KONTOOR™

SUSTAINABILITY STRATEGY

BY THE

2025 HOLLAND FELLOWS

Appalachian STATE UNIVERSITY®

Walker College of Business

Holland Fellows Program

EXPLORING **SUSTAINABLE** BUSINESS

“We believe sustainable business strategy is the pursuit of future operational, economic, and environmental security through a continued responsibility to stakeholders in the present.”

While the cost for sustainability in the present is often great, there are many reasons to invest in it for the future.

BACKGROUND **RESEARCH**

Academic Analytical Frameworks

Guest Speaker Interviews

Project Brief

Value-Chain IRO Graph

VALUECHAIN
IRO GRAPH

KTB	1. Resources	2. Extraction	3. Processing	4. Manufacturing	5. Distribution	6. Use	7. End of Life	8. Competitor	9. Government
Stakeholders	Farmers	Farmers	Mills	Manufacturers	Retailers	Consumers	Public	Competitors	Government
Impacts	Transparency	Emissions	Materials	Sustainability	Performance	Education	Waste	Collaboration	Regulation
Risks	Stewardship	Scarcity	Miscommunication	Waste	Inventory	Awareness	Disposal	Competition	Compliance
Opportunities	Traceability	Regulation	Software	Indigood	Efficiency	Durability	Recycling	Coalitions	Incentives
Tactics	Tracking	Integration	Platforms	RFID	Visibility	QR Code	Disassembly	Advocacy	Policy

PRESENTATION OUTLINE

SUPPLY NETWORK

PRODUCT & SERVICE

COLLABORATION

SUPPLY NETWORK VISIBILITY **THROUGH "CONNECTED CLOTHING"**

Integrating RFID Tags into already existing software platforms: Worldly

RAIN Alliance organization for industry-wide collaboration

Upstream Stakeholder Communication Portal

Apparel Impact Institute & Sustainable Financing

SUPPLY NETWORK CHALLENGES TO CIRCULARITY

Textile Waste & Lack of Standardization in Material Sourcing and Processes

- Pre-consumer textile waste is a CO2 + waste hotspot for upstream suppliers
- Difficult to find recycled fibers due to lack of supply, reinforced by slow demand from upstream stakeholders.
- Diverse textile blends and inconsistent processes make recycling and scaling sustainability difficult.

Lack of Financial and Infrastructure Resources

- Circular initiates are expensive and smaller firms do not have the capability to scale sustainable technology.

SUPPLY NETWORK RISKS

Operational Risks

- No Significant Upstream Visibility → Creates lack of insight into hotspots + disruptions.
- Disconnect Between Suppliers in Similar Region → Lack of information on where to acquire desired materials and dispose of waste responsibly.

Transparency in Response to Mandatory Reporting Risks

- Assurance in Reporting Scope 1, 2, + 3 → Increased risk of non-compliance for EU as scope 3 reporting becomes mandatory and in California reporting for scope 1 + 2 emissions moves from limited to reasonable assurance.
- Misleading Shareholders → Securities law violations and Investor Misrepresentation.

EVOLVING ESG REGULATION

"Why does changing the ESG regulatory landscape matter for multinational corporations?"

- Global ESG laws are expanding fast (EU CSRD, U.S. SEC, ISSB)
- Compliance impacts investment, credit, and market access
- Supply chain due diligence is now mandatory
- Reputational risks from greenwashing or ethical failures
- ESG is no longer optional, it's a core business strategy

WHY TRANSPARENCY IMPORTANT

- Building Trust & Driving Sustainability
- Strengthens Consumer Trust: Ethical fashion choices drive loyalty.
- Supports ESG Goals: Enables progress tracking on water use, emissions, and sourcing.
- Attracts Investors: ESG transparency improves stakeholder confidence.
- Improves Supply Chain Oversight: Ensures ethical practices and sustainable materials.
- Ensures Regulatory Compliance: Prepares for CSRD, SEC, and other ESG regulations.

BLOCKCHAIN. WHY NOT?

Energy Intensive

- Requires enormous amounts of power

Data Infrastructure Challenges

- Technical and scalable complexities

High Cost; Low Return

- High financial costs, complex ROI assessment

Operational Burden & Low Readiness

- Overwhelming, unprepared industry

SCALING RFID

RFID can help track:

ENVIRONMENTAL KPI'S

Water and Energy Usage

TRANSPARENCY

Raw Material Provenance

PRODUCT COMPOSITION

Percentage of Fiber Content

SUPPLIER INFORMATION

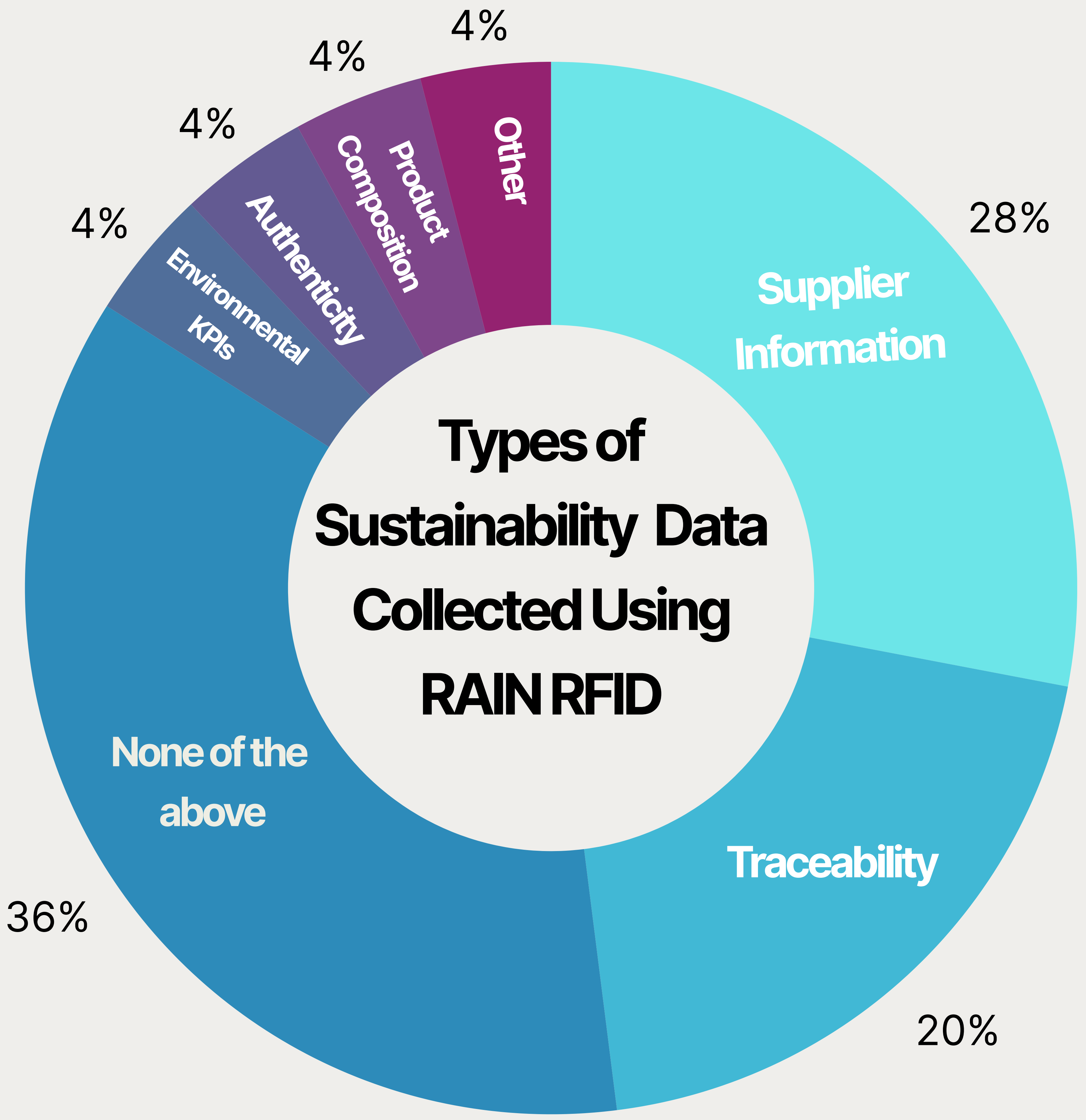
Where, When Processed

WHY RFID?

Of global businesses surveyed, **an average of 29% say their organization's overall sustainability impact comes from supply chain operations. Three quarters of businesses are investing 5% or less of their tech budget to supply chain sustainability objectives.**

Increasing Regulatory Pressures

Competitive Advantage



DECATHLON'S RAIN RFID JOURNEY

From Inventory to Circularity

Initial Motivations

- Transparent inventory and efficient supply chain operations
- Real-time tracking across supply chain

Circularity Outcomes

- **100% of products source-tagged by 2019**
- Powered circular business models: repair, rental, resale, recycle
- **First company with an internal Digital Product Passport**
- RFID tags store product composition data, supporting recyclability and responsible disposal

SUPPLY NETWORK COLLABORATION

Creates Synergistic Value

- Enables firms to achieve collaborative advantage that could not be achieved alone.

Drives Financial Performance

- Cost reductions, risk sharing, greater flexibility, improved quality, and accelerated innovation.

