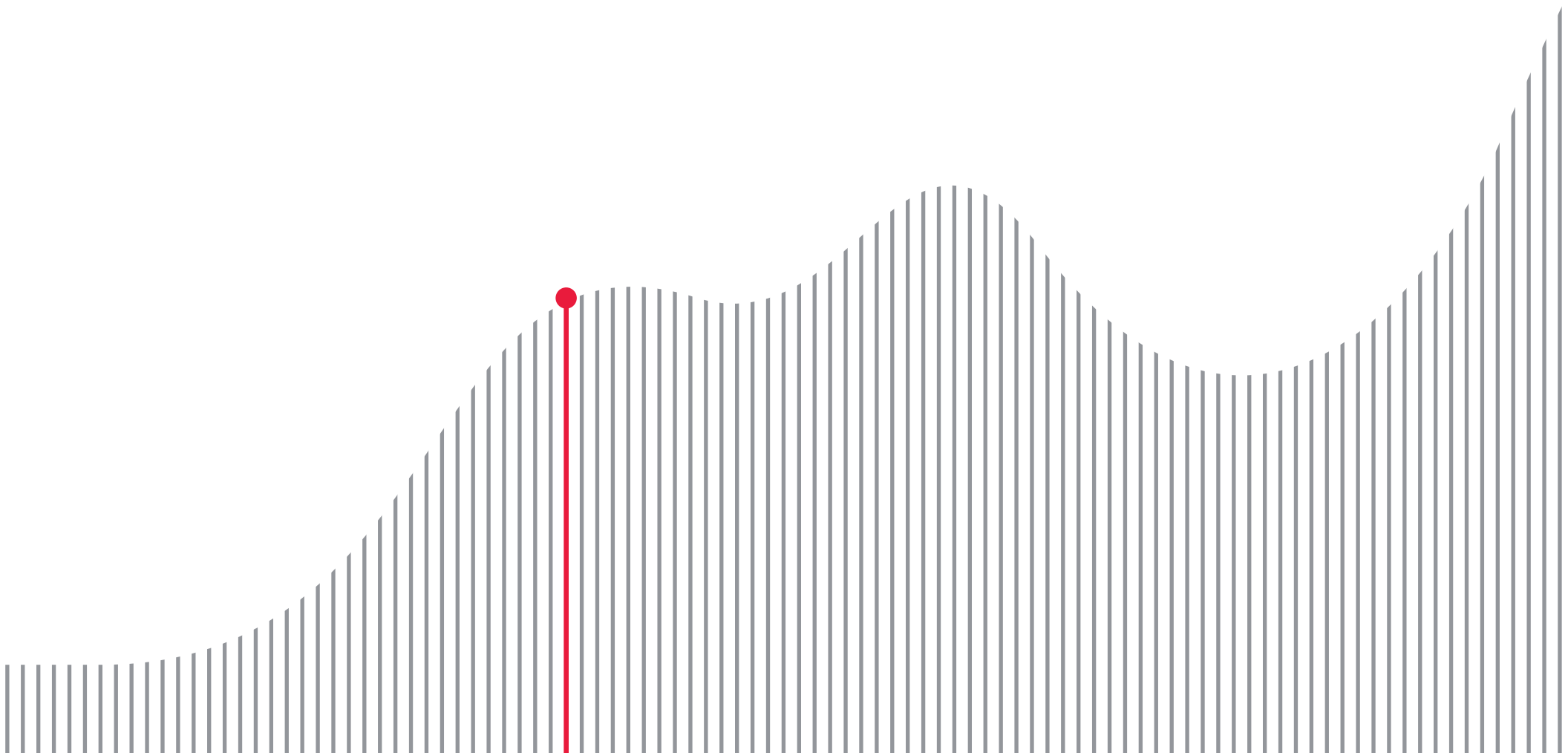
The Cost Of Inaction

apparel impact institute



President's introduction

Over the past decade, our industry has discussed climate change largely in terms of responsibility and long-term intention. But today, the impact is no longer theoretical. It shows up in the daily realities of our suppliers, in raw-material volatility, and in rising energy and compliance costs now appearing in brand budgets, costs that ultimately land on balance sheets.

This report is written for the industry's CFOs, finance teams, and strategic decision-makers — the people responsible for protecting margin, managing volatility, and steering long-term value.

As volatility and emissions increase, so does the cost exposure facing brands, which is why we undertook this analysis: to understand how climate-related impacts flow into COGS, margins, and bottom-line performance.

The Cost of Inaction report illustrates how climate inaction increases costs over time, and why early investment, particularly in supplier decarbonization, offers a clearer path to financial resilience and long-term competitiveness. While we reviewed a wide range of climate-related risks, this report focuses on the three most common risks across brands: *carbon pricing, energy volatility, and raw-material disruption*.

This report also makes the case for collaborative investment in the transition of suppliers to 100% renewable electricity and clean thermal energy. And as we discuss cotton, I want to be clear that our findings should be understood in alignment with Textile Exchange on climate-aligned materials. No single material system (cotton or others) is inherently more or less risky than another, nor is risk mitigated simply by shifting from one fiber type to another. Every material carries its own set of vulnerabilities.

A core message throughout this work is that climate exposure may begin in the supply chain, but it fully arrives on the balance sheet. The encouraging news is that the actions that reduce exposure, electrification, renewable energy procurement, greater material resilience, and supplier support, are practical and investable.

I want to express my gratitude to Accenture for the analytical rigor behind this work; to HSBC and Zalando for their financial support of the report; and to the many partners: brand leaders, suppliers, technical innovators, financial and philanthropic partners, and organizations like Textile Exchange, whose insights shaped this analysis. I am equally grateful to the many suppliers and solution providers who ground this work in operational reality, and to the Aii team whose dedication made it possible.

Thank you for your partnership and leadership as we move forward.

Lewis Perkins
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Credits

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Founded in Berlin in 2008, Zalando is Europe's leading fashion destination, serving 61 million customers across 29 markets. Through its B2C brands, Zalando and ABOUT YOU, it provides an inspiring, high-quality shopping experience for fashion and lifestyle products. Furthermore, it offers a specialized B2B operating system that enables brands and retailers to scale their own e-commerce businesses. By leveraging its logistics and software, it maintains a pan-European ecosystem that drives the future of retail.

Apparel Impact Institute (Aii) is a nonprofit collective founded in 2017 by four industry leaders: the Sustainable Apparel Coalition (SAC), the Sustainable Trade Initiative (IDH), Natural Resource Defense Council (NRDC) and Target Corporation. The organization emerged organically as a result of a real need that apparel brands and retailers self-identified. Gap Inc., PVH Corp., Arvind Mills, HSBC, GIZ, Stichting Doen and Schmidt Family Foundation joined the founders in the first three years of start-up and organizational development. Aii identifies, funds, and scales proven quality solutions to accelerate positive impact in the apparel and footwear industry. Aii programmes focus on areas that result in positive environmental impact from the production of apparel and footwear products to improve the industry.

To learn more about Aii, visit ***apparelimpact.org***.

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Executive summary

A 3% margin shock from climate costs could cut profits by 34%

Carbon cost volatility: The new driver of margin risk

Volatile carbon, energy, and material markets are no longer theoretical. They are shaping supplier pricing and operating costs across the apparel value chain. By 2030, inaction could erase 3 percentage points of your company's operating margin that could lead to 34% profit loss[1].

The cost of producing apparel is rising because the price of carbon, energy, and raw material inputs are becoming more expensive and less predictable. Brands can respond in different ways – by decarbonizing their supply chains, adjusting product quality, or passing costs on to customers, but the underlying COGS and margin pressure must be actively managed. These are balance-sheet realities, not sustainability metrics.

The risk is quantifiable and already visible

Carbon and energy costs are now appearing in quarterly supplier invoices.

2025 marks a turning point: across key production markets, carbon pricing mechanisms are expanding, energy volatility is increasing, and raw material disruptions and regulatory compliance costs are affecting profit margins. These are not abstract risks, they're quantifiable inputs to your cost of goods sold (COGS).

Across major production markets, explicit and implicit carbon pricing is emerging, from China's emissions trading scheme to the EU's Carbon Border Adjustment Mechanism (CBAM) and India's new carbon credit market. These policies translate into supplier cost increases that flow directly into brand COGS.

[1] For a typical apparel brand with 9% earnings before interest and taxes (EBIT) margins, this equates to roughly a 34% reduction in profit by 2030 assuming no increase in revenues (subject to rounding errors)

Methodology

Our assumption for revenue growth

Revenue growth projection assumption based on historical sector volume growth and price increases inline with central bank target inflation rates.

How we calculated the numbers

Carbon pricing
Estimated total Scope 3 emissions using archetype emission intensities; allocated emissions to regions using revenue mix; applied NGFS-based carbon price trajectories to each region; translated into yearly COGS impact assuming brands absorb 100% of costs.

Raw materials (cotton)
Used NGFS-aligned climate scenarios to estimate cotton production decline; converted production loss into price increases using supply elasticity; applied proportionate cotton cost increases to each archetype based on material composition targets.

Energy transition
Determined supplier energy needs by archetype technology mix; applied scenario-driven price outlooks for coal, grid electricity, and onsite solar; compared future energy costs to a coal-baseline; passed 100% of cost changes to brands.

What is driving the numbers

Carbon pricing
Costs vary by regional exposure, speed of decarbonization by archetype, and aggressiveness of carbon price trajectories.

Raw materials (cotton)
Results are driven by severity of climate impacts on cotton yields and the degree of material diversification.

Energy transition
Numbers shift based on how fast archetypes phase out coal, technology efficiency differences, and future energy price trends, especially the gap between coal and renewable electricity.

Figure 1:
By 2040, approximately 70% of market value will be at risk from continued inaction
Conventional Operator under Net Zero scenario

	Units	2025	2030	2040
Carbon price[2]	USD/tCO2e	30	199	543
Incremental cost per year	USD m	94	677	2,300
Estimated COGS increase	%	1.2%	6.6%	12.9%
New EBIT	%	8.6%	6.0%	3.1%
EBIT margin impact	p.p.	-0.6%	-3.1%	-6.1%
Estimated net income loss	%	-6%	-34%	-67%
P/E multiple[2]	N/A	23x	22x	21x
Market value loss	%	-6%	-37%	-70%

Note(s): (1) Analysis uses median figures; (2) 2025 multiple reflects current peer average while 2030 and 2040 figure reflect multiple compression from higher perceived climate risk and cost exposures (assumption)
Source(s): S&P Capital IQ (as of June 2025), NGFS, Accenture Strategy analysis

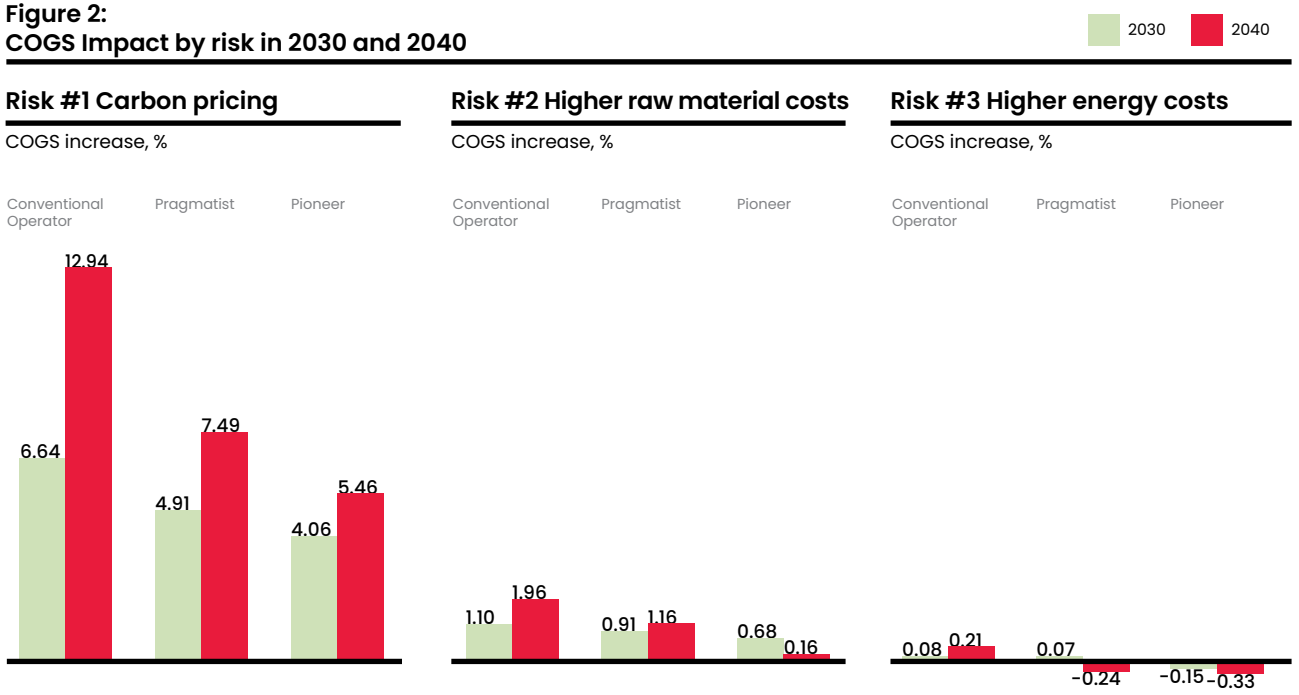
- To translate climate risk into financial terms, the analysis developed an illustrative P&L model for a representative global apparel brand with approximately USD 16 billion in annual revenue and 10% EBIT margin, aligned with sector medians
- Assuming the brand has a 3 $MtCO_2e$ annual footprint (predominantly Scope 3 emissions) and limited decarbonization progress, the analysis applies NGFS carbon pricing trajectories to assess the incremental financial burden of inaction through 2040
- Assumes future carbon costs are benchmarked to today's financials; exposure expected to scale proportionally with volume growth, not materially affecting directional results

