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Chocolate at Risk

Climate Shocks, Labor Challenges and Price Volatility Test Cocoa Industry Resilience

Morningstar Sustainalytics
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Executive Summary

The chocolate industry faces growing financial risks from climate change, price volatility, and child labor. Climate shocks reduce yields and drive price swings, deepening farmer poverty and labor risks, while increasing regulatory and reputational pressure on manufacturers. For investors, these challenges pose ethical and material risks to supply stability and long-term value. Disruptions can compress profit margins, raise compliance costs, and undermine sustainability claims. The world's largest chocolate producers depend on stable cocoa supply chains to protect billions in annual revenue, making climate resilience and human rights due diligence essential. Building on our previous article[1] that examined the systemic causes of child labor in cocoa supply chains, this report explores the links between climate change and human rights in the cocoa industry, using Morningstar Sustainalytics' ESG Risk Rating data to assess how major producers are managing these overlapping risks.

Key Takeaways

- Cocoa prices remain at nearly double their 2023 levels due to ongoing climate-driven supply constraints. Rising temperatures and erratic rainfall threaten cocoa cultivation in Côte d'Ivoire and Ghana, which produce 60% of the world's cocoa.[2] Major chocolate makers like **Nestlé**, **Mondelēz** and **Hershey** face higher input costs, pressuring gross margins and testing the resilience of procurement strategies.
- Climate stress and price instability worsen farmer poverty and child labor risks, with 138 million children still engaged in child labor—mostly in Sub-Saharan Africa. Stricter regulations, such as the EU's due diligence laws, increase compliance costs, particularly for companies that lack strong traceability in their supply chains.
- Corporate action is key to stabilizing the social impact of cocoa price volatility. Programs supporting income and sustainable farming can reduce labor risks and supply volatility.
- Nestlé and Mondelēz are expanding their Child Labor Monitoring and Remediation Systems (CLRMS) and investing in regenerative agriculture to enhance crop resilience. Greater transparency and harmonized metrics are needed for lasting change.

[1] Sustainalytics, "Child Labor in Cocoa Supply Chains: Unveiling the Layers of Human Rights Challenges," 2025, https://www.sustainalytics.com/esg-research/resource/investors-esg-blog/child-labor-in-cocoa-supply-chains--unveiling-the-layers-of-human-rights-challenges.

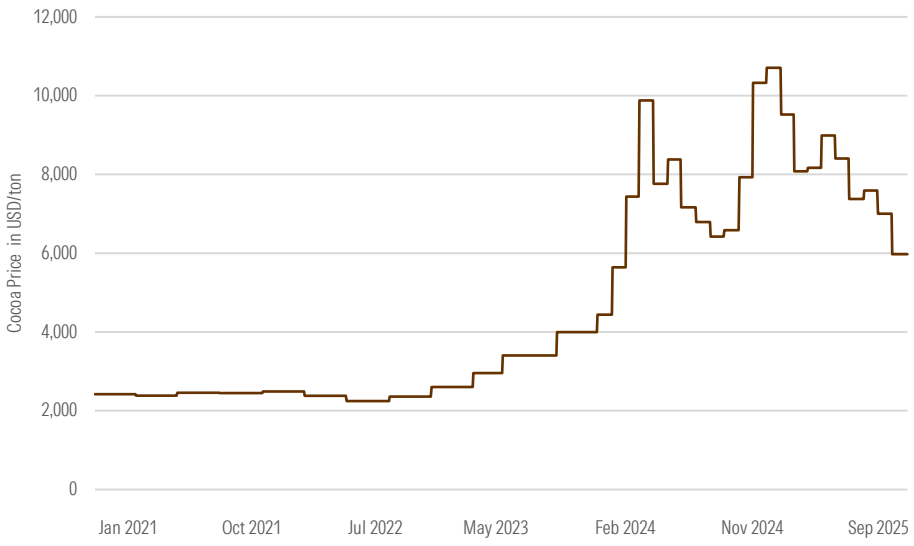
[2] European Investment Bank, "Cocoa with a Conscience: Funding Fair and Forest-Friendly Bean," July 24, 2025, https://www.eib.org/en/stories/ivory-coast-sustainable-cocoa-finance.

