

# Your Clothes Can Have an Afterlife

NIST [nist.gov/news-events/news/2022/05/your-clothes-can-have-afterlife](https://www.nist.gov/news-events/news/2022/05/your-clothes-can-have-afterlife)

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Many people donate used clothing. But clothes and other textiles that are too old or worn can still have an afterlife in other products.

Credit: Supakorn Limteerayos/Shutterstock

Only about 15% of used clothes and other textiles in the United States get reused or recycled. The other 85% head straight to the landfill or incinerator. This wastes scarce resources, contributes to climate change and pollutes waterways.

In a new report from the National Institute of Standards and Technology (NIST), *Facilitating a Circular Economy for Textiles*, scientists recommend strategies to address this problem. The circular economy referenced in the title is one in which materials remain in the economy longer through repeated reuse, repair and recycling, and are finally discarded only as a last resort.

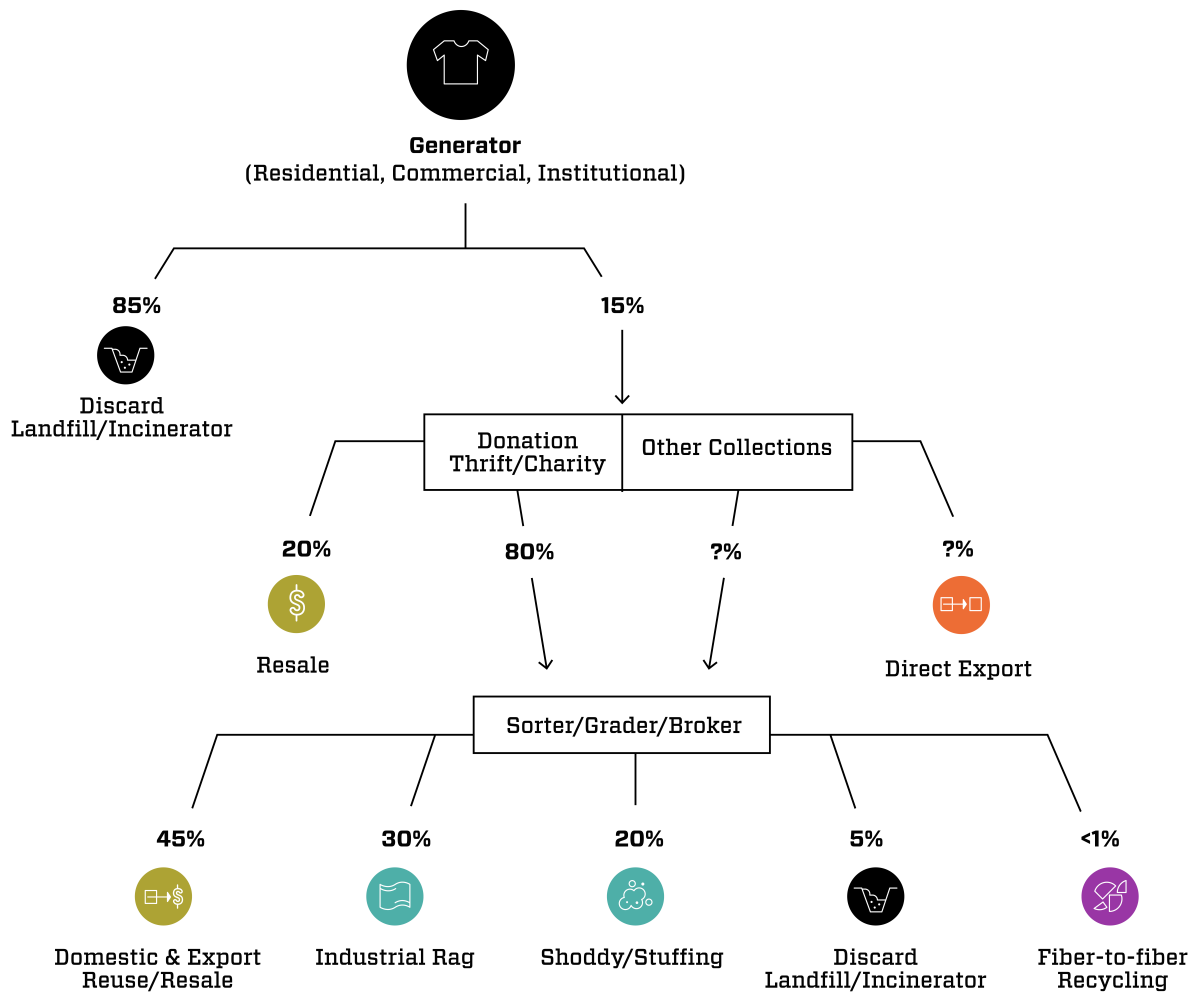
The report is based on a three-day workshop held at NIST in September 2021 that brought together manufacturers, industry associations, recyclers, waste managers, researchers, policymakers and several major fashion brands that share the goal of increasing circularity in the textiles industry.