Carbon prices are projected to surge from an average of $10 to $350 per tonne by 2040, driven by regulatory changes, making apparel manufacturing significantly more expensive[2]. We estimate that carbon costs alone could push the cost of goods sold up by 13% by 2040. This indicates that without action, regulatory compliance costs could reduce profits by 67% and market value by 70% (Figure 1).

[2] Carbon pricing refers to direct government mechanisms such as carbon taxes and trading schemes. The range of carbon prices here are based on the Network for Greening the Financial System (NGFS) scenario modelling projections across regions and scenarios.

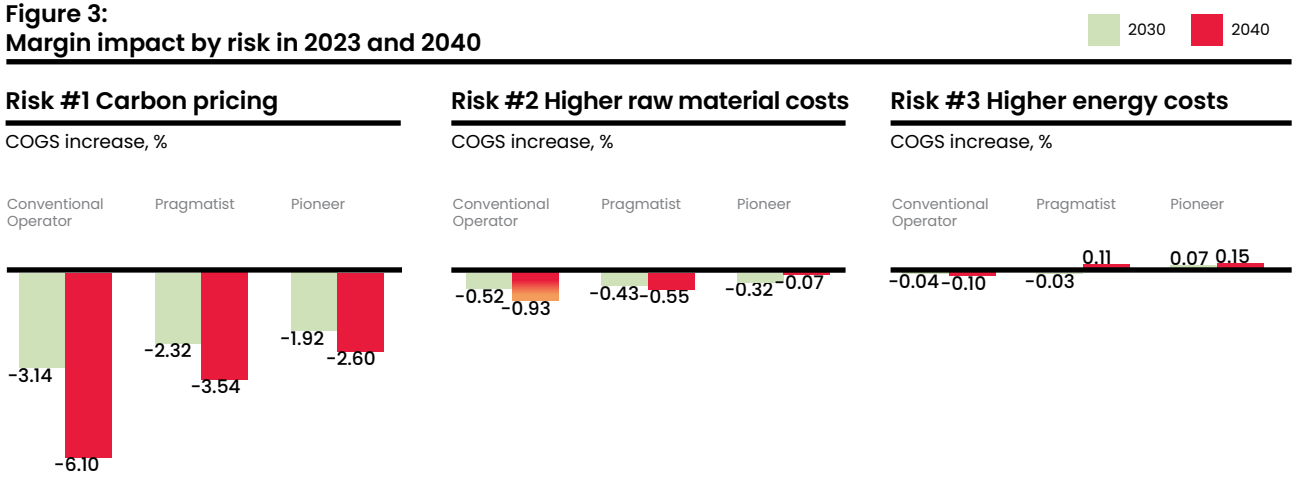
Carbon pricing is the primary COGS driver by 2040

Figure 2:
COGS Impact by risk in 2030 and 2040



Note(s): Figure represents worst case scenarios for each risk. For Risk 1 and 2, figure represents Net Zero 2050 while for Risk #2: figure represents Current Policies as inaction leads to more severe weather outcomes. Source: Accenture Strategy analysis

Figure 3:
Margin impact by risk in 2023 and 2040



Note(s): Figure represents worst case scenarios for each risk. For Risk 1 and 2, figure represents Net Zero 2050 while for Risk #2: figure represent Current Policies as inaction leads to more severe weather outcomes. Source: Accenture Strategy analysis

Even modest climate shocks, such as those resulting in a 3% drop in global cotton production, could raise COGS by 1% and erode earnings before interest and taxes (EBIT) margins by up to 0.5 percentage points by 2030, with the impact expected to double by 2040 (Figure 2 and 3). Now, imagine moderate or severe climate shocks.

Under the policy pathways already being implemented toward Net Zero 2050, including regional carbon markets, carbon border adjustments, and supplier energy transitions, implicit carbon costs could cut margins by up to 3 percentage points by 2030. Additional margin pressure is expected from energy and material volatility by 2040.

Estimated income loss

	2030	2040
Conventional Operator		
Risk #1: Carbon pricing	-34.2%	-66.6%
Risk #2: Higher raw material cost	-5.7%	-10.1%
Risk #3: Higher energy cost	-0.4%	-1.1%
Pragmatist		
Risk #1: Carbon pricing	-25.3%	-38.5%
Risk #2: Higher raw material cost	-4.7%	-6.0%
Risk #3: Higher energy cost	-0.4%	+1.2%
Pioneer		
Risk #1: Carbon pricing	-20.9%	-28.1%
Risk #2: Higher raw material cost	-3.5%	-0.8%
Risk #3: Higher energy cost	+0.7%	+1.7%

Inaction is a financial liability

These risks require proactive financial leadership and capital planning. Investor expectations and public discourse have long called for a reinvention of the apparel industry, and that includes supply chain resilience. CFOs are the key leaders in mitigating climate risk. Their decisions on financing, capital allocation, and risk pricing will determine whether a brand stays competitive in a decarbonizing economy — undoubtedly a priority for boards and investors.

Managing climate exposure is about protecting margins and brand equity.

Climate impacts may begin in your supplier base, but they *will always arrive in full force on your balance sheet and your Profit & Loss*.[3]

[3] This analysis draws on NGFS climate-policy scenarios and sector-level data from the IEA, FAO, and World Bank, applied through Aii's financial impact model to translate climate risks into COGS and margin outcomes.

Capital strategies that pay off

Each quarter of delay compounds costs but that's only half of the story; each investment compounds resilience.

Where do these investments show in your company's performance? Within 3-5 years, the returns are clear: stabilized COGS, improved liquidity, and a measurable hedge against margin erosion. Accounting for the avoided costs of inaction.

The good news is that these investments don't have to be made alone. The apparel sector already has strong collaborations designed to co-invest in climate mitigation and efforts to lower carbon emissions. By taking advantage of these existing forces of collective action, your company can achieve scale, credibility, and cost-efficiency, while sharing these risks with peer brands. It's a profit shield. It's an effective strategy for reducing individual exposure while improving sector resilience.

Illustrative capex investment

Examples

- A Tier 2 dyeing and finishing supplier in Vietnam is evaluating whether to replace a coal boiler with an electric boiler
- The brand uses an internal shadow carbon price to evaluate the financial case under different carbon cost assumptions

Assumptions	Units		Notes
Capex required	USD	100,000	
Annual net benefit			
Carbon emission savings	tCO2e	10,000	Will depend on usage and boiler efficiency. Figure from comparable case studies
Fuel cost	USD	(5000)	No net benefit as electricity prices are currently higher than coal. Only grid electricity is assumed here
Operation & Maintenance	USD	15,000	Electric boiler has lower maintenance cost

Even a modest internal carbon price of USD 5/tCO_2e can turn an otherwise dilutive project into a financially viable investment by recognizing the value of avoided carbon costs

	Units	As-is[2]	With carbon prices		
Carbon price	USD/tCO2e	0 (without carbon price)	5	20	60
Payback period	*years*	*10.0*	*6.7*	*3.3*	*1.4*
NPV@8% (10 years lifetime)	*USD*	*(-32,899)*	*651*	*101,302*	*369,706*

Note(s): (1) In practice, capex and maintenance savings may accrue at the supplier level, whereas carbon cost avoidance is realized at the brand level. The payback period and NPV shown are illustrative and assume all benefits are internalized at the brand level. Actual payback may vary depending on contract structures and cost-sharing mechanisms; (2) All numbers used in this table are illustrative; (3) Based on current average payback period
Source(s): NGFS, Accenture Strategy analysis

Call to action: CFO priorities

What does decision-making look like for financial leaders?

1. **Quantify exposure**
   Translate climate risk into financial terms. Stabilize costs by electrifying Tier 2 manufacturing, adopting renewable energy, and optimizing material sourcing strategies to reduce exposure to price and supply volatility.

2. **Integrate climate risk into capital allocation**
   Embed risk-adjusted climate costs into budgeting and capex. Apply internal shadow carbon pricing to investment decisions and link climate KPIs to executive incentives and governance frameworks.

3. **Establish shared accountability**
   Strengthen supplier data visibility for stress testing and scenario planning. Embed climate metrics into financial performance management to align teams across procurement, finance, and sustainability.

4. **Finance supplier transition at scale**
   Collaborate across brands to share costs and de-risk investment. Use blended finance mechanisms, such as grants, sustainability-linked loans, pooled guarantees, and protocols like the Double Dividend Protocol, to co-fund supplier upgrades. Mobilise new capital through ESG and supplier finance, attract commercial lenders, and protect suppliers from upfront costs.

5. **Adopt common standards**
   Pool financing, aggregate demand for renewables and low-carbon materials, and use shared frameworks (e.g., Higg FEM, Aii Carbon Benchmark) for transparency, comparability, and efficient progress tracking.

The opportunity for financial advantage

Early movers won't just mitigate risk; they'll gain a financial edge. Brands that decarbonize their supply chains unlock +2 pp EBIT, improved liquidity, and a 5–10% valuation premium for climate-aligned portfolios[4].

The data, tools, and partnerships already exist, but time doesn't.

The choice is clear. Act now, and transform climate risk into long-term financial advantage. This is your opportunity to lead and strengthen your competitive position.

Let's talk: finance@apparelimpact.org

[4] https://www.bcg.com/publications/2025/valuation-boost-comes-with-green-growth

01 Introduction

1.1 Scope of the study

The global apparel industry faces immediate mounting financial risks from climate inaction. These risks are already visible in Profit and Loss statements: brands are absorbing higher energy costs, cotton price volatility driven by climate impacts, and emerging carbon costs passed through supply chains. Delaying supplier-side electrification and renewable power procurement leads to avoidable cash outflows over the next budget cycles, compressing gross margin and increasing landed cost volatility. In short, the cost of goods sold (COGS) and margins are already exposed to energy, cotton, and carbon risks. Targeted supplier investments can reduce near-term cash losses and stabilise COGS volatility.

In this report, we quantify the cost of inaction in financial terms and highlight investment-ready supplier measures — electrification, energy-efficiency upgrades, and renewable power sourcing — that protect margin in the near term and shift the businesses toward a structurally lower-risk cost base. The analysis supports real budgeting trade-offs where capital is scarce and payback certainty matters.

Drawing on strategic insights from interviews with over ten leading apparel brands, quantitative modeling, and climate scenarios from the Network for Greening the Financial System (NGFS), this report translates climate and policy risk into the financial metrics such as COGS and gross margin. Outputs are framed for annual strategic planning, capex/opex choices, and capital allocation. The intent is to help CFOs and boards treat climate exposure as a financial variable, directly informing operational cost and capex decisions that safeguard profitability and future-proof their businesses.

To ensure credibility, we quantify the cost of inaction using publicly available data sources — e.g., International Energy Agency (IEA), World Bank, Food and Agriculture Organization (FAO), NGFS — and applying transparent, clearly defined assumptions.

