

Running on Empty

Securing the Future of Fashion in a Water-Stressed World

Why Fashion and Apparel Must Address Water Stress for Business Continuity

Water is the invisible thread holding the fashion industry together – and it is running thin. From raw cotton fields to chemical dye houses, water

stress is a pressing business continuity issue. Quite simply: if the local water supply stops, global apparel production grinds to a halt.

Crop Failure and Yield Reductions

Cotton and other natural fibers are extremely thirsty resources. Cotton is the second most widely produced fiber after polyester, with global production reaching between 23 to 24.5 million tonnes in 2023/24. However, growing just 1kg of conventional cotton typically requires between 10,000 to 20,000 liters of water, with a proportion of this relying heavily on artificial irrigation rather than rainfall. In water-stressed cultivation hotspots, including Western China

(Xinjiang), India, Pakistan, and parts of Central Asia, the depletion of aquifers and surface water makes securing irrigation a challenge. This can result in crop failures, fiber quality degradation, and severe volatility in raw material pricing. Faced with the dual threat of rising water costs and weak cotton prices, growers are seeing the economic viability of cotton crop production decrease.

Manufacturing and Wet-Processing Bottlenecks

After harvest, raw fibers pass through water-intensive wet processing steps, including spinning, dyeing, and washing, before they can be transformed into finished material. Textile processing is thirsty work, requiring 100 to 150 liters of water for every single kilogram of fiber.

This extreme water dependency creates major operational vulnerabilities. Key manufacturing hubs across South and Southeast Asia, including India, China, and Bangladesh, frequently suffer from seasonal droughts. During these shortages, local governments prioritize municipal drinking water over industrial use, forcing factory shutdowns and delaying global shipping timelines.

Water Quality and Pollution Risks

Water stress and water pollution are deeply interconnected. When river basin volumes drop, the concentration of industrial pollutants rises dramatically.

- **Toxic Runoff and Discharge:** Conventional textile dyeing and finishing generate huge volumes of wastewater contaminated with heavy metals, synthetic dyes, and hazardous chemicals. In fact, textile dyeing accounts for roughly 20% of global clean water pollution.
- Companies must comply with strict governance and regulation to safeguard the environment. In Europe, the Corporate Sustainability Reporting Directive (CSRD) requires companies to conduct a Double Materiality Assessment to identify how their business impacts water systems (Impact Materiality) and how water scarcity/pricing impacts corporate finances (Financial Materiality). Organizations in scope are mandated to isolate and report quantitative water data specifically for sites, operations, or supply chains located in areas of high water stress. The Do No Significant Harm (DNSH) principle under the EU Taxonomy requires that an economic activity contributing to one environmental goal must not cause significant damage to any of the other five environmental goals.
- Under the International Sustainability Standard Board (ISSB) frameworks, disclosing material environmental risks to enterprise value is mandatory, effectively establishing water risk as a core element of mainstream financial reporting.
- In water-stressed basins, local regulators are rapidly tightening wastewater discharge rules. Apparel facilities that do not upgrade to advanced, water-recycling closed-loop filtration systems face heavy fines, legal liability, or the loss of their environmental permits.

The Cost of Water is Rising

Water will likely become a material regulatory cost, with intensive basin-level management and access-right negotiations emerging as the standard path forward.

The administrative and physical burden of defining, monitoring, and allocating access

rights will increasingly be transferred directly to commercial users via extraction levies, infrastructure assessments, and volatile water market pricing.

For water-intensive companies, treating water as an unpriced utility is no longer financially viable.

Transition Risks and Brand Reputation

As global awareness of the water crisis grows, fashion brands are facing intense pressure from consumers, non-governmental organizations (NGOs), and ESG-driven investors to account for their virtual water footprint.

Company reputation is on the line. Continued sourcing from highly water-stressed basins without active stewardship plans is increasingly viewed as a major reputational liability.

The Resilience Solution

To transition from reactive crisis management to proactive capital protection, fashion brands must translate complex physical water risks into the language of enterprise risk management for the CFO.

