Thought Leadership

# Chain reaction

## Maximizing opportunities from the global supply chain reset to enhance sustainability

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# Executive Summary

Ongoing supply chain transformation is likely to deepen, driven by intensifying geopolitical rivalries, emerging new technologies, concerns over supply chain resilience, and the search for efficiencies. While this process is potentially disruptive, it also presents an opportunity to improve the sustainability profile of companies' supply chains. This is due not just to the benefits that accrue from improved sustainability, like lower transition, reputational, and legal risks, or improved employee retention and morale. It is also about future-proofing supply chains against a tightening regulatory environment and growing consumer demands for sustainability in companies' operations.

The global trading system has seen various waves of globalization and realignment since the late 19th century, driven by geopolitics, technological change, and shaped by commercial priorities. What makes this time different is the increasing importance of sustainability—both environmental and social—requiring supply chains to be optimized differently. Regulations like the EU's Corporate Sustainability Due Diligence Directive make large companies, and eventually smaller ones too, responsible for the environmental and social damages not just of their own operations, but those of their supply chain as well. These types of changes, which are being considered by countries around the world, would likely require new tools and investment, and a shift from a "least cost" to a "least risk" mindset.

## A four-pillar framework to improve supply chain sustainability

**Evaluate:** Improving a supply chain starts with understanding the individual links in the chain. Visibility within supply chains remains low, meaning many companies simply do not know who they are ultimately reliant on, beyond their direct suppliers, to produce their products and services. Even when they are aware, the emissions and other impacts incurred by those suppliers may not be measured; if they are measured, they may not be disclosed; if they are disclosed, they may not be accurate; and if they are accurate, divergent metrics and methods may make comparability across companies and industries difficult or impossible.

**Optimize:** Balancing of several factors is required. First, replacing links whose sustainability practices fall unacceptably short. Second, looking at supply chain length, and the potential for reducing it.

Third, optimizing supply chain logistics via the deployment and utilization of emerging technology solutions, like automated tracing and tracking, to better match supply with demand, maximize efficiency, and minimize waste.

**Collaborate:** System level improvements require not just avoiding risk (and thereby crowding into the demand for already sustainable products), but proactively seeking to improve the performance of less sustainable supply chain partners. Collaboration is a key part of this. It can take multiple forms, including data-sharing, setting common goals, and making joint decisions. Just 31% of large firms report collaborating with their supply chain on sustainability, versus the 80% who issue a code of conduct to suppliers. But its importance is increasingly being recognized, with BCG finding that companies collaborating on measurement and pursuing joint targets are 1.7 times more likely to be achieving their decarbonization goals.[1]

**Develop:** This refers to actions and investments made to grow a supply chain's sustainability capabilities. It can take multiple forms, including sharing expertise; financing new capabilities, like new product lines or supply links; and promoting circularity.

# Points for action

Concurrent progress on all four pillars will be required to achieve meaningful progress on supply chain sustainability. This in turn will rely on coordinated action from different stakeholder groups.

**Policymakers:** The ground rules required to promote measurement, disclosure, data access, and to order the incentive structures required to encourage transformation are ultimately something only policymakers can provide. But simply adding to the regulatory burden is not enough—companies need clarity and consistency of application and enforcement to avoid the creation of unintended consequences and building resentments.

**Companies:** Many companies have taken steps like writing codes of conducts for their suppliers, requesting data, and setting targets around metrics like emissions. But much remains to be done, with changes in both mindset and approach required along with the deployment of new systems, technology, and collaborations, not just to achieve compliance, but to future-proof against tightening rules and rising expectations.

**Finance:** Financial stakeholders have a key role to play in driving demands for disclosure and best practice improvements, while also being in a position to enable those improvements via transition finance solutions. Their cross-value chain position allows them to exert both "push" and "pull" factors at different points of the supply chain, from the primary resources' extraction, through to the delivery of the final product to consumers, and beyond. Finally, survey evidence suggests that companies feel pressure from their finance partners in this area more keenly than that of any other stakeholder, including governments.

[1] BCG, (2023), *Carbon Emissions Survey Report 2023.*

# 1. Global supply chain reset

**At a glance**

- Geopolitics-driven de-globalization and profit-driven localization are resulting in a profound realignment of global supply chains.
- This is an opportunity to recalibrate supply chains to improve their sustainability.
- Tightening regulations, shifting consumer and investor expectations, and improving enforcement mean that failure to do so risks further supply chain disruptions in future.

## 1.1. Supply chains in flux

Global supply chains are facing pressures to change from multiple angles. Shocks like COVID, Brexit, and US–China trade war have demonstrated the vulnerability of long, complex supply chains to disruption and are causing companies to reduce their exposure to potential dislocations by reorienting their supply chains, re-shoring, near-shoring, and "friend-shoring" production where possible and financially viable (Figure 1). In addition, companies face increasing policy "push" factors related to sustainability due diligence—whether their supply chain contains goods or materials that result from practices like deforestation or modern slavery—along with neo-protectionist measures like the Inflation Reduction Act (IRA) in the US and the EU's Carbon Border Adjustment Mechanism (Figure 2).