Climate Shocks Drive Cocoa Price Volatility

In January 2025, the price of cocoa soared to a historical high of over USD 11,000/ton—nearly three times higher than levels seen the previous year.[3] Poor harvests in Côte d'Ivoire and Ghana, driven by heavy rain and diseases, such as cocoa swollen shot virus and black pod disease, were the main causes of the spike. Prices subsequently fell sharply, starting in February 2025, as weather conditions improved and supply increased, as shown in Exhibit 1.[4] However, prices remain almost double the levels recorded two years ago. Analysts predict cocoa prices could rise to USD 68,100/ton by 2050, with deforestation accounting for 50% of the increase, alongside impacts from disease, climate change, and poor soil quality.[5] In the long term, climate change could render Côte d'Ivoire and Ghana—where 60% of global cocoa is produced—unsuitable for cultivation.

Rather than benefitting cocoa producers, rising prices expose chocolate manufacturers to cost inflation, threatening profit margins. For Mondelēz, chocolate accounts for 31% of annual revenue, and sustained cocoa price inflation could compress profitability in key brands like Cadbury Dairy Milk and Milka.[6] In Q3 FY2025, Mondelēz reported a 12% drop in gross profits compared to Q3 FY2024, citing continued increases in commodity costs.[7]

Exhibit 1 Cocoa Price Fluctuations between 4 January 2021 and 3 November 2025



Source: International Cocoa Organisation

[3] GEP, "Global Cocoa Shortage: What It Means for Procurement & Supply Chain," March 5, 2025, https://www.gep.com/blog/strategy/global-cocoa-supply-chain-crisis-demand-production-impact.

[4] Financial Times, "Cocoa Price Information," accessed November 11, 2025, https://markets.ft.com/data/commodities/tearsheet/summary?c=Cocoa.

[5] Susannah Savage and Jana Tauschinski, *Financial Times*, "Struggles of the World's 'Second Lung' Put One of the Most Beloved Crops at Risk," November 18, 2025, https://www.ft.com/content/79396af3-58d5-4db2-9e4d-57221505102d.

[6] Mondelez International, "2024 Annual Report on Form 10-K," April 4, 2025, https://www.mondelezinternational.com/assets/PDFs/MONDELEZ-INTERNATIONAL-INC_10K_2024.pdf.

[7] Mondelez International, "SEC Form 10-Q," October 28, 2025, https://ir.mondelezinternational.com/static-files/cb7559bd-9dec-46da-94b3-8ecf4fdd0e02.

Cocoa Price Volatility Deepens Farmer Poverty

Cocoa trees require three to five years to mature, and each tree yields only about 200 grams of chocolate per year.[8] This results in highly inelastic supply, as farmers cannot quickly scale production to meet the rising demand. Meanwhile, demand for chocolate is also relatively inelastic—consumers continue to buy even as prices rise— further amplifying price volatility. Climate change compounds this instability, with higher temperatures, unpredictable rainfall, and increased disease pressure leading to more frequent harvest failures. Even small disruptions in harvests can trigger significant swings in global prices. Cocoa production totals for 2025 are also expected to fall short of rising demand, posing operational risks for manufacturers.

When cocoa prices fall, farmers' household incomes drop immediately, increasing financial insecurity. According to the UNDP, most cocoa farmers earn less than a dollar a day, which further exacerbates the problem of poverty. Even when prices rise, due to poor harvests, farmers may not see the benefit—lower yields mean they have less cocoa to sell, so their incomes can still decline. This price instability reinforces structural pressures that can drive families to rely on child labor.

