

GROWTH POTENTIAL: TECHNOLOGY, MEDIA, AND TELECOMMUNICATIONS



Key circular economy strategies

- Improve knowledge of an asset's location, condition, and availability using technology solutions to optimise circular economy value drivers (e.g. extend use cycle, increase utilisation, loop an asset, recover and reuse/recycle)
- Design technology and telecom equipment and infrastructure for life extension, upgrade, reuse, and disassembly
- Reuse, redeploy, upgrade, refurbish, and recycle tech and telecoms equipment and infrastructure (e.g. servers, network equipment)
- Operate shared data centre and network infrastructure (Infra-as-a-Service)

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 increases in the electronics industry, with only 1% of rare earth elements currently being recycled
Innovation	<ul style="list-style-type: none"> • Technological innovation (AI, IoT, blockchain) keeps rapidly broadening the scope for circular business practices • Cloud and edge computing are increasingly enabling intelligent assets • Companies enabling virtualisation and offering (streaming) services have already significantly disrupted the industry (e.g. Spotify, Kindle, Netflix), with the subscription e-commerce market, from streaming media to personal care products, having grown by over 100% annually from 2011 to 2016²⁶²

Policies and regulation

Political priorities

- Growing understanding of how tech can enable solutions for urgent challenges (e.g. EU circular economy Action Plan, European approach to Artificial Intelligence and Robotics)

Customer preferences and macrotrends

Changing preferences and behaviour

- Customers increasingly switching to subscription streaming models (global video streaming market exceeded USD 42 billion in 2019 and is estimated to grow by 20% annually between 2020 and 2027)²⁶³

Digitalisation

- Increasing global digitalisation and connectivity (3.5 billion people globally had mobile internet connectivity in 2019)²⁶⁴ gives citizens access to digital platforms and marketplaces, resulting in trends such as growth in online shopping (including groceries)
- Adoption of 5G could further enable IoT tech supporting the circular economy (e.g. predictive maintenance of smart home appliances)

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



Technologies that enable circular economy value drivers

(e.g. predictive maintenance, automated sorting, reverse logistics planning)



Virtualisation of physical products

(e.g. media streaming)



Repair, refurbish, and resale of tech equipment



As-a-Service delivery models for network infrastructure



Development of enabling telecom technologies

(e.g. 5G)

Examples: Large corporates

Google

applied circular economy principles to their data centres and server management, including buying remanufactured servers (18% in 2017), refurbishing existing equipment, and reselling used hardware

Thyssenkrupp

is using elevator data and IoT technology to enable predictive maintenance

Crown Hosting

provides data centres as a service to the public sector in the UK

KPN

set a target to get close to 100% circular operations and services by 2025 by applying circular design principles, and by the end of 2019, 18 suppliers had signed their KPN Circular Manifesto, representing more than 70% of its spend on materials

Cisco

provides infrastructure, platform and software-as-a-service delivery models, as well as a Takeback and Reuse Program for network equipment

Examples: Innovators

Provenance

uses blockchain technology to provide information about products and supply chains across multiple use cycles

ZenRobotics

combines AI and robotics to recover recyclables from waste

ReGen Villages

has developed software and a simulator which uses artificial intelligence and machine learning to address the integration of high yield organic food, clean water, renewable energy and circular waste to aid resource management at the neighbourhood scale

Closing the Loop

has partnered with **T-Mobile** and **Samsung** to collect and recycle a scrap phone for each new phone sold in the Netherlands, offsetting the material footprint on a one-to-one basis

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