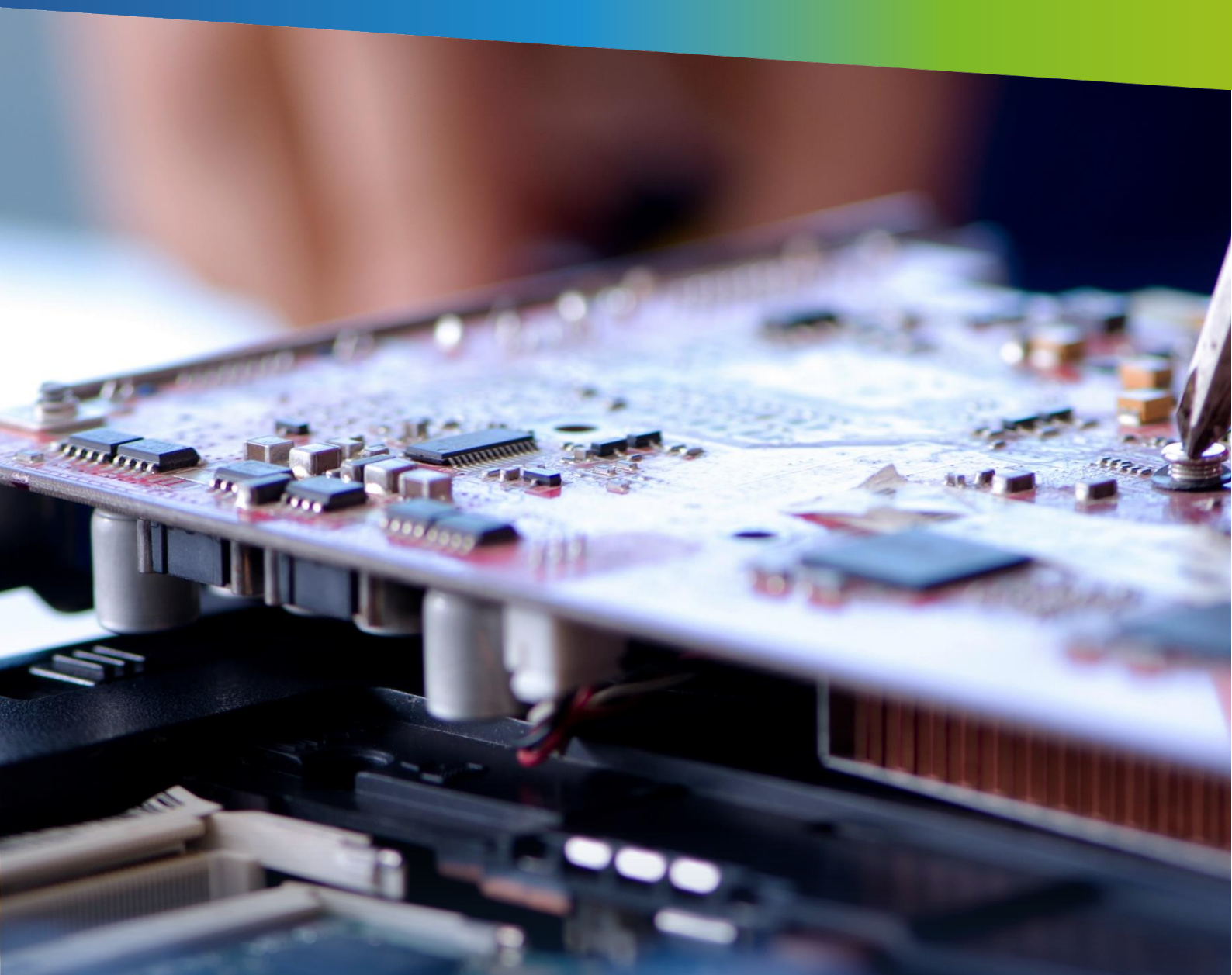

Practical Strategies for Lifetime Extension of ICT

CFIT Mini Guide

Circular & Fair ICT Pact

Colophon

Title	Practical Strategies for Lifetime Extension of ICT
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CFIT Mini-Guide on Lifetime Extension of ICT

About the Circular and Fair ICT (CFIT) Pact series of Mini-Guides

The Circular and Fair ICT (CFIT) Pact Mini-Guides are bite-size resources developed to focus on a topic relevant to the network's interests, integrating insights and practical strategies. Each guide covers a specific subject, including:

- Carbon-conscious ICT
- Remanufacturing and Reuse in ICT Public Procurement
- Critical Raw Materials
- End-of-Life Management

The Mini-Guides provide best practices, procurement criteria, and top tips for replication, offering a comprehensive view of sustainable practices and strategies for circular and fair ICT procurement.