Furthermore, companies are assessing profit-driven "pull" factors like the potential efficiency gains from "localization" (Box 1). Technologies like additive manufacturing are likely to enable more onsite manufacturing of components and shorter, more vertically integrated supply chains. These divergent drivers can have very different consequences for supply chain efficiency and profitability, but they all encourage change to established supply chains. The net result is that the world is likely entering a period of profound supply chain realignment, in both geographic and operational terms.

The journey to this point has been a long one, arguably stretching back over 2000 years, from the first Silk Roads threading from China to the Roman Empire,[2] through the first recognizable wave of globalization circa 1870, when falling transport costs driven by the shift from wind- to steam-powered ships and falling tariff barriers resulting from Anglo-French agreement resulted in a doubling of exports' share of global income.[3] Since then the mix of geopolitics and advancing technologies has driven various new waves of globalization and supply chain realignment, shaped by commercial expediency. What makes today different is the increasing importance of sustainability—both environmental and social—not just of a company's direct operations, but those of its supply chain too.

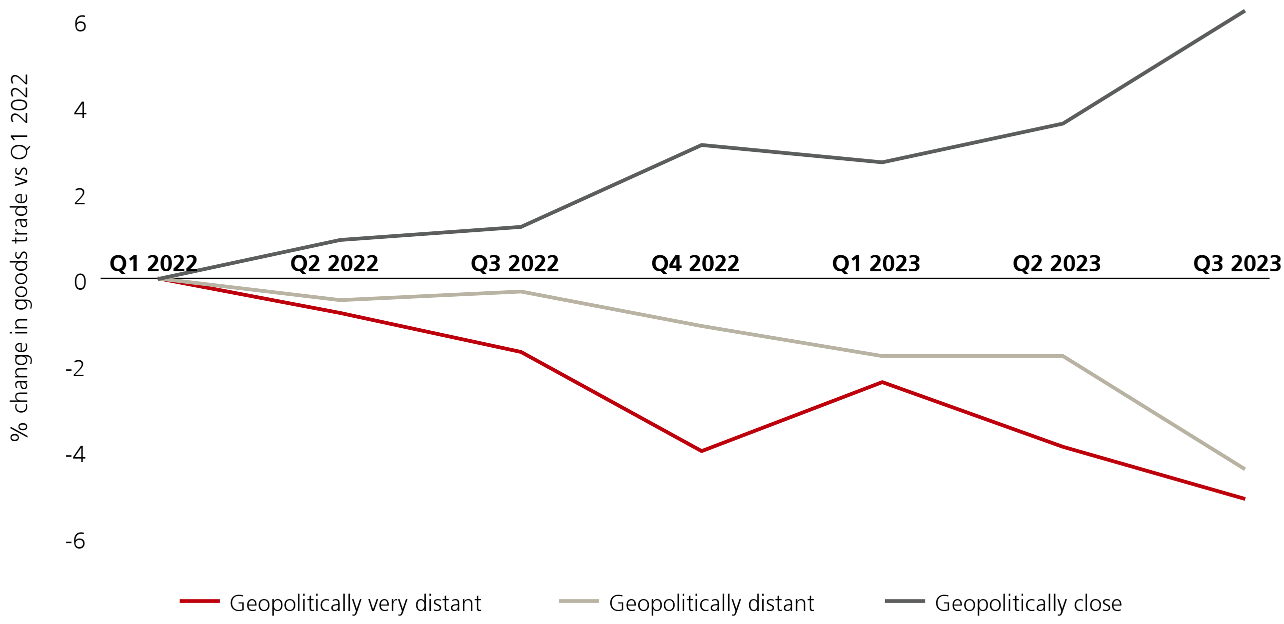
[2] World Economic Forum, (2019), *A brief history of globalization*.
[3] World Bank, (2002), *Globalization, growth, and poverty*, Chapter 1.

**Box 1: Policy-driven de-globalization vs. profit-driven localization**

It is important to note the difference between politically-driven de-globalization and profit-driven localization.[4] De-globalization encourages near-, re-, and friend-shoring to improve supply chain resilience, benefit from subsidies like those in the IRA, and avoid falling foul of protectionist penalties. This increases friction within supply chains, which tends to increase costs and undermine efficiency. Localization, conversely, is driven by the search for efficiencies and cost reductions. Companies choose to locate production closer to consumers while also engaging in capital-for-labor substitution, in a bid to reduce unit costs, and boost efficiency and profits.

**Figure 1:** Geopolitics is contributing to a reorientation of global supply chains

*Change in goods trade vs. Q1 2022 based on geopolitical closeness, calculated using UN voting records (how often countries vote together); excludes intra-EU trade*




Source: UNCTAD; UBS

## 1.2. The sustainability opportunity

Supply chain shocks can be disruptive, but companies increasingly use them as an opportunity to improve their sustainability, as well as resilience.[5] This may mean reorienting them to transport fewer goods fewer miles, with lower freight emissions as a result, though the changes we have seen to supply chains so far have actually made them longer on average, as goods are re-routed through intermediaries on their way to their final destination.[6] This report focuses on the potential for improved sustainability performance from better supply chain measurement, management, and collaboration and development. If companies fail to use current disruption as an opportunity to better incorporate sustainability concerns into their supply chains, they risk more severe disruption in the future, as regulatory, reputational, legal, and other risks start to bite in the coming years.

