

The Role of the Circular Economy in a Habitable Future

HABITABLE FUTURES: ADAPTING POLICY IN A CHANGING CLIMATE

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What is a Circular Economy?

The circular economy is about sustainable resource management



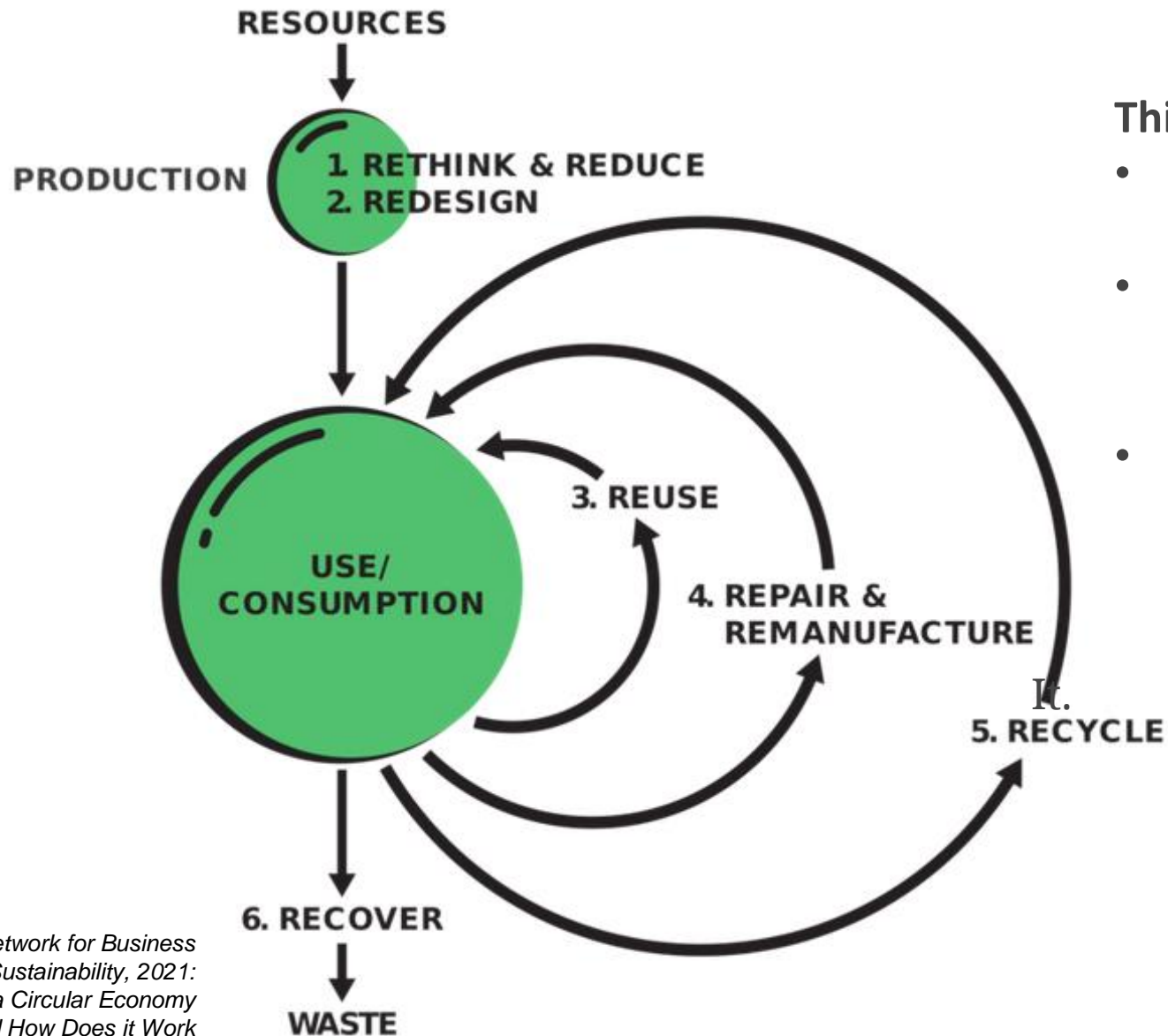
Materials and products are kept in circulation at their highest value for as long as possible through practices like reuse, repair, remanufacturing, and recycling



The circular economy will lead to a reduced demand on raw materials, reducing energy consumption and greenhouse gas emissions. It will also lead to restoring natural habitats and ecosystems, alongside developing regenerative agricultural systems

“Global waste is expected to grow to 3.40 billion tonnes by 2050, more than double population growth over the same period.” The World Bank

What is a Circular Economy?



This model:

- Redefines our understanding of production and consumption.
- Entails gradually decoupling economic activity from the consumption of finite resources and designing waste out of the system.
- Encourages the development of new business models that create sustained economic value and build robust, resilient systems capable of withstanding environmental challenges

Principles of a circular economy



Eliminate waste & pollution

- Rethinking product design to prevent pollution and waste from being created in the first place



Circulate products and materials (at their highest value)

- Keeping products and materials in use for as long as possible
 - Design products for prolonged use / reuse / repair / remanufacture
- Closing resource loops to keep products and materials in use



Regenerate nature

- Returning nutrients to the soil and other systems, to enhance natural resources and regenerate natural systems



The Circular Economy and a better life

By reducing waste and pollution, and contributing to cleaner air, water, and land the approach can significantly improve habitability thereby supporting thriving human communities and natural ecosystems.

