



CLEANTECH LANDSCAPES

# THE EMERGING CIRCULAR ECONOMY



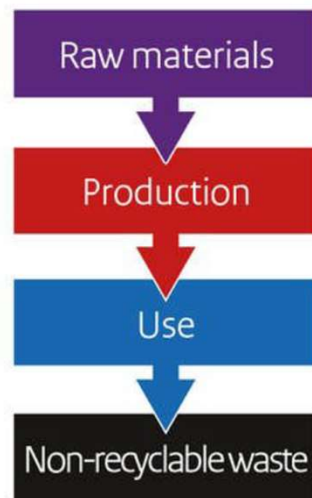
**cleantechcapital**  
A D V I S O R S  
CAPITAL RAISING • M&A • STRATEGY

# THE PARADIGM SHIFT

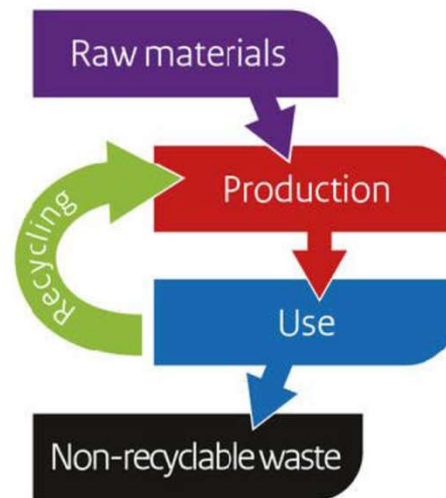


*The circular economy presents a \$4.5 trillion opportunity by 2030 globally<sup>1</sup>*

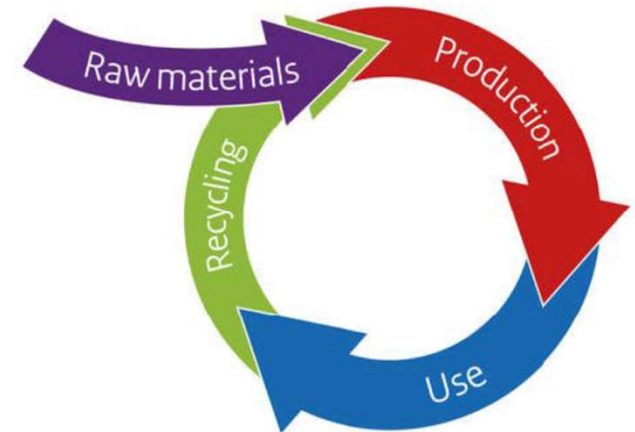
## Linear Economy



## Re-Use Economy



## Circular Economy



<sup>1</sup> Accenture Strategy (Waste to Wealth)

# CIRCULAR ECONOMY OVERVIEW



Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows – for example, replacing fossil fuels with renewable energy or using the maximum sustainable yield method to preserve fish stocks.

