



## The New Circular Economy (CE)

A Circular Economy (CE) is restorative and regenerative by intention and design. It aims to keep products, components and materials, at their highest utility and value, at all times in 2 cycles: Technical and Biologicals cycles.

A circular economy is a continuous positive development cycle that preserves and enhances natural capital, optimises resource yields, and minimises system risks, by managing finite stocks and renewable flows. It works effectively at every scale. It's the new Consciously Constructive approach to smart business.

**Circular Economy Principles:** The CE provides multiple value-creation mechanisms that are decoupled from the consumption of finite resources. In a true CE, consumption happens only in effective bio-cycles; elsewhere use replaces consumption. Resources are regenerated in the bio-cycle, or recovered and restored in the technical cycle.

In the Bio-cycle, life processes regenerate disordered materials, despite or without, human intervention. In the technical cycle, with sufficient energy available, human intervention recovers materials and recreates order, on any timescale considered. Maintaining or increasing capital has different characteristics in the two cycles.

**CE rests on 3 principles; each addressing several of the resource and system challenges that industrial economies faces.**

**Principle 1: Preserve & enhance natural capital** ...by controlling finite stocks and balancing renewable resource flows.

This starts by dematerialising utility—delivering utility virtually, whenever possible. When resources are needed, the circular system selects them wisely and chooses technologies and processes that use renewable or better-performing resources, where possible. A circular economy also enhances natural capital by encouraging flows of nutrients within the system and creating the conditions for regeneration of, for example, soil.

**Principle 2: Optimise resource yields**...by circulating products, components, and materials, at the highest utility at all times in both technical and biological cycles. This means designing for remanufacturing, refurbishing, and recycling, to keep components and materials circulating in, and contributing to, the economy.

Circular systems use tighter, inner loops whenever they preserve more energy and other value, such as embedded labour. These systems also keep product loop speed low by extending product life and optimising reuse. Sharing in turn increases product utilisation. Circular systems also maximise use of end-of-use bio-based materials, extracting valuable bio-chemical feedstocks and cascading them into different, increasingly lower-grade applications.

**Principle 3: Foster system effectiveness**...by revealing and designing out negative externalities.

This includes reducing damage to human utility, such as food, mobility, shelter, education, health, and entertainment, and managing externalities, such as land use, air, water and noise pollution, release of toxic substances, and climate change consequences.

**Design Out Waste:** Waste does not exist when the biological and technical components (or 'materials') of a product are designed, by intention, to fit within a biological or technical materials cycle. The biological materials are non-toxic and can be simply composted.

Technical materials—polymers, alloys and other man-made compounds – are designed to be used again with minimal energy and highest quality retention (whereas recycling, as commonly understood, results in a reduction in quality and feeds back into the process as a crude feedstock).

### Build resilience through diversity:

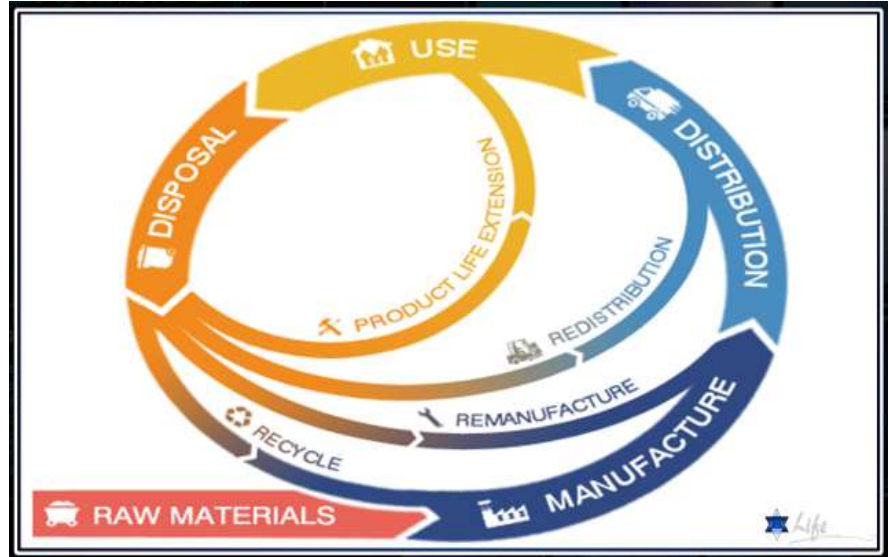
Modularity, versatility and adaptivity are prized features that need to be prioritised in a fast-evolving world. Diverse systems with many connections and scales are more resilient in the face of external shocks than systems built simply for efficiency—throughput maximisation driven to the extreme results in fragility.

### Work Towards Energy From Renewable Sources:

Systems should ultimately aim to run on renewable energy—enabled by the reduced threshold energy levels required by a restorative CE.

The agricultural production system runs on current solar income but significant amounts of fossil fuels are used in fertilisers, farm machinery, processing and through the supply chain.

More integrated food and farming systems would reduce the need for fossil-fuel based inputs and capture more of the energy value of by-products and manures.



**Think in systems:** The ability to understand how parts influence one another within a whole, and the relationship of the whole to the parts, is crucial. Elements are considered in relation to their environmental and social contexts. While a machine is also a system, it is clearly narrowly bounded.

Systems thinking usually refers to the overwhelming majority of real-world systems: these are non-linear, feedback-rich, and interdependent. In such systems, imprecise starting conditions combined with feedback lead to often surprising consequences, and to outcomes that are frequently not proportional to the input (runaway or ‘undamped’ feedback).

**Such systems cannot be managed in the conventional, ‘linear’ sense, requiring instead more flexibility and more frequent adaptation to changing circumstances.**

**Think In Cascades:** For biological materials, the essence of value creation lies in the opportunity to extract additional value from products and materials by cascading them through other applications.

In biological decomposition, be it natural or in controlled fermentation processes, material is broken down in stages by microorganisms like bacteria and fungi that extract energy and nutrients from the carbohydrates, fats, and proteins found in the material.

For instance, going from tree to furnace forgoes the value that could be harnessed via staged decomposition through successive uses as timber and timber products before decay and eventual incineration.

**As the earth struggles to sustain an ever-exploding population on the way to 9-10 billion globally, and 2 Billion in Africa by 2055, we must create more effective, regenerative ways of resource utilization. We must become Consciously Constructive on every level of business, or suffer the longer term consequences.**

**Are you a truly Conscious Leader that’s graduated from just profits, to People, Planet & Profits...yet?**

