



# Cotton's Circular Lifecycle

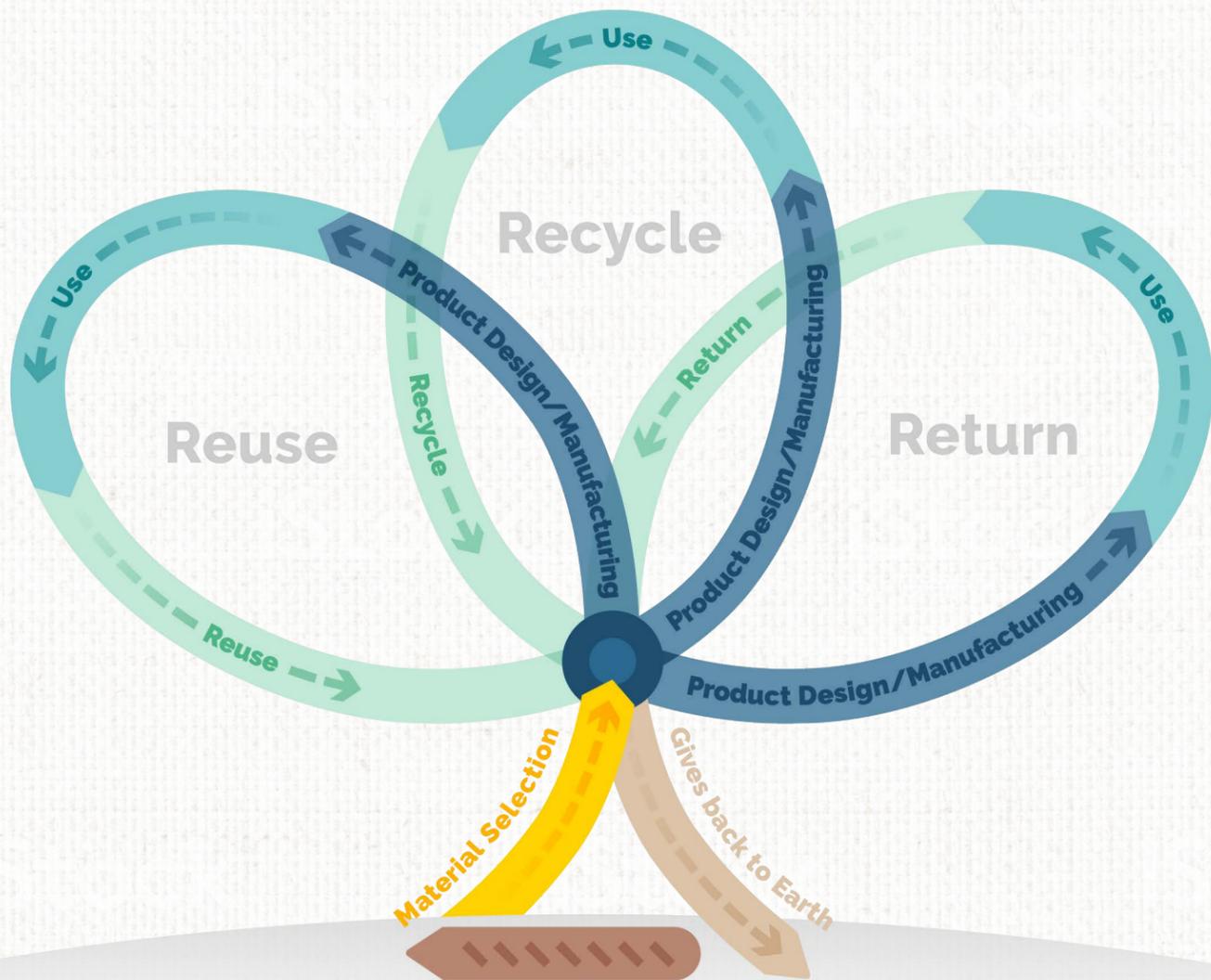


# NATURALLY CIRCULAR

You know cotton as comfortable, durable and incredibly versatile – a natural fiber you can use in products as wide-ranging as shirts, sheets, wet wipes and 3D printed buttons.

Cotton can also be reused, recycled\*\* and returned<sup>®</sup> to the earth. Whatever product you make, there's a circular path ahead when you make it with cotton.