Builds Competitive Strength

- Effective collaboration improves performance directly and indirectly.

Size-Specific Benefits

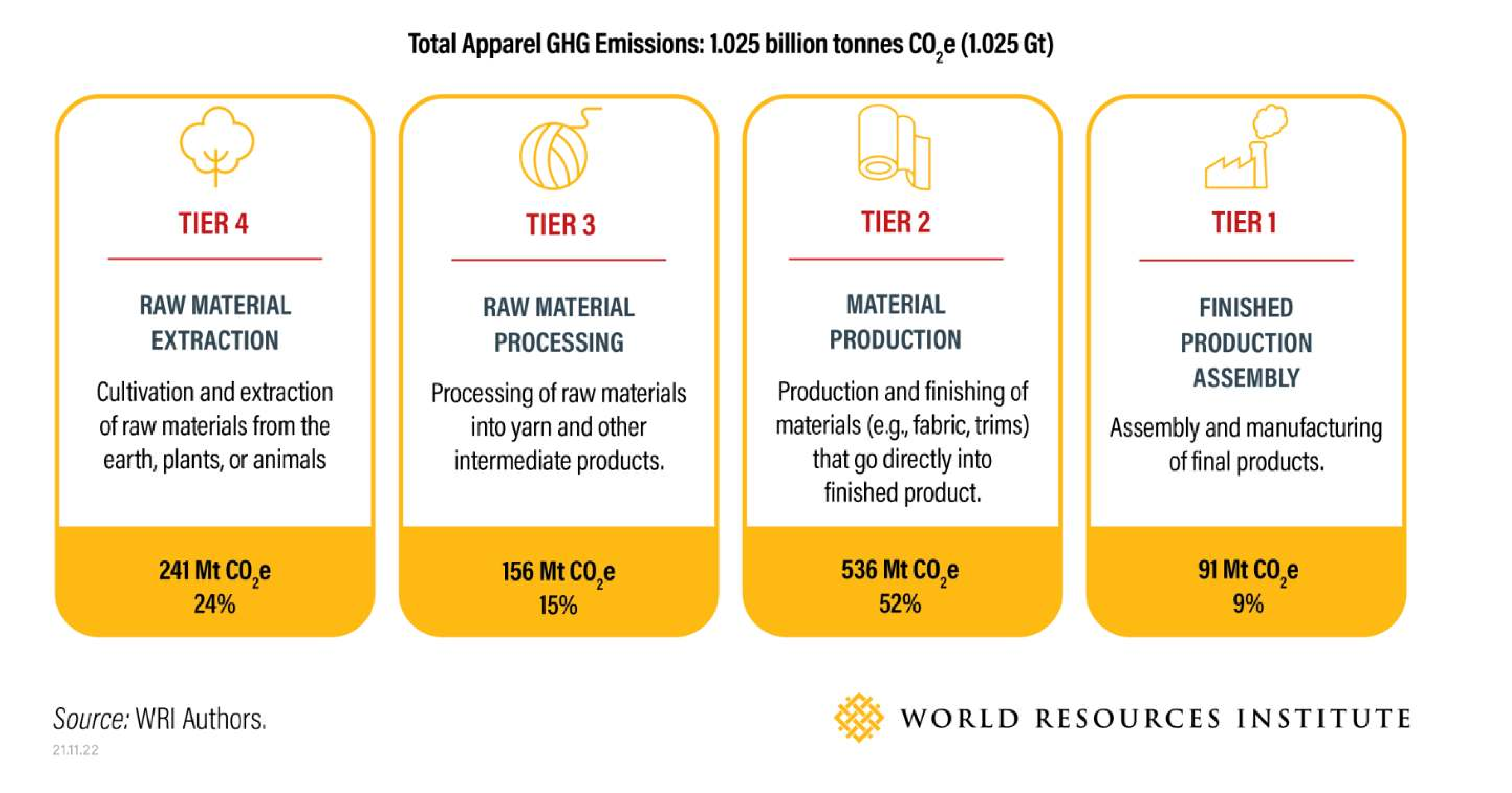
- Large firms excel at creating joint value, smaller firms gain proportionally high returns.

INDUSTRY PROGRESS

Emissions goals for 2030

Paris Climate Agreement:

- 45% reduction in emissions for apparel industry
- Current Progress: 8.6%



UPSTREAM STAKEHOLDER PORTAL

HYBRID-SOURCE PLATFORM

Protect intellectual property while still advancing supply network circularity

ENVIRONMENTAL EDUCATION + KPI'S

Input information required by the DPP

SCALABLE PROFIT MODEL

Create potential revenue streams through advanced tiers

VALUE CHAIN TRANSFORMATION

Building an interconnected ecosystem

IMPLEMENTATION TIMELINE

Months 0-3

Stage 1: Assessment & Planning
- Supply Chain Mapping
- RFID Tech Assessment

Months 4-6

Stage 2: Strategy & Foundation
- Program Development
- RFID Architecture

Months 7-12

Stage 3: Pilot Implementation
- 3-5 Strategic Suppliers
- Portal Beta Launch

Months 13-18

Stage 4: Vertical Integration
- 25% of Tier 1 Suppliers
- 10% Emissions Reduction

Months 19-30

Stage 5: Horizontal Scale
- 60% of Tier 1 Suppliers
- 20% Emissions Reduction

Months 31-42

Stage 6: Advanced Integration
- 90% of Tier 1 Suppliers
- 25% Emissions Reduction

Months 43-60

Stage 7: Transformation
- Full Supply Chain
- 30% Emissions Reduction

Key Program Achievements

90% Pre-consumer Waste Diversion

30% Reduction in Scope 3 Emissions

40% Recycled Content from Pre-consumer Sources

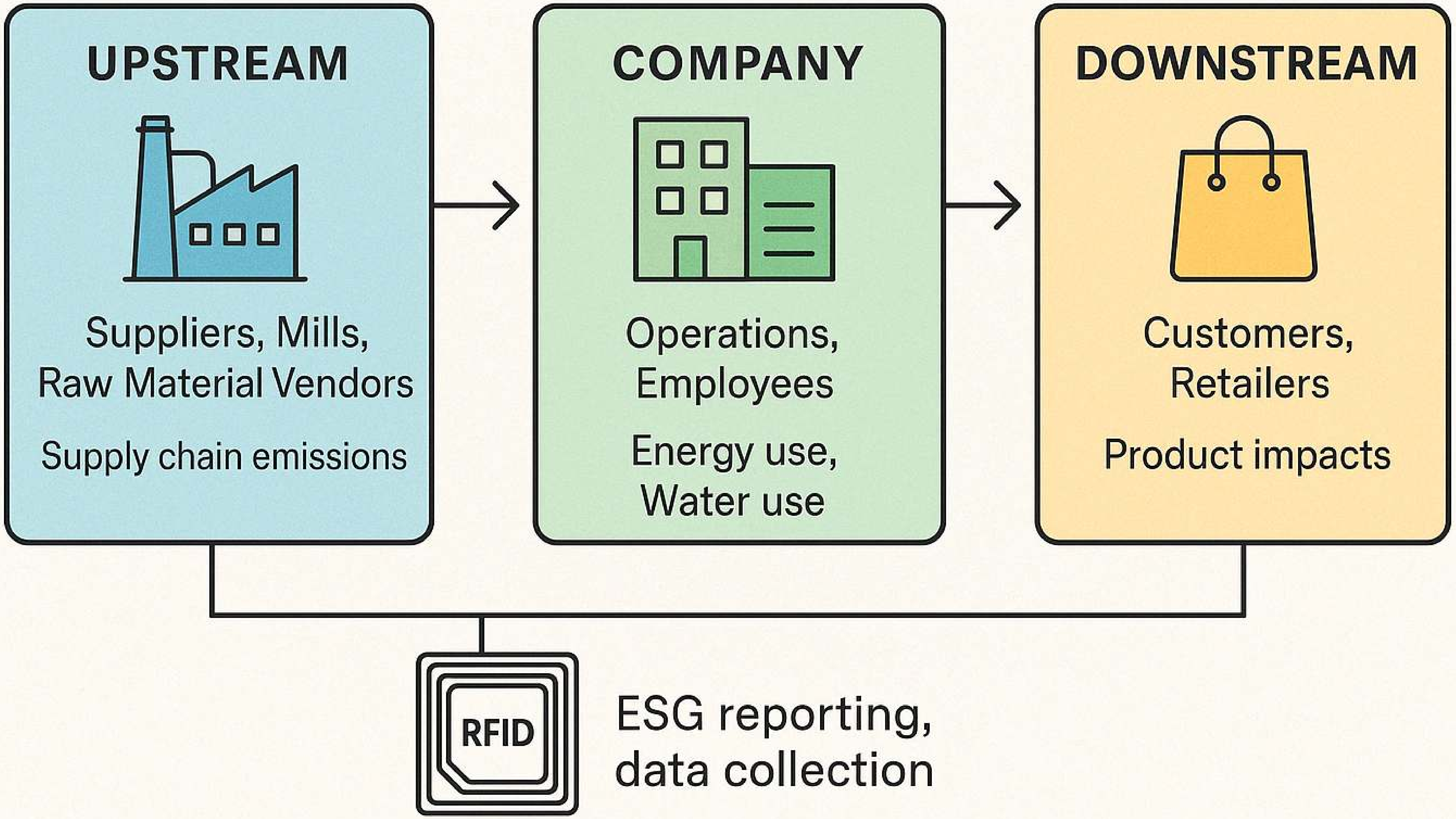
GREEN BONDS

Sustainable financing for suppliers

Consider a partnership with the Apparel Impact Institute (Aii)
Kontoor could act as a facilitator between their suppliers and Aii's financing mechanisms without making large direct investments themselves.