Our modeling focuses on US/EU brands with global supply chains from 2025 to 2040. We balance near-term effects that influence the next one to three budget cycles with longer-term exposures that shape strategy and risk appetite.

This timeframe provides actionable insights for current decision-making and strategic planning, however — recognizing that CFOs typically sit for a 4-5-year period which was highlighted as a challenge during our 2025 NY Climate Week partner convening.[5]

[5] Source: https://fortune.com/2023/12/14/tenure-fortune-500-cfo-downward-trend-spencer-stuart/

We focus on three drivers with the clearest and most immediate financial signals: carbon pricing, raw materials (with our analysis examining cotton exclusively, as a full fiber/materials study is considered separate), and energy. Other important topics, such as labor productivity shifts and biodiversity, are acknowledged but excluded to keep the analysis decision-ready.

Ultimately, our goal is to answer a focused question:
What protects COGS and margin fastest, and what should be funded first?

1.2 Alignment with previous Aii reports

This report builds directly on the analytical foundation laid out in Aii's 2024 *Brand Playbook* for *Financing Decarbonization*[6] and incorporates insights gathered through Aii's multistakeholder finance and supplier-engagement work throughout 2024–2025. This includes discussions with brand partners, finance leaders, and suppliers during Aii-hosted sessions at New York Climate Week 2025, where companies highlighted the need for clearer financial evidence to support supplier transition financing.

The *Cost of Inaction* report is also designed as a companion and precursor to the forthcoming Supplier Finance Playbook on Financial Tools. By establishing a robust financial rationale, the report aims to support industry-wide commitments to supplier financing and enable large-scale CO_2 reduction across the apparel value chain.

1.3 Introduction of the risks

For this analysis, we define **"risk"** as the potential adverse consequences arising from climate-related hazards, including both operational and financial impacts on apparel brands and suppliers.

The report draws on the Task Force on Climate-related Financial Disclosure (TCFD) framework and leading brands' Carbon Disclosure Project (CDP) reporting to systematically identify, categorize, and assess relevant climate-related risks.

We prioritize risks according to materiality, time horizon, relevance and modelling feasibility. Our analysis highlights three risks as most critical to the financial resilience of the apparel sector:

01. **Carbon pricing** — increasing exposure to global regulatory and fiscal measures.
02. **Higher raw material costs** — volatility and supply insecurity driven by climate change.
03. **Higher energy costs** — exposure to rising fossil fuel prices and delayed transition to clean energy.

[6] https://apparelimpact.org/wp-content/uploads/2024/09/Aii_BrandFinancePlaybook_9.26.24.pdf

Other material risks for brands, while not explicitly quantified in this analysis, include operational and adaptation challenges such as heat stress in factories, potential production shutdowns, and broader supplier welfare impacts.
A comprehensive list of risks considered is available in the Technical Report.

Related to higher raw material costs: it is important to note that risks exist across all material categories. For the purposes of this report, cotton has been highlighted as one example; however, this should not be considered in isolation. Any approach to sourcing and managing risk related to raw materials sourcing needs to reflect a balanced understanding of all risks across a portfolio.

Together, these risks underscore the urgency for brands to integrate climate risk into cost planning, investment decisions, and long-term competitiveness.

1.4 Introduction of the archetypes

We developed three representative brand archetypes to illustrate how the cost of inaction varies with sustainability maturity. Each archetype models a global mass-market brand with similar scale and growth assumptions, but different approaches to managing climate risks. By applying this framework, we enable clear comparison of financial outcomes and help brands identify actionable levers for change.

The three archetypes

- **Conventional Operator**
  Engages minimally on sustainability; relies heavily on fossil fuel intensive sourcing and production.
- **Pragmatist**
  Meets minimum regulatory requirements. Adopts sustainability initiatives selectively. Focuses on compliance and cost efficiency rather than ambitious transformation.
- **Pioneer**
  Pursues an aggressive net zero strategy, commits to circular economy principles, and uses renewables extensively across the value chain. Collaborates with suppliers and peer brands.

1.5 Introduction to the scenarios

We use scenarios to help CFOs and finance teams assess how different decarbonization, energy, and policy pathways impact profitability and competitiveness. By modeling a range of plausible futures, we stress-test the P&L, highlight where exposure is greatest, and identify the actions that protect profitability across most outcomes. Our goal is resilience: fewer surprises, steadier COGS, and clearer compliance pathways.

We rely on NGFS scenarios because they are analytically rigorous, aligned with SSPs, and widely used by financial institutions, ensuring our results are both comparable and credible for finance audiences.

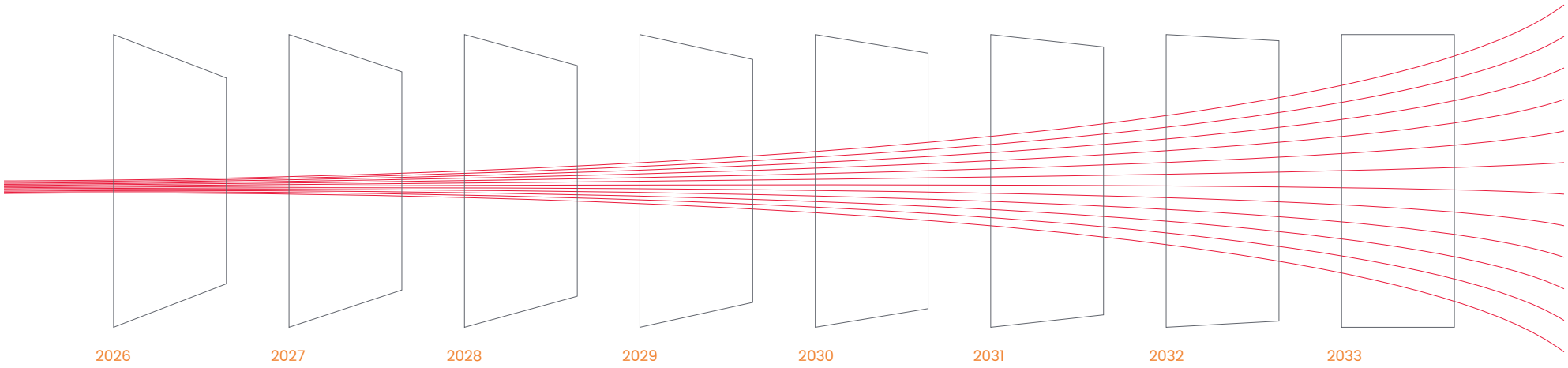
We apply three NGFS scenarios:

- **Current Policies**
  A "business-as-usual" future with no new climate policies, leading to projected warming of 3°C by 2100 and severe physical climate risks
- **Delayed Transition**
  A late, rapid policy action scenario, assuming no additional policies until 2030. Strong policies are then needed to limit warming below 2°C, illustrating higher transition risk from sudden policy shifts.
- **Net Zero 2050**
  A future with immediate, ambitious climate policies to limit global warming to 1.5°C.
  This Paris-aligned scenario is essential for regulatory compliance and represents an optimistic climate future.

We apply each scenario to three brand archetypes, reflecting different starting points and decarbonization speeds. For each combination, we estimate impacts on **COGS, gross margin,** and **emissions**, driven by carbon pricing, cotton availability and prices, and energy costs.

By comparing outcomes across scenarios, brands can:

- Quantify the **cost of inaction**: how waiting increases landed cost and margin volatility compared to acting early.
- Identify **which measures to fund first** — prioritizing investment-ready, scalable actions with the best payback.
- Build **resilience** by investing in a supply base less exposed to policy shocks, weather disruptions, and fossil fuel price swings — delivering steadier COGS and clearer compliance readiness across scenarios.



02 The cost of inaction

The cost of inaction represents the financial, operational, and strategic value at risk for brands and suppliers that do not decarbonize in response to climate-related hazards. This concept is directly linked to financial, operational, and strategic risks and opportunities. When brands fail to act, they face higher costs, potential regulatory penalties, and operational disruptions. In contrast, proactive decarbonization creates opportunities for competitive differentiation, supply chain resilience, and long-term value creation.

Our analysis quantifies the changes in COGS associated with continued "as-is" operations versus making decarbonization investments — directly highlighting the financial trade-offs associated with the three identified risks.

By converting abstract climate risks into measurable impacts on COGS, margin, and cash flow, we provide CFOs with a clear and compelling rationale for investing in electrification, renewable energy, and supplier decarbonization. Our goal is to shift from reactive compliance to proactive capital allocation that protects today's margin while building a lower-risk cost base for the next planning cycles.

2.1 Risk #1: Carbon pricing

Description of risk

Carbon pricing now covers a substantial share of global emissions and will continue to expand. As these schemes tighten, more suppliers are likely to pass carbon costs into purchase orders and landed cost, increasing exposure for brands[7].

The fashion industry contributes 2% or more of global carbon emissions, with 99% of brands' emissions classified as Scope 3 — including manufacturing, sourcing and garment assembly, which most frequently occurs in Asia[8,9,10,11].

Without intervention, sector emissions could rise by an additional 55% by 2030, further increasing exposure to new carbon levies[12].

Regions are progressing at varying speeds and price levels, creating asymmetric landed-cost pressure across sourcing footprints.

[7] Carbon pricing mechanisms now cover about 28% (2025) of global emissions compared to approximately 5% in 2005. (https://www.worldbank.org/en/publication/state-and-trends-of-carbon-pricing)
[8] the wide range reflecting differences in how "fashion" is defined and which life-cycle stages are included across studies
[9] https://www.wri.org/technical-perspectives/roadmap-net-zero-emissions-apparel-sector
[10] https://unfccc.int/news/un-helps-fashion-industry-shift-to-low-carbon
[11] https://www.thefashionpact.org/area-of-action/lower-impact-production/
[12] https://www.wri.org/research/roadmap-net-zero-delivering-science-based-targets-apparel-sector

Country dynamics

Carbon prices are set to diverge sharply by region, creating uneven competitive pressures for apparel supply chains.

EU

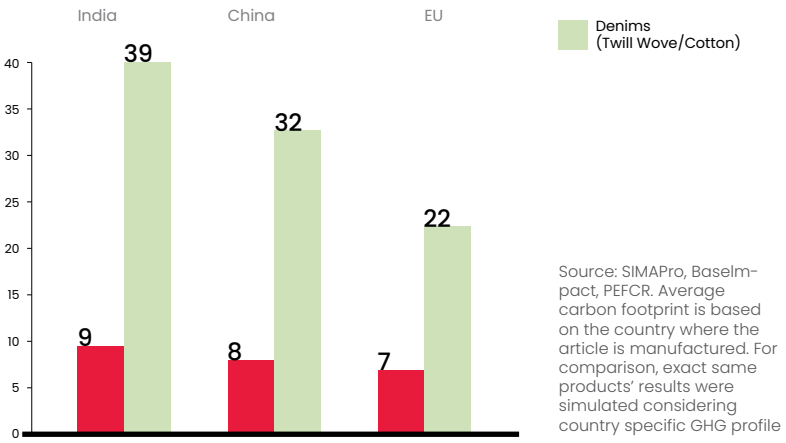
The EU's Emissions Trading System (ETS) sets the highest and most rapidly rising carbon prices, surpassing other major regions and shaping cost structures for apparel[13]. To prevent carbon leakage, the EU has also introduced the Carbon Border Adjustment Mechanism (CBAM), which extends carbon costs to goods imported from high-emission manufacturing countries such as China, India, and Vietnam.

As of 2025, CBAM covers energy-intensive goods. Given textiles' high energy use in key exporting countries (Bangladesh, India, Türkiye, China), future phases are likely to include textiles — potentially by the early 2030s.[14] Such an expansion would directly increase landed costs and align with broader EU textile regulations like Extended Producer Responsibility, integrating carbon pricing into trade and accelerating global decarbonization in apparel production.