1

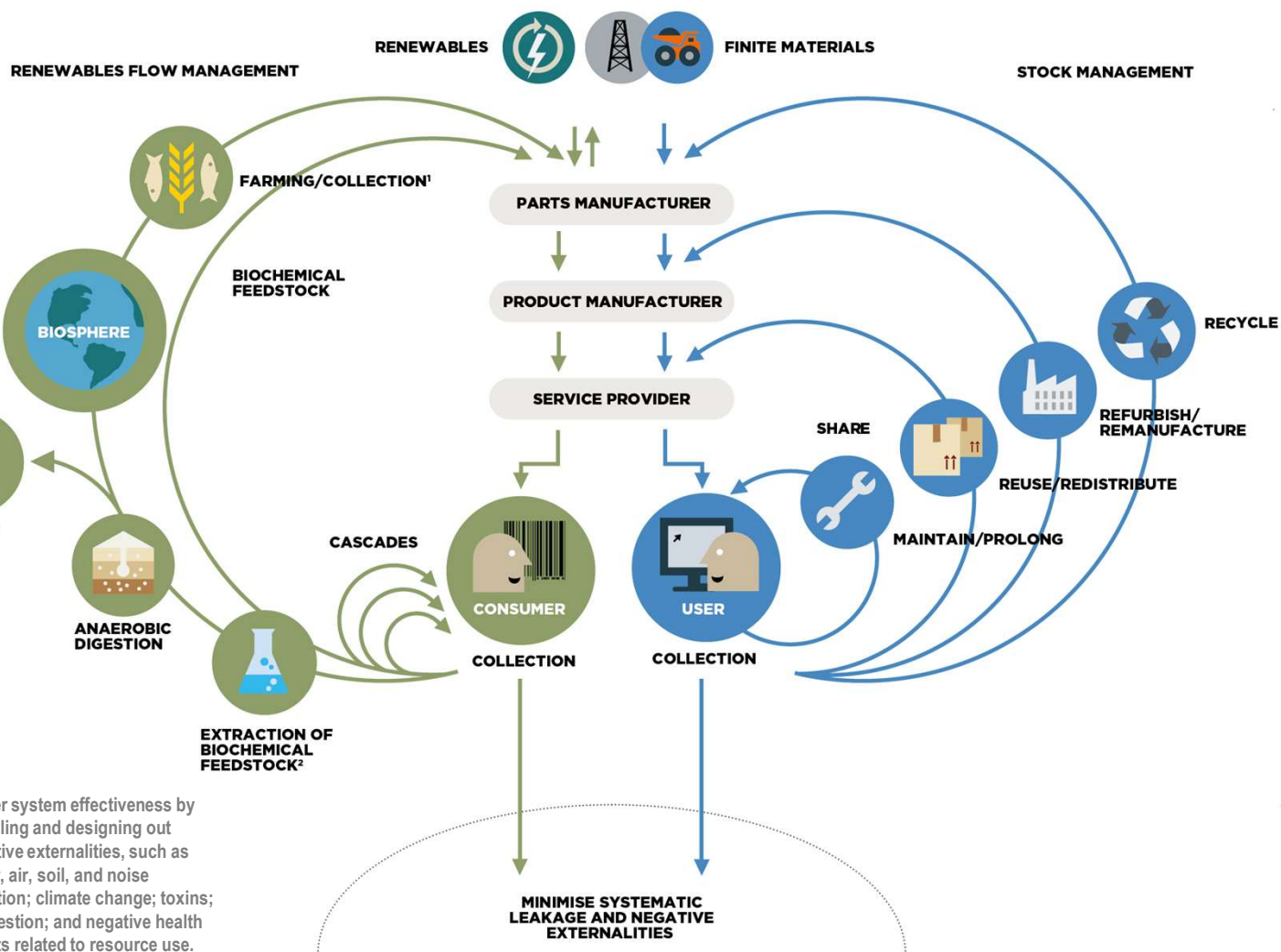
REGENERATION

2

Optimize resource yields by circulating products, components and materials at the highest utility at all times in both technical and biological cycles – for example, sharing or looping products and extending product use cycles.

3

Foster system effectiveness by revealing and designing out negative externalities, such as water, air, soil, and noise pollution; climate change; toxins; congestion; and negative health effects related to resource use.



# CIRCULAR ECONOMY BUSINESS OPPORTUNITIES



## Business Models



### Circular Supplies

- Use renewable energy and bio-based or fully recyclable inputs



### Resource Recovery

- Recover useful resources out of materials, by-products or waste



### Product Life-Extension

- Extend product lifecycles by repairing, upgrading and reselling, as well as through innovation and product design



### Sharing Platform

- Connect product users to one another and encourage shared use, access or ownership to increase product use



### Products-as-a-Service

- Move away from product ownership and offer customers paid access to products, allowing companies to retain the benefits of circular resource productivity or ownership to increase product use



### Digital

- Technologies such as Internet of Things (IoT), big data, blockchain, and RFID help companies track resources and monitor utilization and waste capacity



