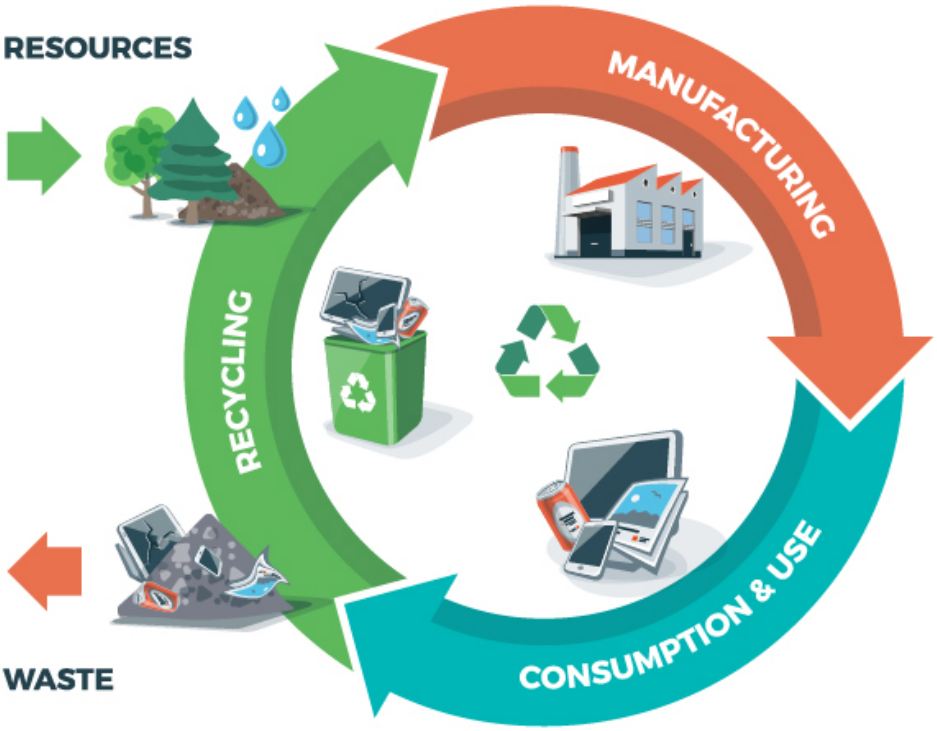
Bioplastics role in the New Plastic Economy



Bioplastics will be a major component in the New Plastic Economy. For plastics to thrive without harmful waste and negative environmental impact, a switch from a linear economy to circular economy is paramount.

The Ellen MacArthur Foundation released a comprehensive report in 2017 aimed at rethinking plastics role in our future, and new research earlier this year aimed at providing tangible actions for stimulating change. This foundation's mission is to "accelerate the transition to a circular economy" by working with businesses, governments and academia to build awareness.

Through a switch in fundamental practices and goals, the plastics industry can have a

prominent role in reshaping the manufacturing and use of goods throughout the world.

What is a circular economy?

Circular economy is an alternative possibility to the traditional linear economy model – make, use, dispose or take, make, dispose. In the circular economy, resources are kept in use for as long as possible with the goal to keep products, components and materials at their highest effectiveness and value at all times.

By doing this, businesses can achieve maximum value from the products consumers use. Once maximum value has been reached, the product and materials can then recover and regenerate. The circular economy is restorative and regenerative in its design, emulating the living world itself. Natural materials decompose into basic building blocks, only to be used again for new things.

How does a circular economy work?

Circular economy is broken into three different components – preserve and enhance natural capital, optimize resource yields and foster system effectiveness. These three components are the tenants on which circular economy is successful.

To preserve and enhance natural capital, society needs to govern the use of finite resources while simultaneously balancing the flow of renewable resources and fostering their growth. Resources need to be selected wisely, then processed using efficient technologies and practices. These practices encourage the flow of nutrients within the system and lead to better regeneration conditions.

Optimizing resource yields within circular economy involves the circulation of products, components and materials at the highest utility for both technical and biological cycles. It also means going beyond Design for Manufacturing (DFM) practices by also designing for refurbishment and recycling. When manufacturers incorporate these design practices, the product life is extended and optimized for reuse.

For humans to foster system effectiveness – the last tenant of circular economy – businesses, governments and consumers have to manage land use along with air, water, pollution and climate change. Managing these externalities reduce damage to renewable feedstocks and limit the consumption of finite resources.

How does a circular economy apply to plastic?

Plastics are a prominent material in modern manufacturing given their high functionality with relatively low costs. In the past 50 years, their use has skyrocketed across all markets. But petroleum based plastics fall under the linear economic model creating significant economic and environmental drawbacks.

That's not to say plastics haven't been good for the economy, instead it's to point out the room plastics can grow in our economy. According to the Ellen MacArthur Foundation's research, $80-120 billion in plastic packaging material is lost, every year, to disposal and waste.

The foundation points out that since the launch of the first universal recycling symbol, only 14% of plastic packaging is collected globally for recycling. Current projections place more plastics in the ocean by weight than fish by 2050.

While this is alarming, plastics don't need to be pushed to the wayside. Instead, with innovation, plastics can be redesigned and conformed into the circular economy to foster growth, reduce waste and improve their environmental impact.

The heart of incorporating plastics into circular economy is through a fundamental redesign in makeup. There isn't a single solution, but instead multiple solutions to fix the problem.

Many of the innovations in redesign are being done through a multi-pronged approach with bioplastics. The increased use of bioplastics is reducing landfill waste, utilizing renewable feedstocks, recycling petroleum based plastics and limiting the use of finite resources to create products that perform just as well, if not better, than traditional plastics in many applications.

Returning to the tenants of a circular economy, bioplastics are:

- Reducing the carbon footprint and sourcing from sustainable feedstocks (preserve and enhance natural capital)
- Utilizing compostable materials that bring nutrients back to the

soil, reducing the amount of fossil fuels used and recycling petroleum-based plastics to reduce landfill waste (optimize resource yields)

- Increasing the quality of bioplastics through technological innovations, increasing utility value, life cycle and functionality (foster system effectiveness)

Innovations in sustainable plastics to improve recyclability and compostability are happening every day. Scaling up commercial composting facilities to handle compostable plastics will speed up the process of recovering and regenerating these materials into usable forms.

Bioplastics are the key component to bringing the plastics industry out of a wasteful linear economy and into the circular economy. Their increased use will yield positive results via the New Plastics Economy, not only in environmental and economic instances, but also functional impacts.

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