We view EU carbon costs as a core consideration for long-term operational resilience. Even for goods produced in Asia, sales into the EU will require budgeting based on EU carbon prices. For example, based on emissions differential, exporters of cotton T-shirts may face added costs of 3.4% (India) and 0.9% (China), equating to a potential 2.4% COGS increase under a 60%/40% sourcing mix (Figure 1 and

Figure 1:
Average total GHG emissions in manufacturing based on geography

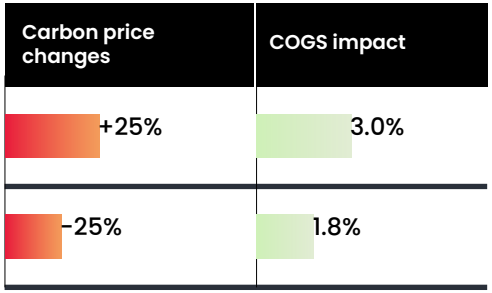
Total GHG Emissions in kg C02e



Source: SIMAPro, BaseImpact, PEFCR. Average carbon footprint is based on the country where the article is manufactured. For comparison, exact same products' results were simulated considering country specific GHG profile

Figure 2:
Estimated change in COGS from carbon price changes

Based on an illustrative portfolio of t-shirts from India (60%) and China (40%)



Source: SIMAPro, BaseImpact, PEFCR. Average carbon footprint is based on the country where the article is manufactured. For comparison, exact same products' results were simulated considering country specific GHG profile

[13] The ETS primary focus has historically been on power generation and energy intensive industries. Fashion is currently not in scope
[14] https://www.europarl.europa.eu/RegData/etudes/ATAG/2023/754626/EPRS_ATA(2023)754626_EN.pdf

Asia

Carbon pricing mechanisms are emerging across the top manufacturing countries. Many Asian countries have set ambitious net zero targets: for example, Vietnam aims to reach Net Zero by 2050, while India targets 2070[15]. Achieving these goals will require tightened policy and expanded carbon pricing mechanisms by mid-century.

China, the world's largest apparel producer, now operates a national carbon market and has announced plans to expand coverage by 2027 to include other carbon-intensive sectors such as chemicals and aviation[16, 17] . This expansion signals a broader trend that could influence apparel supply chain costs in the medium term. The newly announced Nationally Determined Contributions (NDC) at the UN General Assembly in September 2025 may further broaden the scope and ambition of these measures[18].

Key exporters such as India, Vietnam, Bangladesh, and Türkiye are increasingly moving toward stronger climate action, including Türkiye's recent Climate Law. Brands sourcing from these markets are not insulated. With the EU currently accounting for 35.5% of global apparel imports – the largest share globally – EU's Carbon Border Adjustment Mechanism (CBAM) and similar mechanisms mean that apparel sold into the EU will likely face EU-level carbon costs, regardless of the point of production[19].

For Asia-sourced products, finance teams should

1) Run landed-cost sensitivities using EU-level carbon prices for EU-bound SKUs,
2) prioritize supplier electrification and renewable power in coal-heavy grids, and
3) Support supplier-level decarbonization investments, eg through the Climate Solutions Portfolio (CSP), which offers vetted, high-impact solutions with clear, measurable payback.

Hypothesis tested:

Rising carbon taxes and border adjustment mechanisms will significantly increase landed costs for imports unless brands drive supplier decarbonization.

Findings and key takeaways

Relative to the Pioneer, the Conventional Operator shows a 137% COGS increase by 2040 in both Net Zero 2050 and Delayed Transition scenarios, driven by unabated Scope 3 emissions and carbon pass-through[19] (Figure 2).

In a Delayed Transition scenario, the Conventional Operator faces a 2.7pp margin reduction, while the Pioneer sees a 1.2pp impact. Under a Net Zero 2050 scenario, these impacts roughly double: by 2040, the Conventional Operator loses 6.1pp of margin, and the Pioneer 2.6pp — significant given typical brand margins of ~9%.

[15]Climate Action Tracker
[16]https://english.www.gov.cn/policies/latestreleases/202508/25/content_WS68ac6afac6d0868f4e8f50fc.html
[17]https://www.reuters.com/sustainability/climate-energy/chinas-carbon-market-introduce-absolute-emissions-caps-2027-2025-08-26/
[18]https://english.www.gov.cn/news/202509/25/content_WS68d47dcac6d00ca5f9a066a5.html
[19]https://www.cbi.eu/market-information/apparel/what-demand
[20]Impact due to carbon pricing only for 2040. See appendix for detailed approach.

This implies that the Conventional Operator faces an additional 3.5pp margin hit compared to the Pioneer in a Net Zero future.

Our analysis also demonstrated that even Pioneers are not immune to profit impacts, highlighting the need to invest in decarbonization beyond direct operations and into the supply chain (Scope 3).

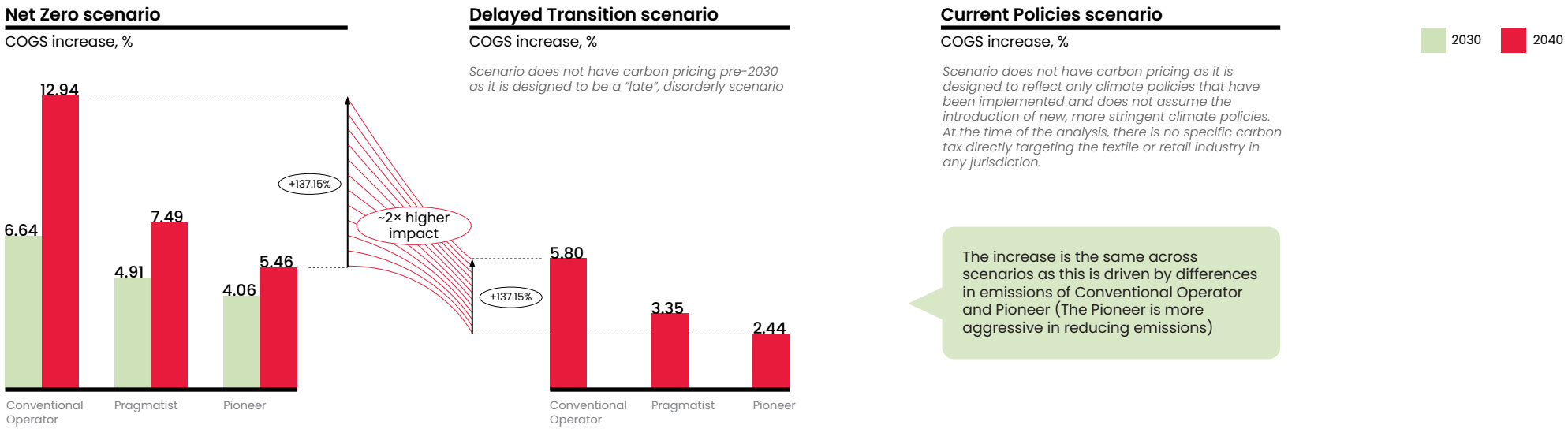
What brands must do now, regardless of maturity:

- **Start with low-hanging decarbonization initiatives.**
  We recommend setting clear expectations for suppliers to reduce emissions and mitigate carbon pricing risks. Energy efficiency measures are cost-effective, quick to implement, and provide immediate operational savings.

- **Co-invest in suppliers. Many suppliers lack the capital required to decarbonize their operations.**
  Even brands following the Pioneer archetype, which decarbonize faster than Conventional Operators, still face margin impacts of 2.6 pp under a Net Zero scenario and 1.2 pp under a Delayed Transition scenario (Figure 3). Supporting suppliers through targeted investments and longer-term buying commitments can help reduce Scope 3 emissions while protecting profitability.

- **Unlock financial resources in a phased, risk-managed way.**
  We recommend beginning with proven tools such as sustainability-linked bonds and supplier co-funding programs. Tie funding to clear paybacks and risk-based pricing, blending green finance with long-term supplier contracts. Prioritize commercially proven technologies with reliable supply chain impact, then expand to pilot projects and industry collaborations to scale emerging solutions faster and lower future costs. Finally, incorporate carbon-price and CBAM risk into hurdle rates to avoid underpricing the cost of inaction.

Figure 3:
COGS impacts by scenarios



Case studies:
H&M green fashion initiative[21]

Background
The apparel industry is highly emissions-intensive, with most impacts concentrated in supplier factories that often lack the capital to invest in clean technologies. Decarbonization requires significant upfront investment, yet suppliers face financing barriers that delay action. This leaves brands exposed to rising carbon costs, regulatory pressure, and long-term competitiveness risks.

Approach
Through its Green Fashion Initiative, H&M Group co-invests with suppliers to scale clean technologies and accelerate decarbonization. The program focuses on energy efficiency, electrification of high-energy processes, onsite solar, renewable power, and boiler/fuel replacement. The initiative blends financing with long-term partnerships, helping suppliers overcome capital barriers while aligning investments with H&M's sustainability and business objectives.

Impact
Since 2023, the Green Fashion Initiative has backed 23 projects with the potential to cut 148,000 tonnes CO_2e in supply chain emissions. For H&M Group, this translates to 67,000 tonnes CO_2e avoided, equivalent to powering 9,000 homes annually, demonstrating tangible progress in supplier decarbonization.

Brands that fail to support upstream decarbonization will likely face accelerating cost increases in COGS driven by Scope 3 emissions. Delay means higher mitigation costs later and greater exposure to margin erosion as carbon pricing regimes mature globally. Proactive investment - even with long paybacks - helps lock in competitive advantage and buffer against regulatory risk.

[21]https://hmgroup.com/sustainability/leading-the-change/green-investment/

2.2 Risk #2: Higher raw material cost

It is important to acknowledge that climate, environmental, and social risks are present across all material production systems. No single fiber, cotton included, should be assumed to carry inherently higher risk. Each material has its own set of vulnerabilities and dependencies that require careful management, and any approach to risk must be grounded in an understanding of this complexity. With this context in mind, the following section outlines how climate pressures are shaping cotton supply, cost, and long-term resilience.

Description of risk

The apparel sector is highly dependent on cotton, which accounts for approximately 19% of global fiber production (Figure 1). Increasingly frequent and intense droughts, heatwaves, and shifting precipitation patterns are driving greater water stress and reducing ecosystem and agricultural resilience. These pressures are further compounded by land-use changes, deforestation, and biodiversity loss linked to raw material sourcing.

Figure 1:
Apparel sector consumption of plant fibres

Fiber	Global fibre production Million tonnes, 2023	Subcategories Percent of total	Exposure to weather conditions
Synthetic fibres		• Polyester: 57.2% • Polyamide (nylon): 6.7% • Other: 4.9%	
Plant fibres		• Cotton: 19.9% • Other: 5.4%	
Manmade cellulosic fibres		• Viscose: 5.0% • Other: 1.3%	
Animal fibres		• Wool: 1% • Other 0.1%	

These climate pressures threaten cotton yield, quality, and growing seasons, increasing production volatility and supply risks for apparel brands. For example, in 2022, heavy rains in India, heatwaves in China, and droughts in the United States caused cotton prices to rise by 30% in a single year[22].

By 2040, approximately 50% of cotton-growing regions are expected to face higher temperatures and water scarcity, with 40% experiencing shorter growing seasons[23, 24]. Under a Current Policies scenario, cotton production could decline by approximately 7.4% in the 2040s[25] . Given cotton's significant role in global fiber use and its high sensitivity to climate impacts, the industry must carefully assess and manage the climate risks linked to cotton production.

[22] https://economictimes.indiatimes.com/news/international/business/the-worlds-cotton-supply-keeps-shrinking-hit-by-drought-heat/articleshow/93679087.cms
[23] https://www.forumforthefuture.org/global-press-release-cotton-2040-planning-for-climate-adaptation
[24] https://www.forumforthefuture.org/global-press-release-cotton-2040-planning-for-climate-adaptation
[25] https://hess.copernicus.org/articles/25/2027/2021/hess-25-2027-2021-supplement.pdf

Country dynamics

Key cotton-sourcing countries by volume are India, China, Pakistan, the United States, Türkiye, and Brazil. They are highly exposed to drought, water scarcity, soil degradation, and extreme weather events, such as erratic rainfall and heatwaves, all of which can reduce production volumes and disrupt supply chains.

India & Pakistan

India and Pakistan together supply 29% share of global cotton production (Figure 2).

Figure 2:
Apparel sector consumption of plant fibres

Country	Share of global cotton production, tier 4 suppliers Percent, 2032F	Climate exposure	Biodiversity exposure
India	25%	Very High	Very High
China	22%	Very High	Very High
United States	15%	High	High
Brazil	13%	High	High
Pakistan	4%	Very High	Very High
Other	21%	N/A	N/A

In Pakistan, modeling projects an average yield reduction of 8–12% by 2039 and up to 30% by 2069 if climate adaptation does not improve, primarily due to high temperatures and rainfall variability[26].

Cotton cultivation is rain-fed in many regions (approximately 60% in India) amplifying climate sensitivity. Variable monsoon rainfall heavily impacts crop success and increases year-to-year volatility[27].