While the number of children working has fallen by over 100 million since 2000, more than 138 million children are still affected, with two-thirds living in Sub-Saharan Africa.[9] As a result, the United Nation's Sustainable Development Goal Target 8.7—to end child labor by 2025—remains out of reach.[10] Systemic poverty and the lack of living wages are key drivers. Although investors may expect higher cocoa prices to support farmers and reduce social risk, the opposite often occurs: increased volatility worsens poverty and heightens compliance challenges for companies sourcing from these regions.

Increasing Regulatory Pressure

In response to ongoing human rights and environmental concerns in global supply chains, the European Union has introduced stricter regulations regarding supply chain due diligence. Under the Corporate Sustainability Due Diligence Directive,[11] large companies are required to identify, prevent, mitigate, and remediate human rights and environmental risks within their supply chains. This directive is complemented by the European Unions' Regulation on Deforestation-free Products,[12] which mandates companies to trace cocoa, using geolocation data, to ensure it is free from deforestation and human rights violations. Both regulations impose hefty fines, ranging from 4% to 5% of annual EU turnover.

For companies like Nestlé and Mondelēz, complying with these regulatory changes will increase costs and raise expectations for ESG disclosure and risk management. Investors should anticipate a near-term rise in compliance expenditure as firms expand traceability and supplier audits, particularly in high-risk

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[8] United Nations Development Programme, "The Crumbling Empire of Chocolate," February 13, 2025, https://www.undp.org/africa/waca/blog/crumbling-empire-chocolate.

[9] United Nations, "The World Pledged to End Child Labour by 2025: So Why Are 138 Million Kids Still Working?" June 11, 2025, https://news.un.org/en/story/2025/06/1164211.

[10] International Labour Organization, *Ending Child Labour by 2025: A Review of Policies and Programmes,* August 12, 2018, https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@ed_norm/@ipec/documents/publication/wcms_653987.pdf.

[11] European Commission, "Corporate Sustainability Due Diligence," 2025, https://commission.europa.eu/business-economy-euro/doing-business-eu/sustainability-due-diligence-responsible-business/corporate-sustainability-due-diligence_en.

[12] European Commission, "Regulation on Deforestation-Free Products," 2025, https://environment.ec.europa.eu/topics/forests/deforestation/regulation-deforestation-free-products_en.

regions. Over the medium term, enhanced due diligence may help protect value by reducing legal and reputational risks.

Viewed through an intersectional lens, it is evident that climate change and human rights are interconnected. Addressing these challenges requires integrated risk management initiatives that consider both physical climate risk and human rights within supply chains. Companies can better manage risk and impact by adopting sustainable procurement strategies and implementing initiatives that promote regenerative agriculture and agroforestry, prevent child labor, and ensure farmers earn a living wage.

Managing Physical Climate Risk in the Cocoa Industry

Sustainalytics' ESG Risk Ratings provide insight into how major cocoa companies address climate change risks. The Physical Climate Risk Management indicator assesses company initiatives to measure, disclose, and manage the risks from extreme weather events such as droughts, heatwaves, and floods. As shown in Exhibit 2, most chocolate producers under our coverage received adequate scores, indicating their awareness of these business risks. Notably, three of the firms have comprehensive programs that detail how they incorporate physical climate-related risks into regular risk assessments and business strategies, including adaptation measures.

Exhibit 2 Physical Climate Risk Management Scores

Company Name	Physical Climate Risk Management Scores
Nestlé SA	100
Mondelez International, Inc.	100
Meiji Holdings Co., Ltd.	100
The Hershey Co.	66
Cargill, Inc.	66
General Mills, Inc.	66
Barry Callebaut AG	66
Chocoladefabriken Lindt & Sprüngli AG	66
Olam Group Ltd.	66
WK Kellogg Co.	33

Source: Morningstar Sustainalytics. Data as of October 23, 2025.