Through this facilitator approach, Kontoor could:

- Connect their suppliers to Aii's network of financial institutions that offer preferential financing terms for sustainability projects
- Help suppliers build capacity to access Aii's programs and external financing
- Leverage Aii's technical expertise to identify high-ROI sustainability investments in their supply chain
- Participate in collective action that reduces the cost burden on any single company


UPSTREAM
Suppliers, Mills,
Raw Material Vendors
Supply chain emissions
COMPANY
Operations,
Employees
Energy use,
Water use
DOWNSTREAM
Customers,
Retailers
Product impacts
RFID
ESG reporting,
data collection

UPSTREAM STAKEHOLDERS

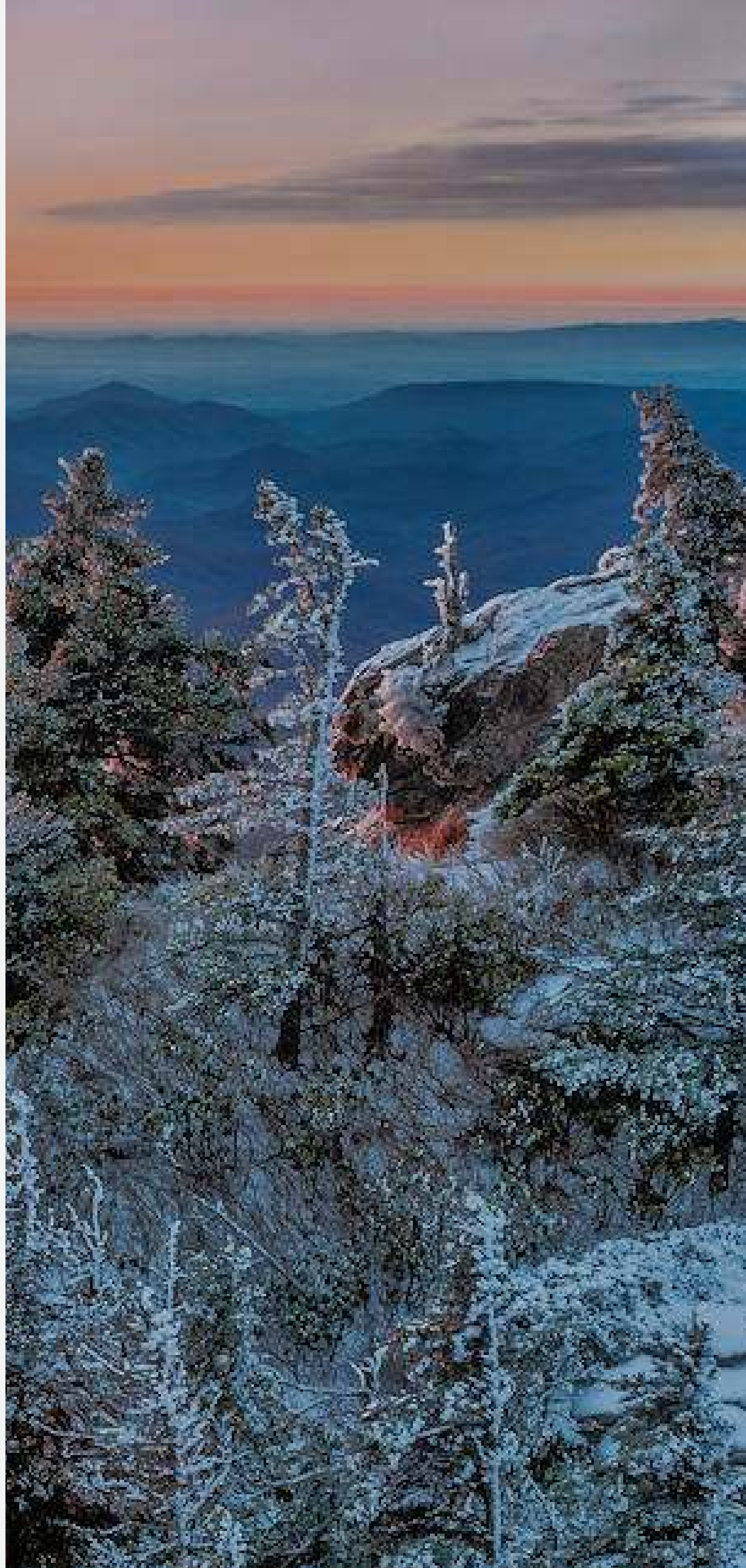
Assessing stakeholder prioritization

- Evolving regulation calls for increased focus on upstream stakeholders
- Reframing Stakeholder Influence beyond Financial Contribution
- Greater Demand for Data Transparency and Interoperability
- Stakeholder collaborations lead to a competitive advantage
- Shifts in downstream, consumer pressures lead to upstream pressure

DECARBONIZATION

Aligning Corporate Vision within the Supply Network

- Supplier Accountability: Scope 3 tracking via RFID & ESG data portals
- Cleaner Logistics: Optimize routes, adopt carbon-neutral shipping
- Localized Sourcing: Reduce emissions & increase resilience
- Incentivize Low-Impact Partners: Reward sustainability efforts
- Enable Circularity: Take-back programs and recyclable design



PRODUCT & SERVICE **INNOVATION**

- Integrate RFID and QR codes to create Digital Product Passports (DPPs) for full lifecycle transparency
- Highlight product origins, care instructions, and end-of-life options for informed consumer decisions
- Launch retailer-enabled take-back programs to recycle old denim into raw materials
- Drive foot traffic and deepen brand loyalty through closed-loop systems
- Align with ESG goals including Scope 3 emissions reduction and DPP compliance

DISTRIBUTION CHALLENGES

Customer Relationship Risks

- Inaccurate inventory data ➜ out-of-stock/overstock leads to lost sales and eroded retailer trust
- Unreliable delivery timing ➜ creates friction with retail partners expecting just-in-time fulfillment

Operational & Compliance Risks

- No real-time product tracking ➜ delays in response to demand changes or disruptions
- Limited traceability ➜ threatens compliance with EU Digital Product Passport & Scope 3 emissions reporting

HOW RFID SOLVES DISTRIBUTION CHALLENGES

Boost Inventory Accuracy

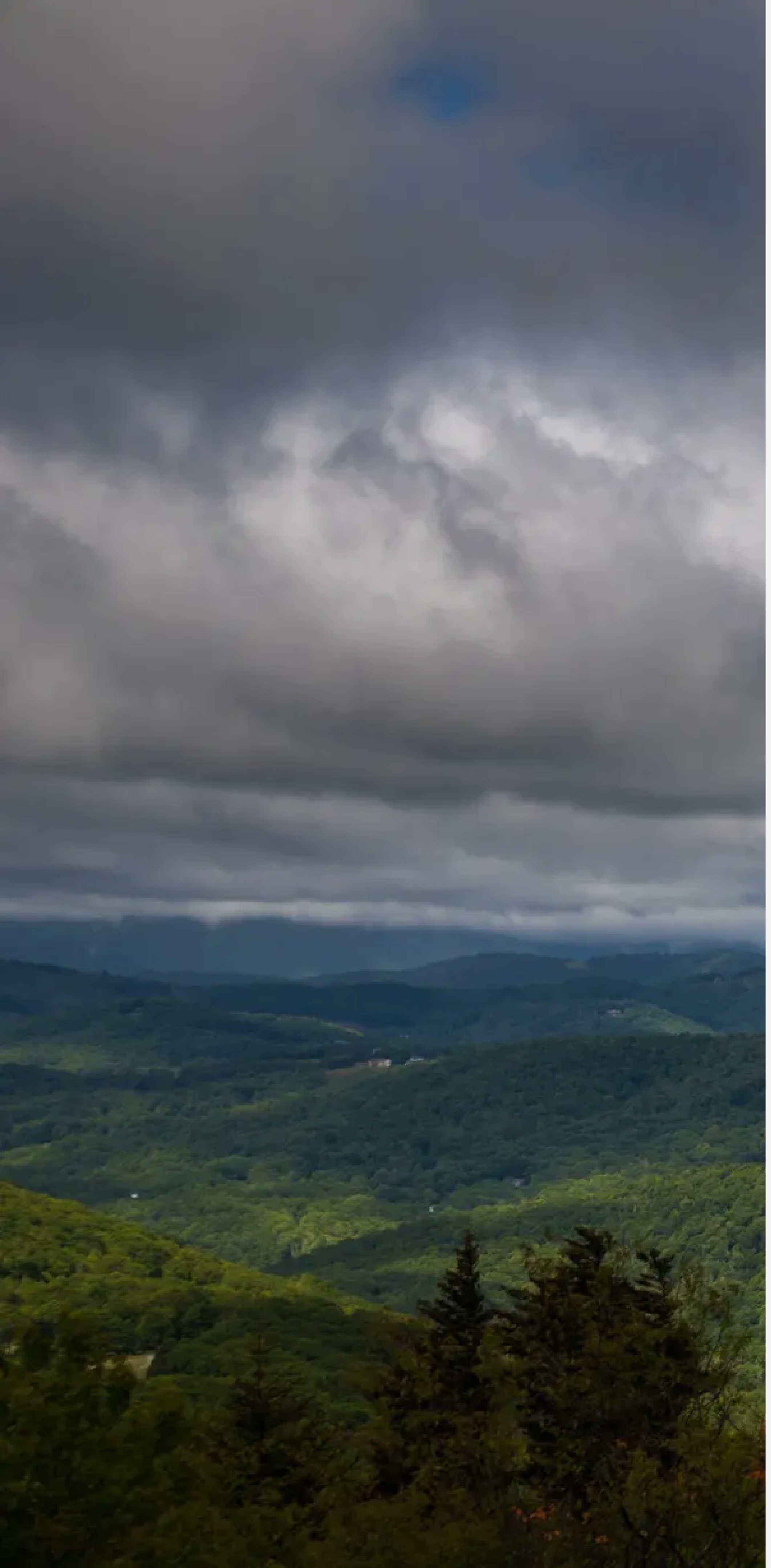
- RFID enables inventory accuracy of 95–98%, up from typical pre-RFID levels of ~70–80%
- Better forecasting minimizes reliance on air freight for urgent replenishment