[26] https://api.clima-planned.rimes.int/media/technical_papers/Rahman_et_al._2020_Climate_Resilient_cotton_production.pdf
[27] https://www.sciencedirect.com/science/article/abs/pii/S0378429022001666

For example, large-scale floods in Pakistan in 2010 caused cotton prices to more than triple from USD 0.70/kg in 2009 to USD 2.50/kg[28].

Water scarcity further intensifies these risks. Pakistan's per capita water availability has fallen well below the water scarcity threshold - from 5,600 m^3 in 1947 to just 930 m^3 in 2023, while northern Indian states such as Punjab, Haryana, and Rajasthan face severe depletion[29].

China

China is a major cotton producer and processor, facing significant risks from water scarcity, changing rainfall patterns, and episodic flooding. This applies particularly in its northern cotton belts where climate impact had decreased cotton yields by 0.45% via higher solar radiation[30, 31].

USA

Increasing heat and extreme weather events are shortening growing seasons and raising irrigation needs in cotton belts across the United States[32].

Given higher investment in climate-resilient infrastructure, yields in these regions are likely to remain relatively more stable compared to South Asia. However, increased irrigation needs raise production costs, reducing cost competitiveness.

The risk is less about sudden shortage and more about long-term, structural cost inflation.

For brands highly dependent on virgin cotton, these dynamics mean higher prices and sourcing challenges. South Asia poses the greatest risk of supply shock, while the United States offers relative but more expensive stability.

Hypothesis tested:

Rising carbon taxes and border adjustment mechanisms will significantly increase landed costs for imports unless brands drive supplier decarbonization.

Findings and key takeaways

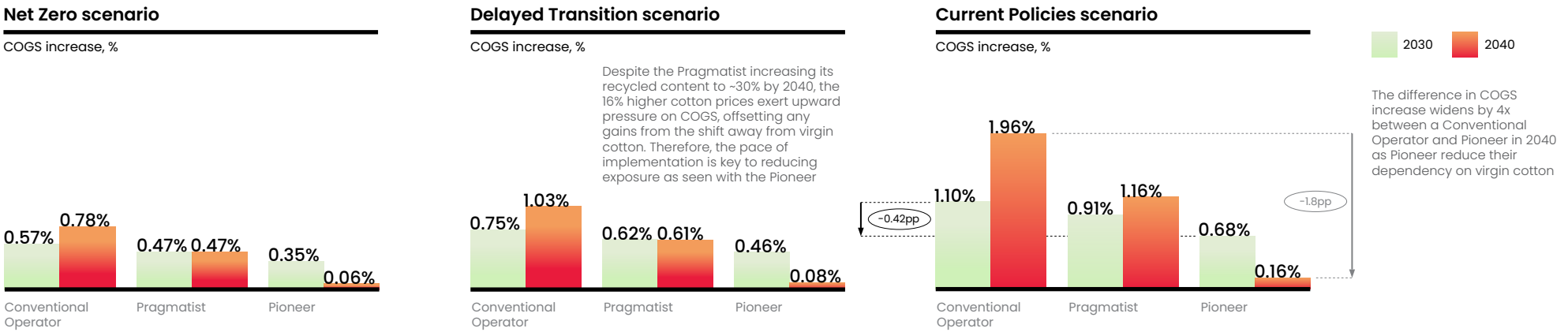
Our analysis shows that risk exposure intensifies over time, and delayed investment significantly increases future liabilities.

- Climate change is projected to reduce global cotton production by approximately 7% by 2040 under a Current Policies scenario, as rising temperatures and erratic rainfall shorten growing seasons and reduce yields[33].
- For brands reliant on virgin cotton, this translates into higher prices and supply volatility, with costs rising by 0.68% — 1.1% under a Current Policies scenario by 2030 and worsening thereafter (Figure 3).

[28] https://www.iisd.org/system/files/2023-01/2023-global-market-report-cotton.pdf
[29] https://www.wwfpak.org/our_work_/water_/
[30] https://www.researchgate.net/publication/365144512_Climate_variation_explains_more_than_half_of_cotton_yield_variability_in_China
[31] https://www.tandfonline.com/doi/full/10.1080/19475705.2025.2455491?src=exp-la
[32] https://www.solidaridadnetwork.org/wp-content/uploads/2023/11/Cotton-and-Climate-Paper_-Solidaridad-Nov-2023.pdf
[33] https://hess.copernicus.org/articles/25/2027/2021/hess-25-2027-2021-supplement.pdf

- For brands already operating at low margins, even a 1% increase in COGS reduces margins by 0.5 percentage points (approximately 6% of margins). In a competitive environment where brands cannot raise prices to offset higher input costs, the cost of inaction amplifies.
- The cost gap between strategies widens over time. By 2040, the difference in exposure between the Conventional Operator (no transition) and the Pioneer (aggressive transition) is projected to be approximately fourfold, highlighting the financial value of diversifying the materials mix.
- Exposure will vary by product mix, sourcing strategy, and sustainability commitments.

Figure 3:
COGS impacts by scenarios



To mitigate long-term financial exposure, brands must move beyond incremental changes toward a portfolio-based resilience strategy that strengthens both supply security and producer livelihoods. This requires simultaneous action to de-risk cotton at source.

- **Lead with cotton at source.**
  Strengthen and invest in direct-to-farm relationships to secure long-term access to high-quality fibers and enhance supplier and farmer resilience. Fund regenerative and climate-resilient cotton practices — including soil health improvement, water-use efficiency, and adoption of heat — and drought-tolerant varieties – tied to measurable yield, soil, and water outcomes.
- **De-risk and diversify.**
  Complement cotton resilience efforts with targeted integration of next-generation and recycled natural fibers where quality and availability allow.
- **Invest in innovation and circularity.**
  Support and co-invest with start-ups, suppliers, and technology partners developing low-impact, bio-based fiber alternatives and scalable recycling or fiber recovery technologies.
- **Embed sourcing flexibility.**
  Build adaptability into sourcing, product design, and material planning processes to enable agile shifts within the natural fiber space as market dynamics and climate conditions evolve.

2.3 Risk #3: Higher energy cost

Description of risk

This report builds on Aii's four key decarbonization levers for apparel suppliers: material efficiency, energy efficiency, electrification, and low-carbon fuels[34, 35]. We focus on electrification as a practical and scalable way to help Tier 2 suppliers decarbonize, especially when we use renewable energy.

Rising energy prices and fossil-fuel volatility at supplier sites, especially in wet processing and dyeing, flow directly into landed costs and margins. Electrification, when paired with renewable power, offers the fastest and most scalable hedge for Tier 2 suppliers.

The feasibility of electrification varies by country, influenced by each market's energy mix, infrastructure, and policy environment.

Country dynamics

Bangladesh's heavy reliance on fossil fuels and significant net import exposure amplify both cost and supply volatility for apparel brands sourcing in the region. Vietnam faces similar, though somewhat less pronounced, challenges.

In contrast, China and India are rapidly shifting toward renewable energy, which is beginning to mitigate volatility as scale and technology advance.

Bangladesh & Vietnam

The energy mix (Figure 1) in Bangladesh and Vietnam is heavily reliant on fossil fuels. In Bangladesh, natural gas supplies 50–70% of energy needs, and coal use is increasing as new thermal plants come online[36].

Declining domestic gas reserves have led to greater reliance on costly imports, which now account for 46% of Bangladesh's total energy supply and expose the country to global price volatility[37].

Although Bangladesh has set policy ambitions to raise its renewable energy share to 20–30% by 2030–2040, current penetration remains very low at 5%, constrained by investment and technology gaps[38].

[34] https://apparelimpact.org/wp-content/uploads/2025/03/Aii-GEI-Low-Carbon-Thermal-Energy-Roadmap-for-the-Textile-Industry.pdf
[35] Carbon Capture, Utilization, and Storage is excluded here as it is not technically or economically feasible for the textile industry
[36] https://1p5ndcpathways.climateanalytics.org/countries/bangladesh/sectors/power#:~:text=vulnerable%20to%20global%20energy%20market%20fluctuations
[37] IEA
[38] https://ieefa.org/resources/rooftop-solars-time-shine-bangladesh

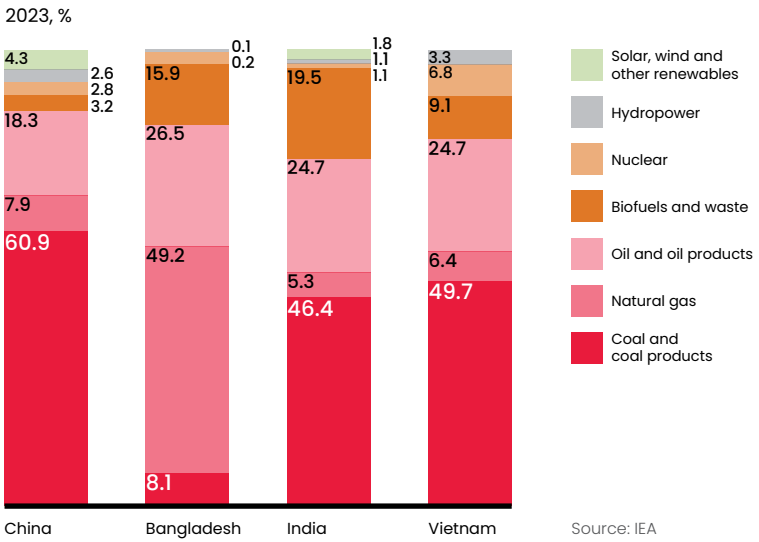
Vietnam's green energy ambition confronts fossil fuel reality amidst rising import dependence.

Growing interest in renewable investment presents new opportunities. In Vietnam, initiatives such as the UN Fashion Industry Charter for Climate Action (UN FICCA) are enabling corporate renewable power purchase agreements (PPAs), signaling potential for private-sector participation and improved energy cost stability.

Coal remains a significant source of electricity generation in Vietnam, accounting for approximately 50% of the energy mix (Figure 1), and is expected to grow in the near term.

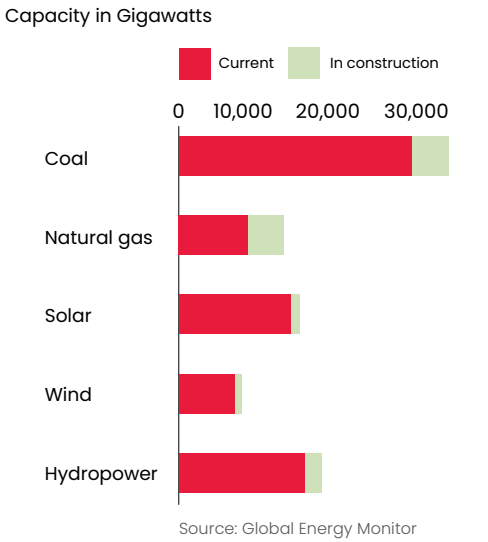
Under Power Development Plan 8 (PDP8), Vietnam aims to reduce coal's share to 20% by 2030 and increase renewables to 28–36%. However, around 70% of new capacity under construction is fossil fuel-based, indicating continued short- to mid-term dependency (Figure 2).

Figure 1:
Energy mix based on geography



Source: IEA

Figure 2:
Vietnam power capacity by source



Source: Global Energy Monitor

Despite substantial domestic coal and gas reserves, Vietnam cannot meet rising demand, resulting in greater import dependence. For example, thermal coal imports rose 31% in 2024 to 44 million metric tons[39].

Suppliers in Bangladesh and Vietnam face rising near-term risks from energy cost and supply volatility. Electrification and on-site renewables are key resilience strategies. Vietnam's faster progress on renewable energy policy may enable earlier procurement opportunities than Bangladesh, where policy and investment gaps remain significant.

[39] Kpler

China & India

Both China and India have power systems that rely heavily on coal (approximately 60% and 40%, respectively, Figure 1). However, both countries are rapidly expanding renewable energy capacity and modernizing their grids. The rapid expansion of renewables creates clear opportunities for brands to participate in supplier decarbonization efforts, including renewable PPAs and industrial zone partnerships.

China added 278 GW of solar and 79.8 GW of wind capacity, surpassing 1,400 GW in total and reaching its 2030 target six years ahead of schedule. This achievement enables clean power to meet more than 80% of new demand. India set a record by adding 22 GW of renewables in the first half of 2025. Initiatives such as the International Solar Alliance (ISA) are accelerating solar adoption through concessional finance, technology transfer, and aggregated procurement, which expands affordable access to renewables for industry.

