key findings

Following our quantitative and qualitative analysis of the 30 projects, we have drawn out the following key themes associated with project success and failure.

6.1 Notable drivers of success

- Collaboration, via community partnerships or investment, was shown to drive the best rates of return from a quantitative perspective.
- The high performing projects in terms of collection had the added benefit of showing the best value for money.
- Innovation in delivery and approach, including the resale of equipment collected for reuse, encouraged participation.
- The best performing projects were supported with publicity and when the campaigns were well targeted, engaging and executed as planned, yielded good results.
- Broadly speaking, collection events yielded best results (in terms of improved collections and value for money), but successes were observed for all activity types when the projects were well run.

6.2 Typical characteristics of failure

- Many of the projects that did not perform as planned involved a failed partnership. This might have been between the LA and a reuse organisation, a charity or a technical delivery partner. While letters of intent were provided with some bids, the language was often vague and the level of commitment unclear.

- Projects also failed when planned resourcing was not made available, this included match funding, specialist equipment and availability of individuals with particular skills.
- Projects that relied on collecting WEEE of a certain quality were disappointed, after collecting older and more damaged items than expected. The expectation had been set by a particular WRAP report and perhaps a new benchmark should be advised.
- Kerbside collection projects tended not to perform well, but there were successes when the projects were executed as planned and when the publicity was sufficiently engaging.
- Projects with no publicity, a confusing message, or a poorly timed campaign, tended not to perform well.

7 Recommendations

Following our analysis of the relative successes and failures of the 30 projects benefiting from the WEEE Fund, drawing out common themes, we have determined that while there are types of projects that are more likely to succeed, the execution is also very important. In light of this, we have prioritised areas of focus for future reviewers and bidders engaging with the WEEE Fund the following sections.

A general finding was that the quality and completeness of the evaluation reports was inconsistent, with varied levels of data available, which challenged evaluating success and making comparisons. A future improvement might include a more complete and defined set of reporting metrics to promote transparency and accountability.

7.1 Focus areas for future reviewers

- Projects with no or poor publicity do not perform well. Reviewers should look to challenge the messaging, reach, targets and methods of delivery in bids, with a view to determining how seriously a project is taking this requirement. The delivery of projects with no publicity should be held to additional scrutiny.
- When examining bids that rely on a specific partnership or the participation of particular actors, the reviewers should challenge the levels of commitment involved from all parties and any mechanisms to ensure delivery. An interim project review to make sure particular resources, equipment, facilities or capacity have in fact been made available, could be a useful enforcement mechanism.
- The project reviewers should also consider the type of project being proposed, but note that all had their unique successes and failures. Introducing new collection sites might bring a more reliable returns, but might not be feasible in certain areas. It is possible to have successful collection events and kerbside collections, but the implementation needs to be good and the publicity needs to be effective. Attention to detail, robust work plans and realistic ambitions should all be considered essential components of a good bid.

7.2 Learning opportunities for future bidders

- Bidders should be realistic about the quality of the items that will be returned, stress testing the models behind the collection forecasts for items of a particular standard and examining their dependency on functional or new items critically. It would be prudent to use a lower benchmark for reusable WEEE items than estimated in the WRAP report.
- Bidders should recognise that the timing and execution of publicity campaigns is crucial in securing participation, projects without any publicity tend to perform worse and as do those with poorly executed workplans.
- Engagement and investment in the local community, through schools, libraries or local charities, was highly effective in securing participation, also Producer Compliance Schemes. Bidders should look for opportunities to establish these partnerships and have a clear plan for maintaining engagement throughout the duration of the project.
- Bidders should seek to secure buy in from necessary delivery partners in advance of securing funding, making sure that any required specialist capacity, equipment, support or space will definitely be available and that there is a contingency plan for unforeseen circumstances.

Material Focus is an independent, not-for-profit organisation on a mission to save valuable, critical and finite materials inside electricals from going to waste. We do this through

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We identify, produce and share insights to improve the UK e-waste system and inform policy decisions.

Investments

We identify and fund projects that make it easier to reuse and recycle; or that encourage circular design.

Inspiration

We inspire, educate and encourage the UK public to fix, donate, sell and recycle their unwanted electricals through our Recycle Your Electricals campaign.