

Device Upcycling - Research into the current practices in London's public sector and capacity of the supplier market to meet upcycling demand

This research was funded by [Nominet](#) and conducted on behalf of the [London Office of Technology and Innovation \(LOTI\)](#), by Ruth Puttick, May 2021

About the research

This research focused on the recycling of devices in London by local authorities, public sector bodies, and companies, and the structure and capacity of the device recycling sector to process and distribute them. During April and May 2021, we undertook desk research, conducted 15 interviews with 20 individuals, and administered two surveys, one to companies and the other to public sector bodies in London.

About digital device retirement

We define **digital devices** as mobile phones, laptops and tablets. This project originally focussed on the “**upcycling** of digital devices”. Through our research we discovered that the term “upcycling” was confusing, and did not resonate with companies, public sector bodies, or device recycling providers. For this reason, this report uses the term **recycling** of digital devices. Another option is “refurbishment”. Future work should refine and test language and phraseology with organizations and individuals to ensure it resonates.

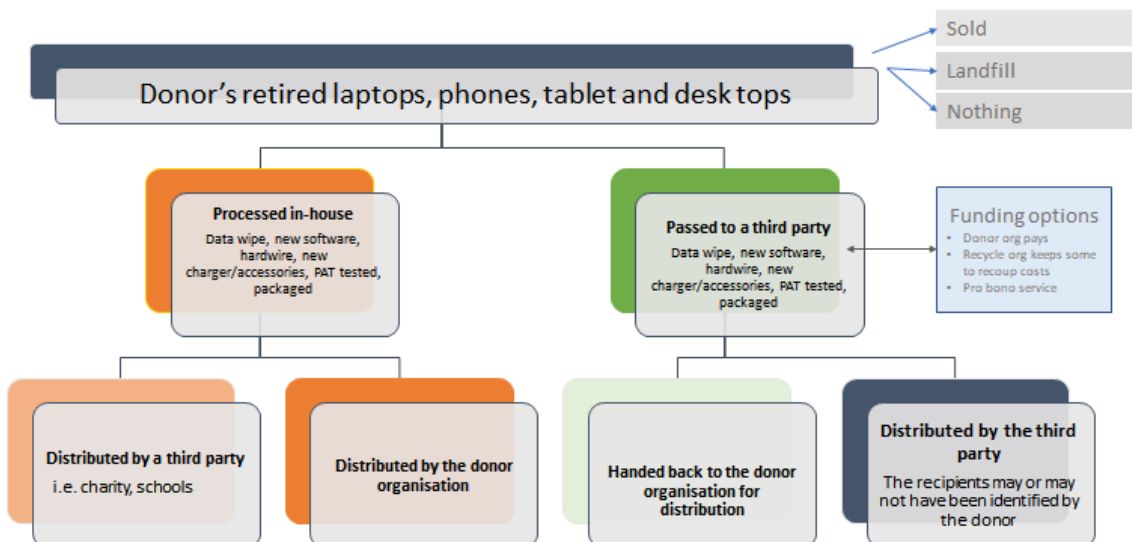
The scale of device retirement in London

The total number of devices across 3 boroughs and 4 public sector bodies being retired this year is shown below.

	Total this year
Mobile phones (inc. IOS devices)	16,050
Laptops	12,000
Tablets	4,950
Desktops	5,500
Chromebooks and Chromeboxes	6,000

The figures will be substantially higher if all London boroughs were included. And even higher, if the private sector engaged.

What happens when digital devices are retired



Our research found that devices take one of four routes when retired by a company or public sector organisation.

The **four options** when devices retire are:

1. **Recycled.** Devices are cleaned, software and/or hardware may be upgraded, and the device is reused. This process may be undertaken in house or by a third party. The average cost per device is about £60.
2. **Sold.** Devices are sold to a contractor who will refurbish and sell them to a private seller. The proceeds of this are often used by the seller organisation to buy replacement IT equipment.
3. **Destroyed.** Devices are shredded, certain elements, such as precious metals and plastics, may be separated, but the majority of the device goes to landfill. This process is typically contracted to a third party.
4. **Nothing.** Devices are retained in-house and stored.

Summary of findings

This research tested five hypotheses, and the table below summarises our findings.