[4] UBS, (2023), *Three reasons trade is slowing*.
[5] Correll, D. and Betts, K., (2023), *State of Supply Chain Sustainability 2023*, MIT Center for Transportation & Logistics and Council of Supply Chain Management Professionals.
[6] Qiu, H. et al., (2023), *Mapping the realignment of global value chains*, BIS.

**Figure 2:** The supply chain policy pipeline is a busy one

*A (non-exhaustive) representation of major upcoming policy changes affecting supply chains*

**Key:** Measurement | Reporting & Enforcement | Policy decision

**2024** — **2025** — **2026** — **2027**

**Global**

- ISSB's new IFRS sustainability accounting frameworks' reporting periods begin (IFRS accounting rules cover 145 jurisdictions globally)
- First disclosures under the new IFRS S1 and IFRS S2 disclosure requirements begin from 2025. These are "designed to enable companies to communicate to investors about the sustainability-related risks and opportunities they face over the short, medium and long term"

**European Union**

- Corporate Sustainability Due Diligence Directive (CSDDD) passing into EU law
- Large companies (>1000 employees with turnover >EUR 450m) expected to comply with CSDDD
- Corporate Sustainability Reporting Directive (CSRD) kicks in
- Large company CSRD first reports due
- Small and mid-size company CSRD first reports
- EU Deforestation Regulation (EUDR) applies for large and mid-size operators and traders importing commodities and products
- EUDR effective for small and micro-size companies
- EU Commission decide whether to extend EUDR to include financial institutions and cover maize, biofuels and additional ecosystem types
- Carbon Border Adjustment Mechanism (CBAM) reporting starts for iron, steel, aluminium, fertilizers, electricity and hydrogen
- CBAM permanent system (reporting + certificates) enters into force
- EU Commission to decide whether to broaden the scope of CBAM to include other sectors like organic compounds and polymers

**United States**

- SEC expected to finalize climate disclosure rules
- Vehicles with battery components manufactured or assembled by "foreign entity of concern" excluded from the IRA Clean Vehicle Credit (USD 7,500)
- Vehicles with critical minerals extracted, processed, or recycled by a "foreign entity of concern" excluded from the IRA Clean Vehicle Credit from 2025
- Half IRA Clean Vehicle Credit depends on the battery being at least 60% manufactured in North America, 70% from 2026, 80% from 2027, and so on
- The other half of the Clean Vehicle Credit depends on at least 50% of the minerals being sourced from the US or one of its free trade agreement partners, rising to 60% in 2025, 70% in 2026 and 80% in 2027

**Germany**

- Corporate Due Diligence in Supply Chains Act extends to companies with 1,000 or more employees
- German government may revise the scope and penalties of the Act depending on its assessment through to 2026

Source: EcoFact; IFRS; European Commission; UBS

# 2. Four-pillar framework

**At a glance**

- Improving supply chain sustainability requires concurrent action on multiple fronts.
- We outline a four-pillar framework aimed at risk mitigation and, crucially, proactive efforts to collaborate with and develop supply chain partners, to boost their performance.
- Sustainability performance depends on shifting from a "least cost" to a "least risk" mindset.

Achieving supply chain sustainability requires improvements on multiple metrics, including, among others, carbon footprint, resource use, natural capital depletion, and social externalities. These different goals require a mix of efforts to evaluate and optimize the supply chain, and to collaborate with suppliers to improve sustainability. Four pillars—Evaluate, Optimize, Collaborate, Develop—are essential to this process, to balance risk mitigation with proactively working with suppliers to spur improvements in their sustainability and that of the overall supply chain (Figure 3).

**Figure 3:** Four pillars of concurrent supply chain sustainability enhancement

| | | |
|---|---|---|
| **Risk mitigation** | Evaluate | • Determine what's in the chain<br>• Measure, disclose, and check accuracy<br>• Use consistent and/or convertible metrics |
| | Optimize | • Choose verifiably sustainable suppliers<br>• Look at reducing supply chain length<br>• Optimize logistics to minimize waste |
| **Proactive change** | Collaborate | • Share data with suppliers<br>• Set common goals<br>• Make joint decisions |
| | Develop | • Share sustainability expertise<br>• Help finance new sustainable links in chain<br>• Promote circularity where possible |

Source: UBS

## 2.1. Evaluate: What's in a chain?

Supply chain evaluation depends on mutually supporting factors:

- **Visibility:** Who are the suppliers, who are *their* suppliers, and so on?
- **Measurement:** What are the environmental and social footprints of the products and services those companies are supplying?
- **Disclosure:** Are the data being disclosed in an accurate and timely manner?
- **Comparability:** Are the metrics consistent or convertible so company and product performance can be reliably quantified, contextualized, or compared?