### Physical

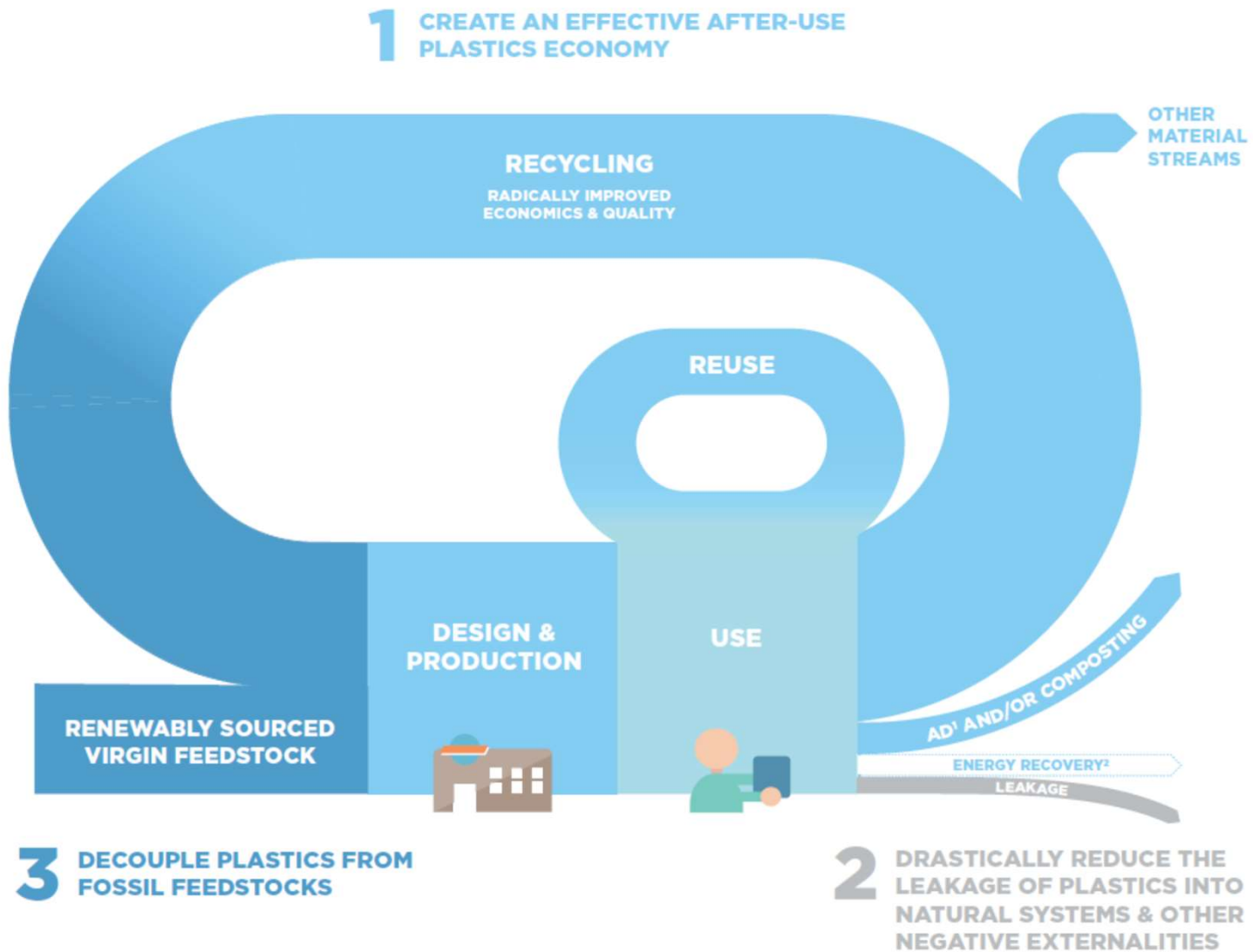
- Technologies such as 3D printing, robotics, energy storage and harvesting, modular design technology and nanotechnology help companies reduce production and material costs and reduce environmental impact



