

COMPLETING THE PICTURE HOW THE CIRCULAR ECONOMY TACKLES CLIMATE CHANGE (Extracts)

ABOUT THIS PAPER

Completing the Picture highlights the indispensable role that the circular economy plays in tackling the climate crisis. It aims to demonstrate how circular economy principles and strategies significantly reduce greenhouse gas emissions.

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2.1 WHAT IS THE CIRCULAR ECONOMY?

The circular economy is a systems-level approach to economic development designed to benefit businesses, society, and the environment. In contrast to the 'take-make-waste' linear economy, a circular economy aims to decouple economic growth from the consumption of finite resources and build economic, natural, and social capital. It is underpinned by a transition towards renewable energy sources and increasing use of renewable materials. It is built on three principles:

- Design out waste and pollution
- Keep products and materials in use**
- Regenerate natural systems

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2.2 HOW DOES THE CIRCULAR ECONOMY REDUCE GREENHOUSE GAS (GHG) EMISSIONS?

Applying circular economy principles and strategies to transform the way in which goods and materials are produced and used in the economy would offer significant potential to reduce GHG emissions. These can be summarised as follows:

- Keep products and materials in use **to retain the embodied energy** in products and materials

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KEEP PRODUCTS AND MATERIALS IN USE

Reusing products and components (1.1 billion tonnes CO² per year):

Service-based business models such as renting, sharing, and pay-per-use can increase the utilisation (i.e. intensity of use) of products and assets, as well as extend the lifetime of products through activities such as reuse, refurbishment, and remanufacturing. By keeping products and components in use within the economy at their highest value and

utility at all times their embodied energy is preserved for longer, and the need for new production and end-of-life treatment is reduced. This significantly reduces GHG emissions that would otherwise have resulted from the production of new products. Modelling this opportunity showed that global emissions could be reduced by 1.1 billion tonnes CO² in 2050 due to a decrease in the amount of cement, steel, plastics, and aluminium needed

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The built environment uses almost half of the world's materials extracted every year and current projections estimate that by 2060 across the world the equivalent of the city of Paris will be built each week.⁴⁵

KEEP PRODUCTS AND MATERIALS IN USE

Sharing business models (0.3 billion tonnes CO₂ per year):

Prolonging lifetime (1.0 billion tonnes CO₂ per year, beyond 2050):

A building built in a traditional way has an expected technical lifespan of 50–100 years, but usually after 20–30 years it is not economically valuable.⁵⁶ Demolition is often then the go-to solution. In the circular economy, the economic value of a building is maintained by extending its 'functional' lifespan. Longevity in buildings can be stimulated through modular, flexible, and durable designs. Such design approaches also ensure a building is capable of being adapted to changing user needs as well as offering easier maintenance and renovations. Modular design typically reuses 80% of the components in a building's exterior so that it can stand for 100 years or more, coupling modularity with durability.⁵⁷