Both countries face challenges related to regional grid infrastructure disparities, and coal dependency in interior provinces limits the pace of renewables adoption. Nevertheless, China and India are progressing rapidly in scaling up renewable energy.

China and India now offer favorable conditions for scalable electrification, although regional differences require careful assessment. Brands can advance supplier decarbonization through PPAs, cluster procurement, and industrial upgrade incentives. Delaying electrification in Tier 2 supply chains increases exposure to fossil fuel price volatility and tightening policy requirements. Early adoption helps reduce Scope 3 emissions and strengthens supply chain resilience.

Hypothesis tested:

Rising carbon taxes and border adjustment mechanisms will significantly increase landed costs for imports unless brands drive supplier decarbonization.

Findings and key takeaways

Our analysis highlights a clear divergence between early adopters of electrification and renewables and those that delay or resist transition:

- Pioneers, defined as suppliers that phase out coal by 2030 and adopt electrification with onsite renewables, generate consistent cost savings in all scenarios. Higher efficiency from electric boilers and heat pumps, combined with greater reliance on solar PV, enables these suppliers to offset rising grid electricity prices and achieve both emissions reduction and cost resilience.

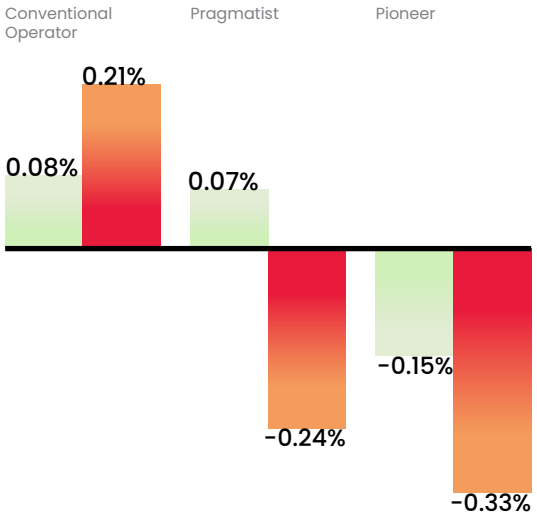
- Pragmatists, who phase out coal more gradually by 2035, experience cost increases before 2030. As global coal prices rise, limited adoption of electrification reduces efficiency gains. Pragmatists only begin to realize cost savings after fully transitioning to electrification and integrating more renewables after 2030.

- Conventional Operators, who continue to rely on coal, face cost increases in every scenario, with cost of goods sold (COGS) rising by up to 0.21% (Figure 3). Ongoing dependence on coal exposes these suppliers to fossil fuel price volatility and prevents them from accessing efficiency or renewable energy benefits. In contrast, Pragmatists and Pioneers can achieve emission reductions of up to approximately 98% (Figure 4).

Figure 3:
COGS[1] impacts by scenarios

Net Zero scenario

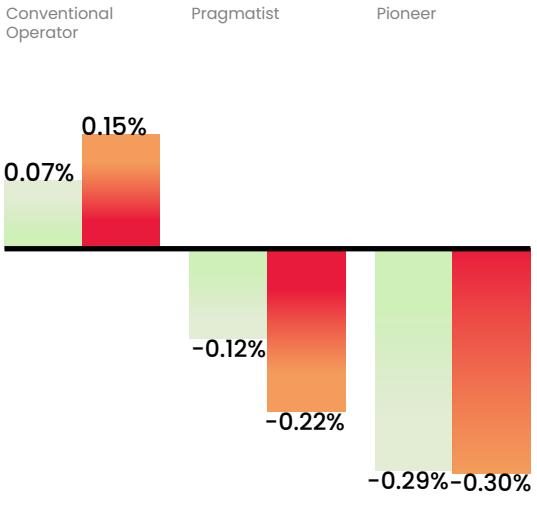
Change in COGS, % change from using new technology to coal boilers



The Pioneer's investment in more efficient, electrification technology and onsite renewables leads to significantly greater energy cost savings by 2040, as coal prices rise sharply (+30% vs 2025), shielding the pioneer from coal price volatility

Delayed Transition scenario

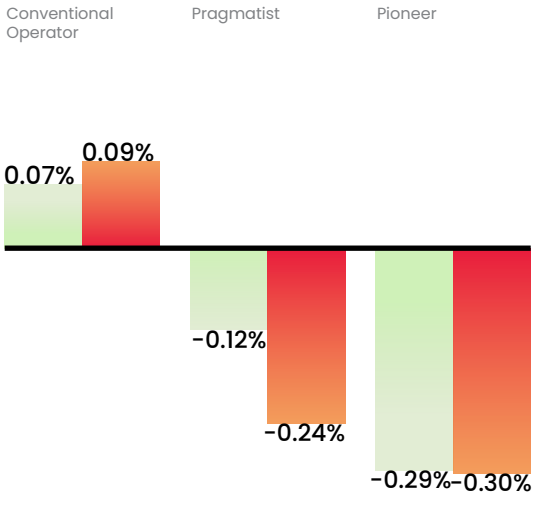
Change in COGS, % change from using new technology to coal boilers



Rising electricity prices in later years offset savings from switching away from coal and into renewables

Current Policies scenario

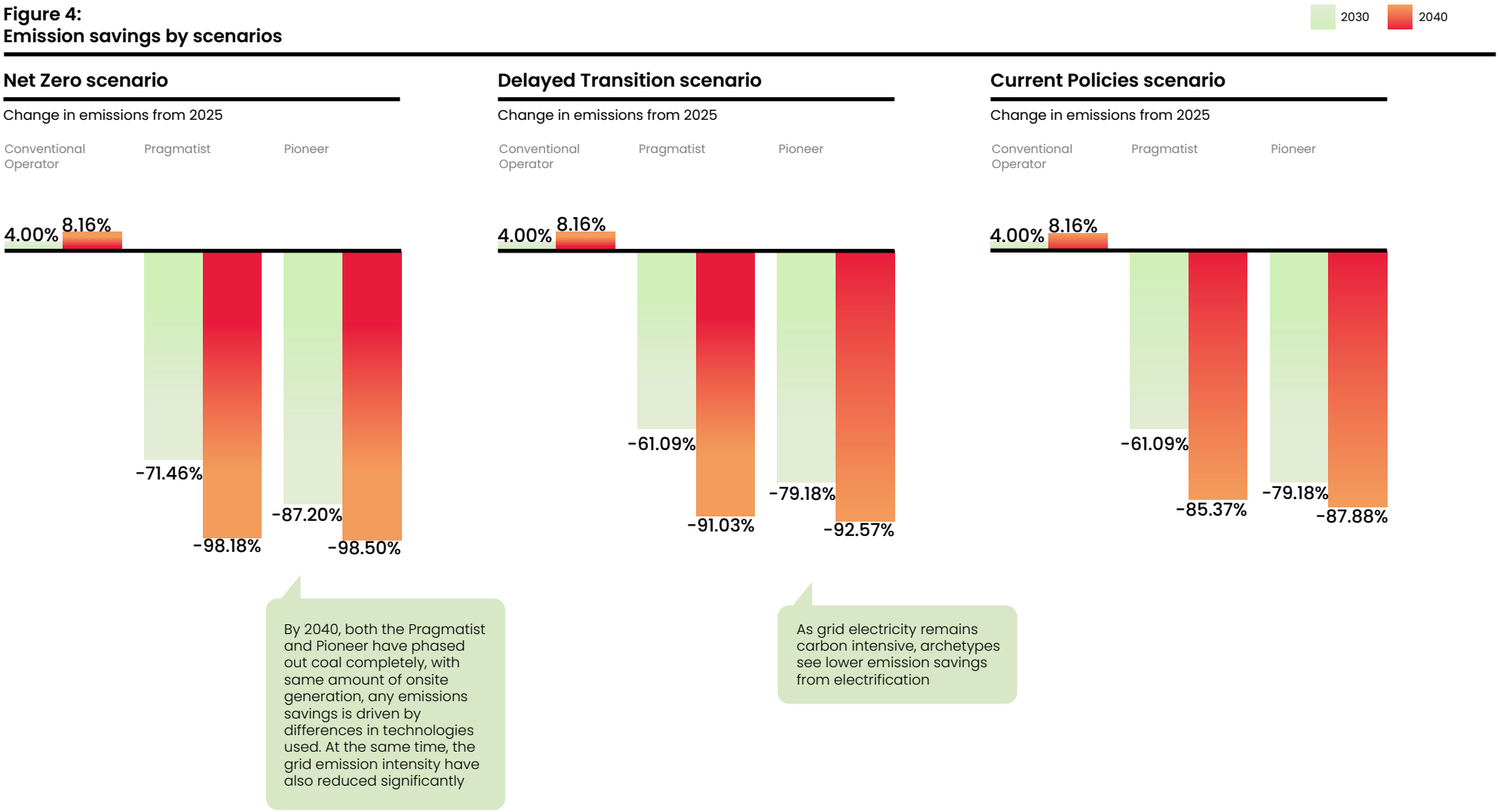
Change in COGS, % change from using new technology to coal boilers



There is little change in savings generated as both price of coal (from +4% in 2030 to +9% in 2040 from 2025) and electricity (from –2% in 2030 to -3% in 2040 relative to 2025) changes moderately

Note(s): Cost increase is measured relative to a baseline which uses coal boilers as the analysis attempt to analyse the impact of different technologies and their associated energy costs. For the Conventional Operator, the cost increase represents the increase in coal prices relative to 2025 as the archetype is assumed to "do nothing" and would have no change in technologies used by 2040
Source: Accenture Strategy analysis

Figure 4:
Emission savings by scenarios



Note(s): (1) Compared to emissions generated by coal boilers in 2025
Source: Accenture Strategy analysis

Delaying the transition results in higher costs. Pragmatists illustrate that slower decarbonization leads to near-term financial penalties, while Pioneers benefit from efficiency and renewable energy savings earlier, resulting in lower costs, reduced emissions, and greater supply chain stability. Continued reliance on coal increases exposure to volatile and rising fossil fuel prices, creating long-term cost risks.

Renewable energy and electrification provide effective cost control. Even if grid electricity prices increase by up to 45% in a Net Zero scenario, electric technologies remain much more efficient (for example, electric boilers at approximately 99% efficiency compared to coal at 75%), which reduces overall energy use and mitigates price impacts. Combining electrification with onsite renewables further enhances energy security and protects against fuel price volatility.

Decarbonization requires a phased and strategic approach. Prioritizing mature, ready-to-deploy technologies while piloting emerging solutions enables brands to manage price risk and allocate capital efficiently. For instance, water heat pumps can partially electrify factories and reduce energy demand, helping brands lower exposure to coal price volatility and advance toward the goal of phasing out coal by 2030.

CFOs should consider the investment time horizon and evaluate capital expenditure, operating costs, and operational suitability of different technologies. For example, steam heat pumps are more efficient than electric boilers but require higher capital investment and careful piloting and scaling. Electric boilers consume more energy, which can result in higher operating costs, particularly if grid electricity is expensive.

Case study: Vago – Electrifying hot water preparation with Aii support[40]

Background
Vago, an Italian textile manufacturer specializing in wet processing, experienced rising energy costs and growing pressure from brand partners to reduce carbon emissions. The hot water preparation process, essential for dyeing and finishing, relied primarily on fossil fuels, specifically methane, which resulted in both cost exposure and increased emissions intensity.

Approach
To address these challenges, Vago collaborated with technology provider Pozzi to implement an electrified hot water preparation system. This solution combined passive heat recovery (RHeX) with an active electric heat pump.

The first installation of the Pozzi solution at an advanced Italian facility demonstrated that the technology is ready for broader deployment. Aii subsequently began collaborating with Pozzi to promote and scale the solution through its framework and partner ecosystem.

Impact
The electrified hot water system achieved an approximate 90% reduction in greenhouse gas emissions from water heating by replacing fossil fuel (methane) use. This change resulted in annual energy cost savings of about $237,000 and a payback period of less than 12 months.

This case demonstrates that even energy-intensive Tier 2 processes can deliver immediate cost savings and fast payback when electrification and efficiency improvements are implemented together.

[40] https://apparelimpact.org/solutions/pozzi-electrification-of-hot-water-preparation/

03 Overarching takeaways

3.1 Implications for brands

Brands face material and rising financial risk if they do not use their supply chains.