For more information visit: https://circularandfairictpact.com/

Glossary of Terms

Asset Management Plan – Tracks ICT assets to extend use and avoid unnecessary replacements.
Award Criteria – Tender scoring points that reward extra features (e.g. warranties, repairability).
Battery Durability – Battery retains ≥80% capacity after 300–500 cycles.
Battery Health Software – Pre-installed app showing charge cycles and tips to extend battery life.
Battery Replaceability – Battery can be easily swapped by user or technician.
Buy Better – Procure higher-quality, durable, repairable ICT with long-term support.
Buy Less – Avoid new purchases by using existing equipment longer.
Circular Economy – Design out waste by keeping materials in use longer via repair, reuse, etc.
Contract Conditions – Legally bind suppliers to long-term repair, parts, and service support.
E-waste – Discarded electronics; lifetime extension reduces its volume and impact.
Embodied Carbon – Emissions from production before use phase; major ICT impact driver.
End-of-Life Management – Plan for reuse, refurb, recycle once a device is truly obsolete.
EPEAT – A global ecolabel for electronics.
French Repairability Index – Score showing how easily a product can be repaired.
ICT – Devices like laptops and phones used to process/communicate information.
Incentive Programs – Rewards for staff or departments that extend device use.
Intelligent Charging – Software limits full charging to prevent battery wear.
IP-65 Rating – Dust- and water-resistant durability standard (e.g. for smartphones).
Lifetime Policies – Org-level rules to keep devices longer and avoid auto-replacements.
MIL-STD-810H – Ruggedness standard (e.g. shock, vibration) for long-life laptops.
The National Cyber Security Centre (NCSC) – UK authority recommending certified secure data wiping before reuse.
Obsolescence – When a device becomes unused or unusable; can be avoided or delayed.
Perceived Obsolescence – Replacing still-working devices due to trends or updates.
Post-tender Phase – After contract award: ensure maintenance, tracking, repair.
Pre-tender Phase – Early planning to avoid unneeded procurement.
Product Lifetime – From first use (or reuse) to final disposal.
Product Lifetime Extension – Deliberate steps to keep a product usable longer.
Raw Materials – Metals and minerals used in devices; reducing demand is key.
Refurbishment – Light repairs and cleaning to prep a used device for reuse.
Remanufacturing – Full rebuild of a device to "like-new" condition.
Repairability Documentation – Manuals and diagrams to guide repairs.
Replacement Cycles – Pre-set timelines for new ICT purchases; can be challenged.
Selection Criteria – Tender requirements evaluating supplier capacity (e.g. repair support).
Service Level Agreements (SLAs) – Contract terms setting timelines and expectations for repair and service.
SoC (State of Charge) – Current battery level; used in intelligent charging.
SoH (State of Health) – Battery's capacity vs. original spec (e.g. ≥80%).
Software and Security Updates – Needed to keep devices usable and secure longer.
TCO Certified – Global ecolabel for electronics.
Technical Specifications – Requirements for durability, repair, battery, updates, etc.
Tender Phase – Writing and evaluating bids with lifetime goals in mind.
Urban Mining – Recovering valuable materials from e-waste.
Use Better – Train users to care for devices and avoid damage.
Use Longer – Rethink refresh cycles; keep devices in use if still viable.
User Profiling – Match device specs to actual user needs to avoid overbuying.
Warranty – Supplier guarantee; longer = more accountability and lifespan.
WEEE Directive – EU law requiring e-waste collection and responsible disposal.

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Conclusion and recommended actions

Extending the lifetime of ICT products is one of the most effective and achievable ways to reduce ICT products' environmental footprint. This guide shows how procuring organizations can embed lifetime extension into every phase of the CFIT procurement cycle (see figure).

Why act now?

Every year that a device is kept in use avoids the environmental and financial costs of manufacturing a new one. With the right strategies in place, public buyers can extend the life of their ICT fleet and reduce emissions, costs, and waste. You don't need to wait for perfect conditions. Start with one contract, one device type, or one team — and build from there.

Key actions to take now pre-tender, tender and post tender

Use the CFIT framework to embed these actions across policies, contracts, and supplier relationships.

The benefits of action

By following this guide's strategies, you can:

- Extend product use well beyond current norms
- Reduce procurement and lifecycle costs
- Avoid emissions from early replacement
- Improve user satisfaction by providing stable reliable equipment
- Support a more circular ICT economy

🎯 **Every extra year of device use makes a difference! Don't wait to take the next step:**

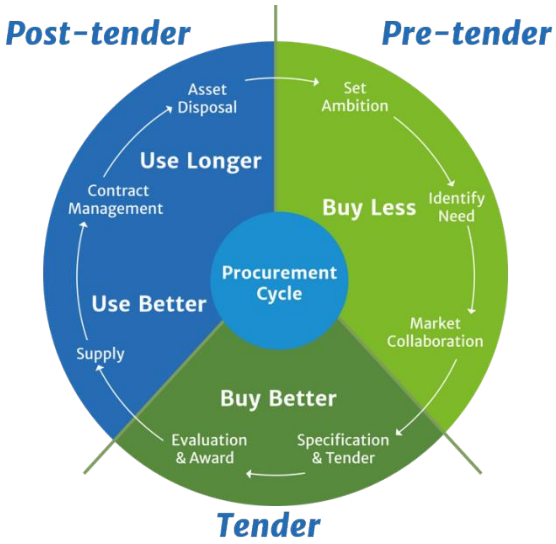
- Pilot lifetime extension in your next ICT procurement
- Share results internally and with peers
- Ask suppliers how they can support longer product life

Together, we can shift the market toward durable, repairable, and longer-lasting ICT — and set a new standard for sustainability in public procurement.

1 Introduction

This Circular and Fair ICT (CFIT) Pact Mini-Guide is designed to provide public procurers and related actors with practical strategies and tools for supporting lifetime extension of ICT products. **Extending ICT product life is one of the most effective ways to reduce environmental as well as financial impacts.**

This mini-guide was developed in collaboration with experts and informed by the experiences of CFIT participants. You will see that it is fully aligned with the core strategies of the **CFIT Framework for Circular and Fair ICT Procurement**: "**Buy Less, Buy Better, Use Better, and Use Longer**". It is furthermore organised into actionable steps that correspond with the Pre-tender, Tender, and Post-tender stages of the CFIT procurement cycle.



CFIT procurement cycle as introduced in the CFIT Framework for Circular and Fair ICT Procurement

The central question in this mini-guide is: How can procuring organizations contribute to the effective extension of product lifetimes?

The CFIT Lifetime Extension Mini-Guide is designed for public procurers and their colleagues, providing strategies for informed decisions that align with sustainable and circular principles. It promotes practices that extend the useful life of ICT products, aligning with CFIT's goals of circularity, fairness, climate consciousness, and chemical safety in the ICT sector.

This mini-guide's focus is on lifetime extension of its first use in the procuring entity's organization. Through incentivizing re-use as part of your end-of-life strategies, product life can be further extended by a second user. This is however out of scope for this mini-guide and will be addressed in future CFIT guidance.

Why is the lifetime extension of ICT an important procurement topic?

For most ICT equipment, the majority of environmental impacts occur before the use phase, during the extraction of raw materials and production of the hardware. Extending the lifetime of ICT products is therefore vital for improving this environmental footprint, reducing material consumption and e-waste. The graph below illustrates some of the benefits of lifetime extension.