The first step to improving supply chain sustainability is understanding the links in the chain. This can be difficult, even for large, well-resourced companies. Visibility within supply chains tends to fall precipitously as you move from a company's tier 1 suppliers (i.e., its direct suppliers), to tier 2 (the supplier's suppliers) and tier 3 etc.[7] This means that many companies simply do not know who they are ultimately reliant on to produce their products and services. Even when they are aware, the emissions, social impacts and such incurred by those suppliers may not be measured; if they are measured, they may not be disclosed; and if they are disclosed, they may not be accurate (Interview 1). Finally, even where visibility, measurement, and disclosure exist, the metrics and methods used may make analysis and comparability between companies difficult, if not impossible, e.g., where different emissions factors have been used, or different materiality or significance thresholds mean an activity is counted by one company but not another.[8]

Without improved understanding, supply chain sustainability cannot be reliably achieved. Much remains to be done: A 2022 literature review by Kalaiarasan et al. noted that poor data quality and availability, budget constraints, disparate sources of information, lack of standardization, lack of skills and knowledge, and supply chain complexity are all challenges or barriers to comprehensive understanding of supply chains.[9] In 2023 just 10% of companies with more than 1,000 employees surveyed by BCG across 23 countries comprehensively measured and disclosed their Scope 1, 2, and 3 emissions, the same percentage as in 2022. And while 75% assessed cradle-to-gate emissions for at least some of their products, just 38% of those agreed that they obtained sufficient product-level emissions data from their suppliers to make those calculations.[10]

Regulation is increasingly going to drive the need for greater transparency over supply chains from a compliance perspective, e.g., the EU's Corporate Sustainability Reporting Directive, entering into force from 2024 for large companies, with others coming into scope from 2025–2028. But companies themselves, along with investors, can also use their voices to press for faster progress in this area as a requirement for retaining their business.

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[7] Choi, T. Y. et al., (2021), *Managing extended supply chains*, Journal of Business Logistics.
[8] Jia, J., Chaudhury, A., and Ranger, N., (2023), *Designing for comparability: A foundational principle of analysis missing in carbon reporting systems*, Oxford Smith School of Enterprise and the Environment.
[9] Kalaiarasan, R. et al., (2022), *The ABCDE of supply chain visibility: A systematic literature review and framework*, International Journal of Production Economics.
[10] BCG, (2023), *Carbon Emissions Survey Report 2023.*

Interview 1

**Where is it really from? Ana Hinojosa**, advisor to Oritain, origin verification specialists

**What does Oritain do?**

Oritain uses forensic analysis of chemical properties to define a product's "origin fingerprint." Everything in nature absorbs different levels of chemical elements and isotopes depending on their physical properties and geography. Analyzing these levels allows Oritain to build a fingerprint database against which samples from the market can be tested. This enables us to identify where in the world the cotton in a t-shirt was grown or the beef in a burger was reared. We make no claim about what's happening at source in terms of production methods. However, a manufacturer, supplier, or regulator can use this data to verify whether materials used in products come from "risk origins" e.g., areas associated with child labor, forced labor, or deforestation.

**And why is this necessary?**

Supply chain transparency starts with origin; you need to know a product's source, before tracking and tracing each individual node or touchpoint throughout the supply chain. Global supply chains can be complex and there is often extremely low visibility of what happens one or two steps back in the chain. As global regulation increasingly requires greater transparency and due diligence, in addition to companies and investors making their own ESG commitments, technology like Oritain's is an essential pillar to work alongside paperwork, like certificates and supply contract assurances, to ensure that product claims match what's being delivered.

This technology also helps deter bad actors by providing irrefutable evidence that is admissible in court if testing reveals that a product doesn't match its description.

**How big of a problem is "mislabeling"?**

It's highly dependent on the sector and supply chain, but Oritain's 2023 Cotton Market Insights data showed that 75% of fashion brands analyzed had at least one garment test consistent for cotton from high-risk regions. The samples were taken as part of an independent blind testing investigation. In addition, US Customs and Border Protection reported that 27% of footwear and garments tested in May 2023 included cotton from "risk origins" where there are concerns over forced labor.[11]

**How have regulators responded to this technology?**

The EU's deforestation regulation already mentions isotopic testing[12] as part of the enforcement process. Regulators in the US are also deploying this technology, particularly through the Uyghur Forced Labor Prevention Act (UFLPA), which prohibits the trade in products made with materials produced using forced labor or child labor. The UFLPA explicitly stipulates that companies must prove the origin of "raw" materials. Canada and other countries around the world are also following suit. Oritain's view is that this new capability will increasingly inform and shape legislation around the world.

[11] Reuters (2023), *US Customs finds garments made with banned Chinese cotton*

[12] I.e., Analyzing the ratio of isotopes (different versions of the same chemical element) in a material. The ratio is affected by altitude, temperature, rainfall and other factors, which make it a reliable method for determining geographic origin.

## 2.2. Optimize

Optimizing requires balancing of different factors. First, replacing links whose sustainability practices fall unacceptably short, when it is economically viable to do so. This will mean different things for different sectors—for a paper supplier, it might mean switching to a company whose paper is Forest Stewardship Council certified, ensuring the wood it is made from is sourced from a sustainably managed forest.

Second, it involves looking at supply chain length, and the potential for reducing it. This can have multiple sustainability benefits. The most obvious is reducing freight miles and the associated emissions—freight emissions account for 8% of the global total.[13] Next is the potential that shorter supply chains offer for allowing more flexible adjustment to changes in demand, which can help reduce over-production.[14] While shorter supply chains can offer benefits, they do not automatically reduce emissions or the other environmental and social impacts of a supply chain. If labor-intensive production shifts to a supplier with worse workplace conditions, or energy-intensive production shifts to one that relies on a more fossil fuel intensive power grid, the net consequence for supply chain sustainability could actually be negative.[15]

Third, it calls for optimizing supply chain logistics to improve the coherence of supply with demand, maximize efficiency, and minimize waste. Increasingly, technology will be essential to achieving optimal results. Supply chains are complex and dynamic. Even with timely and accurate data, keeping track is not straightforward, and increasingly the ability to ensure responsive and proactive management of supply chains will require the deployment and utilization of emerging technology solutions both to support human decision makers, and in some cases, automate certain processes like tracing and tracking.

