

**Title:**

Beyond Bed and Bath: Building a Circular Economy for Linens Discarded by the Hospitality Industry

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**Primary Topic:** Building A Sustainable Circular Economy for Materials & Products

**Secondary Topic:** A Systems Approach to Overcoming Supply Chain & Logistics Challenges

**Abstract:**

The clothing and textile industry has many detrimental environmental impacts and is a major contributor to greenhouse gas emissions, pollution, and water and pesticide use. In addition, currently 85% of all textile waste winds up in landfills. Worldwide, 1.5 million tons of textile waste annually is comprised of just sheets, pillowcases, and towels (linens), with hotels being a significant contributor to this waste stream. We convened a multi-disciplinary academic team to tackle this global issue on a regional scale in Washington State, by investigating a circular economy model in which textile waste generated by the hospitality industry is reused and then recycled to develop new textiles. Within the hospitality industry, we focused on linens discarded by hotels. The linens are optimal for secondary use because many are discarded in new or nearly new condition. The hotel linens have a high percentage of high-quality cotton and are also optimal for recycling because they lack the zippers, buttons, and other accessories common in apparel. Our team is working in partnership with Washington State's hospitality industry and the WA State Department of Commerce.

Our textile circular economy model included a survey to determine information on how, why, and the quantity of linens discarded by Washington hotels. We completed an economic analysis as well as an investigation of potential for secondary markets for discarded linens. With linens donated by hotels, we held a design hack-a-thon with students from Washington State University's Apparel, Merchandising, Design, and Textile Department. Our research estimated the vast quantity of discarded linens available for secondary use and eventual recycling. Next steps include further investigating secondary markets and working with linen manufacturers to develop take-back programs. We believe a circular textile economy fed by linens from the hospitality industry has the potential to create innovative secondary markets and be a good resource for cotton textile recycling to radically transform the industry.