



ER2FOOD

Strategic support for facilitating the adoption of Energy and Resources efficiency as drivers for the technical and business development of Egyptian SMEs and start-ups of the FOOD sector

**Circular Economy
and Sustainable Development Goals**



This project has received funding from Europe Aid /
Contract ENI 2021/425-091



Agenda

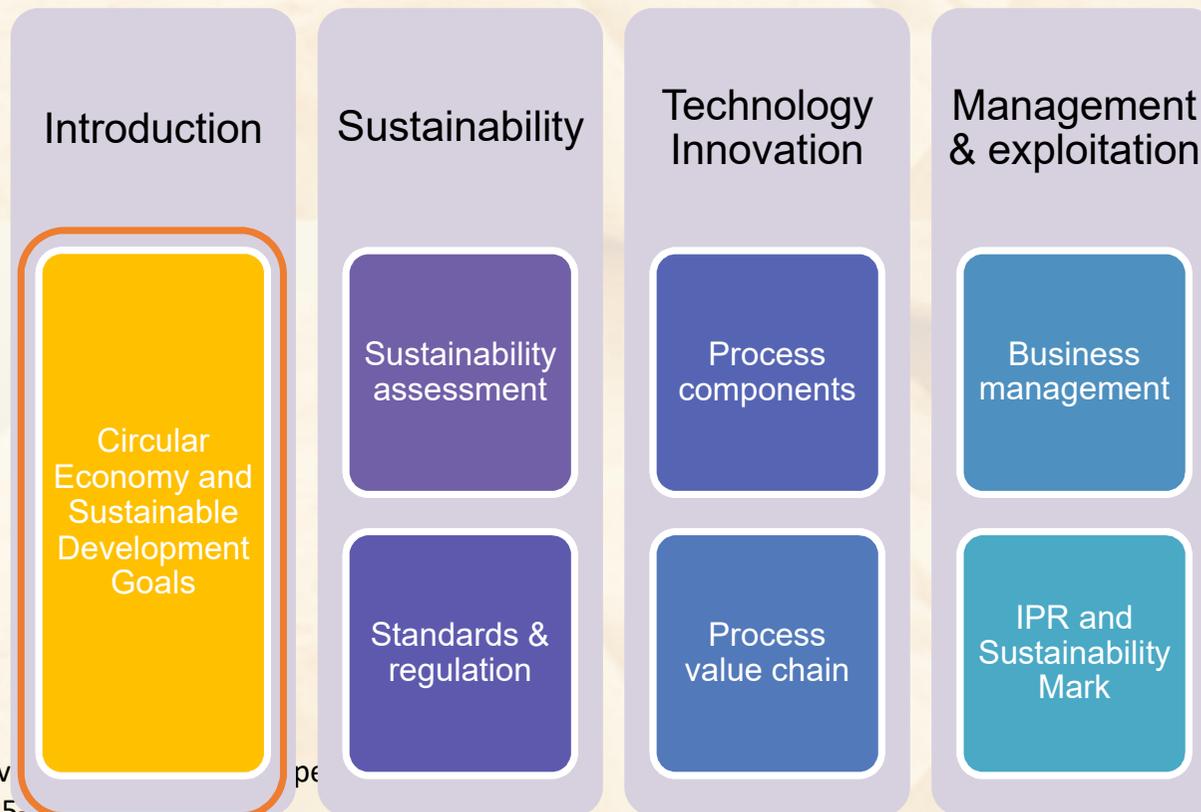
- **Introduction to the module: scope and goals**
- Overview of the Circular Economy concept
- How companies unlock value from the circular economy
- Circular Economy applications to the Food Sector
- Sustainable Development Goals SDGs
- Conclusions





Introduction to the module: scope and goals

This is one of the training modules defined for the group: “Introduction”





SCOPE and GOALS

The goal of the project:

- ER2FOOD project aims at providing strategic support and expert consultancy services to Egyptian MSMEs and start-ups from the value chain of industrial bakery, for facilitating the adoption of Energy and Resources efficiency as drivers of their technical and business development

The goals of the module:

- To provide an overview of the Circular Economy concept
- To identify the best practices for manufacturers to unlock value from the circular economy
- To identify the success cases that could be taken as reference by the Egyptian community
- To share several Circular Economy application to the baking sector
- To introduce the Sustainable Development Goals SDGs



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Linear Economy vs Circular Economy



The **traditional linear economy** creates waste through a model that flows as take, make, use, dispose.