Hypothesis	What we found
1. London could significantly increase the number of devices that are available to benefit digitally excluded people by reducing the barriers to recycling of retired devices	Yes, London could significantly increase the number of devices it makes available. For all the public sector organisations and companies we spoke with, there was an appetite to recycle devices. Some

<p>from the capital's major corporate and public sector organisations.</p>	<p>already recycle devices but it is relatively small scale, and there is willingness to ramp it up.</p>
<p>Hypothesis</p>	<p>What we found</p>
<p>2. Only a minority of retired devices from London's largest corporate and public sector organisations currently go for recycling.</p>	<p>Yes, only a minority of devices are recycled. The vast majority of devices are sold, scrapped, or put in a cupboard. There are few public sector organisations with retirement plans in place that have provision for recycling all their devices to benefit disadvantaged Londoners.</p>
<p>3. That a significant number of those retired devices could, in principle, be recycled.</p>	<p>Yes, a significant number of retired devices could be recycled. However, resources will need to be available to fund the necessary refurbishment, upgrades, and the logistics of collection and distribution. Furthermore, there will need to be exploration of the spec and condition of these devices, and what their future use could be. This will involve "matching" donated devices to user groups. Recycling is only valid if someone is going to use it.</p>
<p>4. That there is sufficient capacity in the device recycling sector to clean, data wipe and make usable (e.g. through adding current software)</p>	<p>Yes, there is capacity in the recycling sector and a willingness to take on devices. There are numerous initiatives, programmes and</p>

<p>thousands of extra devices if they could be provided by corporates and public sector organisations.</p>	<p>companies dedicated to device recycling. But the reason more devices are recycled is not simply a lack of devices, nor a lack of recycling company capacity to take them on, but a disconnect and lack of awareness in organisations on how to get devices out, and agreement about who they should go to.</p>
<p>5. That the cost of device recycling could be reduced through greater economies of scale.</p>	<p>Indicatively, more devices, and more of the <i>same type</i> of device, could result in greater economies of scale. However, at this stage, it is not possible to establish how the cost per device will change without knowing more about the device type, numbers, conditions, and so on. There is also huge variation in what organisations charge for recycling and distributing devices. But it is clear that there are benefits to London organisations - both public and corporate - sharing current practice and experiences, and having access to example/model internal guidance, processes and procedures to aid recycling and donating devices, which others could use and emulate. This would</p>

	<p>save organisation’s time and capacity from having to develop their own processes from scratch, help organisations in their internal and external communications, and may help convince organisations that devices can be recycled, and that risks are manageable.</p>
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Summary of recommendations

This section summarises the recommendations for LOTI, and its partners, on how to increase the number of retired devices made available to digitally excluded Londoners. Under each recommendation there is more detail, and a suggested next step in order to progress the work.

1. Make it easy: create an organisation or programme tasked with device recycling and distribution

The main barrier to recycling devices for companies and public sector bodies is that they lack the knowledge about how to recycle, and they don’t have the capacity to take this on in-house, or the permission. There is a need for a London-wide scheme that can act as the conduit for the donation, recycling and distribution of devices, and be the go-to resource for organizations who need help and guidance.

This is not a one-off exercise, companies and the public sector will continue to refresh and retire devices for years to come.

It is also important to emphasise that the lack of devices donated for reuse by disadvantaged Londoners is not because of a lack of information. There is lots of guidance, such as how to wipe a device, or lists of organisations

who accept donations. But this isn't enough. Device recycling is not part of anyone's core job - either in the public or private sector - and the burden, responsibility and ownership needs to be taken on somewhere, so that organisations can simply hand devices over.

The rest of the recommendations follow on from this starting point.

Next step #1: explore the creation of an initiative or programme, or potentially an organisation, which can be the focal point, conduit and go-to resource on device recycling. However, they may not manage the process end-to-end, and may subcontract elements out to existing organisations working in this space, such as through a framework agreement.

Next step #2: estimate what the associated costs would be. Can this organisation fund the end-to-end process? Do donors need to contribute financially?

Next step #3: explore partners and collaborators, including donors, funders, and logistical partners.

2. De-risk it for the donor organisations and make clear what happens to devices

Any future initiative will need to ensure any internal barriers or concerns are addressed to make donating devices easy for organisations. The most common answer when we asked about barriers to recycling digital devices, was that organisations didn't know how to recycle retired devices to benefit digitally excluded Londoners. They felt there was a lack of clear guidance available to outline the process, and for them to share with colleagues in order to imbue confidence in how devices and data were to

be securely handled. Organisations also found it time consuming to generate internal processes.

Next step #4

- Share and agree policy and accompanying guidance on device recycling to give London organisations the information and reassurance they need.
- Explore developing a draft SLA/MoU to help organisations understand what is involved in donating devices at a partnership level.
- Develop a standard process for all devices, involving:
 - Clarity and certification on data wiping
 - PAT testing
 - Agreement that donors are not responsible for devices once they are donated (i.e. they bear no responsibility for future disposal, damage, failure, injury, and so on).