Lastly, in a world of more sustainable supply chains, the emphasis shifts from a "least cost" to a "least risk" model. This implies a shift away from producing in lowest-cost countries where there is opacity over working practices or where low costs come at the expense of environmentally damaging production processes, and toward those employing least-risk practices, like using certified sustainable materials and traceable products and suppliers.

This shift in approach does not automatically harm the bottom line. While there are advantages of a lower-cost supplier, they are always at risk of being disintermediated by another (even) lower-cost provider. This race to the bottom can be very disruptive and expensive, with negative consequences for quality and service. Instead, aligning suppliers around "shared values" may make greater economic sense over the longer term since it builds a more durable relationship and allows for co-development in ways that a "lowest cost" approach may not. A least-risk approach can have potential shorter-term benefits too. For example, deploying robust traceability systems can help to improve earnings, with benefits accruing from reductions in "*waste and inefficiencies (including up to 50–70% reduction in air freight usage per Planet Tracker), improving security in supply chains, improved inventory management, reduced likelihood of regulatory fines or recalls, and reduced production errors.*"[16]

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[13] International Energy Agency (2018) *CO2 Emissions from Fuel Combustion*.
[14] Kiss, K., Ruszkai, C., and Takács-György, K., (2019). *Examination of short supply chains based on circular economy and sustainability aspects*, resources.
[15] Kravchenko, A., (2021), *When buying local exacerbates climate change*, Economic and Social Commission for Asia and the Pacific.
[16] UBS, (2022), *The close link between supply chains and sustainability.*

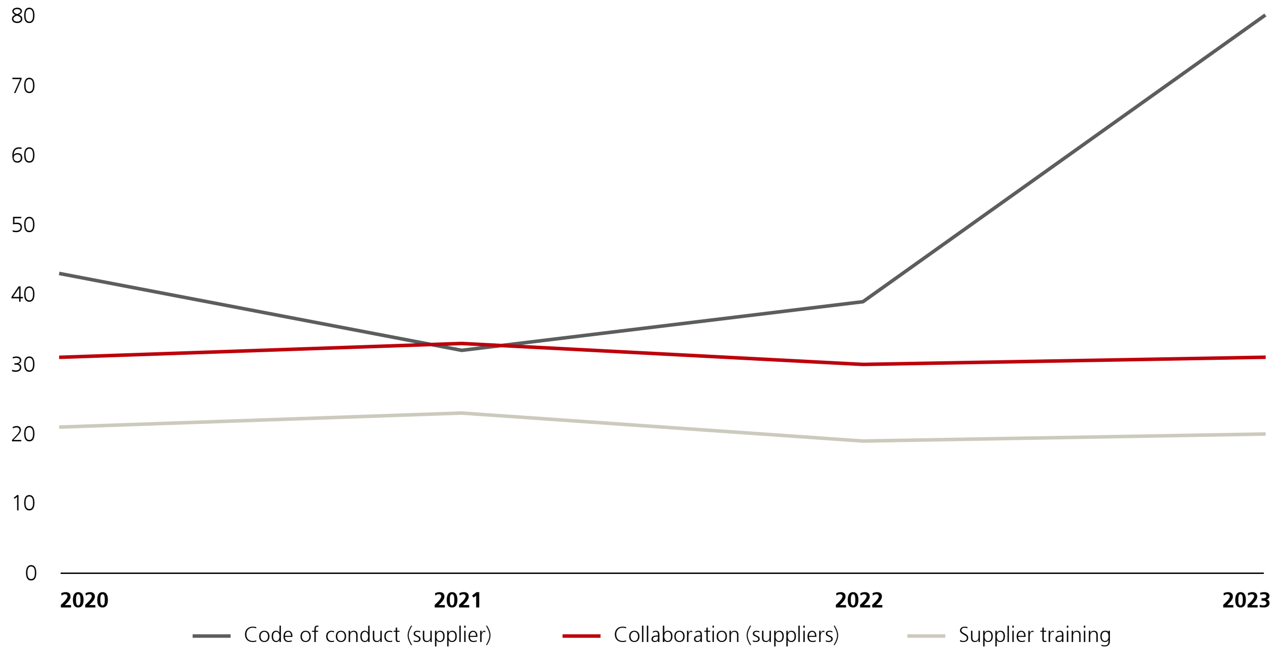
## 2.3. Collaborate

Whereas the first two pillars focus mainly on risk mitigation, the third and fourth emphasize proactively working in tandem with supply chain partners to achieve improvements in overall supply chain sustainability performance.

Collaboration with suppliers can take multiple forms, including data-sharing, setting common goals (Box 2), and making joint decisions. Its importance is increasingly being recognized. A BCG report found that companies collaborating on measurement and with joint targets were 1.7 times more likely to be achieving their decarbonization goals.[17] And yet, in stark contrast to the explosion in the number of firms that have written supplier codes of conduct (up to 80%), there has been hardly any growth in those attempting to share sustainability goals with their suppliers and helping them achieve those goals (Figure 4).[18] This is a missed opportunity.

