



# CIRCULAR ECONOMY

**and Agribusiness Development**



UNITED NATIONS  
INDUSTRIAL DEVELOPMENT ORGANIZATION







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## About this publication

The aim of this publication is to introduce the work of United Nations Industrial Development Organization's Department of Agribusiness and how it supports circular economy development in the context of agro-industries. The publication highlights ways in which the agribusiness sector can facilitate the uptake of circular economy practices, creating shared prosperity, and contributing to improving environmental sustainability and advancing economic competitiveness in developing and middle-income countries.

Sustainable development is increasingly linked to our ability to overcome the prevailing linear pattern of resource extraction, manufacture, consumption and final disposal of material waste into the environment, also known as the “take-make-waste” approach. The need for system innovation towards a circular economy is essential in this regard, based on the principles to design waste and pollution out of the system, to keep products and materials longer in use, and to regenerate natural ecosystems.

The current COVID-19 pandemic is a reminder of the intimate relationship among humans, animals and the environment. The transmission pathways of diseases, such as COVID-19, from animals to humans, highlight the extent to which humans are placing pressures on the natural world with damaging consequences for all. [...] Once the health crisis is over, we cannot have business-as-usual practices that increase emissions and other environmental externalities like pressure on wildlife and biodiversity [...] A mutually beneficial symbiotic relation between humans and their surrounding ecosystems is inter alia the answer to more resilient economies and societies. Securing the global environmental commons requires living within planetary boundaries, conserving and sustainably managing globally shared resources and ecosystems, as well as their shared vulnerabilities and risks to promote human wellbeing.” from the UN framework report on COVID-19:

Source: [https://www.un.org/sites/un2.un.org/files/un\\_framework\\_report\\_on\\_covid-19.pdf](https://www.un.org/sites/un2.un.org/files/un_framework_report_on_covid-19.pdf)





## The Current Global Agriculture System and Planetary Boundaries

We all need air to breathe, clean water to drink, and hospitable climate patterns. However, human activity is pushing the boundaries of what our planet can provide. Our current linear model of consumption is pushing environmental limits outside which humanity can safely operate. Food systems are at the centre of this issue: it is at the same time exposed to the effects of a changing climate; and it is direct contributor to it. Our food production still relies on natural resources and their cycles as its primary input. Nutrient-rich soil, water and biodiversity provide the foundation for the ecosystems on which we depend that common established practices destroy.

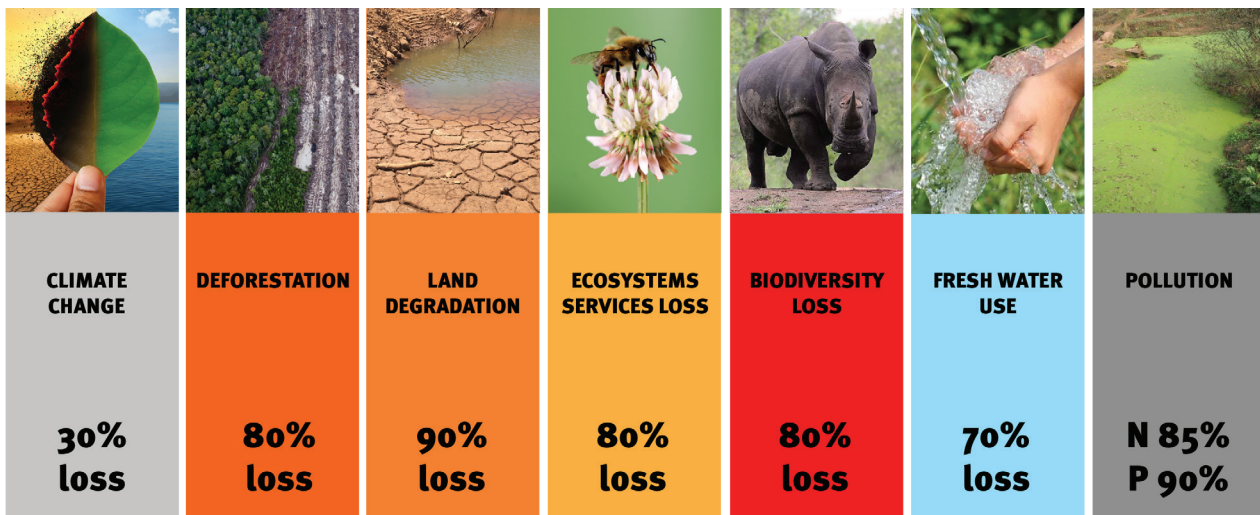
Over the past century, the global food system expanded production faster than population growth. In parts of the world, productivity gains are passed to consumers, who are nowadays provided with more food than ever at relatively lower prices. Such expansion has nonetheless come with important trade-offs: dependency of food production on relatively inexpensive fossil fuels; the loss of biodiversity; farmland degradation through intensive

practices; monoculture and increased pathogen susceptibility; eco-system destruction; and unsustainable water usage.