**Explore the three intersecting paths of cotton's circular lifecycle – and start envisioning your opportunities.**



## Grown from Earth

Cotton is a natural fiber – grown from sunlight, water and earth – that stores carbon dioxide the plant has absorbed from the atmosphere.\* Through the open exchange of best practices and extensive research, cotton producers continuously improve their stewardship of the land and natural resources.

## Material Selection

When you select cotton fiber, the rest of the plant is utilized too. For example, cottonseed is used for both edible oil and feed for dairy cows. Gin waste – natural plant matter – is incredibly versatile, with uses ranging from fabric dyes to medical supplies. And once your cotton fiber product has completed its first use, it shouldn't go to waste then either. There are abundant possibilities for what's next in its circular lifecycle.

## Product Design/Manufacturing

During this phase, smart processing solutions, such as enzymatic scouring and water-conserving dyeing technologies, are continuously being developed to reduce water, energy and chemical (WEC) inputs, as well as waste. Fiber quality is at its peak the first time it goes through the manufacturing process.

## Consumer Use

For specific product categories, like apparel, consumer use is one of the largest contributors to greenhouse gas emissions in cotton's lifecycle due to laundering.\* The product's original purpose and post-use condition then determine whether a product can be reused, recycled or composted. If its first use is a shirt or a bedsheet, then it can be reused or recycled. If its first use is a wet wipe, on the other hand, the product can be composted instead.

## Circular Attributes

### Reuse

Well-made cotton apparel is durable, which makes it a perfect match for the blossoming secondhand market where it can be reused over and over again. Of course, there are still environmental impacts from laundering the garments.\* But no new resources have gone into manufacturing, and no still-valuable resources have been lost in the landfill.

### Recycle

Textiles made of 100% cotton can be recycled\*\* and may be used to create new products. Textile applications include apparel, home goods and fabrics that are made using nonwoven manufacturing techniques. The wealth of non-textile applications that could be cotton's next stop in the lifecycle include insulation, filters and automotive uses. Cotton fibers can also be used in non-textile processes such as 3D printing and injection molding.

### Return

After it can no longer be reused or recycled,\*\* cotton products can be discarded. Cotton can degrade in industrial compost<sup>®</sup>, wastewater, salt water and fresh water environments, and it also degrades faster than manufactured cellulosic fibers like rayon and oil-based synthetics.<sup>†</sup> Ultimately, cotton can be returned to the earth during decomposition under certain conditions.

## Gives back to Earth

Farmers can return the remains of the cotton plants to the soil after harvest for nutrients. Brands and manufacturers can also play a role in this circular path and benefit Earth by choosing cotton as their preferred raw material. They know that at end of life, their 100% cotton products can decompose<sup>‡</sup> to improve soil health and nourish natural resources.



Retailers, clothing brands, nonprofits and consumers have saved about 3.5 million pieces of denim from the landfill through the Cotton Incorporated Blue Jeans Go Green™ denim recycling program.† The denim is recycled into cotton fiber insulation.

Cotton's circular life cycle helps companies across the supply chain reduce waste and meet their sustainable sourcing and content goals.

When you incorporate cotton into your apparel, home fabrics and everyday products, from household cleaning to beauty to baby care, you incorporate a commitment to circularity.

Learn more about cotton's circular attributes at [cottonworks.com/sustainability](https://cottonworks.com/sustainability).



Cary

New York

Hong Kong

Shanghai

Osaka

Mexico City



Cotton Incorporated

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\*\* Cotton products are recyclable only in a few communities that have appropriate recycling facilities.  
∞ In composting tests, cotton fabric samples underwent a weight loss of approximately 50-77% after 90 days in a composting facility.  
Li, Lili; Frey, Margaret; Browning, Kristie (2010). Biodegradability study on cotton and polyester fabrics. Journal of Engineered Fiber and Fabrics, 5(4), 42-53. <https://www.jeffjournal.org/papers/Volume5/5-4-6Frey.pdf>  
\* Cotton Incorporated (2017). LCA Update of cotton fiber and fabric life cycle inventory. <http://resource.cottoninc.com/LCA/2016-LCA-Full-Report-Update.pdf>  
† Research conducted with North Carolina State University (2018). [https://www.cottonworks.com/wp-content/uploads/2019/12/Understanding-the-Plastics-Problem\\_pages.pdf](https://www.cottonworks.com/wp-content/uploads/2019/12/Understanding-the-Plastics-Problem_pages.pdf)  
‡ Blue Jeans Go Green™ (2020). <https://bluejeansgogreen.org>