The **circular economy** eliminates waste through a cyclical model: make, use, return, recycle, reuse, make.



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Circular Economy



Products and services in a circular economy are designed in a way that allows them to be reused, either in biological or technical cycles.

All products are manufactured in a way so they can be disassembled and materials will either be broken down to nature or returned to production.

The goal is to throw nothing away and to reduce the need for purchasing new commodities.

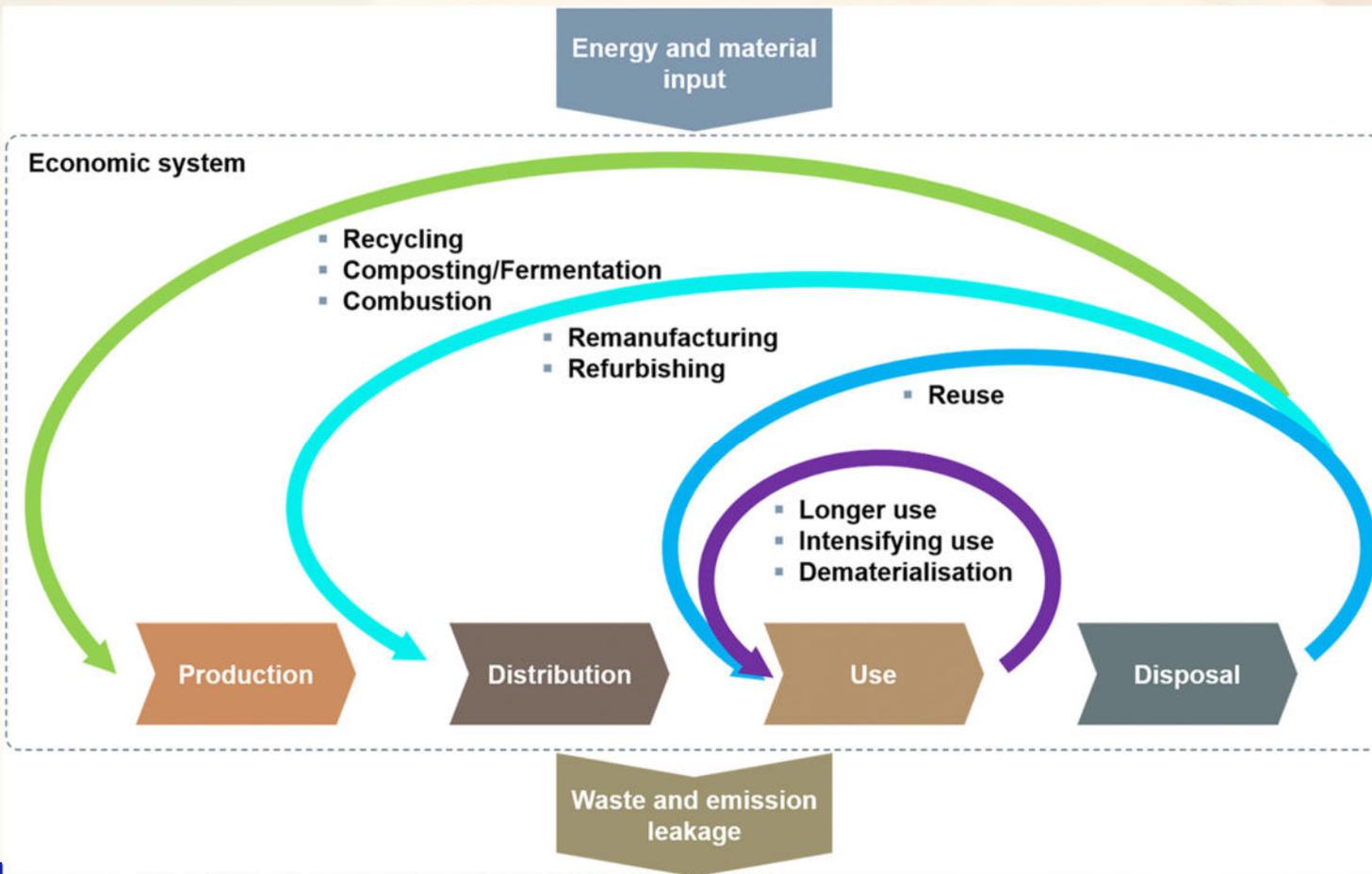


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Image: Sustainable Global Resources Ltd. Recycling Council of Ontario