According to the Ellen MacArthur Foundation, for every dollar spent on food, society pays two dollars in health, environmental, and economic costs. Half these costs – totaling USD 5.7 trillion each year globally – are due to the way food is produced<sup>1</sup>.

Today, agricultural land covers 50 per cent of earth’s habitable surface and the sector contributes 25 to 30 per cent of greenhouse gas emissions. Furthermore, agribusiness is responsible for 80 per cent of deforestation, 90 per cent land degradation, 80 per cent of loss of ecosystem services and bio diversity, 70 per cent of consumption of fresh water and over 80 per cent of water pollution with nitrogen and phosphate. In terms of the ocean, 89 per cent of fisheries are over exploited or at full capacities.

### The Food System’s Impact on Natural Resources



<sup>1</sup> <https://www.ellenmacarthurfoundation.org/explore/food-cities-the-circular-economy>. Accessed 1 March 2020.



What is more, food demand is only growing. The rise of the middle class and urbanization are helping fuel demand for resource-intensive food products. Agricultural will need to double its output to feed the estimate nine billion people on earth by 2050. With the current rate of resource depletion, the current industrial food system is not sustainable.

If the world is to feed a growing population in a sustainable manner, a complete rethink of our approach to food production is needed.

## Introducing circularity in economic processes

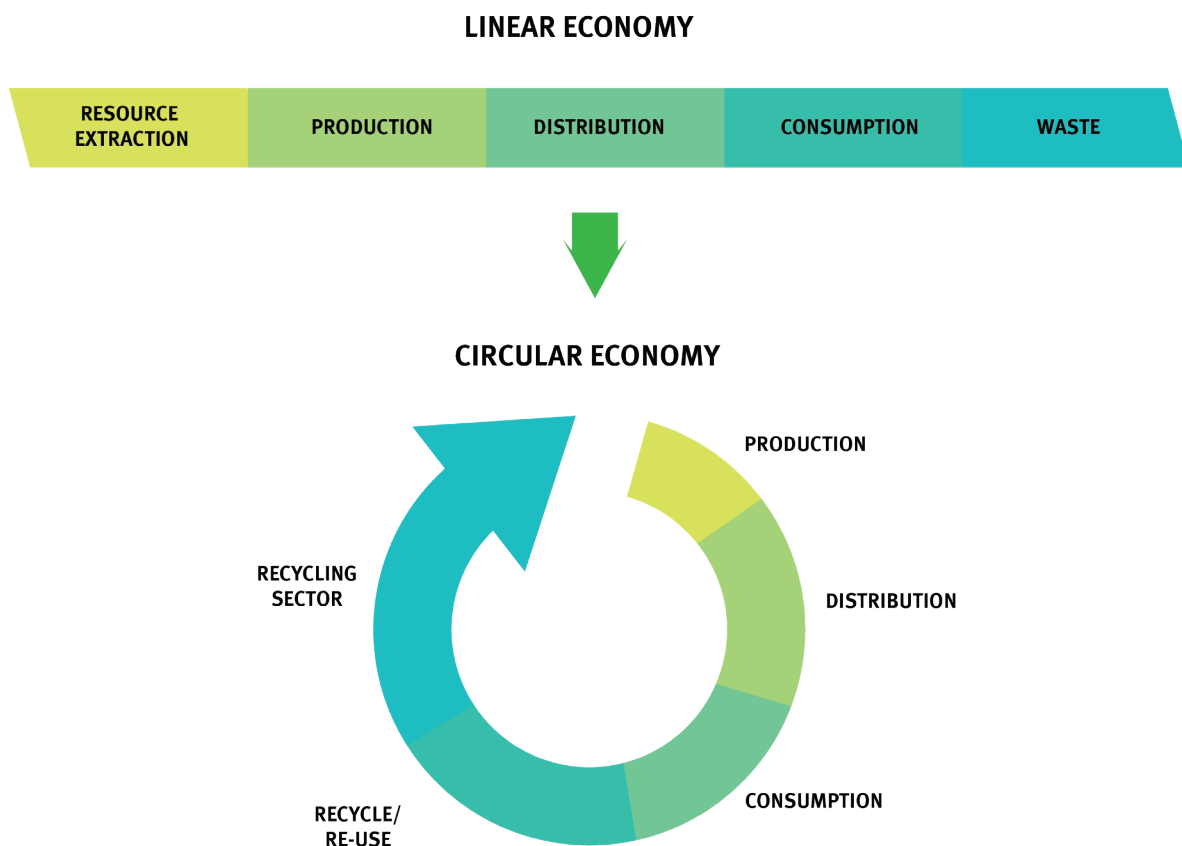
The circular economy principle addresses the “take-make-waste” approach by designing out waste and pollution, keeping products and material in use, and regenerating natural systems.