Regenerative Agriculture and Agroforestry for Climate Adaptation

In cocoa production, regenerative agriculture and agroforestry are key climate adaptation strategies that help companies secure supply chains amid rising climate risks. Regenerative agriculture focuses on improving soil health, carbon storage, water and air quality, and biodiversity to mitigate climate change impacts. Agroforestry integrates trees with crops, promoting biodiversity, enhancing soil health, and providing farmers with alternative sources of income during poor harvests.

Nestlé reports that 21.3% of its key ingredients are sourced using regenerative practices, with a goal of reaching 50% by 2030.[13] The company has planted over 3.3 million native trees alongside cocoa crops, improving yields and diversifying farmers' income. Nestlé plans to triple the investment in its income

[13] Nestlé SA, "Regenerative Agriculture," 2025, https://www.nestle.com/sustainability/nature-environment/regenerative-agriculture.

accelerator program, pledging CHF 1.3 billion (USD 1.6 billion) by 2030 to support regenerative agriculture, gender equality, and farmers' livelihoods.[14] Mondelēz's Cocoa Life program emphasizes agroforestry to protect crops from excessive sun and heat. In FY2024, the company distributed over 19 million shade trees to farmers. Mondelēz has pledged to scale up its program, with planned investments of an additional USD 600 million by 2030.[15]

Innovative Sourcing Strategies

In addition to climate adaptation measures, some companies are diversifying their sourcing strategies. Japanese confectionary company Meiji has invested in a cultured ("lab-grown") cocoa startup to reduce reliance on traditional crops.[16] Similarly, Barry Callebaut has partnered with the Zurich University of Applied Sciences to explore the potential of cocoa cell culture technology.[17] These initiatives offer new ways for companies to hedge against volatile cocoa prices and secure a long-term supply. Combining innovative sourcing with climate adaptation strategies—such as regenerative agriculture and agroforestry—can strengthen income resilience and protect farmers' livelihoods. This approach is also crucial for eliminating child labor in the cocoa industry.

Managing Child Labor Risk in Cocoa Supply Chains

Companies are expected to protect their suppliers through human rights due diligence. The Supply Chain Management indicator assesses efforts to prevent and address labor rights violations among suppliers. In response to regulatory pressure, key players have shown a downward trend in risks scores for the material ESG issue Human Rights – Supply Chain over the past five years, indicating progress in tackling systemic risks like child labor. However, challenges remain, especially in tracing cocoa to plantations where violations are most common, which requires significant resources. Exhibit 3 highlights four chocolate companies with strong supply chain management programs. Across the industry, there are persistent gaps in regular supplier audits, supplier engagement, and initiatives for second-tier suppliers.

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[14] Nestlé SA, "Press Release," January 27, 2022, https://www.nestle.com/sites/default/files/2022-01/tackle-child-labor-risks-farmer-income-cocoa-traceability-pr-en.pdf.

[15] Mondelez International, "Mondelēz International Doubles Down on Cocoa Life Program with Total Investment of $1 Billion by 2030; Calls for More Sector-Wide Action," October 25, 2022, https://ir.mondelezinternational.com/news-releases/news-release-details/mondelez-international-doubles-down-cocoa-life-program-total.

[16] Meiji Group Holdings Ltd., "The Meiji Group's TCFD Initiatives," August 20, 2024, https://www.meiji.com/global/sustainability/caring-for-the-earth/environmental-management/pdf/2024/FY2024_The_Meiji_Group_TCFD_Initiatives.pdf.

[17] Barry Callebaut, "Barry Callebaut Partners with the Zurich University of Applied Sciences to Explore Cocoa Cell Culture Technology," July 16, 2025, https://www.barry-callebaut.com/de-DE/about-us/media/news-stories/barry-callebaut-partners-zurich-university-applied-sciences-explore.