Environmental Impact

- **Compared to replacing with new:**
- Up to 92% less waste, up to 89% fewer GHG emissions
- ***Repair and reuse reduce emissions from materials extraction, manufacturing, and global transport (Oakdene Hollins, 2022)***

Carbon & Cost Savings

- **Extending smartphone use from 2 to 3 years:**
- 23–30% lower carbon footprint
- 4–10% lower lifecycle costs
- ***Lifetime extension reduces both emissions and procurement costs (Cordellla et al, 2021)***.

Systemic Benefits

- Delays product disposal and entry into e-waste system
- Reduces demand for new raw materials (e.g. rare earths, plastics)
- Enables circular economy strategies (modularity, FRUs, reuse)
- Supports local job creation and digital inclusion
- ***(Global E-Waste Monitor 2024)***

Figure 1: The case for keeping devices longer[1]

CFIT Strategy	Where does lifetime extension fit?
Buy Less	Reduces the need to purchase new items by minimizing dependency on new products, conserving resources, and reducing waste.
Buy Better	Focuses on purchasing products that are not only durable and repairable, but also come with extended warranty options and extended software and security update, for a longer lifetime, aligning with the preference for quality and sustainability.
Use Better	Involves efficient and responsible usage of ICT products, emphasizing proper care and maintenance to extend product's functional life.
Use Longer	Centres on utilizing ICT products to their fullest potential and keeping them in use as long as they are functionally viable, reducing overall environmental impact.

Figure 2: Lifetime extension and the CFIT Strategies

What do we mean by lifetime extension?

Product lifetime[1] refers to the period from when a product is first used after manufacture or recovery (repair, refurbishment, remanufacture) until it becomes obsolete. Throughout its lifetime,

[1] Den Hollander, M.C., Bakker, C.A., Hultink, H.J. (2017). Product design in a circular economy; development of a typology of key concepts and terms. https://onlinelibrary.wiley.com/doi/abs/10.1111/jiec.12610

a product may be used by multiple users. **Product lifetime extension** is the postponement or reversal of the obsolescence of a product through deliberate intervention.

Obsolescence is when a product is no longer used or useful due to irreversible breakdown or changing user needs and high maintenance costs.
The **lifetime extension** of a product involves deliberately postponing or reversing its obsolescence. There are three main design approaches to achieve this[2]:

Figure 3: Three obsolescence design approaches

Procurement professionals play a pivotal role in extending the lifetime of ICT products by shaping specifications, contracts, and supplier expectations that prioritise durability and long-term use.

This includes influencing internal policies on replacement cycles and end-of-life routes:

- **Replacement Cycles**: Work with internal stakeholders to align procurement planning with longer replacement timelines, helping reduce unnecessary turnover and environmental impact.
- **Disposal for Reuse or Refurbishment**: Ensure that tenders and contracts support take-back schemes, certified refurbishment, or resale pathways, enabling products to have a second life.

An important consideration for procurement is that product lifetime is not solely determined by physical attributes but also by user perceptions and choices in the operational management.

[2] https://www.oneplanetnetwork.org/sites/default/files/the_long_view_2017.pdf

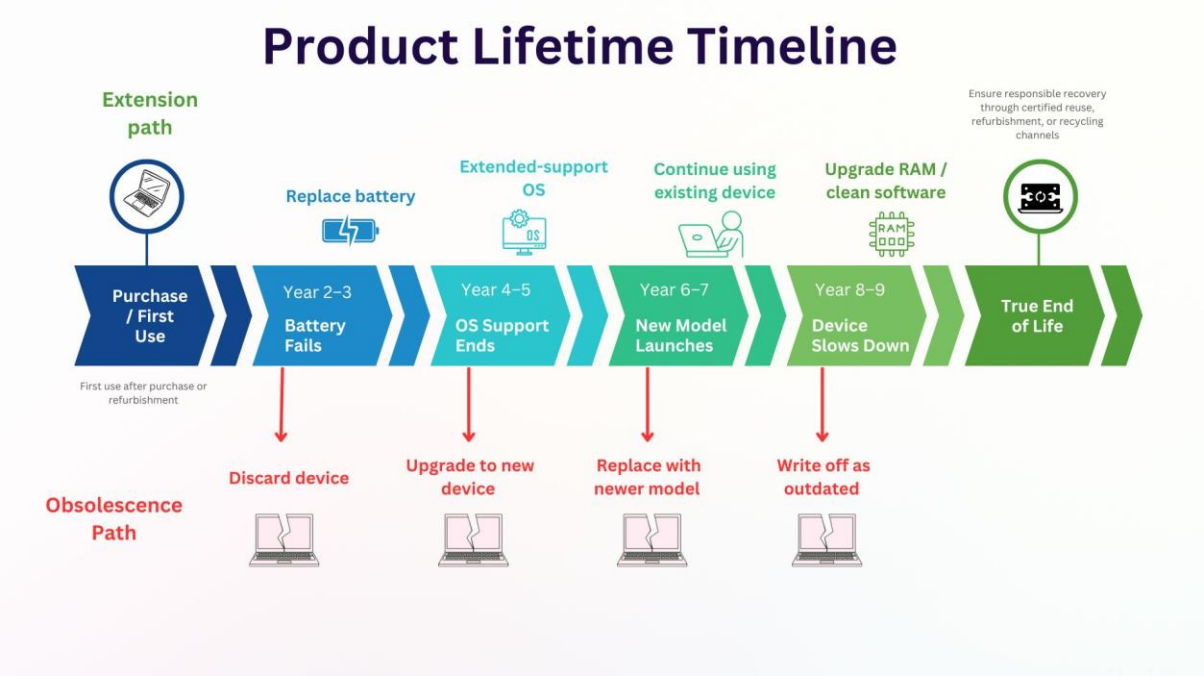


Figure 4: ICT product extension and obsolescence paths

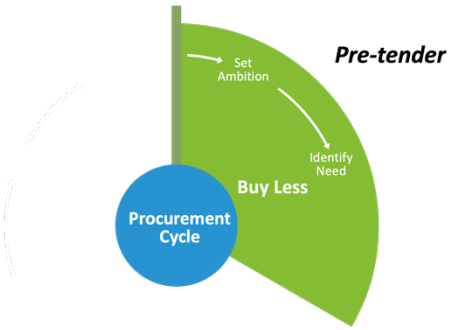
This mini-guide focuses on strategies procurement professionals can implement within their own organisations to extend product lifetimes,[3] aligning with the CFIT **Buy Less, Buy Better, Use Better, Use Longer** framework.

