# Circular economy in electronics relies on infrastructure, not just product design



The concept of the circular economy, particularly within the electronics sector, is increasingly transitioning from a niche idea to a mainstream practice embraced by consumers and businesses alike. This shift is evident in the growing popularity of refurbished phones, laptops, and tablets—not only as cost-effective alternatives but also as environmentally mindful choices.

However, there remains a widespread misconception about what truly constitutes a ‘circular’ product. According to James Murdock, Co-founder at Alchemy, speaking to TechRadar, no device is inherently circular by nature, regardless of its design or durability. Rather, the effectiveness of the circular economy hinges on the surrounding infrastructure. Murdock emphasises that durable and well-designed products alone do not achieve circularity without systems like trade-in programmes, repair networks, and efficient resale channels in place. These mechanisms facilitate the return, refurbishment and redistribution of used devices, preventing them from becoming obsolete or discarded prematurely.

In practical terms, several circular economy models have gained traction. Trade-in programmes remain the most widespread, allowing consumers to exchange their used devices for discounts on new ones while enabling the recirculation of devices. The rise of refurbished technology marketplaces complement these initiatives by offering trade-in services alongside sales. Another notable approach, particularly within the business sector, is the Device-as-a-Service model. This leasing arrangement enables users to rent equipment for a fixed duration and then return it for upgrades or replacements, extending the life cycle of electronic products and shifting consumer focus from ownership to long-term value.

Yet, the success of these circular models depends heavily on comprehensive reverse logistics operations. The collection, inspection, refurbishment, and resale of devices require systems that many manufacturers, traditionally focused on linear, one-way distribution, were not originally designed to handle. Leaders in circular economy practices have developed sophisticated frameworks for grading device condition, managing inventories, and reselling refurbished products effectively.

Murdock notes that a product can only be described as ‘circular’ when there is a reliable logistics system that provides consumers with the convenience and certainty that their devices will re-enter the market. Absent this infrastructure, even the most sustainably engineered devices remain locked within a linear consumption model. Meanwhile, manufacturers can support circularity from the product design stage by creating devices optimised for secondary markets.

The secondary market viability varies significantly across devices. Premium brands like Apple and Samsung tend to dominate, with iPhones typically remaining economically viable for refurbishment for up to eight years and Samsung devices around five years. After these periods, focus generally shifts from reuse to material recycling. Conversely, less expensive devices often face economic challenges in refurbishment despite functionality, making them less suitable candidates for a second life unless they have significant brand appeal or enduring value.

Brand ecosystem loyalty also plays a pivotal role in enhancing circularity. Consumers tend to remain loyal to their operating systems—whether Android or Apple in markets such as the UK and US—making them more likely to upgrade within the same ecosystem, including through refurbished purchases. This consumer behaviour incentivises manufacturers and retailers to nurture brand loyalty as a means to support circular models.

An essential component across successful trade-in programmes is the simplicity and fairness of the consumer experience. Effective schemes provide seamless exchanges, often combining trade-in and new purchases in a single transaction. Refurbished marketplaces reinforce this by implementing quality ratings that boost consumer confidence.

The current pace of technological innovation appears to complement the circular economy well. While new product releases cater to early adopters, refurbished devices continue to meet the needs of the majority of users. Designers are encouraged to create products with timeless appeal and features that endure consumer demand, bolstering circularity.

Notably, brands with robust circular offerings tend to avoid frequent flash sales. Such sales can undermine the perceived value of refurbished devices by reducing the incentive to buy second-hand when new products are heavily discounted. Maintaining consistent pricing supports stronger resale values and consumer trust. Offering certified refurbished products at meaningful discounts appeals to budget-conscious customers who might otherwise opt for lower-end new products from competitors.

Ultimately, the evolution of sustainable technology depends less on individual products and more on the systems that enable their ongoing use. Circular products rely on well-developed infrastructures for trade-in, repair, and resale to succeed. The future of sustainable tech lies in extending the lifespan of quality devices through these comprehensive systems.

This analysis is based on an article from TechRadar and forms part of their Expert Insights channel, which features views from leading figures in the technology industry. The opinions expressed are those of the author and do not necessarily reflect those of TechRadar or Future plc.

Source: [Noah Wire Services](https://www.noahwire.com)

## Bibliography

1. <https://www.epishine.com/news/why-we-cant-afford-to-ignore-eco-friendly-electronics-0> - This source highlights the growing problem of electronic waste, emphasizing the need for circular economy practices in the electronics industry to reduce e-waste and promote sustainability.
2. <https://electronica.de/en/discover/industry-portal/detail/circular-economy-in-the-electronics-industry.html> - It discusses the challenges posed by electronic waste and the role of circular economy models in reducing waste by promoting reuse and recycling of electronic devices.
3. <https://www.sustainablemanufacturingexpo.com/en/articles/challenges-electronics-circular-manufacturing.html> - This article addresses the challenges in implementing circular manufacturing in electronics, including the need for effective recycling processes and collaboration across the industry to close the product lifecycle loop.
4. <https://www.ey.com/en_us/insights/climate-change-sustainability-services/how-circular-economy-models-can-address-global-e-waste> - It emphasizes how circular economy models can help address global e-waste issues by promoting recycling and proper disposal practices, highlighting that only a small percentage of e-waste is currently recycled.
5. <https://www.cec.org/electronics-sector/> - This source explores opportunities for circularity in the electronics sector, focusing on strategies like product design, repair, refurbishment, and recycling, and discusses the economic potential of these practices.
6. <https://www.futureplc.com/> - Future plc is the parent company of TechRadar, a platform that features expert insights on sustainable technology trends, including the circular economy in electronics.
7. <https://www.techradar.com/pro/sustainability-week-infrastructures-makes-circularity-a-reality-not-devices> - Please view link - unable to able to access data