Strengthen Retailer Relationships

- More accurate and reliable product availability improves on-shelf performance at key partners like Walmart and Target
- Enables real-time data sharing, boosting transparency and retailer trust

Support Compliance & ESG Goals

- RFID captures detailed supply chain data for Scope 3 emissions tracking
- Provides the digital backbone for future take-back, repair, and circularity programs



RFID & DISTRIBUTION

SMARTER INVENTORY.

Optimizing stock for better outcomes.

REAL-TIME VISIBILITY.

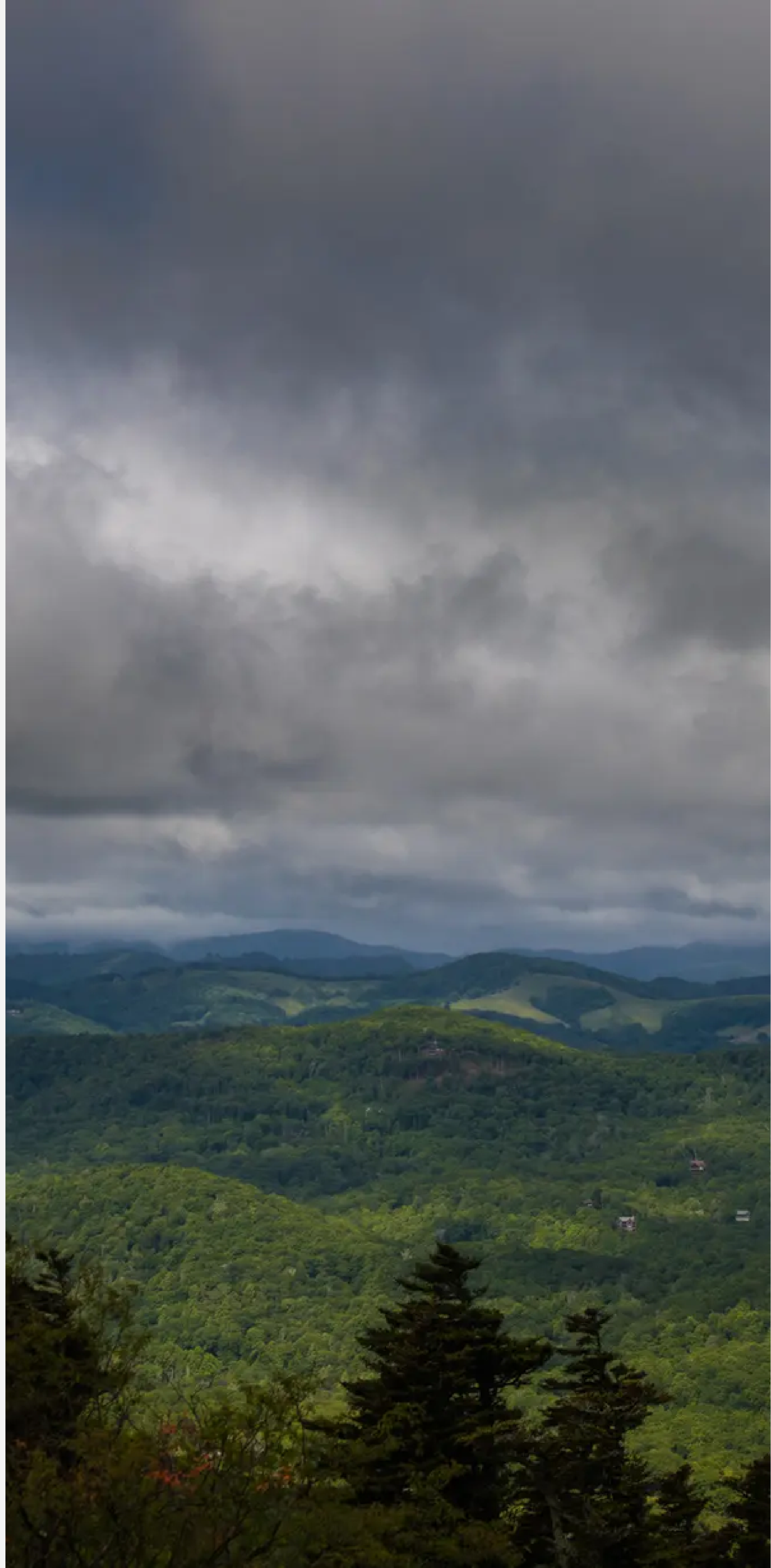
Instant insights, agile decisions.

STRONGER RETAIL PARTNERSHIPS.

Collaborating for mutual growth.

SUSTAINABLE, TRACEABLE, AND BUILT FOR WHAT'S NEXT.

Driving sustainability through transparency.



LEVI STRAUSS'S RFID JOURNEY

From Stockouts to Knockouts

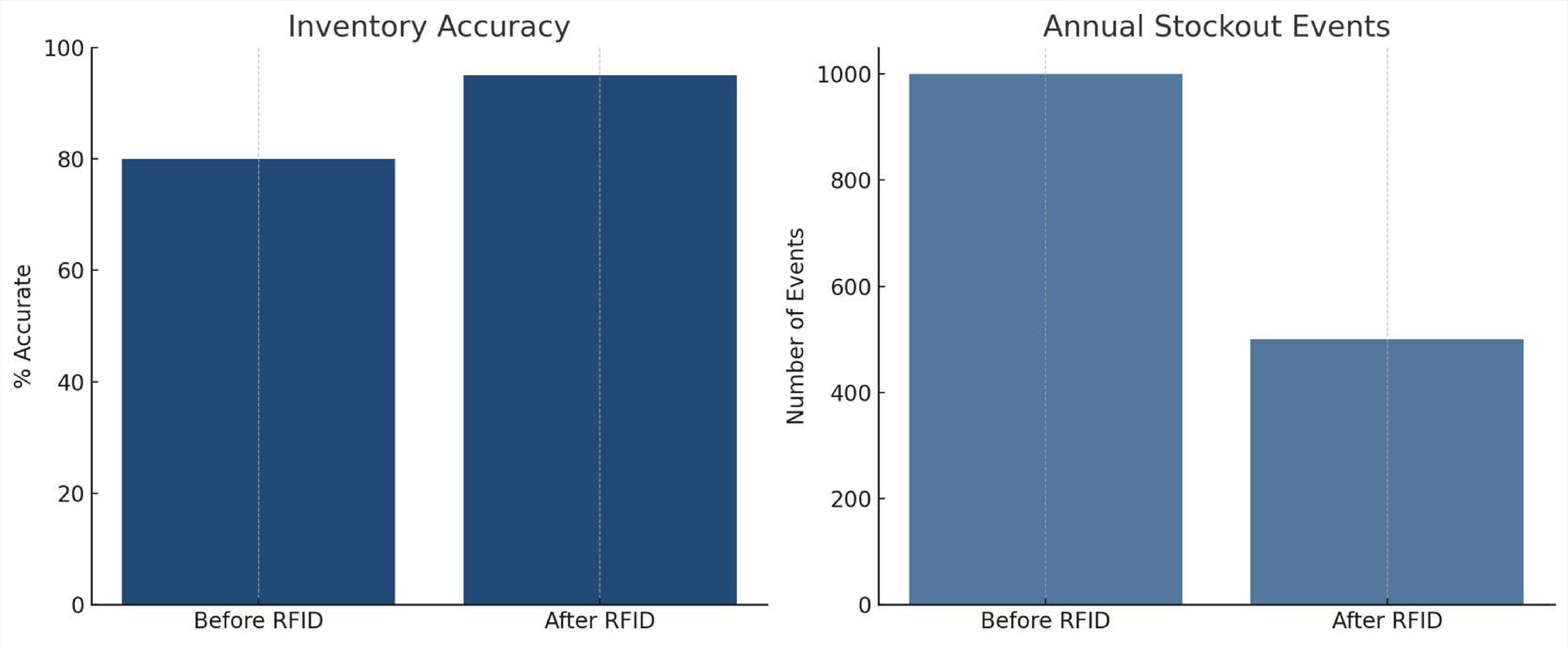
Crtical Visability Challenges

- Inventory accuracy was below optimal levels
- Levi's experienced frequent stockouts that disrupted product availability and strained retail partnerships