Next: Explore strategies for the PRE-TENDER procurement phase to reduce carbon footprints and drive sustainable outcomes.

[3] For deeper guidance on procurement approaches to ICT remanufacturing, reuse, and end-of-life management, refer to the dedicated mini-guides in the CFIT series.

2 Pre-tender

The pre-tender phase offers a critical opportunity for procurement professionals to influence the longevity of ICT equipment. By challenging internal assumptions, clarifying user needs, and adjusting policies and practices, public buyers can significantly reduce waste, cost, and environmental impact before a contract is even signed.



2.1 Understand Why ICT Isn't Lasting Longer

Despite advances in technology, many ICT products are replaced far earlier than necessary. Procurement professionals can help address the following barriers:

Table 1: Barriers to lifetime extension and procurement responses

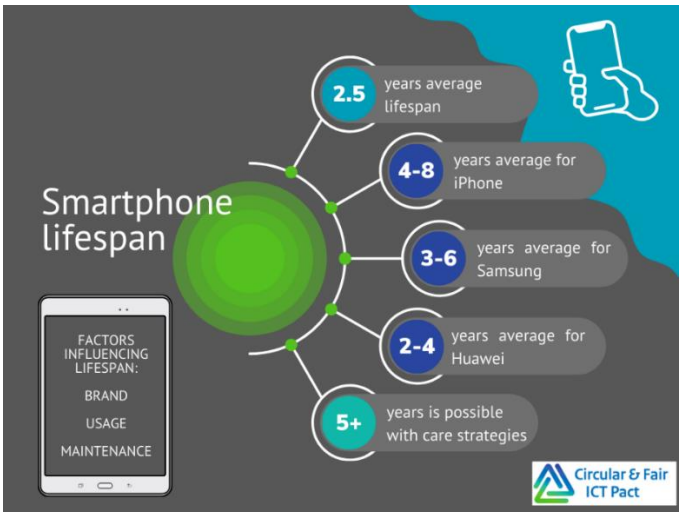
Barrier	Why it happens	How procurement can respond
Organisational policies	Replacement cycles often match financial depreciation timelines.	Propose revised policies that separate financial and technical lifecycles.
Short warranties	Early replacement is driven by warranty expiry and perceived risk.	Specify longer warranties and post-warranty service in tenders.
Perceived obsolescence	Driven by marketing, software updates, and design trends.	Evaluate functional needs, not aesthetic or trend-based triggers.
Designed obsolescence	Limited OS/security updates shorten usable life.	Require minimum years of updates (e.g., 5+ years).
Misconceptions about energy efficiency	New ≠ greener. Manufacturing has huge emissions for most devices.	Communicate the way higher embodied impact of device production in comparison to energy consumption during use.
Reluctance to repair	Repairs seen as too slow or costly.	Promote repair-friendly contracts and vendor services.
Cultural preferences	"New is better" mindset persists.	Change the narrative: reward longer use and reuse; senior staff lead by example.

2.2 What Are We Currently Doing? Baseline Device Lifetimes

Smartphones and laptops are replaced far earlier than necessary—especially in public organizations. Most organisations aren't getting close to the full potential lifetime of these devices.

Smartphone Lifetime[4]

- **Average Lifetime**[5]: Approximately 2.5 years
- **Variation by Brand**:
  - **iPhones**: 4-8 years
  - **Samsung**: 3-6 years
  - **Huawei**: 2-4 years
- **Factors influencing lifetime**: Brand (we see the bigger brands having longer lifetimes), usage (charge less, use covers and cases), maintenance, software and security updates.
- **Actual potential = 5+ years** with care



Studies show a **tendency for organisations to upgrade nearly 2.3 years earlier than necessary** without an established plan for repurposing still-functional technology.[6]

What Makes Smartphones Last?

- Use covers and charge properly
- Stick to preventive maintenance
- Specify longer warranties
- Adopt asset management policies

Laptop Lifetime

Laptop Lifetime Snapshot

- **Business average:** 3–5 years
- **High-end models:** Up to 7 years with proper care
- **Consumer laptops:** Around 5 years
- **Lifetime influenced by:** Usage intensity, build quality, maintenance routines

New working models (e.g., cloud tools, hot desking) reduce hardware demand — making it easier to extend laptop use.

Business laptops, engineered for more intensive use and software demands, have a life expectancy of three to five years. They face more wear, but their greater robustness combined with proper maintenance, software updates, antivirus protection, and cooling solutions for high-temperature operations can extend their lifetime.[7]

[4] https://everphone.com/en/blog/smartphone-lifespan/

[5] Everphone considers the lifetime of a mobile device to include its operational and useful period before it needs replacement or extensive repairs

[6] https://gomainspring.com/managing-it-costs/the-lifespan-of-technology-has-it-changed/

[7] https://www.auslogics.com/en/articles/average-lifespan-of-a-laptop-tips-on-how-to-make-it-last-longer/

Software and security updates

Software support is a key driver of device longevity. Even if hardware remains functional, lack of updates can force premature replacement.

Understanding typical support timelines helps procurement teams plan smarter replacement and upgrade strategies.

Table 2: Typical support cycles for operating systems

OS	Security & Feature Updates
Windows	5 yrs mainstream + 5 yrs extended[8]
macOS / iOS	5–7 years (typical)[9]
Android	3–5 years (standard)[10] [11] → Fairphone: aiming for 8–10 years

🎯 **Bottom line**: With the right policies and care, device life can be doubled — saving costs and reducing carbon. The opportunity is real, and it starts in pre-tender planning.

2.3 Assess ICT Needs Through User Profiling

Effective lifetime extension starts with matching devices to users' real needs—not marketing specs or existing contract cycles.

Table 3: User profiling for needs assessment

User Type	Needs	Procurement Strategy
Basic Users	Email, browsing, office software	Refurbished or lower-spec (new) devices
Medium Users	Programming, multimedia editing	Balance performance and sustainability
Super Users	Data analysis, modelling	Specify upgrades and long lifecycles, not replacements, re-deploy devices for other basic or medium users

Define procurement functionally, e.g., "staff can access secure internet" vs. "20 devices with 256GB storage."