Circular Economy



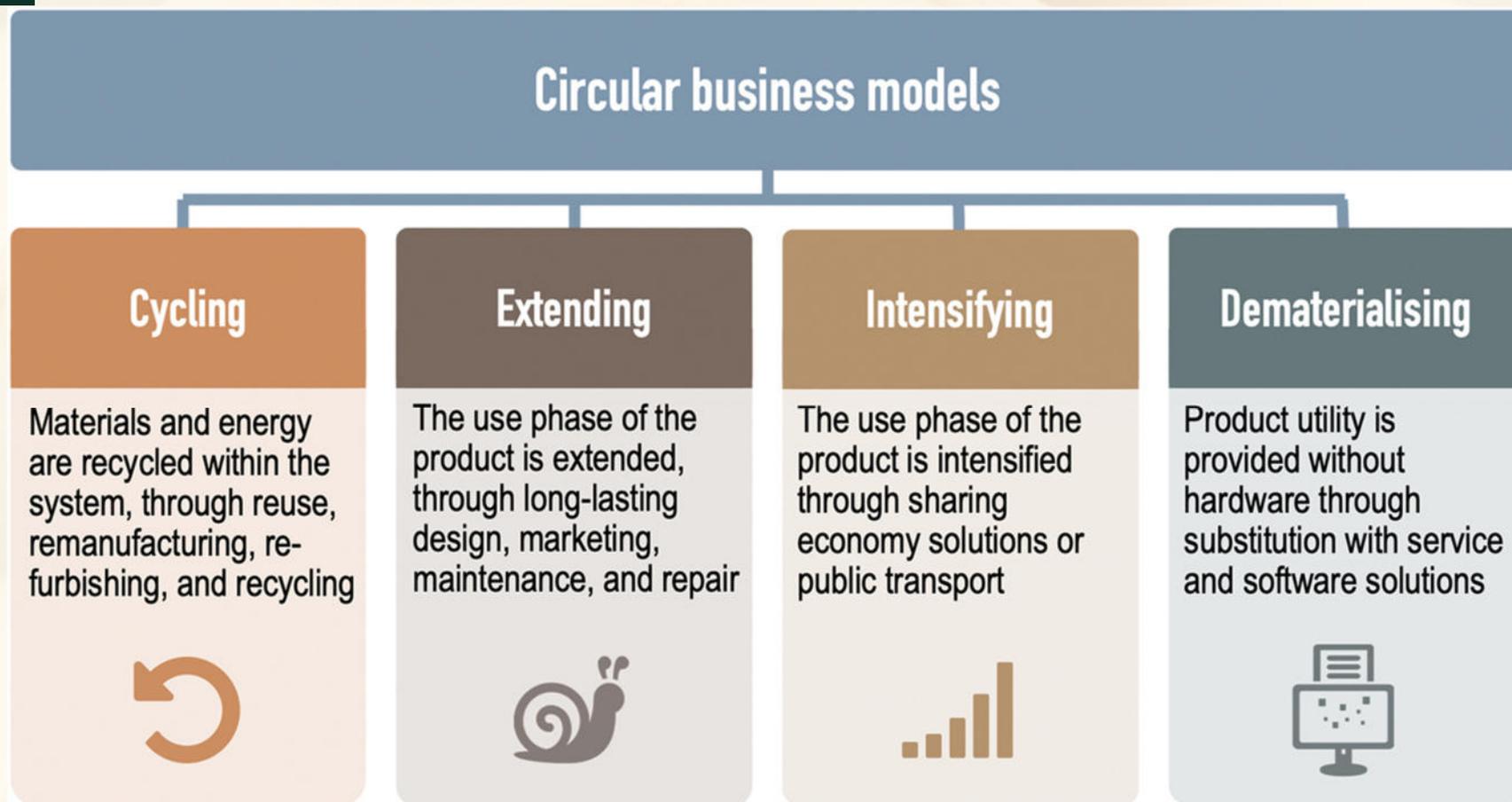
“A circular economy describes as an economic system in which resource input and waste, emission, and energy leakages are minimised by cycling, extending, intensifying, and dematerializing material and energy loops.