Exhibit 3 Supply Chain Management Scores

Company Name	Supply Chain Management Scores
Nestlé SA	75
The Hershey Co.	75
Mondelez International, Inc.	75
Chocoladefabriken Lindt & Sprüngli AG	75
Barry Callebaut AG	50
General Mills, Inc.	50
Cargill, Inc.	25
WK Kellogg Co.	25
Meiji Holdings Co., Ltd.	25
Olam Group Ltd.	25

Source: Morningstar Sustainalytics. Data as of October 23, 2025.

Extending the Scope of Child Labor Monitoring and Remediation Systems

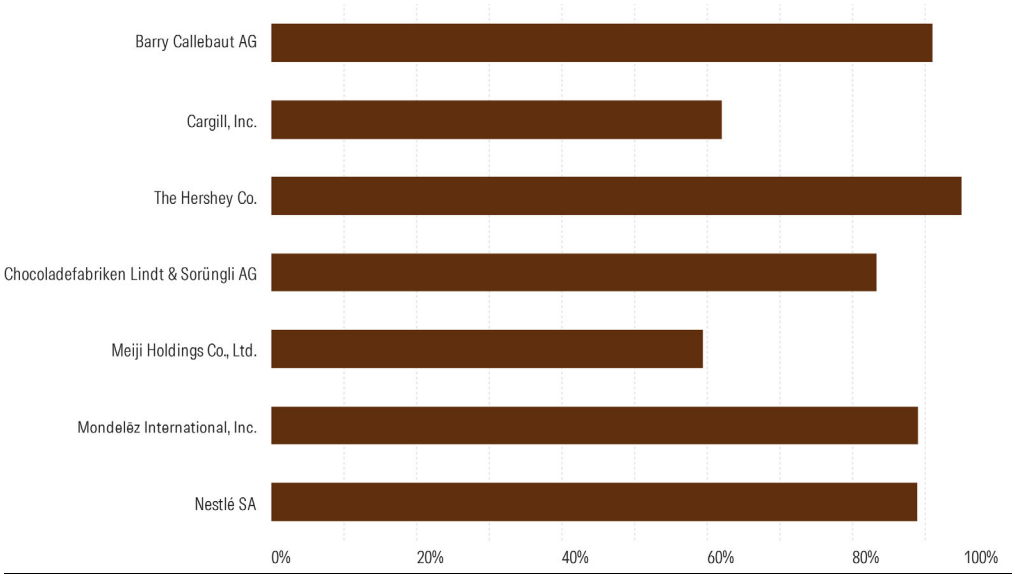
Cocoa supply chains are highly fragmented, with most cocoa traded through intermediaries, complicating traceability and diluting corporate accountability. As a result, even well-designed child labor monitoring systems can take years to expand and embed across sourcing regions. The International Cocoa Initiative has developed an outline for Child Labor Monitoring and Remediation Systems (CLRMS). Companies can follow this risk-based due diligence approach to identify and remediate cases of child labor within their supply chains.[18]

Investors expect the use of a monitoring system to imply that a company's risks are under control. But our data shows coverage is not complete, as effective programs need to reach workers at the plantation level. According to company reported data from FY2024, several companies that source cocoa have achieved over 50% coverage, as highlighted in Exhibit 4. While key players are working to expand scopes, extending CLRMS coverage to 100% of cocoa supply chains could require significant investment increases. Following a benchmarking study,[19] the International Cocoa Organization proposed core indicators for companies to report on in order to harmonize reporting across the industry. However, we note a misalignment in disclosures. A lack of standardized reporting metrics leads to diminished comparability. This also poses a challenge to benchmarking efforts and reduces transparency for investors.

[18] International Cocoa Initiative, "What Is Human Rights Due Diligence?" accessed November 11, 2025, https://www.cocoainitiative.org/our-work/policies-practices-and-standards/human-rights-due-diligence-cocoa-supply-chain.

