

GROWTH POTENTIAL: WASTE MANAGEMENT AND WATER



Key circular economy strategies

- Design for reusability, repairability, durability, recyclability, and/or compostability, including phasing out hazardous materials and substances of concern
- Collect and sort used products and materials (both non-renewable, e.g. metals, plastics, chemicals, etc.; and renewable, e.g. wood, paper, cotton) for reuse, remanufacturing, and recycling
- Reuse, remanufacture, and recycle materials, components and products, and improve efficiencies of recycling and recovery systems
- Collect, sort, and compost or anaerobically digest food and other organic material, and create valuable products from residual biosolids (e.g. fertiliser)
- Recover, reuse, and recycle water and resources from wastewater

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

Innovation

- Automation increasingly being implemented in the waste management process (e.g. robotic sorting)
- Technology and data-driven innovation, such as route optimisation, smart bins and trucks, RFID technology, and fill sensors
- Development of new recycling technologies, particularly focussed on plastic (e.g. chemical recycling)
- Technological innovation in resource recovery from wastewater (e.g. water innovation projects funded under Horizon 2020)²⁷⁷

Policies and regulation

Increasing policies and regulation	<ul style="list-style-type: none">• Stricter waste regulation, e.g. landfill taxes in the EU (EUR 5-100/tonne),²⁷⁸ Australia (USD 42-105/tonne),²⁷⁹ and California, US (USD 36-50/tonne),²⁸⁰ single-use plastic bans, EPR schemes, essential requirements for packaging, and China's National Sword policy banning import of waste in 2018, including plastic, paper and metal, which has increased global waste disposal costs• National recycling targets (e.g. EU targets for plastic, paper, wood, glass, and metals)
Incentives	<ul style="list-style-type: none">• Circular economy regulation, including new EU circular economy Action Plan, EU Packaging and Packaging Waste Directive, is helping to develop high-quality secondary raw materials markets• National governments and cities implementing circular economy roadmaps (e.g. Colombia, France, Slovenia, Germany, China; and London, Charlotte, Beijing, São Paulo, Mexico City, Cape Town), including approach to waste management and water

Customer preferences and macrotrends

Changing preferences and behaviour	<ul style="list-style-type: none">• Growing awareness of waste and pollution, particularly single-use plastic and plastic leaking into the ocean, resulting in changing attitudes, spending and behaviour away from linear business models (e.g. fast fashion and single-use plastic)• Recycling rates in Europe have increased by 16% between 2004 and 2017 for municipal waste, and by 13% between 2005 and 2016 for packaging waste²⁸¹• However, global waste is expected to grow to 3.4 billion tonnes by 2050, more than double population growth over the same period, with at least a third not managed in an environmentally safe manner²⁸²
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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



Collection, sorting, and recycling capacity



Anaerobic digestion of post-customer organic waste



Resource recovery from wastewater



High-quality recycling technologies



Use of organic waste as feedstock for innovative materials



Automated sorting technologies

Note:

In general, waste-to-energy is a linear activity which results in the loss of finite materials. It is therefore **not** considered to be part of a circular economy

Examples: Large corporates

SUEZ

generated 36% of their 2018 revenues in Europe from recycling and recovery activities, and becoming 100% circular through reuse and recycling is part of their 2030 value proposition; and opened in 2020 a pioneering industrial unit for the recovery of ultra-fine metal particles from household and industrial waste

Renewi

are a waste-to-product business that collect and recycle waste and turn it into secondary raw materials and products

Veolia

generated EUR 4.8 billion (USD 5.66 billion) in 2018 (50% of waste revenues) from circular economy activities, including recycling, biogas and wastewater recycling, and partnered with Unilever to jointly improve infrastructure for a circular economy for plastics

GFL

has invested in circular processes across material streams, including soil recycling and reuse in construction and development, and converting organic waste into compost and fertilisers

Cambrian Innovation

offers distributed wastewater treatment and resource recovery as a service via its water-energy purchase agreement

Examples: Innovators

TerraCycle

has programmes to recycle 'difficult to recycle' products, such as multilayer packaging and chewing gum

Loop Industries

produce recycled plastic feedstock of virgin quality using chemical recycling

TOMRA

provides reverse vending machines, waste sorting, and recycling solutions and technology

TriCiclos

integrates the operation of collection, sorting, and recycling stations with the education of communities and strategic consulting with businesses to help them design out waste

Recycling Technologies

have developed mass-producible modular technology which can be installed on existing waste sites to recycle plastic waste into feedstock for new plastic production

Kudoti

uses a digital platform to streamline collection, sorting, processing, and recycling of materials streams across Africa to reduce pollution and improve material recovery

AMP Robotics

uses AI and robotics to automate the identification, sorting, and processing of complex waste streams

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Capturing the opportunity