**Figure 4:** Supply chain codes of conduct the method of choice

*Global survey of companies, % of firms reporting from ~2,300 anonymous responses in 2023*




Source: MIT Center for Transportation & Logistics; Council of Supply Chain Management Professionals; UBS

### Room for improvement

While choosing suppliers based on their sustainability characteristics can incentivize more sustainable practices, working only with sustainability "high performers" is not necessarily the best way to raise standards among the much larger number of suboptimal performers. Improving performance among this cohort is not only necessary to reach a sustainable economy, but arguably does more to achieve positive change than crowding out demand for the limited supply of sustainable products and services already being produced.

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[17] BCG, (2023), *Carbon Emissions Survey Report 2023.*
[18] Correll, D. and Betts, K., (2023), State of Supply Chain Sustainability 2023, MIT Center for Transportation & Logistics and Council of Supply Chain Management Professionals.

Supply chains are by their nature collaborative. Suppliers are more likely to improve their sustainability performance if there are open communication lines with their customers emphasizing the importance of doing so (with the implicit consequence of losing business if they fail to respond). However, such improvements take time to achieve, and require a shifting of priorities and resources.

Producing with sustainability top of mind rather than producing at the lowest possible cost will often require prioritizing different things. In this sense, it is essential for companies downstream to make their upstream suppliers aware of what they are trying to do, and where possible, to align their goals.

On a practical level, setting joint goals can form the basis of joint decision-making, which in turn can enhance "*business performance, reduce logistical costs, increase order fulfillment, improve quality, pricing, delivery, as well as enhance sales and profit margins.*"[19] But it is not always clear how to align the incentives of supply chain partners toward common sustainability goals. If a company wants to reduce its Scope 3 emissions by having its trucking partners use greener vehicles, it's not clear how to set up the deal to ensure they do that, or who books the emissions reduction if they do. Such deals will have to happen, however.

**Box 2: How setting common goals is helping UBS achieve its emissions goals**

In line with UBS's net-zero ambitions across its value chain, it has been strengthening sustainable practices and actively engaging with its vendors to build an understanding of its sustainability goals, bringing them along on the net zero journey.[20] UBS has identified greenhouse gas (GHG) key vendors (defined as those that collectively account for more than 50% of its estimated vendor GHG emissions) in order to focus its efforts on the highest-impact vendors. UBS has met with all its GHG key vendors, shared formal guidance through vendor climate information declaration guidelines, and developed tailored engagement plans, based on the vendor's maturity. UBS runs webinars, which set clear expectations and requirements including asking vendors to provide their climate disclosures in CDP and set net-zero-aligned goals. This ensures transparency and allows monitoring of the environmental impact of UBS's supply chain.

## 2.4. Develop

Development in this context refers to actions and investments made to grow a supply chain's sustainability capabilities. This can take multiple forms, including sharing expertise; financing new capabilities, like new product lines or supply links; and promoting circularity.

### Sharing expertise

Expertise can be shared in low- or high-touch ways. UBS' own efforts in this space include a range of activities from providing guidelines to inviting vendors to webinars, training events or mentoring workshops. At the extreme end, a company could embed its own experts with a supplier, or vice versa, to determine potential improvements. The most well-known examples of this, outside the sustainability space, are Toyota and Honda, which have sent their own engineering experts to

[19] Nurhayati, K. et al., (2023), *Joint B2B supply chain decision-making: Drivers, facilitators and barriers*, International Journal of Supply Economics.
[20] UBS, *Responsible Supply Chain Standards*

suppliers, or had suppliers' engineers embedded with them for up to three years, to help the suppliers make improvements and find cost savings.[21]

**Incentivizing and enabling new capabilities**

Helping suppliers develop new, more sustainable production lines and methods mostly comes down to financing and risk. For example, a company or investor looking to incentivize a food manufacturer to produce an organic version of an existing product could provide the financing to make the initial investment and de-risk that investment by committing to a minimum purchase of the resulting product.

**Promoting circularity**

The linearity of many supply chains creates an inevitable, often unnecessary demand for virgin raw materials at one end of the supply chain and an equally inevitable supply of environmentally and socially harmful waste at the other end. A more circular economy holds potentially major significance for both waste and raw material usage. McKinsey estimates a circular economy scenario could see consumption of primary materials in Europe drop by as much as 32% by 2030 and 53% by 2050.[22]

The ongoing and future reorientation of supply chains in various sectors is an opportunity to realize new circular economy opportunities, particularly in sectors where production and recycling facilities can be clustered near to where products are used. An example of how this could look is the introduction of industrial activities, such as recycling, re-manufacturing, storage, and logistics, near to cities.[23] Such activities might focus on the refurbishment and re-use of, say, electronic devices, rather than the manufacture of new ones, but could also allow utilization or "urban mining" of materials like precious and rare earth metals from obsolete products.