Post-RFID Implementation

- Levi's improved inventory **accuracy to over 95%**
- Achieved a **reduction in stockouts of up to 50%**
- Faster decisions, better stocked shelves, operational blind spots disappeared

Post-RFID Implementation



HOW QR CODES SOLVES USE CHALLENGES

Build Consumer Trust & Engagement

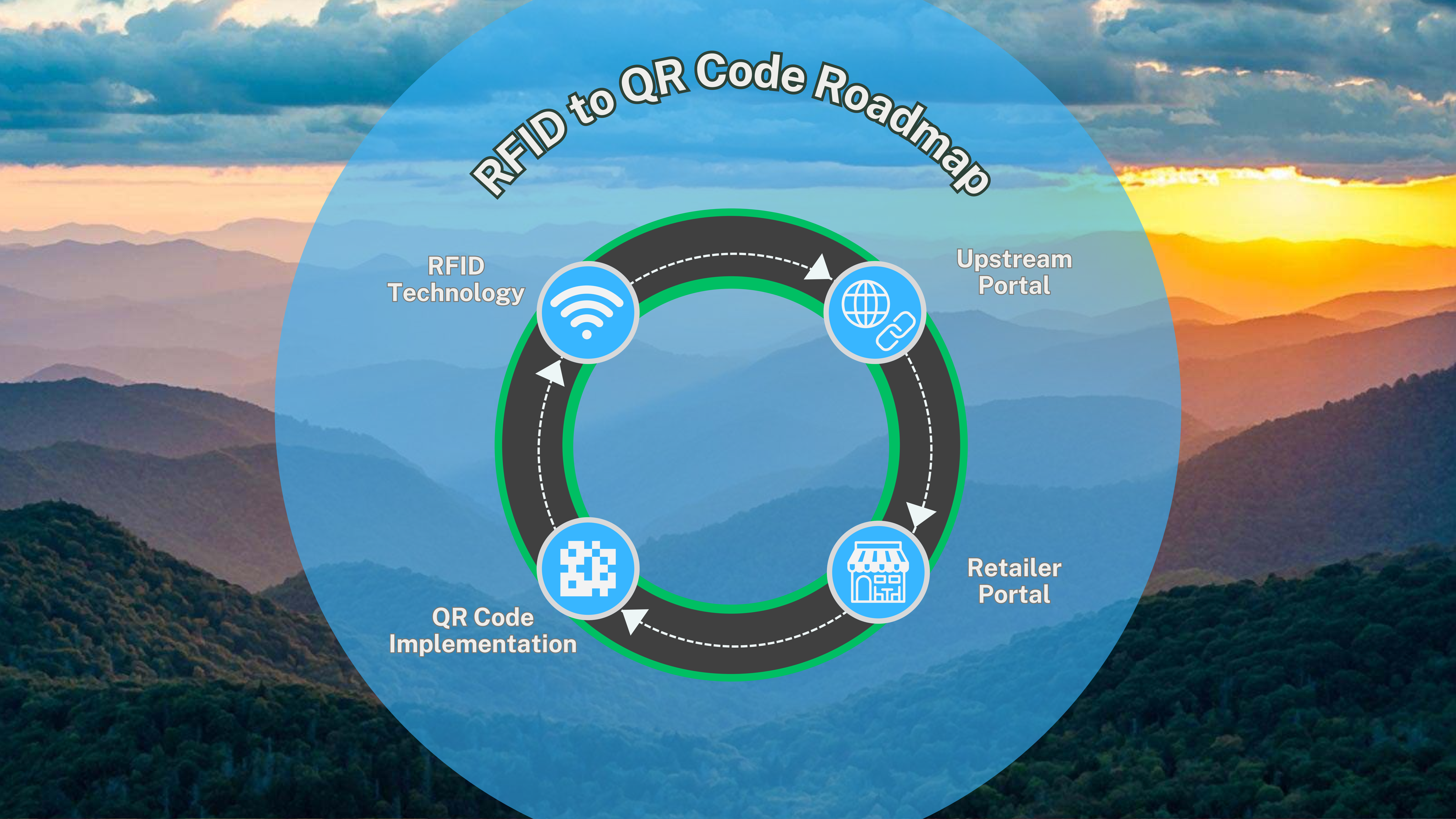
- Interactive experience transforms complex data into accessible consumer journeys
- Elevates brand perception with independently verifiable environmental claims

Reduce Implementation Barriers

- Integration onto care labels requires minimal production adjustments
- No additional hardware needed for customer interaction — leverages existing smartphones

Prepare for Regulatory Compliance

- Provides scalable framework for future sustainability disclosure mandates
- Creates verifiable data trail for ESG reporting and impact tracking


RFID to QR Code Roadmap
RFID Technology
Upstream Portal
Retailer Portal
QR Code Implementation

PANGAIA'S QR CODE JOURNEY

From QR Codes to ReWear

Problem:

- Only 9% of consumers fully trust brand sustainability claims
- PANGAIA needed more transparency and traceability
- Upcoming EU rules (Digital Product Passport) added pressure

Solution:

- Partnered with EON to add QR codes to clothes
- Customers scan the QR code to see full product journey
- Designed the experience to feel like social media on your phone

PANGAIA'S RESULTS

Reselling became easy—just **scan and list**

Benefits:

1. Heightened Trust

2. Boosted Engagement

3. Supported Circular Fashion

KTB SCAN-TO-KNOW

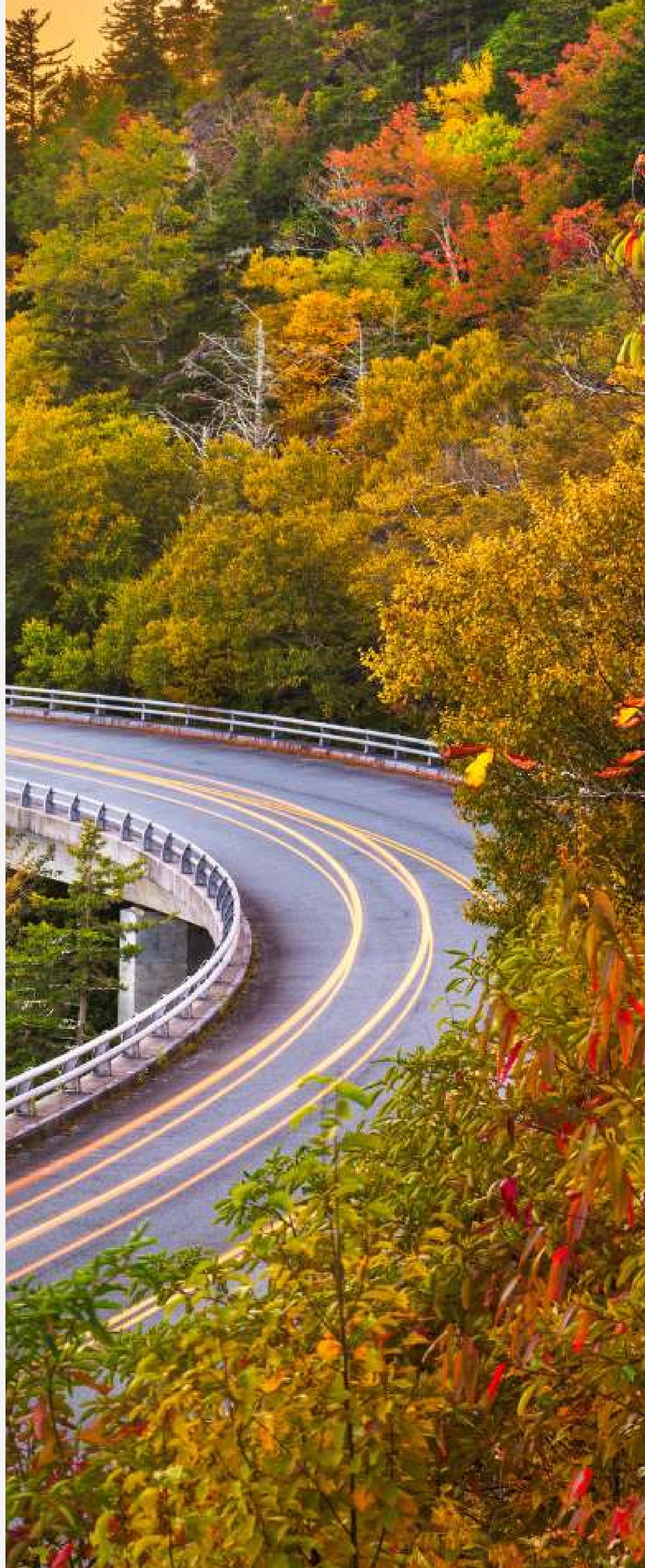
QR-ENABLED DIGITAL PRODUCT PASSPORT IN THE U.S.

