ELLEN MACARTHUR FOUNDATION

CIRCULAR ECONOMY GROWTH POTENTIAL BY SECTOR

Automotive, transport and logistics

Introduction

The circular economy is built on three principles, driven by design: eliminate waste and pollution, circulate products and materials (at their highest value), and regenerate nature. A circular economy gives us the tools to tackle climate change and biodiversity loss together. It can scale fast across industry to create value and jobs, while increasing the resilience of supply chains and delivering massive economic growth potential.

Circular economy opportunities can be found in nearly every sector in the global economy. The plastics, fashion, and food sectors stand out as some of the most likely to be significantly impacted or even disrupted by the circular economy in the near term, driven by innovation, regulation, and evolving customer preferences. The electronics, transport, and technology sectors also have high circular economy growth potential.

Moving from a linear to a circular economy is not only about financing perfectly circular companies or turning away from extractive ones. This transformation will require all sectors to shift fast and at scale to achieve climate targets and build a resilient economy.

This document provides a qualitative assessment of circular economy growth potential across automotive, transport and logistics.

A full sector-by-sector analysis can be found in our paper Financing the circular economy: capturing the opportunity.

Automotive, transport, and logistics

Key circular economy strategies

- Design vehicles and mobility infrastructure for shared use, adaptability, disassembly and recyclability, accompanied by a shift to electrification
- Keep materials in use by remanufacturing and upgrading of parts, vehicles, and infrastructure
- Diversify modes of transport and operating models (e.g. multimodal public transport-as-a-service)
- Plan cities and regions to optimise mobility (including freight), and enable effective reverse logistics and resource flows

Drivers of circular economy growth potential

Innovation and corporate action	
Established circular practices	• Second-hand car market is already well-established, with car manufacturers often refurbishing and reselling • Car manufacturers have started to launch their own car-sharing programmes with varying uptake
Innovation	• Further shift towards and innovation into electrification of mobility • Ongoing innovation in autonomous driving and connected vehicles, but feasibility of implementation at scale is still uncertain • Development and implementation of digital solutions that optimise logistics and support the consolidation of freight services and reverse logistics, including local 'last mile' solutions

Policies and regulation	
Increasing policies and regulation	• Increasing regulation on emissions restrictions, design with recycled content, end-of-life vehicle reuse and recycling, rechargeable batteries, product-as-a-service mobility solutions (e.g. Reusability, Recyclability, and Recoverability Directive 2005/64/EC, which requires that new vehicles to be sold in the EU be designed so that minimum thresholds of parts and materials may be reused, recycled or recovered at the end of a vehicle's use-cycle,[1] EU circular economy Action Plan) • Increasing regulation on smart mobility (e.g. EU circular economy Action Plan)
Incentives	• Incentives for car-sharing (e.g. Chinese central government and local municipalities have issued multiple policies to encourage car-sharing, which is expected to grow rapidly in China)[2] • City planning to ease congestion and air pollution is changing approaches to transport in cities, including walking and cycling action plans (e.g. London's Walking Action Plan and 450km of new Cycleways planned by 2024; Seattle, Brussels, and Milan are all limiting car use and developing dozens of miles of bike lanes following the Covid-19 lockdown)

Customer preferences and macrotrends	
Changing preferences and behaviour	• Increasing demand for electric vehicles (the global EV market is forecasted to grow by 21% annually between 2019 and 2030)[3] • Changing customer preferences towards access-over-ownership (e.g. car-sharing market exceeded USD 2.5 billion in 2019 and is estimated to grow at 24% annually between 2020 and 2026)[4] • Rapid growth in online shopping, including food and grocery, increasing required logistics and reverse logistics capacity (e.g. online spend in UK grew by 13% year on year (YoY) in July 2019),[5] accelerated by Covid-19 crisis (online YoY revenue growth for US retailers was up 68% as of mid-April 2020)[6]
Changing demographics	• Rapid urbanisation, with 68% of world's population expected to live in cities by 2050, shared multimodal public transport becomes increasingly viable[7]

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

Remanufacturing of spare parts and recycling of materials

Circular business models including car-sharing, ride-sharing, logistics and freight load-pooling, mobility/infra-as-a-service, and multimodal integrated public transport, accompanied by a shift to EVs

Digital platforms that enable circular businesses such as sharing models

Examples: **Large corporates**

Renault
has increased the use of recycled materials in their vehicle design, as well as used vehicle collection, dismantling, reuse, and remanufacturing, the recycling of components, batteries and vehicles, and it launched ZITY, an all-electric car-sharing service

DHL
has introduced modular delivery 'Cubicycle' units which can be loaded onto electric cargo bicycles for last mile inner-city deliveries in Frankfurt and Utrecht

Daimler and **BMW**
have formed a joint venture, Share Now, which offers 'mobility-as-a-service' car-sharing in urban areas

Toyota
has launched initiatives to establish certified automobile dismantling facilities and has rolled out car-to-car recycling technologies globally

LKQ Corporation
recovers, recycles, refurbishes or remanufactures parts from trucks and cars to produce spare parts which can be used to repair and upgrade vehicles

Examples: **Innovators**

Whim
offers access to (almost) all types of transport through an integrated mobility-as-a-service scheme in Helsinki, the West-Midlands, and Antwerp

BlaBlaCar
enables car-pooling, using spare capacity in private vehicles on existing journeys

Convoy
is a platform that enables local freight drivers to pick up additional jobs en route and utilise empty load capacity

Connected Energy and **Powervault**
use second-life EV batteries for energy storage systems

Mobike
offers a bike-sharing service using IoT technology in dozens of cities across the world

Pony
operate a shared micro-mobility rental scheme with decentralised vehicle ownership

Black Bear Carbon
turns used tyres into a raw material called 'carbon black' which can be used in a range of products, including pen ink, smartphone covers, and new tyres

Endnotes

1 Europa, *Re-use, Recycling and Recovery of Vehicle Parts and Materials*

2 Roland Berger, *Car-sharing in China* (2017)

3 Markets and Markets, *Electric Vehicle Market: Global Forecast to 2030* (2019)

4 Global Market Insights, *Car Sharing Market Size, Industry Analysis Report, 2020–2026* (2019)

5 Office for National Statistics, *Retail Sales: Great Britain* (2019)

6 Forbes, 'How COVID-19 Is Transforming E-Commerce' (28th April 2020)

7 UN Department of Economic and Social Affairs, *'68% of the World Population Projected to Live in Urban Areas by 2050, Says UN'* (16th May 2018)

The Ellen MacArthur Foundation, an international charity, develops and promotes the circular economy in order to tackle some of the biggest challenges of our time, such as climate change, biodiversity loss, waste, and pollution.

We work with our network of private and public sector decision-makers, as well as academia, to build capacity, explore collaborative opportunities, and design and develop circular economy initiatives and solutions.

Increasingly based on renewable energy, a circular economy is driven by design to eliminate waste, circulate products and materials, and regenerate nature, to create resilience and prosperity for business, the environment, and society.

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Charity Registration No.: 1130306
OSCR Registration No.: SC043120
Company No.: 6897785