Cleaning Smarter, Not Harder:
How Sustainable Device Maintenance Is Saving Energy, Reducing Waste, and Changing the Way we Work

CENTRE *for* SUSTAINABLE HEALTHCARE

SUSTAINABLE IT MAINTENANCE: WHY IT MATTERS MORE THAN YOU THINK
A PRACTICAL GUIDE FROM THE CENTRE FOR SUSTAINABLE HEALTHCARE

When was the last time you truly looked at your laptop? Not at the spreadsheet on the screen or the email in your inbox, but at the device itself? For most of us, our work computers are invisible tools, gateways to our tasks that we barely notice until they slow down, overheat, or stop working entirely. We rarely think about cleaning them, and when we do, it's usually a hasty wipe with whathever is closest to hand: a paper towel, a sleeve, or a harsh chemical spray that might do more harm than good.

But this overlook is about much more than just smudged screens and sticky keys. It turns out that the way maintain or fail to maintain our electronic devices has profound implications that go far beyond basic hygiene. It touches on energy, efficiency, hardware longevity, and a global environmental crisis that is growing by the minute.

At our organisation, we decided to dig deeper into this. What we found was surprising: sustainable device maintenance is a powerful, untapped opportunity to reduce our carbon footprint. Lets delve into how we clean and care for our technology can save energy, reduce waste, and contribute to a healthier planet.

The Scale of the E-Waste Crisis

To understand why cleaning a computer matter, we first need to look at the lifecycle of the technology we use. We are currently facing a staggering global challenge regarding electronic waste. In 2022 alone, the world generated a record 62 million tonnes of e-waste. To put that into perspective, that is equivalent to 7.8 kg of electronic waste for every single person on earth [1].

The trajectory is even more concerning. We are on track to reach 82 million tonnes of e-waste by 2030, representing a 32% increase in just eight year [1]. Despite this massive volume of discarded technology, our systems for managing it are struggling to keep up. Only 22.3% of e-waste generated in 2022 was formally documented as collected and properly recycled [1]. This gap means millions of tonnes of resources are being lost, often ending up in landfills where toxic substances like mercury and lead can leach into the soil and damage ecosystems and human health [1].

There is a silver lining! If we can improve our practices and reach a 60% rate by 2030, the economic and environmental benefits would exceed the costs by ,more than US $38 billion [1]. Recycling is the last resort; the most effective strategy is to prevent waste in the first place by extending the lifespan of the devices we already have.

THE SCIENCE

Many of us assume that computers just naturally slow down as they age, but the science suggests that neglect is a major culprit. Proper maintenance isn't just cosmetic, it's critical for performance. The manufacturing phase accounts for 70-85% of a device's total carbon footprint [5], meaning that keeping a device running efficiently for longer is the single most impactful environmental action we can take.

The correlation is clear: dust clogs air vents, which reduces cooling efficiency. When a computer runs hot, the fans work harder, consuming more energy, and the processor throttles its speed to prevent damage. By simply keeping the hardware clean and the vents clear, we prevent this cycle of degradation, saving energy and extending the usable life of the machine.

30% PERFORMANCE BOOST:

By undergoing routine maintenance compared to neglected devices [2].

60% AVOIDABLE FAILURES

Research shows that over 60% of computer issues faced by users are caused directly by negligence in routine maintenance [2].

25% HEAT RISK

Lack of hardware maintenance results in component temperatures to rise by yp to 25%, leading to overheating and failure [2].

40% SPEED RECOVERY

Neglected systems can suffer a 40% speed reduction within a year. Proper maintenance can restore boot times by 40% and app loading by 35% [2].

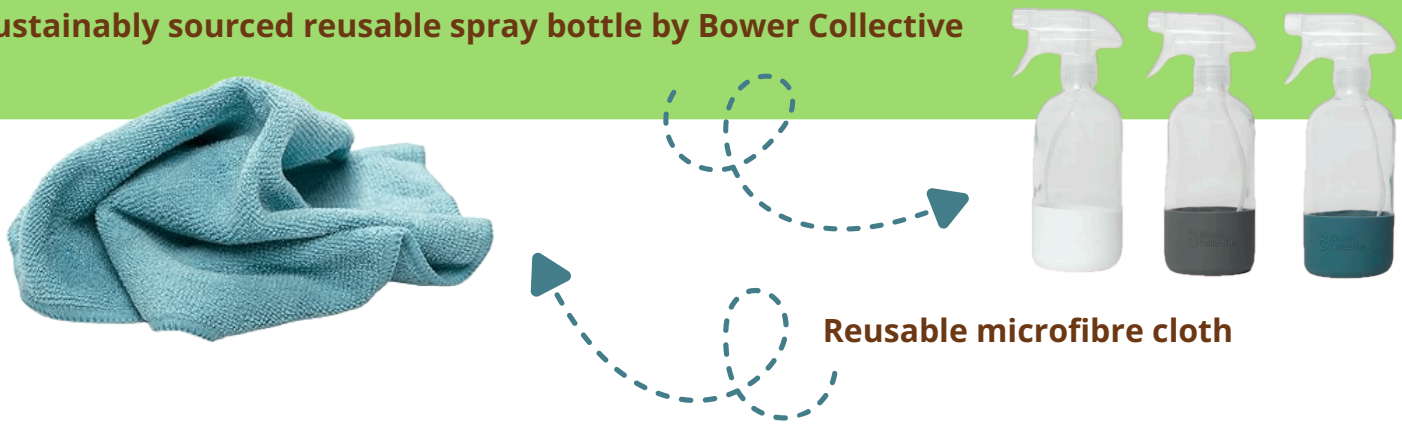
THE HIDDEN ENVIRONMENTAL COST OF HOW WE CLEAN

In many offices, the go-to solution to clean devices is a disposable disinfectant wipe or paper towel, while convenient, these single-use items carry a heavy environmental price tag.

A single disposable wipe contributes approximately 124g of carbon equivalent emissions. That might sound small, but it is roughly equivalent to the emissions from driving a care for one kilometre [3]. Multiply that by hundreds of employees cleaning devices weekly, and the carbon footprint balloons rapidly.

In contrast, reusable microfibres cloths consistently outperform single-use wipes across all 16 environmental impact categories in life cycle assessments [3]. They are durable, effective without harsh chemicals, and can be washed and reused hundreds of times. Furthermore, reusable products generally have significantly lower greenhouse gas emissions over their entire life cycle compared to disposable alternative [4].

Sustainably sourced reusable spray bottle by Bower Collective



Reusable microfibre cloth

WHAT WE DID: OUR ORGANISATION'S APPROACH

- **Reviewed Current Practices:** We started by auditing our habits, there was no standardised method for maintenance
- **Researched Best practices:** we dived into the data on sustainable materials and safe cleaning methods for electronics to ensure our new protocol would be safe for the planet, device and user.
- **Introduced sustainable tools:** we replaced disposable wipes with high-quality reusable microfibre clothes and refillable spray bottles containing safe, diluted alcohol solution. We also provided compressed air dusters for non-contact cleaning of vents.
- **Developed a formal Standard operating procedure (SOP):** Launched the "Cleaning and Sustainable Maintenance of Computers and External Components (Version 1.0)".

Implementing environmentally sustainable computing by reducing energy consumption, minimising electronic waste, and optimising the lifecycle of equipment

LETS CLEAN SMARTER, NOT HARDER. YOUR DEVICE AND THE PLANET WILL THANK YOU
FARIS OTMANI

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