

FASHIONING FIBER FUTURES

THE FIBERSHED APPROACH TO REVITALIZING REGIONAL
FIBER NETWORKS

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Abstract

In less than 100 years, the fashion and textile industry has transformed from local to global supply chains. Today, the industry is dominated by synthetic fiber production which produces garments that contribute to a variety of environmental and social issues such as microplastic pollution, increased carbon emissions, and abundant waste. In recent years, a response led by Fibershed has emerged which embraces a return to local fiber systems with a sincere focus on sustainable practices. Using instrumental case study, this study evaluates Fibershed's approach to establishing regional fiber networks and offers possibilities for future expansion of Fibershed's practices through policy and the inclusion of Indigenous and Black American knowledge and experience in order to create a more sustainable fashion future.

Keywords: *Fiber, Fibershed, Localism, Policy*

INTRODUCTION

Globalization under capitalism has created a vast network of players in a complex fiber and textile system of growth and production, transforming the textile industry from local natural fibers to a synthetic industry. Prior to industrialization, the American fashion industry consisted of natural fibers including flax, hemp, wool, and cotton. The role of cotton in industrializing the American South through chattel slavery is commonly known, yet the growth of textile production in the Northeast was also crucial to economic development (Rivard, 2002). Since the first synthetic fiber, nylon, was created by Du Pont in 1935, fashion companies have exploited the shorter production cycle to create more garments,

diversify market offerings, and meet consumer demand (Handley, 1999). For the sake of increasing production and profit, fashion companies have become sources of dangerous labor conditions, unethical wages, environmental pollution, and resource extraction (Schlossberg, 2019). Due to a growing global middle class and increasing prosperity in the wealthiest countries, clothing production doubled from 2000-2015 (Ellen MacArthur Foundation, n.d.). To remain profitable in an increasingly competitive industry, modern fashion companies rely on synthetic fibers due to their lower production costs when compared to natural fibers, leading to negative effects on the environment (Niinimäki et al., 2020). For over 60% of synthetic fibers, the production process begins

with fossil fuel extraction (World Apparel Fiber Consumption Survey, 2013). It is estimated that 342 million barrels of oil are consumed during production annually (Ellen MacArthur Foundation, 2017). Furthermore, garments created with synthetic fibers made from non-renewable fossil fuel resources shed microplastics with every wear and wash. Through laundering and the eventual discarding of the garment, these microplastics pollute soil (Yang et al., 2021), oceans (Boucher & Friot, 2017), and bloodstreams (Leslie et al., 2022). Synthetic textiles, dyes, and finishes also contain carcinogens, neurotoxins, and endocrine disruptors that negatively impact human health (Burgess & White, 2019).

LOCAL FIBER

Local fiber models serve as a foil for the modern industrial textile and fiber system. These models reclaim preindustrial localism, focusing on producing the natural fibers that have lost ground through industrialization. Producers in this model are smaller and often serve multiple roles within the system, including farmer, designer, fiber processor, textile producer, and entrepreneur within smaller communities and geographic regions (Morrow, 2023). A common fixture of the local fiber movement over the last several decades is the festival circuit. Festivals like New York Sheep and Wool in Rhinebeck, NY, draw in large crowds of designers and makers interested in local products (Adams, 2022). While these festivals draw fiber enthusiasts, the most prominent organization in the local fiber movement supporting fiber production and development is Fibershed.

FIBERSHED

Fibershed is a non-profit organization founded in northern California by Rebecca Burgess in 2010. The organization consists of 71 fibersheds – local networks of fiber and textile production, derived from the slow food movement and the concept of watersheds. In comparison to current textile production, Fibershed sets itself apart by considering “all the people, plants, animals, and cultural practices that compose and define a specific geography” (Burgess & White, 2019, p.7). By focusing on the ‘source of the raw material, the transparency with which it is converted into clothing, and the connectivity among all parts, from soil to skin and back to soil,’ Fibershed creates a place-based textile sovereignty aiming to include

rather than exclude (Burgess & White, 2019, p. 7). “Place doesn’t always travel,” (Liboiron, 2021, p. 151) indicating that local wisdom is local for a reason; it is not universal. Fibershed’s system is strategically local. As their affiliate network grows, the Fibershed model also spreads. Its flexibility allows for a continued focus on local knowledge and needs which sets an example for the fiber industry at large.