🎯 So what?

Procuring devices that match actual user needs avoids unnecessary over-specification. This not only saves money but also extends product life—since right-sized devices are more likely to be used to their full potential, maintained properly, and replaced less often.

[8] https://learn.microsoft.com/en-us/lifecycle/faq/fixed-policy
[9] https://www.ncsc.gov.uk/collection/device-security-guidance/platform-guides/macos
[10] https://www.androidpolice.com/samsung-four-year-update-list-android
[11] https://www.androidpolice.com/google-pixel-os-update-length

2.4 Evaluate Existing Equipment

Before launching a new procurement, consider:

- Could equipment be repurposed in the organization, upgraded or shared?
- Is there a repair or refurbishment plan?
- Can existing assets support current functions?

📋 Use lifecycle management plans and maintenance tracking to identify extension opportunities.

🔍 So what?

By assessing current assets before buying new, procurement teams can cut costs, avoid waste, and uncover opportunities to extend device life through upgrades, repairs, or reallocation. Every reused device is a deferred purchase and a carbon saving.

2.5 Set Lifetime Policies

Establish policies that drive longer use, such as:

- Standard time-of-use targets (e.g., 5 years for laptops)
- Condition-based replacement approvals
- "Zero Option": Don't procure unless necessary

Encourage internal stakeholders to ask: *Do we need new?* or *Can we maintain what we have?*

📏 So what?

Without clear use-duration targets, devices are often replaced by default—not necessity. Lifetime policies set a new organisational norm: devices should be used as long as they remain fit for purpose, not just until the next refresh cycle.

2.6 Promote Repair Over Replacement

Work with IT teams to:

- Develop internal repair capabilities or vendor repair SLAs
- Promote repair-first culture through training and communications
- Make repair and upgrade logs part of performance reporting

Streamline Internal Approvals by mapping and simplify processes for extending asset life. Address blockers such as:

- Rigid refresh schedules
- Security myths (use National Cyber Security Centre (NCSC) or equivalent certified sanitisation services)
- Unclear replacement criteria

🔐 Recommend certified data sanitisation providers for secure reuse (e.g., NCSC UK guidance[12]).

🛠 So what?

Normalising repair shifts procurement from a linear to a circular model. When repair becomes the first option—not the last resort—it reduces e-waste, extends asset value, and supports internal sustainability goals. But it only works if approvals, training, and vendor support are aligned.

[12] https://www.ncsc.gov.uk/guidance/secure-sanitisation-storage-media

2.7 Change the internal narrative

Change the internal narrative to:

- Empower users to keep their devices if they're still satisfied
- Offer extended use as default, with replacement only on request
- Communicate environmental and financial benefits clearly

Use storytelling and internal campaigns to shift the mindset toward longevity.

Table 4: Device myths vs reality

Myth	Reality
"New devices are more efficient"	The carbon cost of new often outweighs efficiency gains
"Old devices aren't secure"	With proper sanitisation and patching, they can be
"Repairing is too expensive"	Repairs save more over time than new purchases
"We always need high specs"	Only super users do—profile user needs accurately

🧠 So what?

Lifetime extension isn't just technical—it's cultural. By shifting internal narratives from "new is better" to "longer is smarter," procurement teams can unlock major sustainability and cost benefits. Empowering users to keep using devices challenges myths, reduces premature replacement, and builds organisational buy-in for smarter ICT use.

Pre-tender lifetime extension checklist

1. Conduct an ICT inventory
☐ Map existing ICT assets to identify priority hotspots
☐ Review replacement cycles and usage patterns
☐ Assess opportunities for repair, upgrade or reallocation

2. Remove internal barriers
☐ Address myths about old vs. new devices (performance, security, cost)
☐ Encourage continued use as the default at replacement milestones
☐ Streamline approvals and offer certified data wiping options

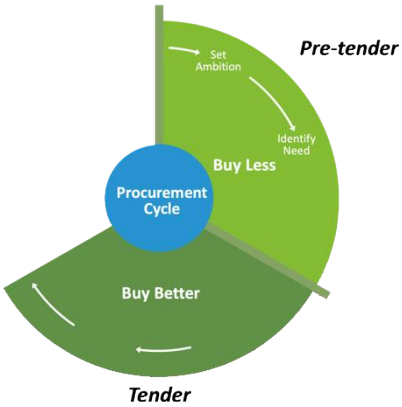
3. Define lifetime extension strategies
☐ Set clear policies for minimum device use (e.g., 5 years)
☐ Use user profiling to match device to actual need
☐ Prioritise internal repair and upgrade options

4. Engage the market early
☐ Ask suppliers about extended warranty and parts availability
☐ Explore service contracts for upgrades and repair
☐ Identify reuse or refurbishment partnerships

Next: Explore strategies for the TENDER phase to increase device lifetimes

3 Tender

Procurement professionals can influence product longevity directly through tender requirements. This section provides minimum requirements, award criteria, and contract clauses that embed lifetime extension into ICT procurement. By focusing on aspects such as battery durability, repairability, and spare parts availability, buyers can ensure ICT products stay in use longer — reducing both carbon impacts and e-waste.



Align product expectations with real usage *to reduce waste. For example, if your organisation typically uses devices for four years, requiring 10 years of spare part availability is unrealistic. Effective criteria must reflect the expected lifespan and disposal practices.*

3.1 Buy better: Criteria for Lifetime Extension

This section outlines procurement criteria designed to extend the useful life of ICT products — from first use through to end-of-life. These criteria, drawn from CFIT members' real-world practice, are adaptable across procurement contexts and contract types.
Different types of procurement criteria support different lifetime extension goals:

- **Selection criteria** – Prioritise suppliers with a proven track record in repairability, spare parts support, and extended service delivery (e.g. certified repair networks, take-back schemes).
- **Technical Specifications** – Set clear product and service expectations to ensure devices are built to last. This might include:
  - Minimum warranty lengths (e.g. 2–5 years)
  - Battery durability thresholds (e.g. ≥80% SoH after 300 cycles)
  - Availability of repair manuals and spare parts
  - Replaceable batteries or modular components
  - Software and security updates for a specified timeframe
- **Award criteria** – Incentivise suppliers to exceed minimum requirements. For example:
  - Longer-than-required warranties or service levels
  - Higher repairability scores (e.g. French Index)
  - Software optimisation tools to prolong battery life
  - Design commitments for upgradeable or modular hardware
- **Contract conditions** – Hold suppliers accountable for long-term support:
  - SLA commitments for repair timelines and spare parts provision
  - Requirements for reporting on repair activity and failure rates
  - Post-warranty repair and upgrade support pathways

These criteria help embed lifetime extension as a procurement outcome, not just an aspiration.