Resources may be circulated through a variety of routes, utilizing new technologies and creating new value chains and jobs.

The closed loop concept is central to the circular economy, increasing a continuous flow of technical and biological materials in the value circle, keeping products, components and materials at their highest utility and value, while reducing waste to a minimum<sup>2</sup>.

**From production and its inputs, to the final consumer, circular economy practices can be developed, leading from a linear flow of goods to a circular flow that avoids pollution, prolongs material use, captures value from waste and regenerate organic flows.**

### Linear versus Circular Economies



<sup>2</sup> Ellen MacArthur Foundation 2013

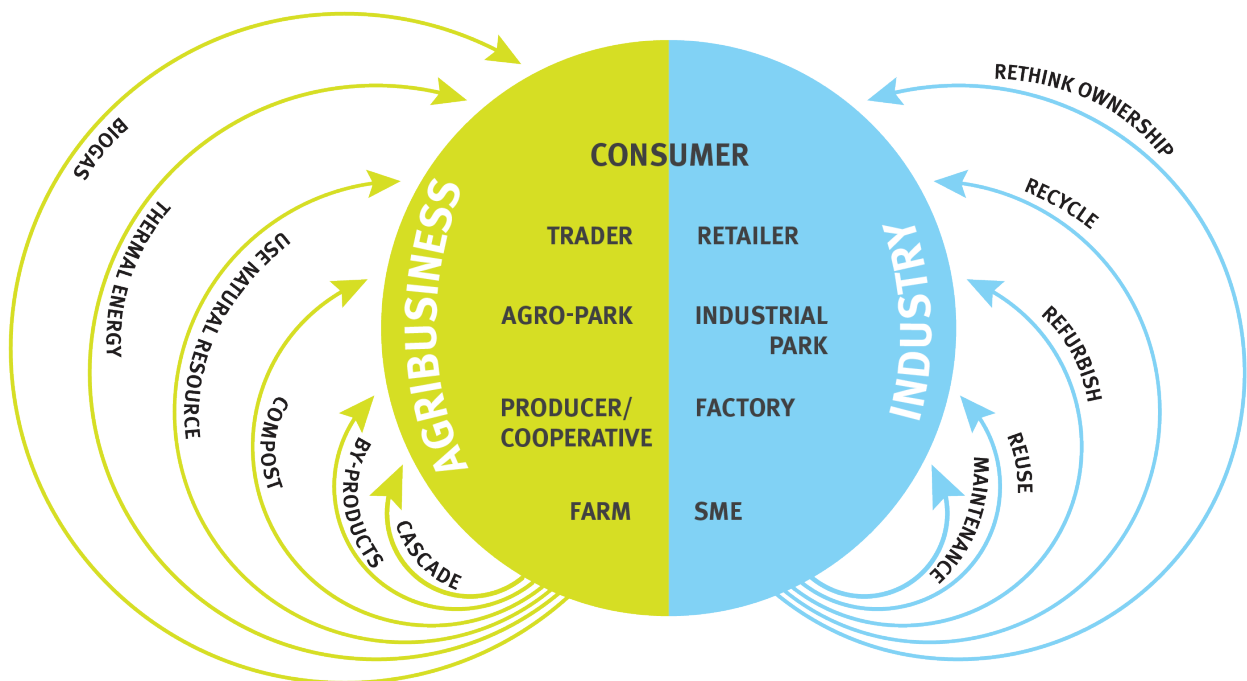


## Circular Economy and the Agribusiness Sector

In the agribusiness sector, two distinct cycles of circular mode are present: technical and biological. The **technical cycle** applies to agro-industrial technologies through maintaining, returning, renewing and reusing agri-processing technologies that support agricultural efficiency, while also minimizing waste and providing cost savings. New business models focusing on sharing capital-intensive machinery also allow for wider application and cost savings. It also applies to non-natural source of packaging, where reuse and recycle are prioritized.

As an example, the recent awareness of single use plastics and resulting bans of plastic bags are pushing food brands to rethink their packaging materials, providing new opportunities for renewable packaging entrepreneurs.

### Technical and Biological Systems in the Circular Economy



Source: Ellen MacArthur Foundation concept, redesigned by UNIDO

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