[19] International Cocoa Initiative, *Benchmarking Study: Overview and Definition of Child Labor Monitoring and Remediation Systems,* 2021, https://www.cocoainitiative.org/sites/default/files/resources/ICI_CLMRS_Benchmarking-study.pdf.

Exhibit 4 Scope of Child Labor Monitoring and Remediation System Coverage



Source: Morningstar Sustainalytics.
*Data as of October 23, 2025.
**Metrics vary by company. The Hershey Co., Schokoladefabriken Lindt & Sprüngli AG and Nestlé SA disclose on sourced cocoa volumes covered by a CLMRS. Barry Callebaut AG discloses the percentage of cocoa farming communities covered. Mondelez International, Inc. discloses the percentage of farmer groups covered. Meanwhile, Cargill, Inc. and Meiji Holdings Co., Ltd. report on the percentage of cocoa farmers covered.
***Olam Group Ltd. and General Mills, Inc. report having a CLMRS in place but do not disclose the scope of its coverage. WK Kellogg does not report whether it has a CLMRS.

As shown in Exhibit 4, Hershey, Mondelēz and Nestlé stand out due to their progress in terms of CLMRS coverage, while Cargill and Meiji are currently covering a comparatively smaller part of their supply chains. Hershey, which has had a CLMRS in place since 2018, discloses that out of 10,631 identified child labor cases, 7,428 have been successfully remediated.[20] The company has set a target to cover 100% of its cocoa volumes in Côte d'Ivoire and Ghana by the end of 2025, having achieved 95% coverage in FY2024.

Beyond the remediation of individual child labor cases, Mondelēz is working towards systemic solutions by partnering with governments, NGOs, peers, and industry initiatives. Both Mondelēz and Barry Callebaut collaborate with the Child Learning and Education Facility to scale education in Côte d'Ivoire.[21] The organization also offers supplier awareness training on child labor. It is in the process of remediating 41,190 child labor cases.[22] Remediation can include the provision of school kits, assistance in obtaining birth certificates and conducting home visits.

Nestlé's Cocoa Plan, launched in 2009, combines initiatives on farming, social conditions and supply chain traceability.[23] The company conducts internal and external audits at different supply chain tiers

[20] The Hershey Co., "Child Labor," 2025, https://www.thehersheycompany.com/en_us/home/sustainability/sustainability-issues/child-labor.html.

[21] CLEF Partnership, "Welcome," 2025, http://www.clefpartnership.com/en/welcome/.

[22] Barry Callebaut, *Human Rights Statement Update 2023/24,* 2025, https://www.barry-callebaut.com/system/files/2025-05/Barry%20Callebaut%20Human%20Rights%20Statement%202023_24_ENG.pdf.

[23] Nestlé SA, *Nestlé Cocoa Plan Annual Progress Report Summary 2024,* February 7, 2025, https://www.nestlecocoaplan.com/sites/default/files/2025-07/Nestl%C3%A9%20Cocoa%20Plan%20Progress%20Report%202024.pdf.

and works to improve children's access to education by building and refurbishing schools in Côte d'Ivoire. Nestlé reported that by the end of 2019, its system had reached more than 78,000 children in cocoa-growing communities and had identified over 20,000 cases of child labor. It provided remediation measures such as school kits, bridging classes, and access to birth certificates. As of FY2024, Nestlé expanded coverage to 123,953 households, sourcing 88.9% of its cocoa volumes from the Cocoa Plan.

Meanwhile, companies like Mondelēz, Kellanova, Nestlé, Hershey and Unilever are part of the AIM-Progress Living Wage Working Group, and are implementing initiatives with the goal of ensuring that farmers in their supply chains are able to earn a living wage.[24] Additionally, Hershey and Mondelēz are partners in WageMap, a multi-stakeholder coalition that works on benchmarking living wages.[25] Nestlé's Income Accelerator Program is a pivotal component of the Nestlé Cocoa Plan, aiming to help farmers earn a living wage, which is benchmarked at CHF 6,365 per year for a household in Côte d'Ivoire. Nestlé has set a target to cover its full supply chain by 2030.[26]

Despite this progress, several key players, including Nestlé, Mondelēz, Hershey, Cargill, Olam, and Barry Callebaut, remain involved in controversies related to human rights in their cocoa supply chains, according to Morningstar Sustainalytics' Controversies Research. This highlights that even leading firms face challenges, particularly at farms supplying indirectly sourced cocoa and using smaller co-operatives.