Box 1: TENDER CASE STUDY – Viken extends smartphone lifetime through rental and repair-first design

Viken County, Norway, embedded lifetime extension strategies into its smartphone procurement by introducing a rental model and repair-first policies. This approach directly addressed the 80% of lifecycle emissions that occur during production and aimed to reduce device turnover, extend usage, and promote reuse.

Key actions

1. **Rental-based procurement model**
   Viken offered two procurement options: traditional purchase and a new 3-year rental model. The rental model, used for all county employees and schools, discouraged early replacement by ensuring users kept the same device for the full contract period.
2. **Repair-first replacement policy**
   If a device failed, repair was the preferred option. If repair was not viable, users received the same model (ideally refurbished), not a newer or upgraded device—reducing incentives to "upgrade by accident."
3. **Buy-out and dual use to support extended life**
   Employees had the option to buy their device at the end of the rental period. Dual-SIM phones allowed for both work and personal use, increasing satisfaction and discouraging early replacement.
4. **Tolerance for wear and tear**
   Return conditions accepted cosmetic wear after 3 years, enabling reuse and resale rather than scrapping slightly damaged devices.

Outcomes

- **Extended use period** as users keep phones longer and return them for reuse or resale, supported by 3-year rental terms and repair-first policies.
- **Lower lifecycle emissions** by reducing premature disposal and maximising first-use and second-use cycles.
- **Employee satisfaction and cost-efficiency**, with optional buy-out, flexibility in device choice, and reduced upfront costs.
- **Market stimulation** for rental and refurbished devices through scaled procurement and supplier engagement.

***Source**: CFIT Case Study: Viken County – Rental smartphones and lifetime extension*

Minimum requirements

The production phase accounts for the largest share of a device's total carbon footprint. To mitigate embodied carbon, these criteria focus on promoting longer product life, repairability, and resource-efficient manufacturing. They also focus on LCAs, labels, and standards to drive transparency across supply chains.

Table 5: Production phase-related criteria

No.	Link	Criterion	Description	Lifetime impact
1		**Warranty**	Devices must include a manufacturer warranty of [X years, minimum 2]. Tenderers must provide written evidence.	Incentivises longer product use and enables greater accountability for device durability.
2		**Refurbished Products Warranty**	The contractor must provide a warranty of at least **two years**, covering repair or replacement of the product and each of its components. Where repair work is undertaken the maximum time period from notification of the fault through to its resolution must be stated together with the provision which will be made for temporary alternative equipment where required by the client.	Supports second-life device uptake. Reduces need for new production and accelerates circular use of ICT assets.
3		**Spare Parts Availability**	Spare parts must be available for [5–15 years], depending on expected life. Applies unless SLA applies.	Enables repairs over replacement for many years.
4		**Battery Durability**	Devices must retain ≥80% capacity after 300 charging cycles. Applies to laptops, tablets, and smartphones.	Prevents early device failure due to battery degradation. Extends functional lifetime of portable ICT.
5		**Battery Replaceability**	Main batteries must be user-replaceable. Provide documentation and access instructions.	Makes repairs viable and reduces waste. Delays full device replacement by allowing only the failing component to be swapped.
6		**Repairability Documentation**	Manuals must include diagrams, repair steps, tools required. Free and online.	Empowers technicians and users to maintain and fix devices. Ensures ongoing serviceability and reduces total lifecycle emissions.
7		**Battery Health Software**	Equipment should have pre-installed software to determine and monitor the status of the battery and provide insight into how many cycles the battery has already been charged. The software should also offer tips for users to maximise battery service life.	Promotes user behaviour that protects battery condition. Slows degradation and supports efficient battery use over time.
8		**Intelligent Charging**	The contractor must provide the equipment with pre-installed software (default setting) to enable battery "State of Charge" (SoC) charging capacity limitation when a battery-powered device is systematically in use. Such functionality should prevent the battery from being fully charged.	Automatically extends battery lifespan via smarter charging behaviour. Prevents avoidable wear and enables longer productive use of the device.

Procurers' Checklist

- Confirm that the warranty covers hardware and software for a period that aligns with the product's life expectancy and intended use.
- Assess the benefits and costs of extended warranties and their influence on the product's lifetime.
- Establish protocols for maintenance and repairs after the warranty expires, considering both supplier-based and independent service options.
- Various type 1 ecolabels, like TCO Certified, EPEAT and Blue Angel include criteria that address longevity. Check the criteria documents to understand what certified products should deliver and whether additional requirements are necessary.

Box 2: TENDER CASE STUDY - Malmö increases longevity and circularity

The City of Malmö carried out an ICT assortment revision with a clear focus on **extending device lifespans**. This included specific procurement requirements to reduce early replacement and maximise device usability.

Key climate criteria

1. Minimum five years of security updates
   Suppliers were required to ensure at least five years of security updates for smartphones. This helped keep devices functional and secure over a longer period, reducing premature replacement.
2. **TCO Certified smartphones**
   At least one model in the smartphone assortment had to be TCO Certified. This label encourages modular, repairable design. For example, the Fairphone was selected for its strong circular design, enabling easier and cheaper repairs that extend lifespan.
3. **Durability and ruggedness standards**
   Devices had to meet minimum durability requirements (e.g. IP-65 rating for smartphones, MIL-STD-810H for laptops). These standards help prevent breakage and extend functional use in tough conditions.
4. **Competitive pricing for spare parts**
   Tenderers had to provide price offers for key spare parts (e.g. batteries, screens), making repair more viable and reducing the likelihood of full device replacement.