Strategic Capability	How Resilience Applies It to Fashion
Financial Quantification	Converts physical water/drought risks into investor-grade financial metrics, specifically Earnings Value at Risk (EV@R).
Digital Twin Mapping	Maps acute water risks directly to localized farm and wet-processing facility coordinates to identify exact supply bottlenecks.
Shadow Water Pricing	Establishes internal shadow water pricing pathways to prepare the business for future regulatory “water taxes” and protect long-term enterprise value.

Business Insights and Deliverables

Quantify Revenue Losses: Translate site-specific volumetric water deficits into projected production downtime, converting physical risk into actionable financial metrics.

Map Asset Dependency: Integrate facility-level operational profiles with baseline water demand to identify which high-value production lines face immediate supply bottlenecks.

Define Future Time Periods: Model hydrological stress over critical short, medium, and long-term horizons to inform footprint diversification and proactively shift sourcing strategies to climate-resilient zones.

The ROI of Partnering with Risilience

Rather than viewing water mitigation as a cost center, Risilience enables apparel brands to translate physical water vulnerabilities into quantified financial risk and strategic capital allocation.

1. Capital Protection: Quantifying and Reducing Earnings Value at Risk (EV@R)

- **Unmitigated Risk:** In a business-as-usual scenario, a fashion brand sourcing raw cotton from high water-stress grid cells faces catastrophic yield collapses down to 40% of standard capacity as climate pathways progress.
- **Risilience ROI:** By mapping exact farm-level and wet-processing coordinates into a customized digital twin, Risilience allows risk teams to run predictive stress-testing scenarios. The Risilience-powered platform, Riise, quantifies the direct financial payoff of adaptation, showing the Chief Risk Officer and CFO exactly how much Earnings Value at Risk (EV@R) is preserved by transitioning to low-stress or regenerative sourcing locations.

2. Securing Brand Value in a Shifting Consumer Market

- **Unmitigated Risk:** As consumer preferences shift, fashion brands that fail to adapt their product portfolios face severe transition risks. Sourcing default conventional cotton in highly depleted basins can lead to regulatory fines, loss of permits, and damaging consumer boycotts.
- **Risilience ROI:** Risilience parameterizes consumer trends such as increasing demand for sustainable textiles, organic cotton and alternative fibers. Quantifying climate risks and mitigating initiatives allows brands to prioritize resources and demonstrate a clear sustainability ROI, protecting the business from future transition losses.

3. Avoiding Severe Water Tax Shocks via Shadow Pricing

- **Unmitigated Risk:** Water is projected to mirror the compliance structures and pricing pathways of carbon. Direct water extraction is rapidly transitioning from free or cheap to heavily penalized, regulatory-driven costs. Brands that fail to adjust their water intensity face sudden, aggressive operating margin shocks.
- **Risilience ROI:** Just like shadow carbon pricing, Risilience models shadow water pricing. This helps apparel brands justify investments in water-recycling initiatives to avoid future regulatory penalties.

4. Direct Cost Savings via Seamless Regulatory Compliance

- **Unmitigated Risk:** Preparing for mandatory disclosures under Europe's CSRD (Double Materiality) and the ISSB that requires granular, site-specific quantitative data. Generating this data manually across complex multi-tier supply chains is extremely costly and prone to audit failures.
- **Risilience ROI:** Riise automates the isolation of quantitative water data specifically for sites, operations, or supply chains located in areas of high water stress. Brands significantly reduce audit, consultant, and legal costs while satisfying lenders and institutional investors who mandate transparent enterprise value risk disclosure.

About Risilience

Risilience provides finance-grade climate and nature-risk analytics to help global businesses build resilience and strategic advantage in the face of economic and geopolitical uncertainty. Our award-winning platform, **Riise**, translates complex environmental risks into financially quantified, actionable strategies, empowering organizations to secure profitability and growth.

Protect production and secure supply chains against water stress. [Get in touch](#) to discover how Risilience can financially future-proof operations today.



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