SUSTAINABILITY YOU CAN SEE

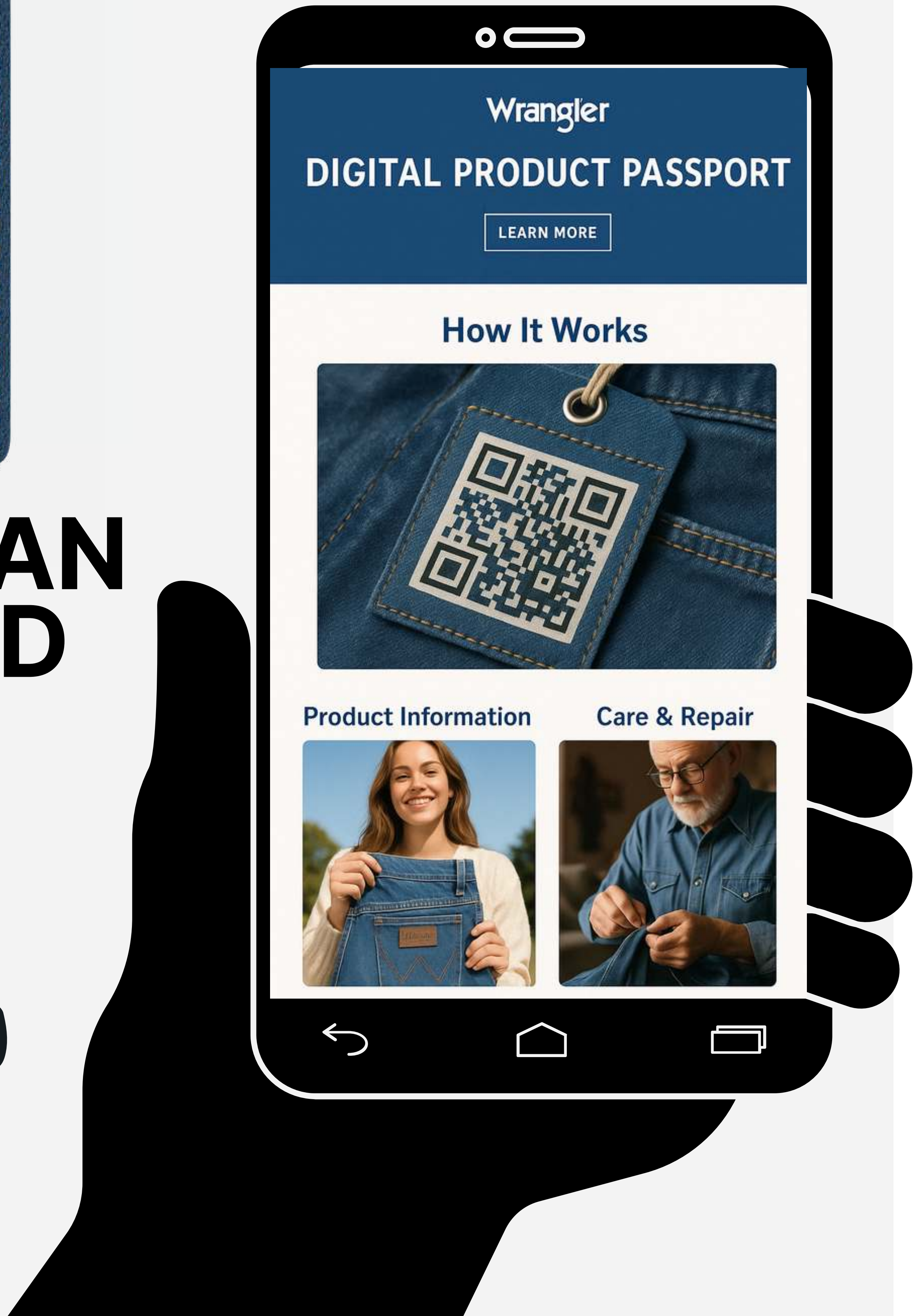
EVERY PRODUCT'S STORY, ONE CLICK AWAY

TRUST BUILT THROUGH TRANSPARENCY

DESIGNED FOR THE FUTURE OF FASHION



FROM SCAN TO HAND



Product Transparency

Care Guidance

Take-Back Integration

Compliance & ESG Data

SUSTAINABLE SKEPTICISM

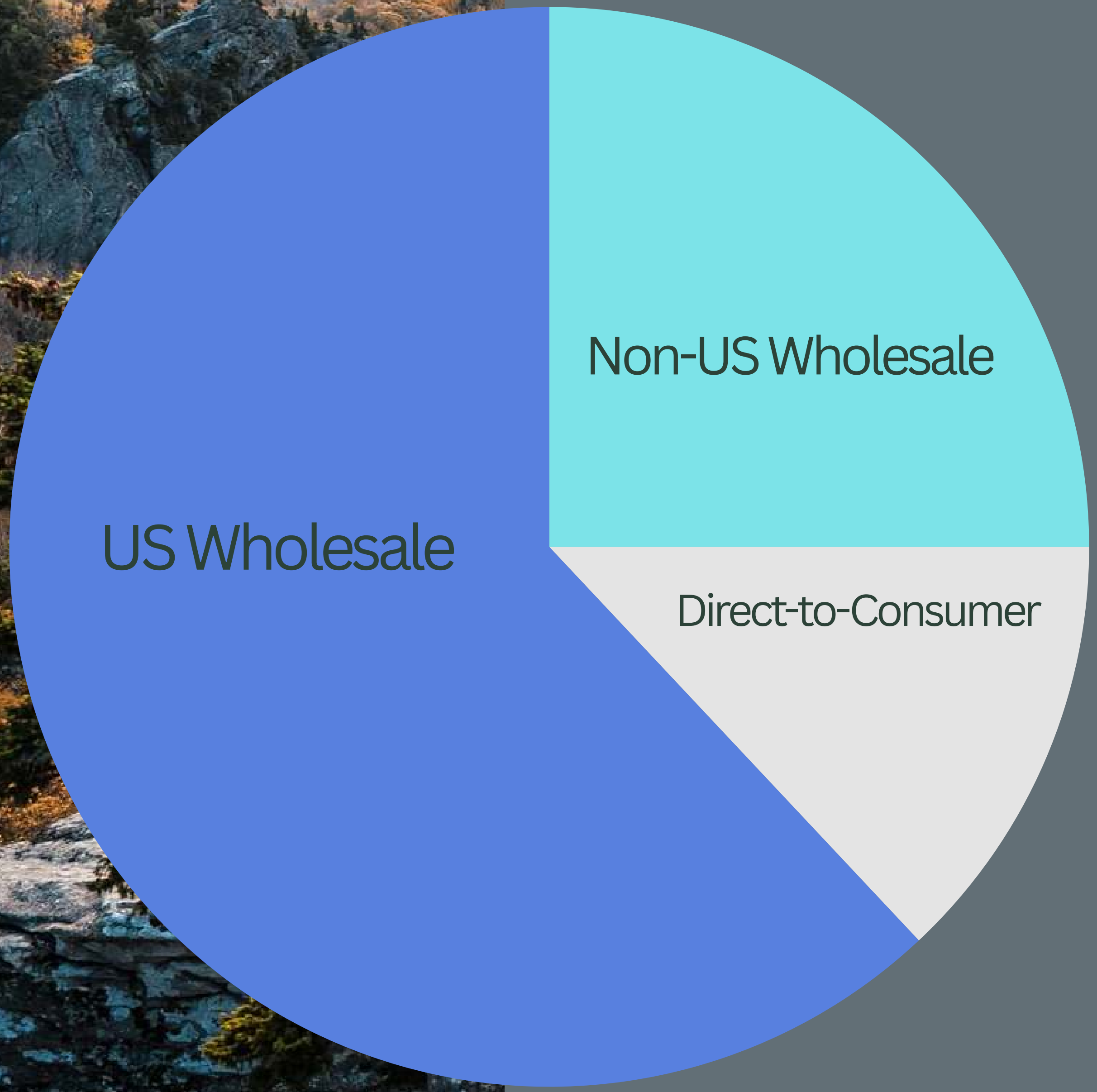
Consumer Experience & Trust Risks

- **Skepticism around sustainability claims**
- 55% of global consumers doubt brand sustainability messaging; only 9% fully trust it
- **Missed communication opportunities at retail**
- Lack of in-store or on-product storytelling leads to a disconnect between brand efforts and consumer perception
- Inadequate product traceability

Limited visibility into product usage & lifecycle

- Hinders execution of circular initiatives like **take-back and reuse programs**, reducing environmental impact and customer engagement potential