**Box 3: Walking the circularity talk**

UBS embeds environmental, social, and governance (ESG) standards into its sourcing and procurement activities. Its firm-wide Responsible Supply Chain Management framework is based on identifying, assessing, and monitoring vendor practices on human and labor rights, the environment, nature, health and safety, and anti-corruption. UBS includes product-specific environmental and social purchasing requirements in its purchasing agreements with vendors. These include circularity requirements where relevant, such as "products need to contain a percentage of recycled material, recyclable packaging materials, takeback, repair, and refurbishment services," etc. For example, collaboration with one technology infrastructure vendor led to a circular economy approach to the hardware used within data centers once it reaches the end of its useful life. The vendor takes the legacy hardware from UBS, recycles and remanufactures it, and then provides certified remanufactured hardware back to UBS. This promotes circularity, ensuring materials and products are re-used, remanufactured, and recycled, reducing waste and driving a more sustainable circular economy.

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[21] Liker, J. and Choi, T. Y., (2004), *Building deep supplier relationships*, Harvard Business Review.

[22] McKinsey, (2015), *Europe's circular-economy opportunity.* Refers to primary resource use as measured by car and construction materials, synthetic fertilizer, pesticides, agricultural water and land use, fuels and non-renewable electricity, and land for real estate. The study suggested a circular economy, enabled by and in concert with rapid adoption of technologies like precision agriculture and industrialized building systems, could grow resource productivity by up to 3% annually, generating a primary-resource benefit of up to EUR 0.6tr per year by 2030.

[23] Tsui, T. et al., (2022) *Spatial clustering of waste reuse in a circular economy: A spatial autocorrelation analysis on locations of waste reuse in the Netherlands using global and local Moran's I*, Frontier Built Environment.

# 3. Points for action

**At a glance**

- Improving supply chain sustainability will require new mindsets, tools, and investment.
- Policymakers can provide the ground rules to promote transparency, consistency, data access, and order the incentive structures required to encourage this transformation.
- Companies up and down the value chain must deploy new systems, technology, and collaborations to achieve compliance and future-proof against tightening regulations.
- Financial stakeholders will drive demands for disclosure and best practice improvements, while also enabling those improvements via transition and blended finance solutions.

Until recently, price, quality, and reliability have been the main determinants of how a company chooses its suppliers. But as societies look to account for sustainability concerns, that set of factors is no longer sufficient. Supply chains, which have been built up over decades to optimize for one set of metrics, are increasingly being expected to conform to sustainability requirements that they were not built for. Achieving this transformation will require a different mindset, different tools, and, in many cases, substantial investment. We examine how key stakeholder groups (policymakers, companies, finance) can actively engage to increase the likelihood of achieving systemic change.

## 3.1. Policymakers

Policymakers are an essential piece of the puzzle for better supply chain standards. Minimum requirements for due diligence and data disclosures can help promote a better understanding of supply chains, greater transparency, and avert a race to the bottom, protecting the commons. Incentives can help to improve the rewards to first movers and tip the balance on investments. Some areas where policymakers can move the needle include:

**Clarity**

- Common definitions of minimum standards.
- Clarity on rules, e.g., what counts as "material" for the purposes of calculating Scope 3 emissions[24]—once these are codified, companies can adapt, but currently it is not clear what the rules for measuring such emissions are going to be.

**Consistency**

- Inconsistent application of new requirements, like carbon pricing, could create resentments, undermining the case for sustainability, while also causing unintended consequences like "leakage." For example, the EU's narrow carbon pricing in the form of the Carbon Border

[24] MSCI, (2022), *Which Scope 3 emissions will the SEC deem "material"?*

Adjustment Mechanism focusing on raw materials, risks incentivizing the shifting of production of those goods that include the materials outside the EU, without necessarily any benefits in terms of overall emissions reductions.

**Better data gathering**

- Encourage consistent accounting methods[25] or at least the formulation of conversion standards that help companies switch between them.

**Improved enforcement**

- Enforcement must move beyond bureaucratic measures and utilize technologies like isotopic testing to improve detection and deter bad actors (Interview 1).
- Facilitation of data sharing between jurisdictions would enable more joined-up enforcement.

**Incentivizing circularity**

- Support regional industrial clusters and value chains that can contribute to the transition.

## 3.2. Companies

Many companies have taken steps like writing codes of conducts for their suppliers, requesting data, and setting targets around metrics like emissions. But much remains to be done, with changes in both mindset and approach required to facilitate the shift needed to realize supply chain sustainability goals.

**Shift from lowest cost to lowest risk, shared values mindset**

- Factors like cost and quality will remain essential to factor into supplier choice, but where previously sustainability factors were all but zero-weighted, increasingly firms will need to shift the emphasis from minimizing costs to minimizing risks and aligning values. This should help to reduce instances like that of parts from a banned region entering the supply chain, as happened with Porsche, Bentley, and Audi recently.[26]
- The evidence suggests that regulations and wider expectations among investors and consumers in this area are on an upward ratchet.

**Focus efforts**

- Companies with many suppliers should focus on where they can make the biggest positive change. This likely means focusing on their largest suppliers and "hotspotting" to identify where the main problems are, both within the four walls of their firm, and within a particular supply line.
- Suppliers in high-risk industries e.g., construction are likely to merit highest scrutiny (Figure 5).

**Leverage supplier relationships**

- Request sustainability data, e.g., product level emissions data, from suppliers to improve understanding of the supply chain. These requests will not always be granted, but often will, and requesting them also serves to intensify the demand pressure for the measurement and reporting of such data.
- Set targets for and receive commitments from suppliers. The next step after receiving data from suppliers is to look to improve performance on those metrics, not just on emissions, but also other impacts like waste, water use etc.
- Be clear on timelines. Suppliers cannot improve performance overnight, but a timeline of when disclosure and subsequent improvement is expected, and when failure to comply could result in loss of business provides both clarity and incentive.