### Biological

- Technologies such as bio-energy, bio-based materials, biocatalysis, hydroponics and aeroponics help companies move away from fossil-based energy sources

# CIRCULAR ECONOMY & PLASTICS – A NEW PARADIGM

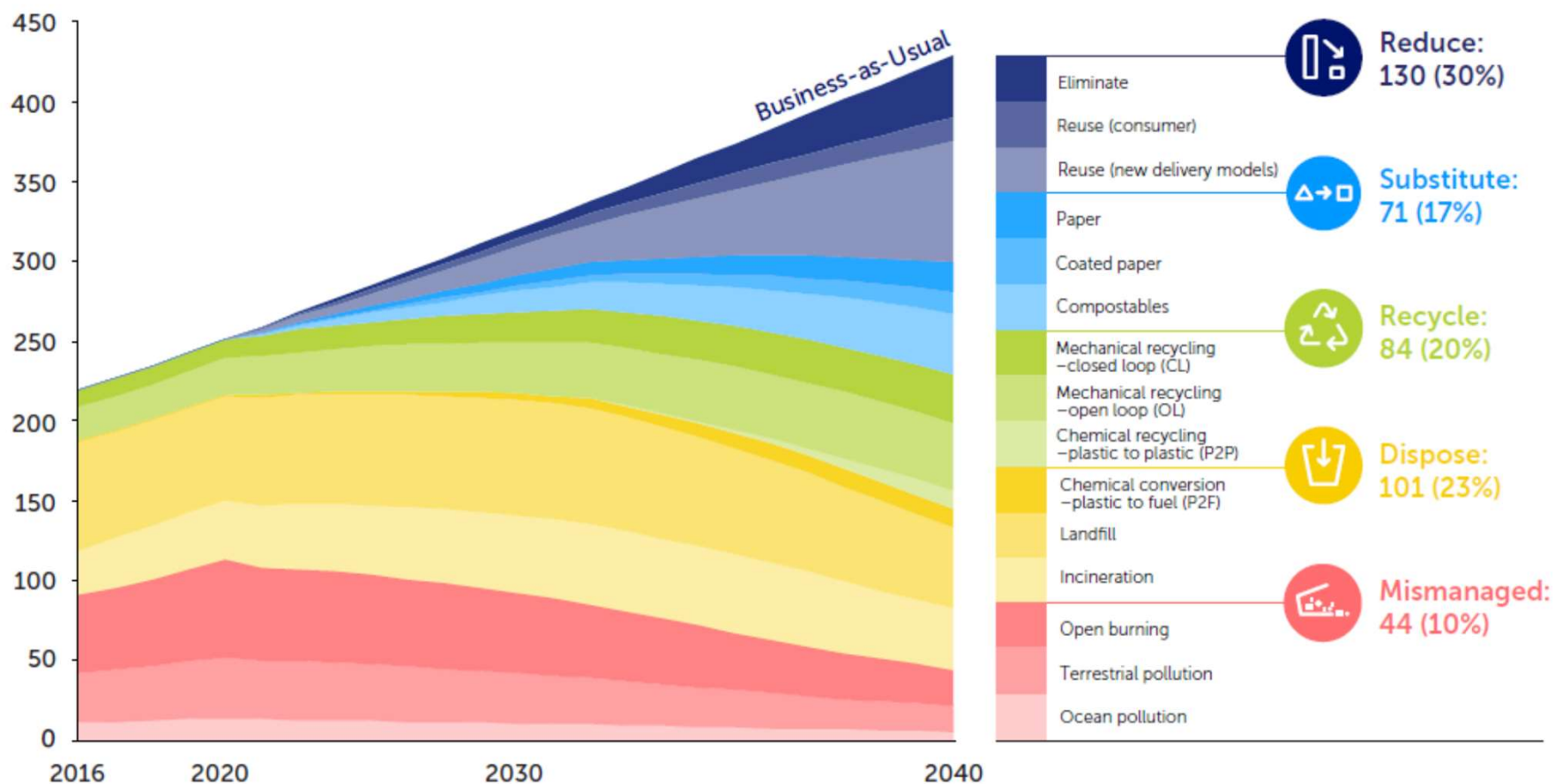




# CIRCULAR ECONOMY & PLASTICS – WEDGE ANALYSIS<sup>1</sup>



Million metric tons per year



<sup>1</sup> System Change Scenario

# EU CE ACTION PLAN FOCUS – FOCUS SECTORS



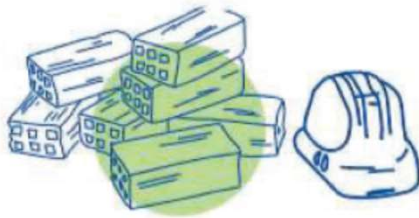
**Food, water & nutrients**



**Electronics and ICT**



**Batteries & vehicles**



**Construction & buildings**



**Textiles**



**Plastics**



**Packaging**

# EU KEY CIRCULAR ECONOMY ACTION AREAS



	Objectives	Key actions
<b>Production</b>	<ul style="list-style-type: none"> <li>provide incentives to boost circular product design</li> <li>innovative and efficient production processes</li> </ul>	<ul style="list-style-type: none"> <li>durability, reparability and recyclability of products – Ecodesign Directive, Extended Producer Responsibility</li> <li>best practices for waste management and resource efficiency in industrial sectors - BREFs</li> <li>industrial symbiosis, remanufacturing</li> <li>More coherent policy framework for products, tools for SMEs</li> </ul>
<b>Consumption</b>	<ul style="list-style-type: none"> <li>repair and reuse of products</li> <li>reliable information to consumers</li> </ul>	<ul style="list-style-type: none"> <li>better labelling: EU Eco-label, Environmental Footprint</li> <li>new forms of consumption – collaborative economy, digital platforms</li> <li>guarantees and action on false green claims</li> <li>independent testing programme to assess possible planned obsolescence</li> <li>Circular Economy criteria in Green Public Procurement</li> </ul>
<b>Waste Management</b>	<ul style="list-style-type: none"> <li>improve waste management in line with the EU waste hierarchy</li> <li>address existing implementation gaps</li> <li>provide long-term vision and targets to guide investments</li> </ul>	<ul style="list-style-type: none"> <li>revised EU targets for recycling 65% of municipal waste and 75% of packaging waste by 2030</li> <li>new binding target to reduce landfill to a maximum of 10% of total waste by 2030</li> <li>improve waste management, new investments in recycling capacity, avoid overcapacity in incineration and mechanical-biological treatment</li> <li>ensure coherence between waste investments under EU Cohesion Policy and the waste hierarchy</li> </ul>
<b>Secondary raw materials</b>	<ul style="list-style-type: none"> <li>increase the use of secondary raw materials</li> <li>increase the use of recycled nutrients and water</li> <li>safely managed chemicals</li> <li>improve knowledge of material flows</li> </ul>	<ul style="list-style-type: none"> <li>EU regulation on fertilisers</li> <li>legislative proposal on minimum requirements for reused water</li> <li>quality standards for secondary raw materials</li> <li>analysis on the interface between chemicals, product, and waste legislation</li> <li>EU-wide electronic system for cross-border transfers of waste</li> </ul>