METHODOLOGY

To evaluate the potential of local fiber models, this research centers the Fibershed initiative in the U.S. as an instrumental case study to gain insight into feasibility of local models (Stake, 2013; Patton, 2015), with a secondary focus on regional fiber networks and the interplay of domestic textile industry policy. A thematic content analysis of secondary source material was conducted to evaluate the Fibershed model and determine how the model meets future social and environmental needs of the fashion system. First, existing research on the global fiber industry and local fiber systems regarding social, economic, and environmental impacts was reviewed. Next, to identify how the Fibershed system differs from the modern industrial textile production system, materials published directly by and in association with Fibershed were analyzed. These sources include the Fibershed website, blog, annual reports dating back to 2020, white papers, the Weaving Voices and Soil to Soil podcasts, affiliate social media accounts, and the book, *Fibershed: Growing a Movement of Farmers, Fashion Activists, and Makers for a New Textile Economy*, written by the founder and Executive Director, Rebecca Burgess, in partnership with Courtney White (2019). Analysis of affiliate Fibersheds was focused on the New York Textile Lab. Fiber, textile, and fashion legislation (both proposed and implemented) within the U.S. and its member states from 2014 to 2024 was analyzed for themes and connections to local fiber networks and aligned priorities. The evaluation of Fibershed as a large-scale model for industry change was limited by the use of secondary source materials.

FINDINGS

To align with the three pillars of sustainability, the analysis of Fibershed’s current practices are presented within the context of fashion sustainability (Daukantienė, 2023). Economic, environmental, and social aspects of Fibershed are categorized

according to product and consumer orientations in the fashion, textile, and apparel industries. While Fibershed's focus is developing and strengthening local fiber systems, attention to the products created with these fibers is limited to facilitating relationships between corporate buyers and connecting regional producers to local markets. Below, we connect Fibershed's efforts in the fiber industry to existing approaches to sustainability in the fashion industry in order to evaluate Fibershed as a sustainable model for fiber system development and identify areas where the model can extend to promoting slow fashion and a circular economy.

ECONOMIC ASPECTS OF FASHION SUSTAINABILITY

Fibershed recognizes the importance of creating economic viability for an alternative fiber system by working within ideas of circularity and regional development.

THE SOIL-TO-SOIL SYSTEM

Fibershed practices a Soil-to-Soil system, an adaptation of circular design, where fiber production is centered around the soil. Once fibers are harvested, they become garments that return to the land through composting. Unlike other circular models, this system deemphasizes reuse, recycling, and repair. Prioritizing natural fibers for their quick compostability creates opportunities for more sustainable practices in fiber farming such as carbon sequestration (Burgess & White, 2019). On Earth, carbon is stored in the oceans and soil. Due to anthropogenic climate change, the carbon content of our soil has decreased (Ontl & Schulte, 2012). To encourage carbon sequestration fiber farming, Fibershed formed the Climate Beneficial™ Agriculture program to increase carbon drawdown, work with land stewards to implement best practices, and certify Climate Beneficial farms. Through this program, 8,746 tons of carbon emissions were sequestered from 2019 to May 2021 through just 66 fiber producers (Fibershed, 2023a). In 2021, seed grants amounting to over \$66,000 were awarded to 17 producers with an estimated carbon drawdown impact of over 4,000 tons of carbon in the next 20 years. To radically change current fiber production practices, programs like Climate Beneficial Agriculture are needed to develop environmentally friendly agricultural methods. By implementing methods that benefit the soil and environment, Fibershed aims to

achieve a net positive impact for fiber farming on Earth.

However, less than 1% of all clothing is recycled into new clothing, while another 14% is recycled into other objects (Ellen MacArthur Foundation, 2017), leaving a gap for potential reuse. Fibershed does not significantly engage with how to utilize existing fiber for good reason; the fiber recycling process is as complex as the local fiber movement Fibershed promotes. However, natural fibers have the potential to be reused, reducing the need for new fibers. Contemplating reuse within the Soil-to-Soil system, for example, would create feedback loops that lengthen the time between fiber cultivation and its return to soil, decreasing the needed annual yield from fiber farming.

REGIONAL FIBER MANUFACTURING INITIATIVE

In order to create a truly local and resilient fiber system, increased investment in national fiber manufacturing is needed. Once apparel manufacturing moved overseas in the 1980s, most domestic fiber mills closed, leaving a lack of structural support for processing locally grown fibers (Oh & Suh, 2003). Today, the U.S. fiber and textile industry is stratified according to regional issues hindering full production. In the Central Plains Region, existing fiber farmers need infrastructure support such as mills, processing, and weaving facilities (LeHew et al., 2022) which Fibershed aims to facilitate. In the 10 years since Fibershed was founded, two regional mills were established through the Regional Fiber Manufacturing Initiative which assists potential mill owners with engineering plans and financial support (Fibershed, n.d.-b). Despite these ongoing efforts, today, the northern California Fibershed can support knitting production for all fibers, but spinning is limited to small scale wool operations, and unavailable for cotton and bast fibers (Fibershed, 2023). These mills keep fiber production as close to the point of origin as possible, but structural obstacles remain.