- Carbon taxes, energy transition, and volatile raw material costs all place direct upward pressure on COGS, eroding profitability and margins. Even modest increases of 1–2% can have a substantial impact, particularly for brands operating with single-digit earnings before interest and taxes (EBIT) margins.
- Brands should incorporate avoided costs and resilience benefits into investment decisions. Quantifying these avoided costs helps clarify the value of decarbonization investments, which can mitigate exposure to regulatory penalties (Risk 1) and supply disruptions (Risk 2).

Brands that take proactive steps can achieve stronger competitive positioning compared to their peers.

- Our analysis shows that the cost of inaction compounds across all risks. Brands that delay or under-invest in transitioning away from carbon-intensive energy or building resiliency into raw materials supply chains will see their exposure multiply over the next decade, while proactive brands secure structural advantages.
- Even incremental improvements, such as enhancing energy efficiency, adopting heat recovery, or optimizing process performance, deliver near-term cost relief. These actions build resilience and free up capital for future, larger-scale decarbonization efforts.
- However, the pace and depth of action remain critical. Brands that transition slowly, following a Pragmatist approach, gain only limited protection. In contrast, those that act ambitiously, like Pioneers, experience four to five times less exposure by 2040 across all risks. Incremental change alone will not protect margins in a high-risk climate scenario.

Brands should act promptly to mitigate climate-related risks.

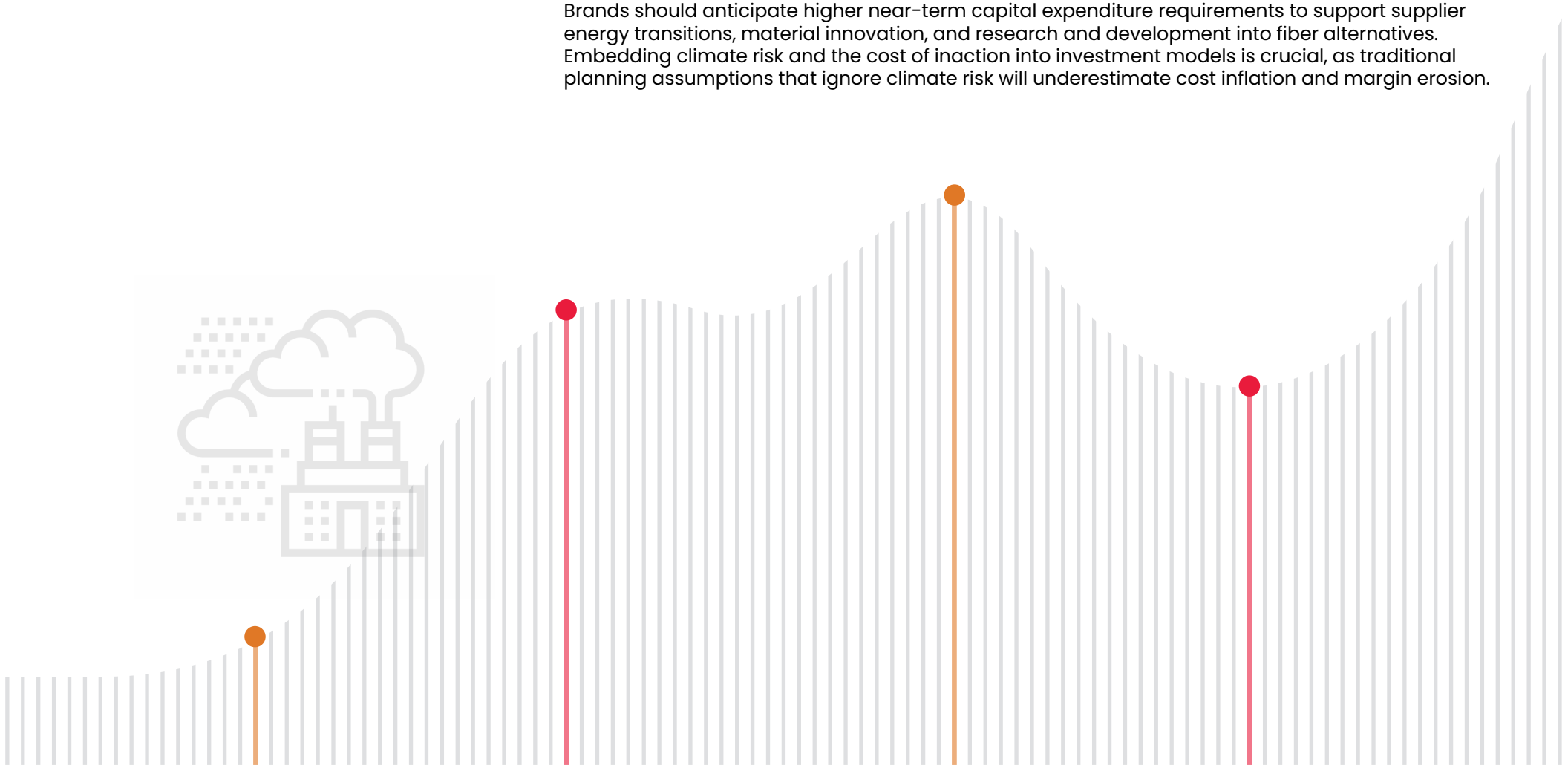
- Carbon taxes and renewable energy transition risks are concentrated in key sourcing hubs such as China, India, and Vietnam. Raw material climate risk is most pronounced in cotton-producing regions, including India, Pakistan, and China.
- Overlapping vulnerabilities mean brands face compounded risk if they rely heavily on one geography or supplier base.
- Identifying and investing in ready-to-deploy solutions in the near term is essential for brands to mitigate long-term exposure. Delayed investments will increase future liabilities.

3.2 Implications for long term planning

The three risks analyzed — carbon tax, energy transition, and raw material volatility — require brands to reframe long-term planning with a focus on resilience rather than cost efficiency. Achieving long-term resilience depends on de-risking supply chains and decoupling profitability from inputs that are vulnerable to climate impacts.

Brands must shift from transactional procurement to strategic partnerships and co-investment models with suppliers. Sharing technology, financing, and expertise will accelerate the transition to low-carbon operations. Investing in supplier resilience, such as renewable energy adoption, regenerative agriculture, and water-efficient practices, is now essential. These actions support long-term supply reliability, continuity, and value creation.

Brands should anticipate higher near-term capital expenditure requirements to support supplier energy transitions, material innovation, and research and development into fiber alternatives. Embedding climate risk and the cost of inaction into investment models is crucial, as traditional planning assumptions that ignore climate risk will underestimate cost inflation and margin erosion.



04 CFO tools and strategies

CFOs can fund decarbonization by creatively using capital they already control, such as redirecting savings, reallocating capex, or providing treasury guarantees to support suppliers, without waiting for new budgets. These internal funds can be combined with external sources, including green loans, development bank programs, or philanthropic capital, to expand impact and lower risk. Philanthropy, in particular, can help test and de-risk new solutions before they are scaled with commercial finance. Effective CFOs see decarbonization not as an added cost but as a strategic investment that protects margins and strengthens long-term resilience.

The following sections outline specific financing tools (4.1) and best practices (4.2) that leading brands are adopting to transform capital creativity into measurable decarbonization results.

4.1 Financing tools

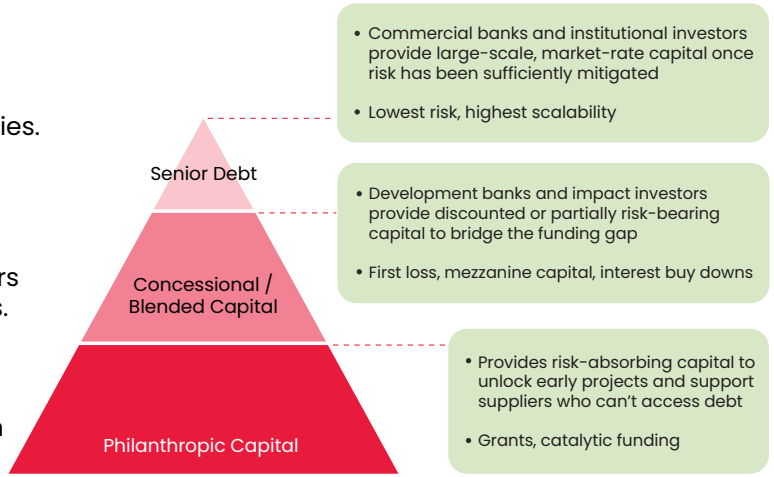
CFOs are increasingly expected to play a strategic role in climate risk management, balancing financial resilience with sustainability goals. A growing set of financing instruments and tools, many outlined in the Aii Brand Playbook for Financing Decarbonization, are available to help brands mitigate exposure to carbon costs, energy transition risk, and raw material volatility[41].

These tools also help remove financing barriers for suppliers, enabling faster adoption of low-carbon solutions across the value chain.

Key tools include

- **Supplier incentives & Co-funding**

1. Long-term purchasing agreements, green premiums, or reward-based incentives can encourage supplier investment in low-carbon technologies.
2. Co-funding mechanisms, such as virtual power purchase agreements (VPPA), loan guarantees, or interest subsidies, help reduce capital barriers for supplier decarbonization projects.
3. Direct contributions or grants can unlock supplier decarbonization, particularly for smaller suppliers with limited access to financing.



[41] https://apparelimpact.org/resources/brand-playbook-for-financing-decarbonization/

- **Debt & Financing instruments**
  - Green bonds, sustainability-linked loans (SLLs), and direct supplier loans can fund renewable energy, water efficiency, and recycling initiatives.
  - Structured debt models that blend catalytic, mezzanine, and senior tranches are emerging as scalable ways to finance decarbonization while maintaining risk-adjusted returns for investors. These models bundle loans across suppliers or regions into a diversified portfolio and mirror Aii's Deployment Gap Grant approach, where brand or philanthropic funding at the catalytic layer unlocks commercial lending participation and mitigates default risk.
  - Blended finance structures combine public or philanthropic concessional capital with private investment to de-risk sustainability projects in emerging markets. Concessional capital from development banks, donor agencies, or foundations absorbs first-loss risk, improving the risk-return profile for commercial investors. Private investors and brands can then provide senior debt or equity capital at scale, ensuring both financial sustainability and measurable climate impact.
- **Equity & Strategic investments**
  - Direct stakes in renewable energy projects or fiber innovation start-ups help secure resilient inputs and hedge long-term supply risk.
- **Capital allocation & Internal pricing**
  - Shadow carbon pricing and climate-adjusted hurdle rates embed climate costs into procurement, capital expenditures, and investment decisions, valuing projects not only on cost but also on avoided risk.
  - Dedicated transition funds allocate capital to circularity and resilience initiatives, such as recycling technologies and regenerative agriculture pilots, to ensure strategic priorities are funded. Several brand retailers are exploring ways to deploy corporate treasury funds into structured vehicles to support supplier decarbonization.
- **Collaborative capital deployment**

  Brands are pooling resources to accelerate supplier decarbonization at scale. For example, the Apparel Impact Institute's Fashion Climate Fund (with a $250 million target) blends philanthropy, concessional capital, and commercial finance to de-risk supplier transition. Leading brands such as H&M are acting as lead partners[42].

4.2 Best practices and other solutions

Forward-looking brands are starting to integrate climate risk and the cost of inaction into financial planning, capital allocation, and governance models. Although these practices are still evolving, several emerging strategies and case examples show how companies can mitigate exposure and build resilience.

[42] https://apparelimpact.org/fashion-climate-fund/

- **Establish strong governance models and cross-functional processes for effective climate risk management.**

  — Integrated climate accountability is achieved through board-level KPIs and public commitments, which strengthen accountability and keep climate goals prioritized. Cross-functional KPIs ensure that finance, procurement, and sustainability teams share responsibility for climate targets. For example, procurement and finance may jointly track the avoided cost of inaction, making decarbonization a shared performance metric. Leading apparel brands report that embedding climate KPIs across teams and linking them to performance compensation fosters a collaborative culture rather than siloes.

  — Top-down accountability means leadership sets clear expectations, treating progress on public commitments as a collective enterprise responsibility. Decarbonization progress is tracked as part of overall enterprise performance, not as a separate sustainability initiative.