Customer Categories



69%

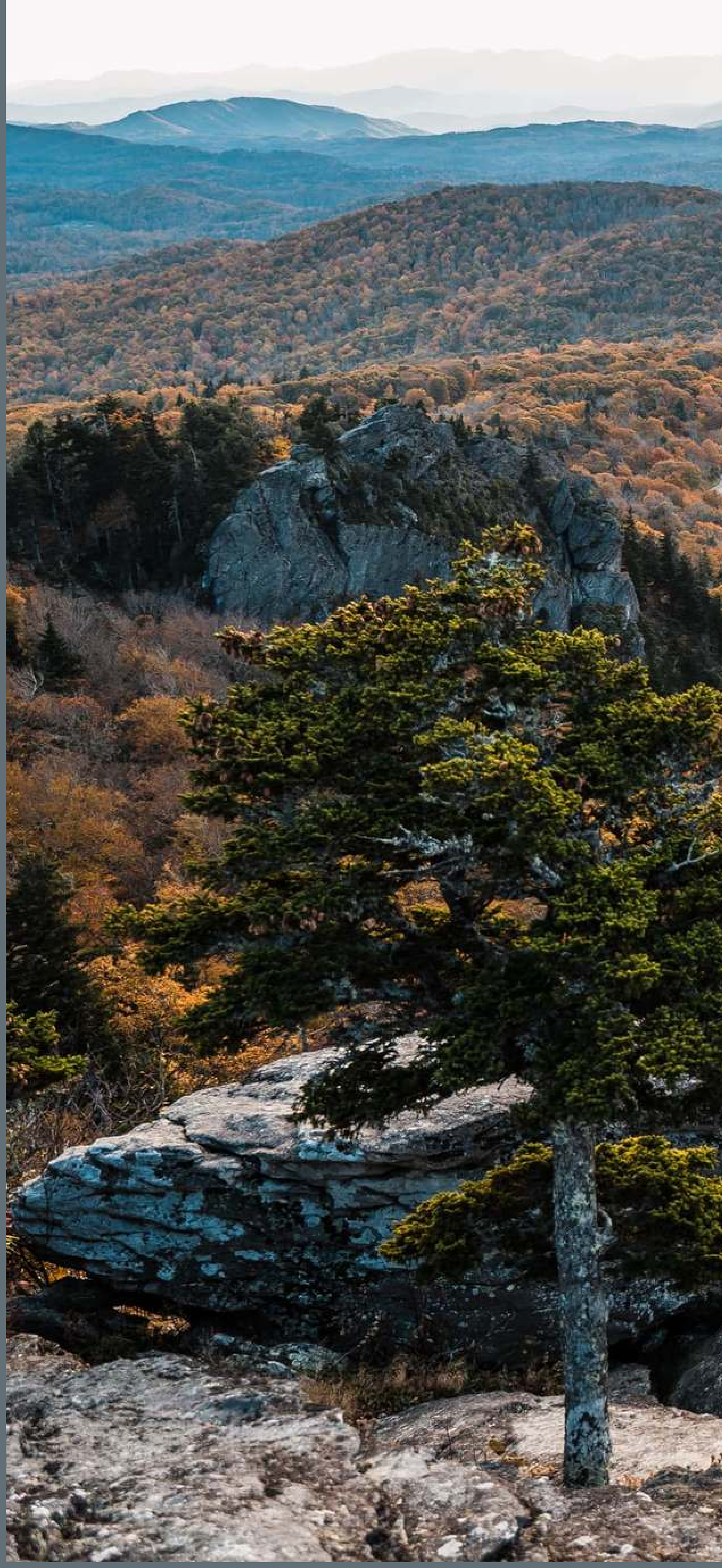
U.S. Wholesale

20%

Non-U.S. Wholesale

11%

Direct-to-Consumer



LONG STANDING CONSUMER BASE

Enhanced Customer Engagement

- D2C channels allow companies to gather direct feedback from customers about product durability and end-of-life preferences
- Companies can use their D2C platforms to educate customers about sustainable practices

Sustainable Product Design

- Direct interaction with consumers can inform companies about the types of products that are most valued for their durability
- Companies can invest in sustainable materials that are easier to recycle or biodegrade, reducing the environmental impact of their products at the end of their lifecycle

Circular Economy Initiatives

- D2C channels can facilitate take-back programs where customers return used garments for recycling or repurposing.
- Companies can leverage their D2C platform by extending the life of their products and reducing waste

Scope 3 Emissions Gap

Scope 3 Emissions Gap

- **Post-consumer waste** represents an estimated **35%** of the brand's carbon footprint across the full product lifecycle
- Kontoor's commitment to reduce absolute emissions by **46.2% by 2030** requires addressing downstream impacts, yet product end-of-life remains a significant blind spot

END OF LIFE CHALLENGES

Limited Closed-Loop Solutions

- Technical limitations in recycling post-consumer denim require blending with virgin materials, limiting true circularity
- Fragmented recycling infrastructure creates barriers to scale for potential take-back programs

Take-Back Program Absence

- Denim industry generates 2.16 million tons of waste annually with 85% typically ending in landfills
- Missed brand loyalty and consumer engagement opportunities

MUD Jeans

Problem:

- Fast fashion's linear production model was creating massive waste, with **less than 1%** of clothing materials being recycled into new garments
- Denim waste was particularly problematic, accounting for about **5%** of all landfill space according to the EPA

Solution:

- Implemented a take-back program accepting any brand's jeans **(containing at least 96% cotton)** with a **€10 discount** on new purchases

Results:

- **By 2019**, MUD had saved **20,000 jeans from landfill** and incineration, turning them into new denim products
- Their production process now uses **93% less water** and emits **74% less CO2** compared to industry-standard jeans

Re-Wrangle™

DENIM TAKE-BACK PROGRAM
FROM CLOSET TO RAW MATERIALS
— NOTHING LEFT BEHIND.
RESPONSIBILITY IN MOTION,
CIRCULARITY IN ACTION.
BUILT TO LAST. REBUILT FOR THE FUTURE.

How “Re-Wrangle” Solves End-of-Life Challenges

Close Scope 3 Emissions Gap

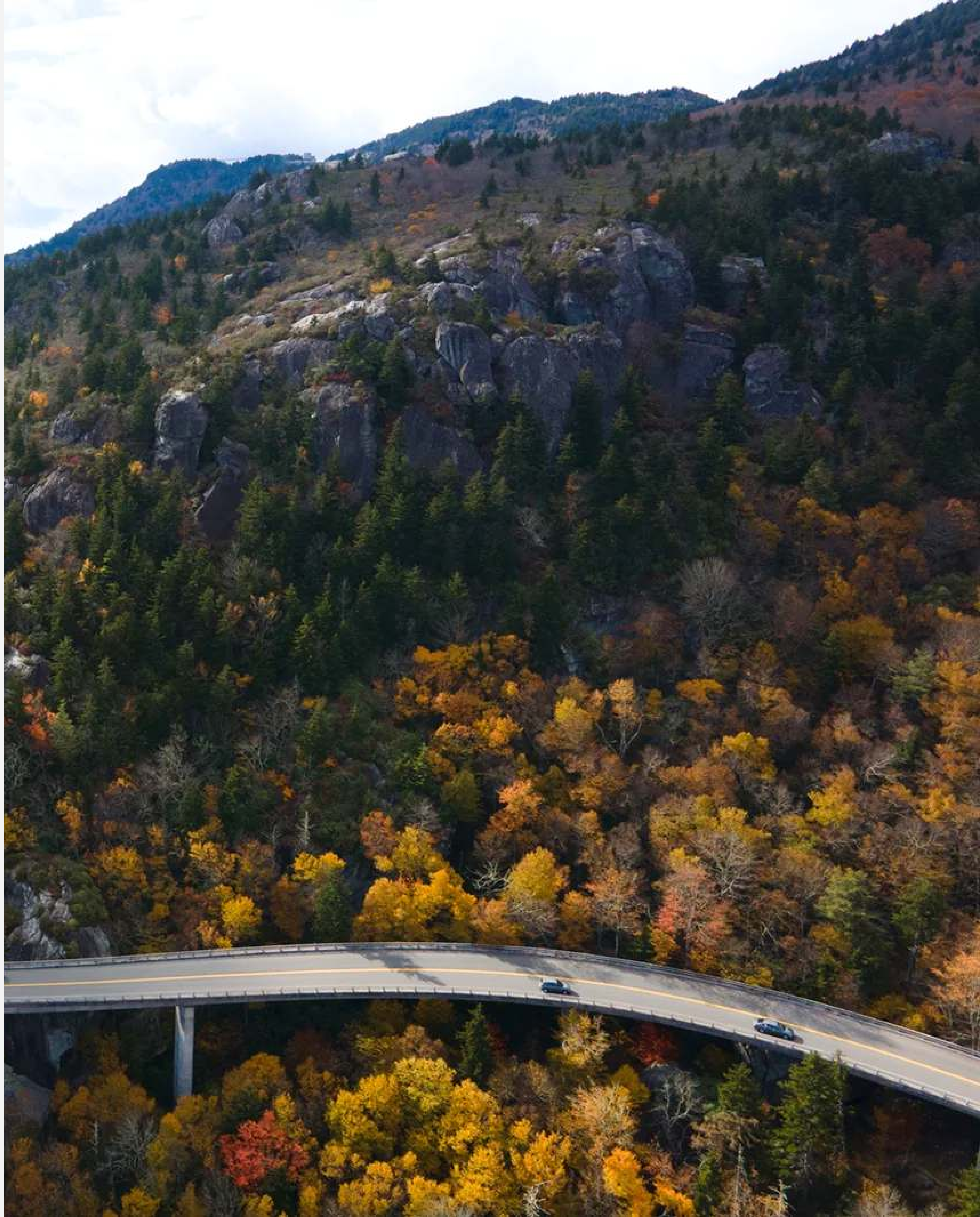
- Creates verifiable emissions reduction metrics for ESG reporting and science-based targets compliance

Enable Circular Material Flows

- Transforms waste liability into resource opportunity with controlled material recovery process
- Establishes centralized collection infrastructure that overcomes fragmented recycling barriers

Build Operational Resilience

- Reduces raw material volatility by securing internal fiber supply from recaptured post-consumer waste



Collaboration

“We suggest pushing for sustainability outside of KTB by encouraging collaboration both within and beyond the apparel industry.”