“Textiles are one of the fastest growing categories in the waste stream,” said Kelsea Schumacher, an environmental engineer working with NIST who co-authored the report. “But there are a lot of opportunities to reduce waste in this sector that would bring big economic and environmental benefits.”

The report defines textiles to include clothing, shoes, bedding, towels, upholstery fabrics and carpeting. However, the main type of textile in the municipal waste stream, according to the Environmental Protection Agency (EPA), is discarded clothing. On average, each person in the United States discarded roughly 47 kilograms (103 pounds) of textiles in 2018, the most recent year for which data is available.

Many people donate used clothing. But clothes and other textiles that are too old or worn can still have an afterlife in other products. For example, they can be cut and resold by industrial rag manufacturers. The fibers can also be separated and recycled back into new textiles or used as stuffing for upholstered furniture and car seats or home insulation material.

The authors of the report compiled data from multiple sources to create a flow diagram that shows what happens to textiles in the United States after they are donated or discarded.



This flowchart shows the fates of used textiles in the United States today. Question marks indicate flows for which reliable data are unavailable. "Shoddy" is a material made from shredded fibers and used for insulation and stuffing. Based on data from the U.S. Environmental Protection Agency and Resource Recycling Systems. From NIST Special Publication 1500-207: *Facilitating a Circular Economy for Textiles*.

Credit: N. Hanacek/NIST

One obstacle to greater reuse and recycling cited in the report is that consumers lack information about how to dispose of their used textiles. For instance, many people don't realize that they can recycle them. Cities and towns often have textile recycling drop-off centers that can be found with a quick internet search.

For more tips on how to donate and recycle used textiles, see Kelsea Schumacher's [blog post](#).

But consumer knowledge can only go so far. The report recommends other improvements that businesses and governments can undertake to increase reuse and recycling of textiles. These include better sorting and grading technologies, advanced labeling and digital product identification, advanced recycling processes for certain synthetics that are not currently recyclable, standardized terminology and classifications, and better data collection.

NIST undertook this effort as part of its larger circular economy initiative, which until now has focused mainly on ways to keep plastics circulating within the economy, rather than ending up in landfills or polluting the environment.

“Circular economy is about more than just recycling,” said NIST materials scientist and report co-author Amanda Forster. “It’s about keeping products in their useful form for as long as possible, then when you can’t use them anymore, finding a way to recycle them that preserves as much of their value as possible, and only sending them to the landfill as a last resort.”

Environment, Climate, Sustainability, Manufacturing, Sustainable manufacturing and Materials

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### What is the Circular Economy?

How do we go from a throwaway economy to one where we minimize waste, prevent greenhouse gas emissions, and keep resources in the economy for as long as possible? With a circular economy. Learn more in this animation. For more information go to: <https://www.nist.gov/circular-economy>