3. De-risk it: Engage senior leaders / CEOs in public sector bodies and companies

For those in companies and organisations undertaking device recycling and distribution, it is typically an extra part of their role, or a “hobby”, and rarely - if ever - is managing device recycling and redistribution a core part of their job description. Linked to this, employees felt like that they didn’t have appropriate “cover” or sign off to donate devices. For devices to be donated as the norm, then senior leaders would need to be onboard.

Next step #5

- Promote the campaign and showcase those who donate.
- A league table could show those who do it well and those who don’t (although this could be controversial!).
- Ask companies and public sector bodies to pledge devices. This will help signal who is doing it, and help manage the flow of devices.

4. Increasing the number of devices available: engage both corporate and public sector organisations, their staff, and the wider public

The overwhelming response we received in our research, both with corporates and the public sector, is that they have retired digital devices, that there is a willingness to make them available, but they don't know HOW to do this. They require guidance and reassurance about the process. Another opportunity available to LOTI and its partners is to source devices from the public, either by recycling personal devices from the staff within organisations, or collecting devices directly from the public. The willingness of the public to donate devices is beyond the scope of this study, but there is potentially an untapped reserve of devices, with an estimated 700 million devices across Europe which are unused and 'hibernating' in households.

Next step #6

- Create a phased programme, potentially engaging with organisations first, then their staff, and then the wider public, to ensure that the recycling infrastructure can cope.
- Furthermore, the process will help gauge the spec of devices and the associated costs of recycling these. Is the opportunity cost too high for some devices?

5. Creating device drop off locations in London to make it easier for organizations and individuals to donate devices.

To increase the amount of donations from the public, drop off locations could be created. This would make it easier to collect devices, potentially

reduce transport costs, and utilise existing infrastructure. These locations would need to be secure.

There is a possibility that the devices donated will be of low quality, and a cost may be incurred to recycle and/or dispose of them. The screening of devices and the associated opportunity cost of recycling this, would need to be factored into any further programme.

Next step #7

- To explore how public locations, such as train stations, could be utilised as device drop-off hubs.

Next step #8

- Is there an environmental angle to this, if devices can't be reused, could the precious metals be stripped and avoid going to landfill? Could a recycling partner be engaged for this purpose?

6. Don't just give devices, but provide the support so that they can be used, and connectivity to the internet

Donating the device is just the starting point. Alongside a device, ensure that there is detailed guidance on how to use it, potentially even a phone line to answer queries.

Ensure the device has connectivity, which might involve providing data/internet access for a certain period of time. Some advocate providing a guarantee/warranty and replacing faulty devices.

Next step #8

- Build this wider package of support and work into the future programme.

7. Match devices with the end user and have a minimum quality threshold

How devices reach the end user was often the biggest challenge for donor organisations. There are organisations which can distribute them. But thought is needed as to what the end user wants and needs. Linked to this, how will they use it? Is it for in-school learning? Home learning? Paying bills? Gaming? Will the donated devices meet this need? Is the device going into a school? Will there need to be standardisation on what is provided? Does this mean providing a high volume of the same device?

There needs to be an agreed minimum quality standard, both in terms of device performance, and in terms of device condition. This may need to be flexible and change depending on who is receiving the device. For example, some schools may have IT assistance who can repair a cracked screen before it's used, whereas other end users will require a fully refurbished device. Some users may require the technology to assist with home learning, or gaming, whereas other individuals may simply need a device to pay a bill.

It's worth noting that IT professionals often had a more discerning view of what a "good" device looked like, compared to those working in charities who distribute devices to those who need them. What a good device looks like is very subjective.

Next step #9

- When devices are received they will need to be assessed to identify potential uses and users, and it will be an iterative process. Could an API be set up for donors to pledge and organisations to request these?

8. Use the existing infrastructure of recycling providers, including corporates, social enterprise, down to smaller community initiatives

There are lots and lots of existing initiatives and organisations in this space. These could help with logistics of transporting devices, recycling and/or distributing them. These existing organizations and networks may also know who in a community needs a new device.

Next step #10

- Based on the scope of the programme, potentially set up a framework agreement to engage with these organisations on a formal basis.

9. Make it UK-wide

Once established, put London on the map and ramp up interest by syndicating the model in other cities. London could potentially be the first city in the UK - if not internationally - to have a city-wide, end to end process for digital devices, ensuring that the digitally disadvantaged benefit, with associated economic and social impacts, and making the most of precious metals for recycling and future use.