SOCIAL ASPECTS OF FASHION SUSTAINABILITY

Fibershed builds networks of social connections between producers, buyers, and consumers that produce sustainable local systems.

FACILITATING A LOCAL MARKET FOR SLOW FASHION

Sustainable local products are cost-intensive and cannot be consumed like disposable fast fashion products. To reduce consumer apprehension around longer lead times and higher costs, Fibershed approaches consumer education as community engagement. Each Fibershed facilitates interactions between local producers and corporate buyers, thereby benefiting multiple stakeholders throughout the textile supply chain. Producers gain access to fiber industry peers for a small membership fee, which begins at \$40 for the original Northern California network. This network spans 51 counties in northern and central California where 191 members including farm owners, millers, textile designers, dyers, and apparel designers are designated as producers. Membership also provides access to Fibershed's Instagram and Facebook connections which provide relevant updates and advertisements while educating the public about the benefits of the Fibershed system. Fiber farmers and processors become fiber educators who share their firsthand experiences with students of all ages, backgrounds, and knowledge levels creating "an environment for public engagement" (Trejo & Lewis, 2017, p. 122) that brings newcomers into the fold. Public classes also increase slow fashion skills needed to make and maintain garments within the local economy. This focus on developing artisanal skills eschews big business models and empowers consumers to become makers.

PRODUCT TRACEABILITY AND TRANSPARENCY

To increase consumer knowledge of textile waste, product traceability and transparency is necessary. However, this is limited within the Fibershed system. For final products, Fibershed provides Climate Beneficial verification labels which includes care labels made from organic cotton and hang tags created with recycled paper and soy ink (Fibershed, 2023b). However, information on end-products created through Fibershed systems is limited.

Most Fibersheds host producer markets featuring fiber products for small scale knitting and weaving projects. Like farmer's markets (Warsaw et al., 2021), these markets connect producers directly to customers, providing opportunities for education through informal conversation and fiber farm

tours. Producer markets also match inventory to interested buyers, ensuring that excess fiber is delivered to interested buyers.

At the New York Textile Lab, a small amount of products are sold directly through the website. Most of these products are made from yarn sourced from multiple farms in the purchasing cooperative, Carbon Farm Network. Within the co-op, designers collaborate to source fibers and make yarns for commercial textile products. Products are priced on a sliding scale meant to empower consumers while also offsetting production costs. The lower end of the scale reflects wholesale discounts made possible through bulk production. Limited products are available directly through Fibershed websites. In December 2024, 12 products were offered on NY Textile Lab's website. Five were sold out and one, a knit hat, was priced according to the sliding scale (\$45, \$65, and \$85). Price transparency facilitates access to local goods for a range of customers. Facilitating community spending is crucial to Fibershed's long-term success. 73% of every \$100 spent at a local business remains in the community (Robinson & LaMore, 2010). Investing in community wealth building ensures that wealth created through strategic localism efforts is recirculated for the community's benefit (Brett, 2024) in order to pay wages, increase school funding, and decrease product transportation costs. As the Fibershed affiliate network grows, generational knowledge spreads to support local business needs.

ENVIRONMENTAL ASPECTS OF FASHION SUSTAINABILITY PRODUCT TRACEABILITY AND TRANSPARENCY

Fibershed recognizes that more is not needed, but a better approach to what exists is necessary. Current efforts cite cutting-edge technology as the ultimate solution to environmental issues. However, recent research indicates that technology development in agriculture is insufficient to fully overcome the challenges of climate change (Allwood, 2021; Moscona & Sastry, 2022). In Louisiana, the Acadiana Fibershed supports a coalition of producers that grow Acadian Brown Cotton, a regional heirloom variety (Fibershed, 2023c). Fibershed's local approach to fiber production also extends to regenerative garment design. In one example, the final garment, created with three shades of locally grown and milled yarn sourced

focusing on production networks, crafting pieces that will outlive the wearer, and eschewing trends in favor of land and community relationship-based design.

HONORING HISTORICAL LAND RELATIONSHIPS

By connecting local fiber networks and advocating for more sustainable farming practices, Fibershed presents a model that supports local economies and sustainable agriculture. However, fiber production does not take place in a vacuum. Laborers, such as farmers and millers, are integral to the fiber farming process and many face a lack of income and resources (Trejo & Lewis, 2017).

