

GROWTH POTENTIAL: ELECTRONICS



Key circular economy strategies

- Design products for repairability, disassembly and recyclability, using recycled materials
- Keep electronics in use for as long as possible through circular business models (e.g. rental or product-as-a-service) and by repairing, refurbishing, reusing, reselling, repurposing or remanufacturing components and products
- Maintain value of materials by collecting, sorting, separating, and recycling materials after a product's useful life

Drivers of circular economy growth potential

- **High** potential for growth in the short-medium term
- **Increasing** potential for growth in the short-medium term
- **Emerging or limited** potential for growth in the short-medium term

Innovation and corporate action

Increased demand for finite resources	<ul style="list-style-type: none">• Increase in urban mining/recycling efforts as the demand for rare earth metals rises in the electronics industry, with only 1% of rare earth elements currently being recycled
Innovation	<ul style="list-style-type: none">• Technologies such as IoT, AI, 5G, or blockchain are enabling new business models (e.g. streaming services, subscription models)• Emerging design for repairability and reverse logistics solutions

Policies and regulation

Increasing policies and regulation	<ul style="list-style-type: none">• Increasing directives and regulation, such as new EU circular economy Action Plan, national policies and regulations (e.g. in Malawi, South Africa), right-to-repair, restrictions on hazardous substances, EPR on Waste Electrical and Electronic Equipment (WEEE) (e.g. China's Regulation on the Administration of the Recovery and Disposal of WEEE; South Korea's EPR scheme for e-waste covers 27+ products nationally)
Political priorities	<ul style="list-style-type: none">• Mounting political interest in access to rare earth metals (e.g. EU critical raw materials work), reinforced by Covid-19 crisis and geopolitical tension (e.g. US-China trade)

Customer preferences and macrotrends

Changing preferences and behaviour	<ul style="list-style-type: none">• More and more customers are opting for cheaper, as-new refurbished electronics or access-over-ownership models to get access to newest products, especially in the fast-moving electronics space
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Types of circular economy opportunity areas



Circular design and innovation



Circular business models



Reuse, repurpose, and redistribute



Repair, remanufacture, and refurbish



Collect, sort, and recycle



Regenerative and renewable practices and materials



Enabling digital technologies

Current circular economy opportunity areas



Electronics resale platforms and refurbished electronics marketplaces



Disassembly and recycling technologies



Electronics reverse logistics/infrastructure for collection and sorting



Repair, maintenance, and upgrade of devices



Access-over-ownership business models

(e.g. rental, peer-to-peer lending or subscription pay-per-use models)

Examples: Large corporates

Apple

have committed to use 100% recycled or renewable resources in all products in future and use customer returns programmes and robotic disassembly to increase material recovery from used iPhones

HP

offers an IoT enabled subscription model ('printing-as-a-service'), closed loop cartridge recycling, and has partnered with Sintronics to recover and create value out of HP end-of-use electronic equipment

Dell

designs products for reuse, repair, and recyclability, and committed to source 100% recycled or renewable materials for packaging by 2030

Samsung

offers subscription models that allow an upgrade to the latest device for a monthly fee

Cisco

has pledged 100% product return using returns programmes to repurpose, repair, refurbish, and remanufacture telecom equipment

Electrolux

is trialling subscription pay-per-use business models for hardware products in China and Sweden

Reclite

collect, transport, and recycle waste electronics in South Africa and surrounding countries

Examples: Innovators

Grover

offers 'pay-as-you-go' subscriptions to the latest user tech, including e-scooters

Fairphone

offers a modular mobile phone, allowing customers to replace and upgrade parts easily

Teleplan

offers lifecycle care of technology products, focusing on screening and testing, repairing and refurbishing, and recovering value from large flows of used electronics

Refind Technologies

develops systems for automatic classification and sorting of e-waste, such as batteries and phones

Back Market

is a marketplace for refurbished consumer electronics and recently raised USD 120 million from Goldman Sachs, Aglaé Ventures, and Eurazeo Growth²⁵⁴

ReUrbi

collects discarded IT equipment from businesses, then dismantles/refurbishes it and sells it under the Remakker brand, including warranty and technical assistance, at prices that are up to 50% lower than for new products

Close the Gap

refurbishes and redistributes used IT equipment for educational, medical, and social projects in developing and emerging countries

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Capturing the opportunity