Award Criteria

The operational life of a device contributes to its carbon impact through energy consumption. These criteria aim to reduce energy use, optimise device efficiency, and prolong battery life to minimise emissions during usage.

Table 6: Award criteria

No.	Criterion	Description	Lifetime impact
9	**Extended Warranty**	Award points for exceeding the minimum warranty period.	Encourages longer use by making extended coverage financially attractive.
10	**Battery Performance**	Score devices based on durability beyond 300 cycles; maximum marks for ≥500 cycles with ≥80% SoH.	Extends device life by preventing early battery failure. Reduces replacement rates.
11	**Repairability Index**	Reward high scores using French Repairability Index or equivalent documentation.	Promotes selection of devices that are easier to fix, extending overall lifespan.

Contract Clauses

Table 7: Contract clauses

No.	Link	Criterion	Description	Lifetime impact
12		**Product warranty for laptops, tablets and mobile phones**	Include max repair times, pick-up/return options, and temporary replacements.	Faster repairs reduce downtime and unnecessary replacements.
13		**Product Lifespan Extension – Service Level Agreement Reporting**	Require annual reporting on warranty coverage, repairs, and resolution timelines.	Increases supplier accountability
14		**Supply of refurbished or remanufactured equipment – Service commitments**	The tenderer must provide periodic reporting on their compliance with all the metrics, Key Performance Indicators and other indicators defined by the service level agreement.	Increases supplier accountability

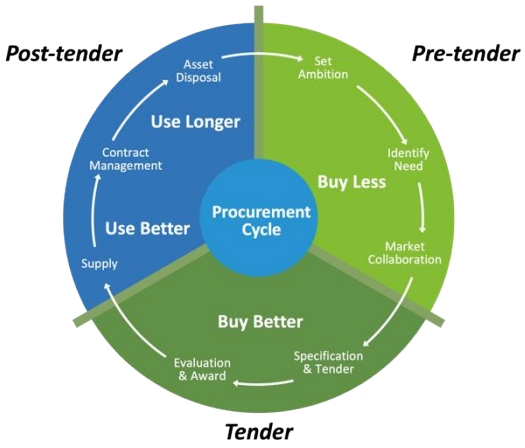
Lifetime extension tender checklist

1. **Select suppliers with lifetime strategies**
   - ☐ Assess track record in repairability, spare parts support, and service delivery
   - ☐ Prefer vendors offering take-back or upgrade schemes
   - ☐ Require service partner or in-house repair capabilities
2. **Set clear minimum requirements**
   - ☐ Minimum 2–5 year warranty
   - ☐ Battery durability: ≥80% SoH after 300 cycles
   - ☐ Guarantee spare part availability (5–15 years)
   - ☐ Require replaceable batteries and modular components
   - ☐ Provide public access to repair manuals
3. **Reward lifetime-friendly design choices**
   - ☐ Score higher for warranties >3 years
   - ☐ Use repairability index (e.g. French Index) in evaluation
   - ☐ Award points for battery optimisation software
   - ☐ Incentivise modular design or upgradability
4. **Lock in long-term commitments in the contract**
   - ☐ Require SLAs for repair speed and temporary replacements
   - ☐ Mandate post-warranty repair/upgrade options
   - ☐ Include KPIs on repair rates and spare part delivery
   - ☐ Ask for reporting on repair incidents and failure trends
5. **Design for second life**
   - ☐ Include refurbished equipment in framework
   - ☐ Allow employees to buy out devices after use
   - ☐ Permit cosmetic wear tolerance to support resale

Next: Explore strategies for the POST TENDER phase to reduce carbon footprints and drive sustainable outcomes.

4 Post tender

Procurement doesn't end at purchase. To realise the full value of lifetime extension, organisations must actively manage how devices are used, maintained, and supported. This phase focuses on internal practices and partnerships that preserve performance, prevent early failure, and prepare equipment for second life.



4.1 Use Better: Key actions

Many ICT products become obsolete not because they fail, but because they are poorly maintained or prematurely replaced. Actively managing their use phase helps preserve performance and delay deterioration.

Table 8: Active device management for lifetime extension

Area	Good Practice
Preventive maintenance	Schedule updates, cleaning, and diagnostics.
Battery and energy care	Use smart charging tools, limit full charge cycles, and monitor battery health.
Environmental conditions	Reduce exposure to heat, dust, and moisture in shared-use areas.
Usage policies	Align staff behaviour with product care goals.
Employee training	Equip users to handle devices responsibly and report early signs of wear.
Vendor support	Leverage SLAs for fast repairs, part replacements, and software support.

Example:
A business smartphone capable of 5 years of use often lasts just 2.4 years due to battery neglect, exposure to heat, and unused software features.

4.2 Use longer: Key actions

Extending ICT lifetime means rethinking refresh cycles and enabling second-life use — giving devices new roles rather than retiring them too early.

Procuring organisations must actively champion initiatives that prioritise repair, maintenance, and extended device use over frequent replacements. Tangible actions to promote using better and longer include policies, incentives, training and establishing end-of-life programs.

Policies for longevity

Develop policies emphasising device care, proper storage, and reuse before considering replacements. For example, think of developing guidelines on acceptable device performance thresholds before upgrades should be established.

Implementing effective internal strategies can significantly enhance the longevity of your ICT assets.

Table 9: ICT care strategy for longevity

ICT care strategy	Description
Asset management plan	Implement inventory tracking and lifecycle management for ICT assets.
Preventive maintenance	Establish regular cleaning and maintenance schedules. Engage IT professionals for checks.
Environmental controls	Maintain temperature-controlled environments and manage dust in ICT equipment areas.
Usage policies	Update software regularly, ensure proper handling and storage of devices.
Energy management	Use power-saving settings and educate on optimal charging practices.
Security measures	Keep antivirus software updated, conduct regular scans, and ensure data backups.
Employee training	Provide training on the importance of ICT care, maintenance, and responsible use policies.
Remove incentives for early replacements ('upgrade by loss or accident')	Introduce policies to remove incentives for early replacement upon introduction of new device models.
Vendor support and warranties	Manage warranty periods and establish relationships with vendors for support and maintenance.