Fiber work in the U.S. is entangled with racialized agricultural histories, including land dispossession, chattel slavery, and sharecropping. Over the past century, Black farmers in the U.S. have decreased from 14% to a mere 1.4% (Aminetzah, 2021). The long term effects of USDA loan discrimination (Tyler & Moore, 2013), inequitable and segregated extension programs (Ramirez Solis & Montgomery, 2021), and social ills linger in this diminished representation. Black farmers still encounter significant discrimination and barriers to obtaining federal support, including miscommunications, inconsistent application standards, and a lack of transparency around approval processes (Russell et al., 2021). This discrimination has been meaningful enough to warrant a \$2.2 billion payment toward farmers who have experienced discrimination from federal funding programs under the Inflation Reduction Act's Discrimination Financial Assistance Program (United States Department of Agriculture, 2024). While this is a step in the right direction, there is still more to do to increase Black American representation in fiber farming. The Fibershed model, with its focus on strategic localism, has the potential to reincorporate the generational knowledge and lived experiences of marginalized communities that has been erased in mainstream fiber agriculture.

One of the responsibilities of any land-based organization is to recognize indigenous sovereignty. Burgess worked with dyers in Thailand and farmers of the Navajo nation prior to creating Fibershed. Through this experience, she recognized "the indigenous understanding that plants are our relatives and deserve our respect" (Burgess & White, 2019, p. 49). This focus on indigeneity is also evident in the Weaving Voices podcast, where

Burgess interviewed the Diné people of the Navajo nation, who shepherded Navajo Churro sheep for centuries. In Diné culture, shepherding practices connect generations. Colonizers subjugated the Diné by stealing or murdering their sheep, which was devastating to Diné livelihood (Burgess, 2022). By promoting heritage making practices like hand knitting and traditional dye methods, Fibershed also shares indigenous histories alongside their present ventures. After recognizing indigenous sovereignty and building connections with communities, it is necessary for organizations to make progress toward concrete restitution goals. In this sense, Fibershed and other local fiber organizations must work towards creating opportunities for self-determinism of indigenous fiber workers, financial and social support, as well as supporting movements toward land restitution.

As a non-profit organization, Fibershed measures impact through progress towards mission fulfillment. Their commitment to building regional fiber systems includes driving investment in climate benefiting practices in fiber farming and manufacturing. To achieve a "de-colonized and equitable soil-to-skin" textile system, Fibershed redistributes their grants through several funds: Carbon Farm Seed Fund, Affiliate Network Micro-Grants, and the Fibers Fund (Fibershed, n.d.-a). Since their establishment, Fibershed has provided \$772,631 in financial support to producers, processors, and community engagement. Since 2020, Fibershed has granted \$301,631 to implement 72 carbon farm practices at individual farms through the Carbon Farm Seed Fund. In collaboration with the Sustainable Agriculture and Food Systems (SAFSF), Fibershed has also issued \$240,000 in grants to support development related to flax, hide tanning, and natural dyes. Together, these organizations support small natural fiber and textile producers and processors in the U.S., including the Black Fiber Cohort. This cohort of Black owned and operated textile businesses provides individualized technical assistance and support to address previous devaluing of Black, Indigenous, and People of Color farmers who have been left out of carbon reduction and climate improvement programs (Seed2Shirt, 2022). With additional funding support from the USDA, Fibershed will invest over \$18 million in wool and cotton growers in nine states (California, Montana, Wyoming, Indiana, South Dakota, Tennessee, Georgia, North Carolina, and New York) until March 2028.

To support Historically Underserved Farmers, affected farmers will receive up to \$2,500 as an incentive for participating. These efforts aid in asserting “fiber farming as a sustainable, scalable option for Black growers” (Siegele, 2024).

DOMESTIC FIBER POLICY

Inasmuch as corporations often control governments, governments can stimulate change within corporations through policy. Fibershed maintains that government policy is needed to force companies to move forward as corporations have a responsibility to the environment and humankind that supersedes other commitments. Within the American legislative scope, interest in fiber and fashion policy is increasing, but passing legislation at a national level remains a challenge. The FABRIC Act, introduced in 2022, is one example of this issue (S.4213). This proposal sought to implement fair wages and promote onshoring of production using tax incentives. While the Act garnered press attention and conversation, it was immediately moved to committees in both the House and Senate and never reemerged for a vote. This is in stark contrast to legislative efforts in the European Union, where individual nations and the governing body of the EU have proposed and passed multiple recent legislative efforts (European Commission, n.d.). Most recently, Maine Representative Chellie Pingree spearheaded the creation of a congressional Slow Fashion Caucus to develop legislation that focuses on emissions reduction, sustainable sourcing, improved recycling, and waste reduction (Borst, 2024). Critically, one of the early backers of this initiative is Fibershed.