This can be achieved through digitalisation, servitisation, sharing solutions, long-lasting product design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling.”

(Geissdoerfer et al., 2017)



Circular Economy



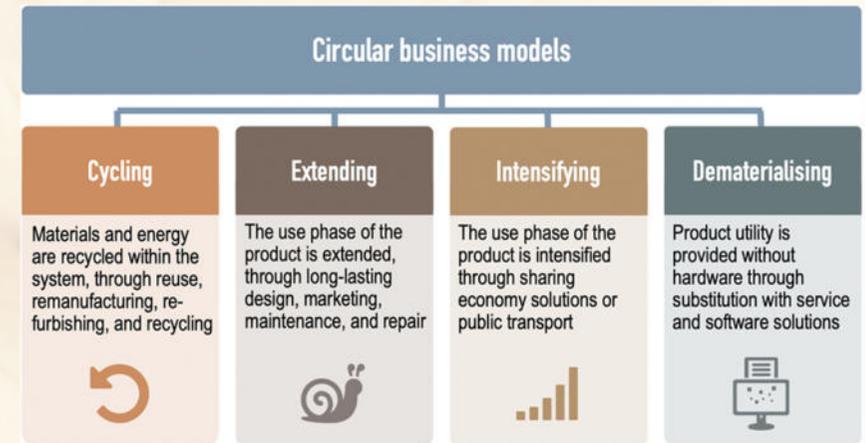
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Circular Economy

Cycling means that materials and energy are recycled within the system, through reuse, remanufacturing, refurbishing, and recycling. For example, decommissioned industrial robots can be reused in small and medium enterprises (SMEs), where their reduced purchasing cost enables a viable way to increase productivity through automatisisation.

Extending resource loops implies that the use phase of the product is extended, through long-lasting and timeless design, marketing that encourages long use phases, maintenance, and repair. For example, Patek Philip builds upmarket mechanical watches that last for a long time and have a timeless design that has not changed considerably over the past decades. A marketing campaign supports this with the slogan “you never actually own [this watch]. You merely look after it for the next generation”.

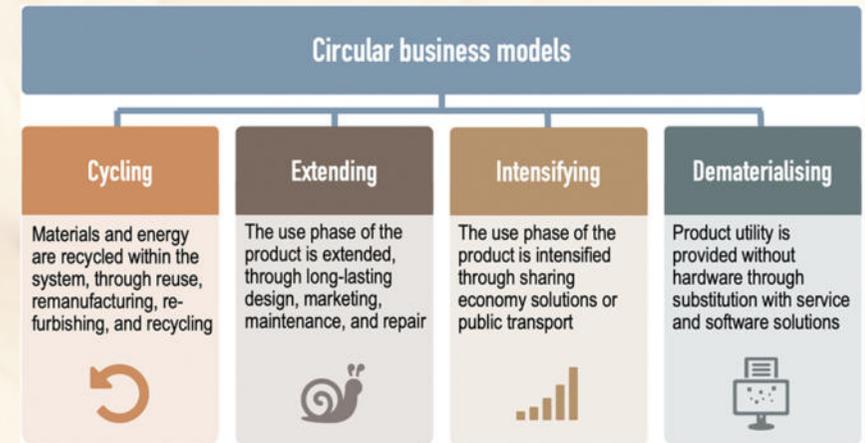




Circular Economy

Intensifying resource loops implies that the use phase of the product is intensified through solutions such as sharing economy or public transport. For example, car sharing can reduce idle times of cars and driven mileage per user significantly compared to a conventional ownership-based system.

Dematerialising resource loops describes the provision of product utility without hardware through substitution with service and software solutions. For example, offering services or product-service systems instead of physical products to fulfil the same function for the user can reduce the number of produced products while enhancing the customer experience at the same time. Nevertheless, the product-service system has to be purposefully designed for resource decoupling, otherwise it could generate undesired or rebound effects that could trigger resource consumption increase.





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Shifting to Circular Economy

In the baking sector, shifting to a circular economy will have massive economic and environmental benefits across the food value chain and broader society.

Embedding circular economy principles means that manufacturers will want to stop wasting food and therefore preserve the value of resources such as raw materials, water, and energy.

Circular economy allows also an **economic return**.

