

BGB and the Circular Economy







































The role of the engineering sector

Engineers are ‘future builders’ with a global societal responsibility to fulfil the broad environmental, economic, social and ethical expectations of their work. They are tasked with finding and designing solutions to the key challenges that population growth poses. Given the importance of engineering in shaping the future and the unsustainable nature of present production and consumption, the sector plays a key role in the transition from a linear economy to a circular economy.

The Institution of Engineering Technology argues that engineers can, through technical intervention, create solutions for a circular economy. They can develop sustainable designs and engineering methods to improve the reuse, repair, refurbishment, remanufacturing, and recycling of products for a circular economy.

The ReSOLVE framework, developed by McKinsey & Company, proposes that businesses can implement the following actions in their circular economy approach.

- *Regenerate*: shifting to renewable energy and materials
- *Share*: promoting the sharing of products or otherwise prolonging product life spans through maintenance and design
- *Optimize*: improving efficiency and removing waste from supply chains
- *Loop*: keeping components and materials in “closed loops” through remanufacturing and recycling
- *Virtualize*: Delivering goods and services virtually
- *Exchange*: replacing old materials with advanced renewable ones or applying new technologies such as 3-D printing

REGENERATE 	<ul style="list-style-type: none"> Shift to renewable energy and materials Reclaim, retain, and restore health of ecosystems Return recovered biological resources to the biosphere 	    
SHARE 	<ul style="list-style-type: none"> Share assets (e.g. cars, rooms, appliances) Reuse/secondhand Prolong life through maintenance, design for durability, upgradability, etc. 	    
OPTIMISE 	<ul style="list-style-type: none"> Increase performance/efficiency of product Remove waste in production and supply chain Leverage big data, automation, remote sensing and steering 	    
LOOP 	<ul style="list-style-type: none"> Remanufacture products or components Recycle materials Digest anaerobically Extract biochemicals from organic waste 	      
VIRTUALISE 	<ul style="list-style-type: none"> Books, music, travel, online shopping, autonomous vehicles etc. 	     
EXCHANGE 	<ul style="list-style-type: none"> Replace old with advanced non-renewable materials Apply new technologies (e.g. 3D printing) Choose new product/service (e.g. multimodal transport) 	   

Source: Ellen MacArthur Foundation; SUN; McKinsey Centre for Business and Environment (2015). *Growth Within: A Circular Economy Vision for a Competitive Europe*; Ellen MacArthur Foundation: Cowes, UK, 2015.

McKinsey Centre for Business and Environment reports that most of the industries they studied in 2015 (as part of a major study with the Ellen MacArthur Foundation) could adopt three to four of the six circular-economy actions and potentially improve performance and reduce cost. The engineering sector can easily adopt some of these actions. It can regenerate (shift to renewable energy and materials), optimise (increase performance/efficiency of products and remove waste in production and supply chain), Loop (recycle materials and remanufacture products/components) and Exchange (apply new technologies and replace old with advanced renewable materials).

One area where the engineering sector plays a major role in the advancement of the Circular Economy is in eco-design. The Circular Economy advocates for resources to be kept in use for as long as possible, this is often only possible where products have been designed for circularity. Eco-design refers to the act of designing better-quality products that have a low environmental impact in manufacturing and in their use. The goal is to design products for reuse and upgradeability while reducing the need to dispose of most of the physical product. This way products remain in use longer, and companies have less need to make new products thereby reducing their consumption of raw material and (potentially) greenhouse gas emissions.

Companies like BGB primarily design their products in-house, this means they can design their products such that it is easy to recover and regenerate materials at the end of the product's service life. Such companies play a vital role in improving understanding and acceptance of the Circular Economy.

References/Further reading

Ellen MacArthur Foundation; SUN; McKinsey Centre for Business and Environment (2015). *Growth Within: A Circular Economy Vision for a Competitive Europe*; Ellen MacArthur Foundation: Cowes, UK, 2015.

McKinsey & Company Quarterly (2017). *Mapping the benefits of a circular economy*.