At the state level, policy has focused on producer responsibility, supply chain transparency, and worker rights. New York and California have led the way in policy development. While New York has been unable to pass substantive legislation at the state level thus far, policy efforts like the FABRIC Act (S.4213, 2022) have influenced action in other states, including Massachusetts (H.420, 2023) and Washington (S.B. 5965, 2024). Other governmental action in New York is influencing the local fiber landscape in the state, including the addition of fiber in New York State Grown and Certified products to target ethical consumers (n.d.) and the governor’s funding of the Fashion Innovation Center to provide a New York-based, sustainable textile pipeline to the state’s fashion

industry (During New York Fashion Week, 2023). In Fibershed’s home state of California, policy efforts target corporate responsibility beyond the boundaries of fashion, but have had greater success in being signed into law. Large corporations, including fashion companies, will soon be required to report their greenhouse gas emissions if conducting business in California (SB253, 2023). Workers in California’s robust garment industry must also be paid properly, with the elimination of piece rate payments (SB62, 2021). These policies codify Fibershed’s priorities, showcasing how Fibershed, and the local fiber movement more broadly, are aligned with future legal precedents for the fashion industry.

Unfortunately, most current policy initiatives fall short of the comprehensive reform championed by Fibershed. Looking to historical fiber and textile policy may present a solution. Much of the initial wool industry in the U.S. resulted from an embargo on British wool leading up to the war of 1812 (Vaughan, 1947). After the war, tariffs helped the U.S. fiber industry stay afloat as the domestic market began to see international competition once again. Focusing policy on creating financial incentives for domestic and local production while taxing fiber and textiles that travel further could strengthen local supply chains and help achieve Fibershed’s mission.

CONCLUSION

Similar to other types of farming, fiber farming continues to be a difficult pursuit for individuals of marginalized identities (Berkey, 2017). Government policies and community practices keep farmland in the hands of those with the most economic and social capital. Even when these individuals can purchase land to cultivate, minimal raw fiber prices have made it difficult for small farms to survive. Current infrastructure only increases this difficulty as small producers struggle to find fiber processing facilities that can work with their small batch fibers. If the needs of marginalized fiber farmers can be identified and prioritized, a shift in the fiber farming industry may be possible. Further engagement is needed on the part of Fibershed and its affiliates to broaden the scope of diversity initiatives and develop plans for substantive action, but local policy efforts are a strong starting point. Current practices degrade biodiversity, destroy soil, overutilize water, and otherwise contribute to poor environmental conditions.

Furthermore, the current industrial fiber system isolates workers into functional silos, limiting the ability to work across and within the system. Many of the practices that Fibershed advocates for, such as applying compost, and planting hedgerows, windbreaks, or cover crops, are remarkably simple. These changes shift the quality of life on Earth for people, plants, and animals, with greater water retention, more biodiversity, higher crop yields, and increased carbon levels in soil. Ultimately, they move us toward the goal of less but better, a goal that can center local communities and marginalized people.

To align with the three pillars of sustainability, the analysis of Fibershed's current practices are presented within the context of fashion sustainability (Daukantienė, 2023). Economic, environmental, and social aspects of Fibershed are categorized according to product and consumer orientations in the fashion, textile, and apparel industries. While Fibershed's focus is developing and strengthening local fiber systems, attention to the products created with these fibers is limited to facilitating relationships between corporate buyers and connecting regional producers to local markets. We connect Fibershed's efforts in the fiber industry to existing approaches to sustainability in the fashion industry in order to evaluate Fibershed as a sustainable model for fiber system development and identify areas where the model can extend to promoting slow fashion and a circular economy. Lastly, while Fibershed's current model focuses on production and distribution, initiatives such as their Soil-to-Soil farming system, Climate Beneficial apparel labels, and attention to developing heirloom fibers connects these efforts to the eventual end-user: consumers. This is not an obvious aspect of Fibershed's mission but applicable to their vision. Perhaps future work rests on the collective ownership of the means of fashion production to ensure a major shift in working conditions, environmental consequences, and the usefulness of our things (Moscona & Sastry, 2022). Fibershed and the legislative action that stands beside it have offered us a tactical guidebook for a better path forward.

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