This can be achieved by:

- Building better manufacturing processes
- Design and market healthier food options
- Redistribute non-sellable food
- Recycling byproducts
- Using environmentally friendly packaging





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Toast Beer – Toast Ale Startup

Toast is an award-winning craft beer brewed with surplus fresh bread that would otherwise be wasted. This firm, founded in 2015 by Tristram Stuart, brews beer from sliced bread. Toast uses five main ingredients to brew our beer: malt, bread, hops, yeast and water.

Malt is the key ingredient in brewing. It affects the colour and flavour of the beer, provides nutrients for the yeast and contains enzymes that break down starches into fermentable sugars to produce alcohol.

Toast Ale replaces some malt with surplus bread. In early 2020 they used the leftover heel ends of loaves from Adelle Foods, a packaged sandwich producer.

In Egypt, Fayrouz was launched in 1997 to be the first flavored malt beverage. Malt is a huge part of the carbon footprint of beer due to the land required to grow barley and because the process of malting is very energy intensive.



Similar experience the [Brussels beer project](#) and [Draw Your Beer](#).

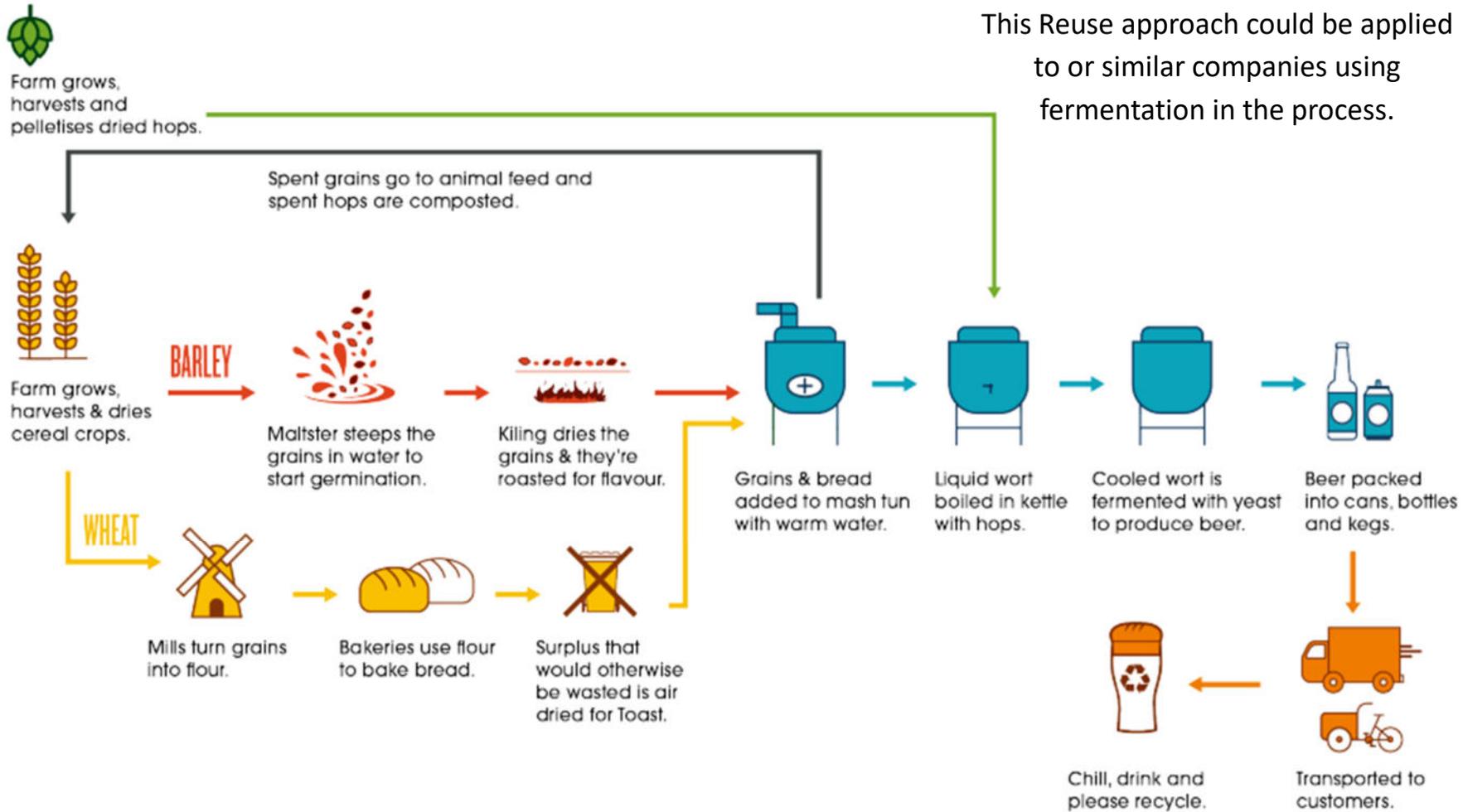


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Toast Beer – Toast Ale Startup