Incentive programs

Incentive programs can drive sustainable practices by encouraging departments or individuals to extend the lifespan of ICT devices through responsible use and energy-saving actions. Recognising efforts such as reduced repair requests, extended device usage, and measurable carbon savings can motivate change.

Programs can offer practical incentives like rental agreements, buy-out options, and repair prioritisation. By implementing initiatives that balance employee flexibility with environmental goals, organisations can promote long-term device use and reduce procurement needs.

Device care champions

Identify sustainability advocates across departments to drive local initiatives and awareness raising, share success stories, and track progress.

Box 3: POST TENDER CASE STUDY: NHS Digital green ICT strategy

NHS Digital (UK) implemented a *Green ICT Strategy* to reduce environmental impacts by extending device lifespans and optimizing IT infrastructure. A key element was fostering internal engagement through their *Green Digits* sustainability champions, who drove awareness and supported initiatives across the organization.

Key actions

1. **Employee engagement through the "Green Digits"**
   A group of sustainability champions from across NHS Digital promoted initiatives, raised awareness of device care, and supported best practices for extending device life.
2. **Extending device lifespans**
   A *device buyback service* allowed staff to purchase used devices, reducing premature recycling and encouraging reuse. Devices not sold were responsibly recycled to minimize waste.
3. **Optimizing IT infrastructure**
   NHS Digital migrated ICT systems to cloud-hosted platforms and consolidated data centres, decommissioning legacy infrastructure. This improved energy efficiency and reduced reliance on new hardware, lowering embodied carbon.

Outcomes

- **Cultural shift** as *Green Digits* champions helped embed sustainability practices across teams, fostering long-term behavioural change.
- **Reduced demand for new devices** through extended lifespans, responsible reuse, and improved employee awareness.
- **Improved energy efficiency** by consolidating IT infrastructure and migrating to cloud services.

Source: *Greening government ICT and digital services: 2019 to 2020 annual report*

Workshops and training sessions

Conduct regular workshops to educate staff on responsible device handling and maintenance techniques. Include demonstrations of power management tools and repair opportunities.

Box 4: POST TENDER CASE STUDY - Employee engagement drives device longevity and carbon savings

Atos research highlights the crucial role of employee engagement in extending device lifespans and reducing carbon emissions. The study shows that **75% of employees** are **willing to keep devices longer** when they understand the environmental benefits, demonstrating the power of awareness and education.

Key insights include:

- Educating employees about the carbon impact of manufacturing devices, which accounts for around **80% of a laptop's footprint**, builds support for sustainability.
- Condition-based refresh cycles, combined with remanufacturing, enable devices to achieve an **8-10 year lifespan**, reducing e-waste without affecting user satisfaction.
- Promoting energy-saving habits, such as powering down devices when not in use, further reduces emissions and improves workplace sustainability.

By engaging employees and aligning IT practices with sustainability goals, organizations can drive behaviour change, extend device use, and achieve measurable environmental benefits.

Source: *Atos Sustainable Workplace research finds device lifespan can double while still delighting users*

Prioritising reuse, refurbishing and remanufacturing

Procuring refurbished electronics can extend the electronics' lifespan and reduce raw materials consumption. These devices have been repaired and updated to serve new users, support environmental goals, and offer cost-effective technology solutions.[13]

Remanufacturing a laptop, for example, could save over 300kg of CO_2 emissions compared to buying new[14]. Some suppliers now offer contracts where the 'refresh' of a device through remanufacture can be built into the service. See the ***CFIT Mini-Guide on Remanufacturing*** for more details and strategies (this mini-guide is still under development. Once published, it will be available on the CFIT Website, under 'publications').

Establishing collection and recovery programs

Set up take-back programs or participate in collection schemes to recover used electronics. Devices should be prioritised for refurbishment, resale, or recycling to minimise waste and extend material use.[15] Extending product life is the preferred option. If a second life is not an option, ensure that products are recycled. Within the European Union collection and recycling schemes are widely as they are mandated under the WEEE Directive. A list of approved operators can be found here.

Urban mining recovers valuable metals like gold, copper, and aluminium from e-waste, reducing the need for virgin materials. [16] Key actions include:

- Developing recycling technologies to recover metals from complex waste streams
- Designing products for easy disassembly and recycling
- Ensuring compliance with chemical restrictions and local regulations [17]

When devices cannot be reused, ensure responsible recycling to recover valuable materials. Supporting these processes reduces emissions, conserves resources, and drives a circular economy. [18]

[13] https://www.epa.gov/smm-electronics/basic-information-about-electronics-stewardship
[14] https://circularcomputing.com/sustainable-it/
[15] https://www.epa.gov/smm-electronics/basic-information-about-electronics-stewardship
[16] https://www.epa.gov/smm-electronics/basic-information-about-electronics-stewardship
[17] DEFRA, Helping businesses create a greener, more sustainable future through ICT
[18] ITU, End-of-life management of ICT equipment guide: https://www.itu.int/dms_pub/itu-t/oth/4B/04/T4B0400000B0013PDFE.pdf

Box 5: Cut and paste criterion ✂

Secure computer collection, sanitisation, re-use and recycling

Technical Specification
Tenderers must provide a service for the re-use and recycling of the whole product or of components requiring selective treatment in accordance with Annex VII of the WEEE Directive for equipment that has reached the end of its service life. The service must comprise the following activities:

- Collection (take back system);
- Confidential handling and secure data erasure*
- Functional testing, servicing, repair and upgrading to prepare products for re-use;
- Remarketing of products for re-use;
- Dismantling for component re-use, recycling and/or disposal.

In providing the service, the contractor must report on the proportion of equipment prepared or remarketed for re-use and the proportion of equipment prepared for recycling. Preparation for re-use, recycling and disposal operations must be carried out in full compliance with the requirements in Article 8 and Annexes VII and VIII of the (recast) WEEE Directive 2012/19/EU and with reference to the list of components for selective treatment.

Verification
The tenderer must provide details of the arrangements for collection, data security, preparation for re-use, remarketing for re-use and recycling/disposal. This must include, during the contract, valid proof of compliance for the WEEE handling facilities to be used.

***Source**: Irish GPP Criteria Search*

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