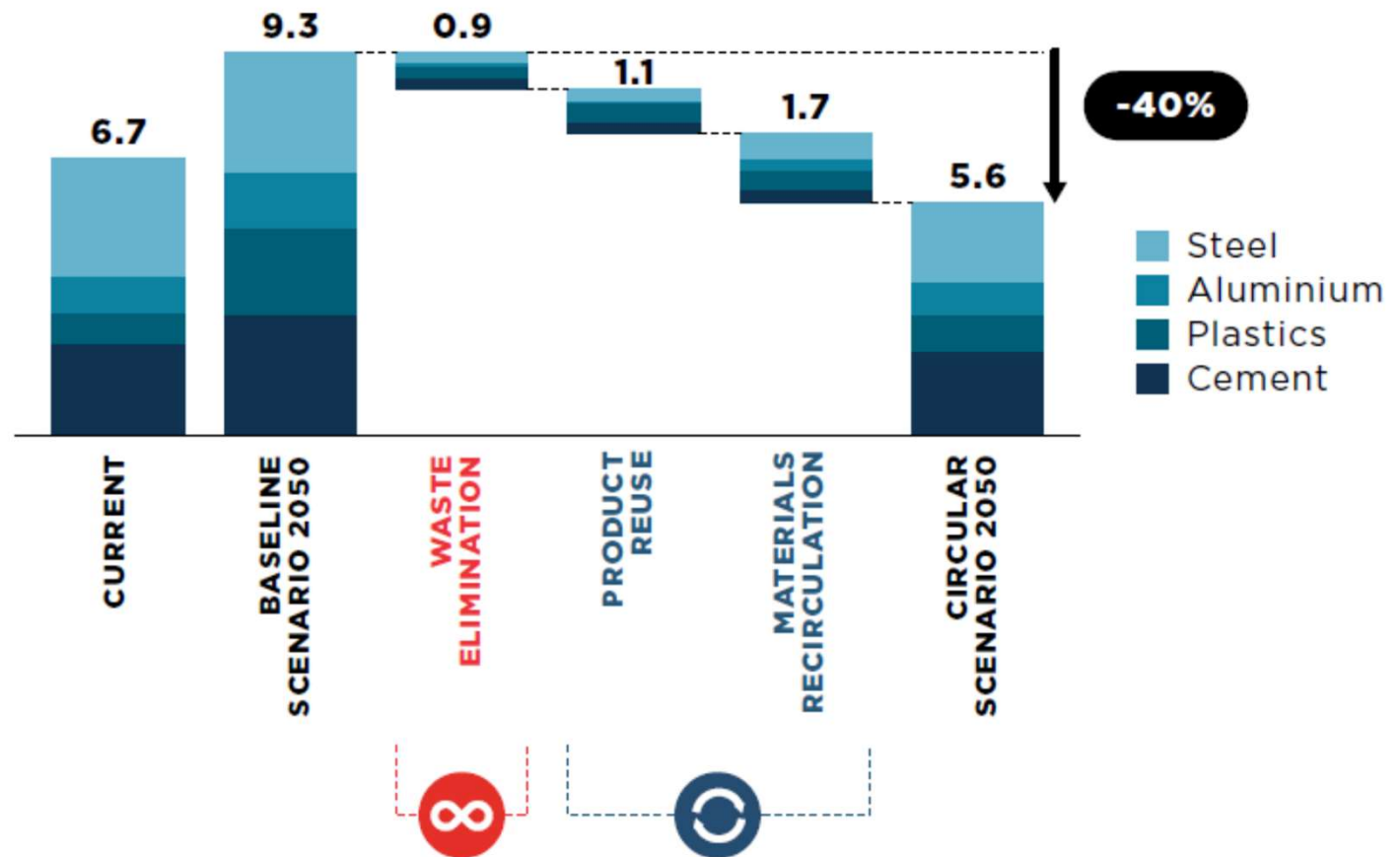


# CIRCULAR ECONOMY CONTRIBUTION TO NET ZERO



*A Circular Economy could reduce annual global CO<sub>2</sub> emissions from key industry materials by 40% or 3.7 gigatons in 2050*