Building Cocoa Supply Chain Resilience

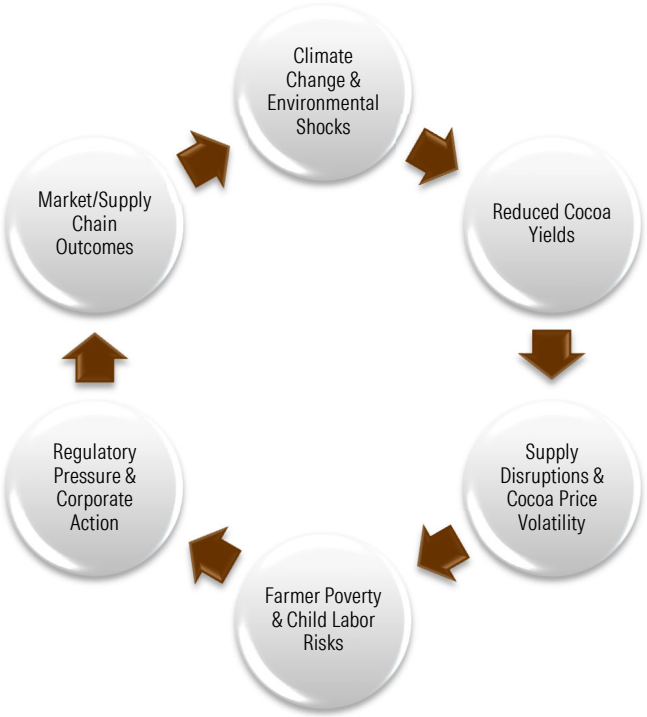
Exhibit 5 below shows how climate, economic, and social risks are deeply interlinked. Climate change and environmental shocks reduce yields and destabilize production, leading to price volatility and exposing the fragility of supply chain weaknesses. These disruptions lower smallholder incomes, increase poverty and raise the risk of child labor. As social pressures rise, regulatory scrutiny intensifies, prompting companies to strengthen due diligence, invest in income-support programs, and adopt regenerative agricultural practices.

[24] The Hershey Company, "Living Wage and Income," 2025, https://www.thehersheycompany.com/en_us/home/sustainability/sustainability-issues/living-wage-and-income.html.

[25] WageMap, "Home," 2025, https://wagemap.org/.

[26] Nestlé SA, *The Income Accelerator Program: How It Works,* 2022, https://www.nestle.com/sites/default/files/2023-07/nestle-income-accelerator-program.pdf.

Exhibit 5 Reinforcing Feedback Cycle in Cocoa Supply Chains



Source: Morningstar Sustainalytics

Corporate and regulatory interventions act as the primary balancing forces within this cycle. When effectively implemented, these measures can stabilize farmers' household income, strengthen climate resilience, and mitigate future supply shocks. Conversely, fragmented or insufficient action can amplify existing vulnerabilities. For example, when companies focus only on short-term supply security or price stability, rather than adopting broad, sustainable practices, production often expands into new forest areas. This expansion makes cocoa farming regions less resilient and increases local vulnerability to climate change shocks, further reinforcing the cycle.

For investors, the implication is clear: disruption of this cycle is directly linked to the long-term profitability and resilience of the chocolate industry. The degree to which chocolate manufacturers collaborate with each other and with governments to break this cycle will determine not only their long-term supply security, but also their credibility in meeting evolving ESG and human rights expectations.

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