This Reuse approach could be applied to or similar companies using fermentation in the process.





Toast Beer – Toast Ale Startup

42 tCO₂e
emissions avoided



15 million
smartphone charges

2,067,094
slices to date

177,527m²
less land

27 
football pitches

260,372 
litres less water

16 years
of a daily shower



Being a circular economy business reduces the environmental impact of a company.

Toast Ale uses 30% less malted barley than other beers by brewing with surplus fresh bread.

Then the spent grain becomes animal feed and spent hops are composted to return nutrients to the soil.

Preventing food waste and using less barley means that Toast Ale have a smaller footprint on the land, reduce demand for water and prevent carbon emissions.



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Bread to Flour: DAXNER

The leftover bread or dough will be liquified with a minimum of water and homogenized by the selected technique of fine grinding in a rotor stator system. The result is an extremely fine suspension, which is pumpable and will no longer separate.



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Bread to Flour: Le Crumbler

The Crumbler is a machine that crushes old bread into a powder that can be recycled as its own flour. That flour can be used to make bread, cookies, muffins and pastries. The products made using its recycled flour last longer than those made with typical flour. (Price around 2k€)



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Molassed Sugar Beet Feed

Molassed Sugar Beet Feed is a natural feed produced from the root crop sugar beet and fibre ingredients (as bread).

Molassed Sugar Beet Feed provides a rich balance of energy sources for horses and animals which is rapidly digested and efficiently used for work and performance.

Energy released from the breakdown of digestible fibre helps to let the animals gain weight.

The combination of sugars and digestible fibre means that energy is released more steadily than with cereals.



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Sustainable Development Goals SDGs

The **2030 Agenda for Sustainable Development**, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future.

At its heart are the **17 Sustainable Development Goals (SDGs)**, which are an urgent call for action by all countries - developed and developing - in a global partnership.





SDGs & Food Sector

Improving energy efficiency and the battle to become sustainable is a growing challenge for all industries, including bakery.

From a purely commercial perspective, sustainability is perhaps seen as less of a driver for bakers when compared with other key consumer drivers, such as: health and fitness, convenience or clean labels.

However, the central tenets of sustainability, such as reducing energy usage and water consumption, and lowering food waste levels are not only better for the planet, but make good business sense too, as they can lower overall production costs, simultaneously improving the bottom line and bakeries' green credentials.

For example, by reducing waste, one will in turn be reducing business costs, creating social and environmental benefits and increase consumers' savings.

The reduction of food waste also works to directly affect the **SDG Goal 12**, that aims to “ensure sustainable consumption and production patterns”.



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SDGs & Water Consumption

Circular Economy and Sustainable Development Goals



ضمان توافر المياه وخدمات الصرف الصحي للجميع وإدارتها إدارة مستدامة



Target 6.4

By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity





Egypt Vision 2030 (SDS)

Out of the government's commitment to ensure a quality life for the Egyptian people, Egypt launched its first-ever **Sustainable Development Strategy: Egypt Vision 2030 (SDS)** in February 2016, believing that sustainable development is the guarantee for growth, development, and prosperity for future generations.

SDS represents a roadmap for maximizing competitive advantage to achieve the dreams and aspirations of Egyptians in a dignified and decent life.

The SDS is aligned with the 17 SDGs, as well as the African Agenda 2063, and acts as the governing framework for all development programs and projects that will be implemented until 2030.



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Conclusions

- The circular economy eliminates waste through a cyclical model: make, use, return, recycle, reuse, make.
- Shifting to a circular economy for bread production will have massive economic and environmental benefits across the food value chain and broader society.
- Circular economy have an environmental and economic benefit.
- Sustainable Development Goals SDGs encourage the optimization of resource consumption





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