The circular economy has the potential to create new and decent jobs, ensure a more equitable management of resources and combat inequalities and societal crises, by providing resilient and thriving local economies.



Societal Justice Aligned with the Circular Economy Principles



Eliminate waste & pollution



- **Health Benefits:** Reducing waste and pollution directly improves air, water and soil quality, which in turn reduces health impacts such as respiratory diseases, waterborne illnesses, and other health issues associated with environmental degradation.
- **Resource Security:** By minimising waste and using resources more efficiently, this principle helps secure critical resources for future generations, alleviating potential conflicts or shortages.
- **Mental Well-being:** A cleaner environment also contributes to psychological health by reducing stress and fostering a sense of living in a healthy, uncontaminated space.

What this entails:

- Using recycled material rather than raw materials.
- Designing products for easy repair or upgrade.
- Design products to have no waste
- Make use of nature friendly alternatives
- Choosing manufacturing processes that minimise offcuts and scrap.



Societal Justice Aligned with the Circular Economy Principles



Circulate products and materials (at their highest value)

What this entails:

- Establishment of take-back schemes or leasing models where products are returned, ensuring they are either reused, refurbished, or responsibly recycled.
- Facilitating a secondary market for products or materials, extending their lifecycle beyond initial use.
- Products are designed specifically for circularity

- **Economic Stability:** Extending the life cycle of products reduces the need for constant manufacturing, which lowers costs for consumers and can enhance financial security by creating more durable, repairable, and affordable goods.
- **Job Creation:** Circular systems support new business models such as repair, remanufacturing, and recycling, which create jobs in local communities. These jobs tend to be more localized, providing stable employment and enhancing community resilience.
- **Social Equity:** Promoting reuse and recycling helps ensure that valuable materials are not wasted and can benefit society.

Societal Justice Aligned with the Circular Economy Principles

- **Ecosystem Services:** A regenerative approach restores ecosystems, leading to enhanced natural services such as clean air, fertile soils, and pollination—all of which are critical for food security and public health.
- **Climate Resilience:** Restoring natural systems increases resilience to climate change by improving biodiversity, which buffers against extreme weather events, floods, and droughts. This creates safer living conditions, especially for vulnerable populations.
- **Physical and Mental Well-being:** Access to regenerated natural spaces, like parks and green areas, promotes physical activity and mental well-being, reducing stress and enhancing overall quality of life.



Regenerate nature

What this entails:

- Investing in technologies or processes that restore soil health, clean water, and air quality through your business operations.
- Partnering with organisations working towards reforestation or ocean clean-ups to offset the ecological footprint of your operations.
- Regenerative farming practices

Examples from CSIR projects

Green Bricks



Photos from Linda Godfrey

With funding from the Circular Economy Demonstration Fund from the DSI the CSIR has partnered with Key-bricks and Use-it to demonstrate the value of the innovative bricks made from waste material.

The interlocking bricks, contain waste glass and waste building rubble achieving a 60% replacement of virgin material.

The bricks can be made by unskilled people at low cost as the material would come from dumped C&D waste. It is also a mobile technology so not limited place.

Uniqueness is that the design of the brick is such that no prior building experience is required.

Brick is completely recyclable

Provides a practical way to clean up illegally dumped C&D waste

They help the community by providing affordable and available bricks that can help in the making of houses, schools, roads etc

Support for South Africa's transitioning from conventional plastics to more sustainable alternatives

With funding support from the Japanese government, the CSIR in partnership with UNIDO and Wits University provided support to waste picker associations ARO and SAWPA.

The project realised the importance of recycling in addressing plastic pollution and the need to support waste picker's efforts in increasing recycling rates for a more circular plastics economy.

Waste pickers were issued with PPE, to protect their health, but also to elevate their social status to that of workers.

They also received a truck to assist with the transport of the collected recyclables from the suburbs to the point of sale.

Personal Protective Equipment (PPE) issued included

- Gloves
- Masks
- Safety boots
- Overalls





Reusable bags



Anaerobic digestion
-waste to energy



Refurbishment of
furniture



Reuse of materials
for other purposes



Recycling and
reuse of clothing



Urban mining – reuse
and repurposing of e-
waste

Local Circular Economy Initiatives



Local repairs



Urban food gardens/farming



Informal waste collection



Repurposing clothing



Reuse of packaging



Local Buy back centres



Home waste separation



Reuse and repurposing of products



Waste clean up programmes



Low carbon transport



Home composting

Conclusion

Transitioning to a Circular Economy is key to a habitable future for the following reasons:

- It forces society to rethink production and consumption from the design of products and services, to innovative delivery models culminating in reduced waste and pollution.
- It supports keeping products and materials in use for as long as possible and at their highest value, to protect our non-renewable natural resources from depletion.
- It realises the importance of natural systems for survival on this planet and aims to regenerate natural systems to ensure continued delivery of ecosystem services.
- It generates new localised jobs, provide stable and decent employment, and enhance community resilience.

A circular economy, if achieved in a balanced and responsible way, has the potential to support a habitable future by restoring harmony between people's needs and the planetary boundaries.