Collaborating inside the Industry
Raising the Industry standard

Collaborating outside the Industry
Allowing for sustainable change

REGULATORY CHALLENGES

The Hindered Business Case for Sustainability

- Policy constraints limit sustainability progress → Current U.S. antitrust laws restrict industry-wide collaboration, transparency, and communication

The Risks of Advocacy

- Large and influential companies that lobby for change often find themselves in an uphill brand image battle, always being in the crosshairs of critics

One Company can’t do it Alone

- Sustainability initiatives require collective action → A single company risks falling behind competitively if it bears the cost alone

REGULATORY TACTICS

Improving the Business Case for Sustainability

- Taking an active stance in advocating for measures that help companies like KTB reach their sustainability goals while staying competitive

Corporate Lobbying for a good cause

- Advocate for enhanced financial incentives and the ammendment of regulation that inhibits collaboration

SUMMARY OF TACTICS

POLICY ADVOCACY

for....

TAX INCENTIVES

Subsidies
Grants
Sales tax Amendment

REGULATION CHANGE

Lobby for the amendment
of antitrust laws

JOINT VENTURES WITH COMPETITORS

The Challenge to Integration

- Financial Costs
- Operating Risks

Our Insight

- Competitor Partnership
- Joint-Owned Factories
    - Processing Mills

The Benefits

- Reduced Production Costs
- Clear Communication
- Product Quality Control
- Innovation Opportunity

COLLABORATING FOR ADVOCACY

Collaboration with the WBCSD

- A global CEO-led organization of over 200 leading businesses working together to accelerate the transition to a sustainable world
- TCFD Framework

A Relationship with the WBCSD can be Leveraged in order to:

- Push for financial incentives for sustainability
- Amend antitrust laws that prevent collaboration

The Benefit

- Partnering with an organization well versed in strategies for advocacy
- KTB as an industry leader

INDIGOOD SUCCESSES AND AREA FOR EVOLUTION

Ranks Suppliers improvement and leadership

- Shows individual suppliers commitment to water stewardship and leadership
- Allows for suppliers to develop and improve their water saving tactics
- Shows KTB's commitment to holding their key suppliers accountable

Limited marketability to consumers

- Indigood is supplier specific making it hard to market water saving through all apparel products
- Indigood is only pushed for KTB's key suppliers where it leaves room for judgement of non-certified suppliers

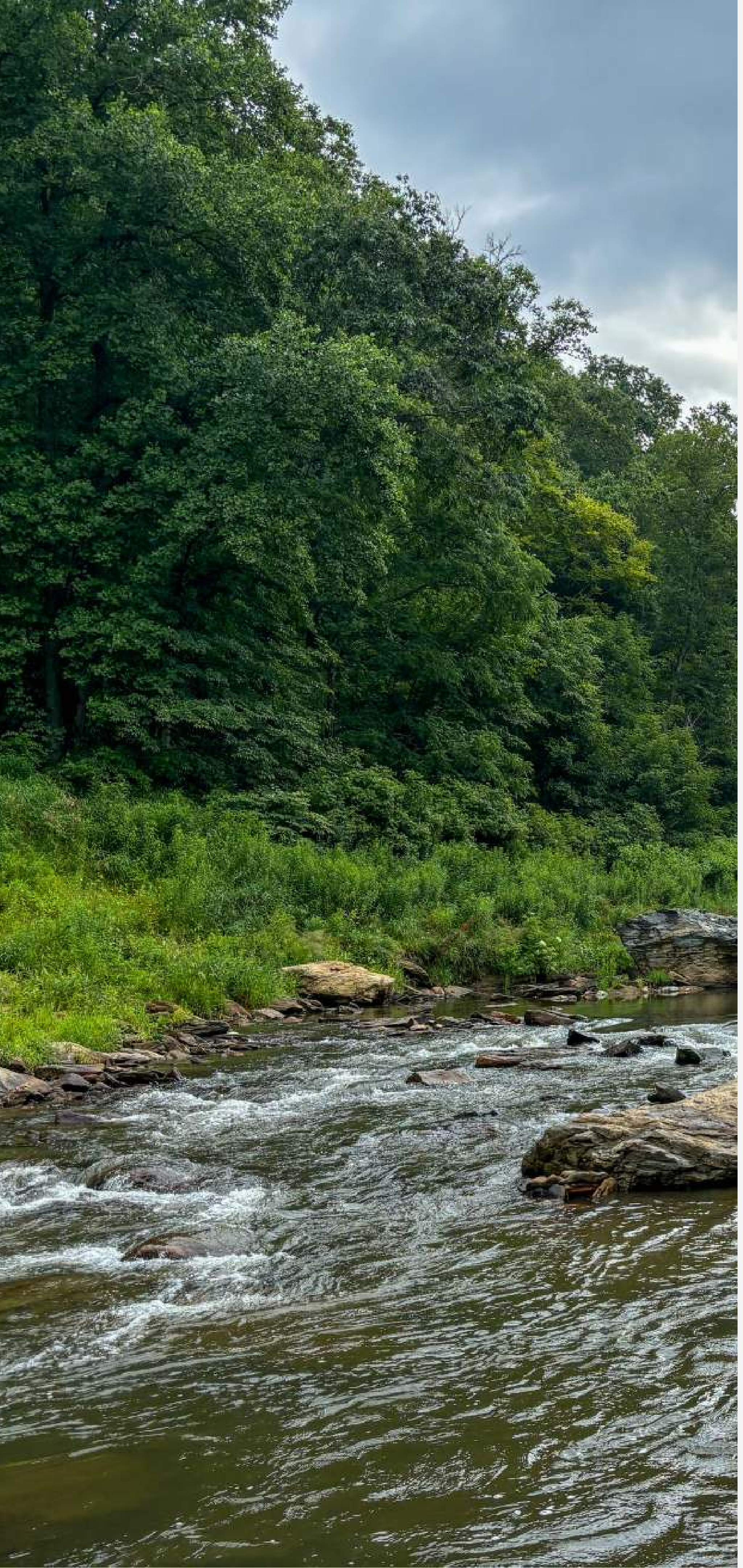
AQUAMARK: UNLOCKING INDUSRY LEADERSHIP

Scalable Framework:

- Indigood™ supplier certifications provide a foundation that can be expanded to a company-wide certification, enhancing KTB's commitment to water conservation across the entirety of KTB’s brands

Industry Standard:

- KTB can lead the industry by scaling Indigood to Aquamark, a brand-level water stewardship certification, setting a benchmark for sustainable practices within the industry



WHY AQUAMARK?

Consumer Engagement

Water stewardship can be marketed
with each pair of jeans

“This pair of jeans saved 90% of water”

Strengthen brand loyalty

Competitor Collaboration

Aquamark can be implemented industry wide

Separating from Indigood allows competitors to join
without directly supporting KTB

Fill the gap for water stewardship
specific certifications

NAVIGATING THE CHALLENGES OF IMPLEMENTING AQUAMARK

Expenses

- Costs for KTB due to collaboration with third party auditing
- Significant expenses for companies to obtain certifications: Companies seeking certification would face substantial costs

Industry collaboration

- Difficulty in securing industry-wide collaboration: Companies might be hesitant to align with a standard perceived as favoring a competitor
- No existing model for brand-level water-saving certifications: Currently, there is no established model

SOLUTIONS FOR AQUAMARK

Cost Management

- Continue to use tiered certification levels for businesses of all sizes and budgets
- Explore revenue-sharing models to align incentives and offset initial costs

Facilitating Industry Collaboration

- Establish a neutral governing body to ensure impartiality and build trust
- Partner with brands to co-develop and promote Aquamark
- Join coalitions to harmonize standards and boost adoption

Developing a Scalable Framework

- Pilot with select brands to test and refine the program
- Use feedback to improve certification criteria and processes
- Align with existing sustainability initiatives for credibility and integration

LEADING IN WATER STEWARDSHIP

Wanting to better the apparell industry

The development of Aquamark shows KTB’s willingness to save more water across the industry as a whole

Lead in what Kontoor cares for most

Water saving through the denim industry

Transparency and third party assurance

SUSTAINABILITY INSIGHTS **SUMMARY**

Based on our research and analysis we suggest that Kontoor consider the following:

- RFID + Upstream Visibility Portal
- QR Digital Passports
- Re-Wrangle
- Joint Venture Factories
- WBCSD
- Aquamark

While the cost for sustainability in the present is often great, the cost of missing this opportunity is far greater.

THANK YOU

QUESTIONS