- **Embed climate risk into budgeting, capital expenditure, procurement decisions, and enterprise risk management (ERM) to build resilience.**

  — Business planning and scenario integration should include internal shadow carbon pricing for financial and operational decisions, ensuring projects are valued for avoiding carbon exposure, and the cost of inaction is quantified. The shadow price can be benchmarked against regulatory standards (such as EU ETS or China ETS), long-term risk scenarios (IEA, NGFS carbon pricing pathways), or peer benchmarks (as disclosed in CDP reports). Scenario analysis aligned with NGFS or IEA frameworks helps test the financial resilience of investments under different carbon, energy, or raw material cost trajectories. This approach transforms decarbonization into a value-generating strategy, ensuring capital is allocated toward projects with the highest long-term financial returns and lowest carbon liability (See Boxes 1 and 2).

Box 1
Recommended Carbon Prices

	Units	2025 *(short term)*	2030 *(medium term)*	2040 *(long term)*
Recommended range	USD/tCO2e	5-30	50-200	>200
Rationale		*Reflects average near term compliance benchmarks (e.g., EU ETS= USD 60 -90, China ETS= USD 10-15) and unpriced regions*	*Represents expected regulatory tightening and expansion of carbon pricing coverage*	*Reflects long term convergence towards global net-zero aligned prices as regulation and market instruments mature*

Methodology:

- *Proposed carbon prices uses the growth rate implied by NGFS and reflects the average of a Delayed Transition scenario and Net Zero 2050 scenario*

Box 2
Illustrative capex investment

Examples

- A Tier 2 dyeing and finishing supplier in Vietnam is evaluating whether to replace a coal boiler with an electric boiler
- The brand uses an internal shadow carbon price to evaluate the financial case under different carbon cost assumptions

Assumptions	Units		Notes
Capex required	USD	100,000	
Annual net benefit			
Carbon emission savings	tCO2e	10,000	Will depend on usage and boiler efficiency. Figure from comparable case studies
Fuel cost	USD	(5000)	Will depend on usage and boiler efficiency. Figure from comparable case studies
Operation & Maintenance	USD	15,000	Electric boiler has lower maintenance cost

Even a modest internal carbon price of USD 5/tCO_2e can turn an otherwise dilutive project into a financially viable investment by recognizing the value of avoided carbon costs

	Units	As-is[2]	With carbon prices		
Carbon price	USD/tCO2e	0 (without carbon price)	5	20	60
Payback period	*years*	*10*	*6.7*	*3.3*	*1.4*
NPV@8% (10 years lifetime)	*USD*	*(-32,899)*	*651*	*101,302*	*369,706*

Note(s): (1) In practice, capex and maintenance savings may accrue at the supplier level, whereas carbon cost avoidance is realized at the brand level. The payback period and NPV shown are illustrative and assume all benefits are internalized at the brand level. Actual payback may vary depending on contract structures and cost-sharing mechanisms; (2) All numbers used in this table are illustrative; (3) Based on current average payback period
Source(s): NGFS, Accenture Strategy analysis

— Climate targets should be translated into measurable KPIs, such as cost avoidance and risk-adjusted returns, to directly inform financial planning, budgeting, and capital allocation.

— Climate risk assessment and decarbonization progress should be embedded into quarterly or annual planning cycles. Finance and procurement teams should jointly evaluate exposure to energy, carbon, and raw material volatility, integrating resilience into financial governance.

— ERM helps brands move from reactive compliance to proactive resilience. Embedding sustainability data and improving supplier visibility enables scenario testing for climate, operational, and regulatory shocks. Quantified risk exposures, such as potential COGS increases from cotton disruption, feed into enterprise-level dashboards, supporting coordinated, data-driven decisions by finance, procurement, and sustainability teams, with oversight from CFOs and boards.

- **Collaborative procurement model**
  - Collaborative procurement models are emerging, with firms forming joint purchasing agreements for renewable power (such as VPPAs) or low-impact fibers to achieve economies of scale and price stability. For example, in the Five Global Brands Aggregated Renewable Energy Deal, Gap Inc. joined Salesforce, Workday, Cox Enterprises, and others to collectively commit to a 42.5 MW solar project. By pooling demand, the group secured renewable power at scale and reduced procurement risk. This aggregation model can be applied to apparel manufacturing or large supplier networks, enabling brands to access cleaner energy and more resilient fiber supply at lower cost[43].

- **Aggregated machinery procurement**
  - Aggregated machinery procurement enables brands and suppliers to pool capital for purchasing proven low-carbon technologies, such as high-efficiency boilers, dryers, and heat-pump systems, at scale. By creating pre-qualified vendor lists and coordinated order windows, companies can negotiate better pricing, warranties, and service terms while reducing lead times. Linking bulk orders to green-loan or rebate programs can further lower unit costs and accelerate deployment. This approach mirrors fleet purchasing models in other sectors and provides a practical path to reduce technology costs, align financing windows, and accelerate supplier decarbonization.

[43]https://www.bloomberg.com/company/press/bloomberg-cox-enterprises-gap-inc-salesforce-workday-close-new-renewable-energy-aggregation-deal/

05 Call to action

5.1 Brands/Industry-wide collaboration

The apparel sector is a complex, global supply chain with thousands of suppliers, making climate risks too great for any single brand to address alone. Moving beyond isolated initiatives to shared action models is essential for meaningful progress.

Peer alignment offers greater impact than isolated leadership. By co-funding with industry peers, brands lower their own investment size while sending a stronger market signal to suppliers and financial institutions, accelerating the adoption of low-carbon solutions while protecting margins and ensuring supply chain continuity.

Priority areas for co-funding with industry peers include

- **Finance supplier transition** by sharing risk through pooled capital and co-financing structures, such as blended finance mechanisms. Lower barriers for suppliers, especially small and medium-sized ones, to access affordable transition finance. Use collective finance mechanisms to amplify impact.
- **Aggregate demand and procurement for renewable energy** to unlock economies of scale and improve price stability. Learn from parallel industries, such as pharmaceuticals (Energize Program) and consumer goods, as well as alliances like the Global Energy Alliance for People and Planet (GEAPP), which have successfully co-funded supplier decarbonization and renewable energy adoption. Leverage these models to scale impact in the apparel sector.
- **Establish common standards**, KPIs, and reporting requirements to simplify expectations for suppliers. Co-develop metrics on the cost of inaction for CFOs and finance teams to integrate into budgeting, capital expenditure, and enterprise risk management.
- **Accelerate innovation** by jointly investing in piloting and scaling solutions to fast-track adoption.
- **Collaborate to advocate for enabling policies**, such as renewable infrastructure, supportive carbon pricing, and transition finance mechanisms, to reduce compliance risks and create stable market conditions.

5.2 Brands/Industry-wide collaboration case studies

Case study: "Energize" industry-wide decarbonization program (Pharmaceuticals)[44, 45]

Background
Healthcare systems contribute nearly 5% of global emissions, with most coming from Scope 3 sources. Limited financing, expertise, and fragmented supply chains make it challenging for suppliers and brands to scale renewable energy solutions

Approach
The Energize program brings together 12 global pharmaceutical companies to pool their influence and engage hundreds of suppliers in decarbonization. By acting jointly, the program achieves scale, negotiation leverage, and standardization of renewable energy solutions, moving beyond brand-by-brand efforts.

For example, the first cohort – including sponsors Takeda, Teva, UCB, and five suppliers – signed 27 PPAs totaling 563.7 GWh per year over 10 years. These deals support over 280 MW of new solar capacity in Spain and are expected to avoid approximately 393,795 metric tons of CO_2 annually.

Suppliers benefit from standardized renewable energy procurement frameworks, shared best practices, and aggregated demand pooling, which lowers transaction costs.

Impact
The Energize program is engaging hundreds of suppliers across the pharmaceutical value chain in renewable energy deployment. By aggregating demand and sharing risk, the program enables suppliers to access renewable energy at scale, which would be difficult to achieve individually.

For apparel brands, adopting a similar pre-competitive procurement or "Energize-style" program could be a powerful lever to manage energy and carbon risk deeper in the supply chain.

[44] https://perspectives.se.com/youtube-sustainability-business-schneider-electric/energize-renewable-energy-for-pharmaceutical-suppliers-schneider-electric-4
[45] https://www.se.com/ww/en/about-us/newsroom/news/press-releases/the-energize-program-celebrates

06 Conclusion and recommendations

Throughout this report, we have demonstrated that the financial risks of climate action are real, immediate, and quantifiable. Now is the time for strategic investments and collaborative action. By embracing the recommendations that follow, we can transform risk into resilience and secure lasting value for our organizations and the industry as a whole.

6.1 Risk mitigation recommendations

To address the three key risks we have analyzed — carbon cost exposure, energy volatility, and raw-material disruption — we recommend that brands prioritize the following actions:

- **Accelerate supplier decarbonization investments**, as 96% of emissions are in Scope 3 and climate risks are most prominent within supply chains. More than half of emissions occur in Tier 2 facilities, where fossil-based heat and coal remain prevalent. We recommend prioritizing electrification and renewable power at these sites. By investing in supplier-level renewables or aggregated PPAs, we can hedge against energy-price volatility. Additionally, we can reduce raw-material disruption risk by diversifying fiber inputs and supporting regenerative or recycled feedstocks.[46]
- **Balance near-term technology trade-offs with long-term cost resilience.** We can achieve this by investing in ready-to-deploy solutions today, while piloting emerging technologies that target harder-to-abate processes.

6.2 Industry-wide recommendations

The scale and complexity of climate risk demand industry-wide collaboration to scale solutions and reduce systemic risk. By working together, companies can unlock solutions that are greater than the sum of their parts. We recommend that brands:

- **Establish collective financing mechanisms** that pool brand and investor capital. This builds supplier trust and sends clear market signals that drive aggregated demand for renewable energy. Follow proven models such as Aii's Fashion Climate Fund and the pharmaceutical sector's Energize program.[47]
- **Adopt shared standards,** including common frameworks and unified metrics for evaluating climate-related financial risks. By quantifying the cost of inaction, avoided costs, and supplier transition needs, consistency and comparability across the sector is ensured.
- **Link these systems together** by aligning verified data with finance tools — for example, connecting Aii's Benchmark for *Carbon Intensity*[48] with blended-capital vehicles such as the Fashion Climate Fund[49] — to direct funding toward the highest-impact, lowest-risk opportunities and reduce transaction friction across the sector.

[46] https://apparelimpact.org/wp-content/uploads/2023/06/Aii_RoadmapReport-752.pdf
[47] Originally led by Schneider Electric and is a pre-competitive renewable energy purchasing platform in the pharma sector
[48] https://apparelimpact.org/resources/benchmarking-and-target-setting-with-a-focus-on-collaboration/
[49] https://apparelimpact.org/fashion-climate-fund/

6.3 Overall brand recommendations

As boards and executive teams navigate complex risks, their financial decisions today shape both resilience and long-term success. By integrating climate strategy with financial planning, they can protect margins, unlock new value, and secure lasting competitive advantage.

We see a clear strategic imperative for boards and leadership teams:

- **Position sustainability as a margin defense and source of value creation**, rather than viewing it as a cost center. Decarbonisation is an opportunity to drive long-term value through margin protection, enhanced resilience, supply chain continuity, improved access to finance, and better business planning. We advise CFOs to incorporate both short-term financial discipline and long-term investment horizons into planning, ensuring that decisions today deliver measurable benefits for current performance and future resilience.
- **Embed integrated governance** that aligns finance, procurement, sustainability, and business functions, supported by cross-functional KPIs and robust data for decision making. Integrating climate risk into enterprise risk management is essential for building resilience.
- **Investors' focus expected to tighten on climate risks' financial effects and action**, likely impacting ESG ratings and potential capital access opportunities (e.g., SFDR 2.0).

6.4 Closing statement

The evidence is clear: a 3% climate-cost shock could erase a third of your profits, and high-risk scenarios could push losses to 67%. By investing now, you can turn margin risk into advantage: stabilising COGS, protecting operating margins, and unlocking EBIT growth through resilient supply chains. Investing in supplier decarbonisation isn't a sustainability expense. It's a strategy to lower costs and safeguard margins.

Forward-looking brands recognise that rising climate costs must be managed – whether through decarbonization, pricing actions, or quality decisions – and will view supplier decarbonisation as an essential capital allocation that stabilises the supply chain against pricing volatility and supports EBIT growth.

Transitioning now is a proactive way to manage the escalating cost pressures of inaction and protect margins over time.

Let's talk: finance@apparelimpact.org

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