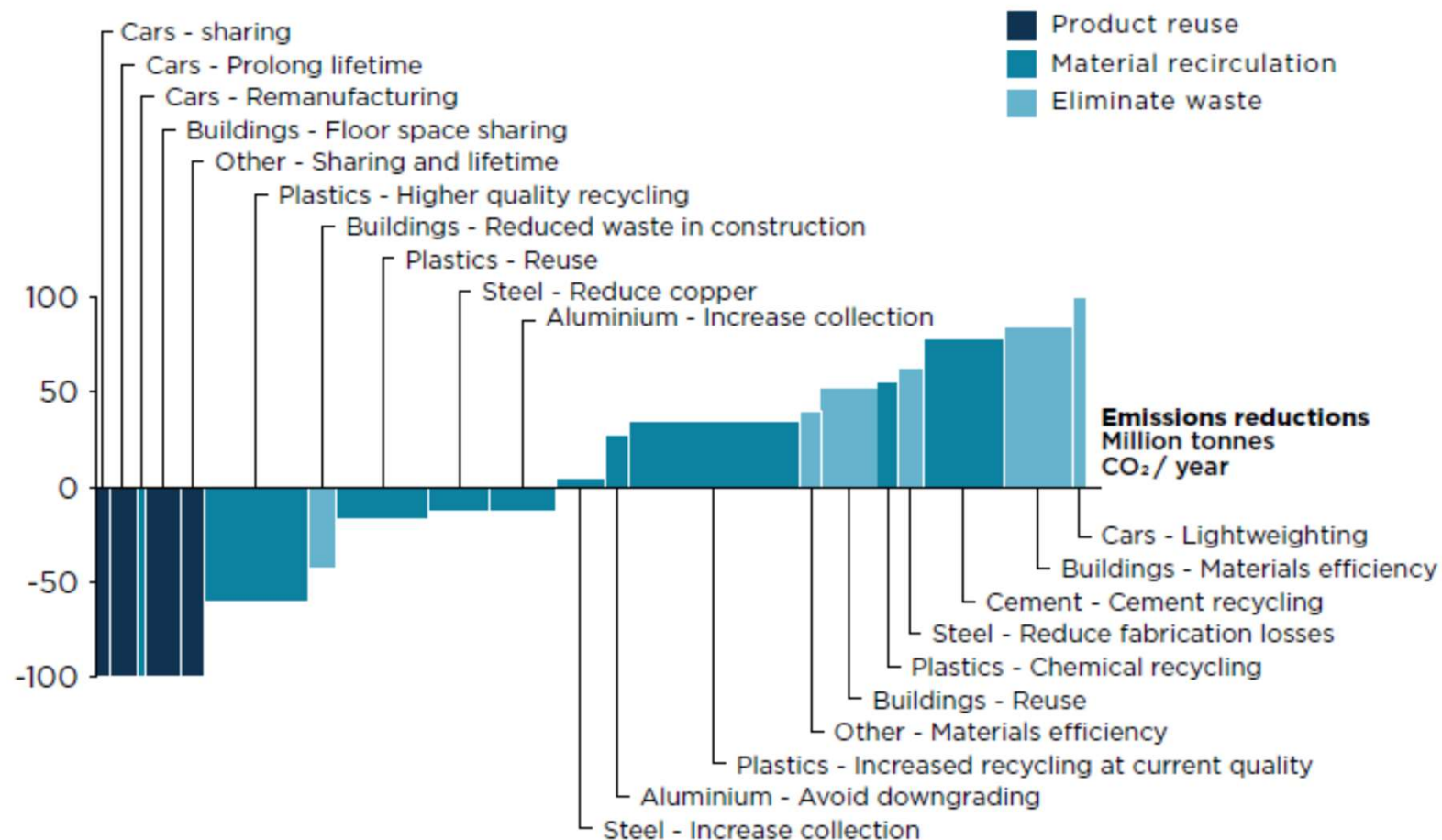
**Global CO<sub>2</sub> emissions from four key materials production**  
Billion tonnes of CO<sub>2</sub> per year



# CIRCULAR ECONOMY EMISSIONS REDUCTION POTENTIAL



## Cost of emissions reductions EUR / tonne CO<sub>2</sub>





DEDICATED TO CLEANTECH & RESOURCE EFFICIENCY GROWTH

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