**Adapt supply contracts**

- Changing suppliers is an opportunity to revisit supply contracts. Ultimately sustainability targets will require a legal grounding to have teeth. A potential model is formulating improvement plans

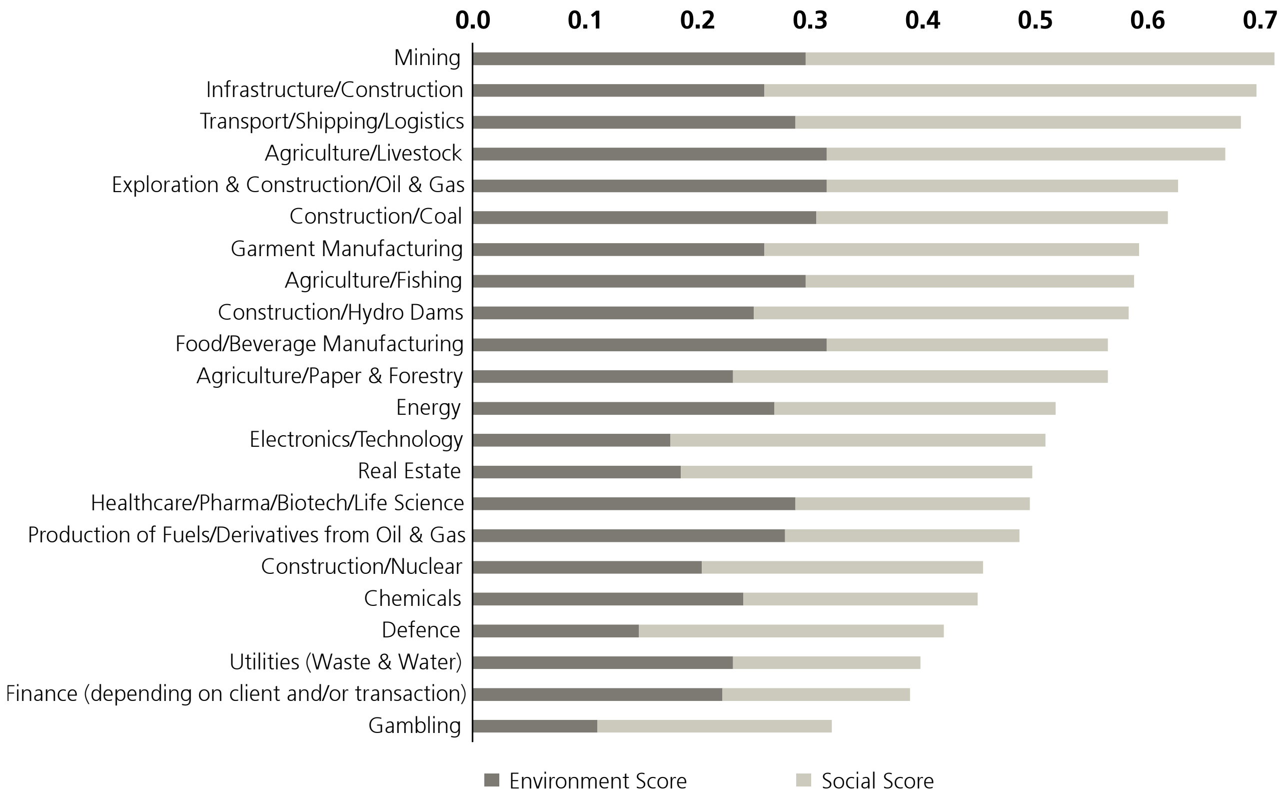
[25] UBS, (2024), *Why sustainability hinges on good accounting.*
[26] FT, (2024), *US Porsche, Bentley and Audi imports held up over banned Chinese part.*

that feature in some contracts relating to cost but adjusted to reflect sustainability factors, with remedies if the expected improvements are not delivered.

- Ensure understanding and enforcement. Pre-contract questionnaires, reporting requirements, improvements on external ESG rating provider scores, and auditing rights on agreed metrics are potentially important factors in ensuring that sustainability commitments are abided by.

**Figure 5:** Sector environmental and social risk scores

*Higher score equates to higher risk across various environmental and social metrics, e.g., of water pollution, or use of child labor*




Note: The score is calculated from ratings featured in the 2020 UN Principles for Sustainable Insurance report: *Managing environmental, social, and governance risks in non-life insurance business*.
Source: UN Principles for Sustainable Insurance; UBS

### Collaborate across supply chains

- Share guidance with suppliers.
- Foster dialogue across the value chain to find common ground. An example of this is UBS Asset Management's shipping value chain initiative which started in 2023.[27]
- Work with suppliers to set joint targets and see where joint decisions can be made to achieve positive change at lowest cost.
- Provide support where necessary, e.g., to a small supplier that may struggle with new paperwork requirements.

### Deploy technology

- Digitization can allow for automated emissions management processes.
- AI and forensic tech like isotopic testing can improve supply chain tracking and traceability, in the process identifying potential risks (Interview 1).

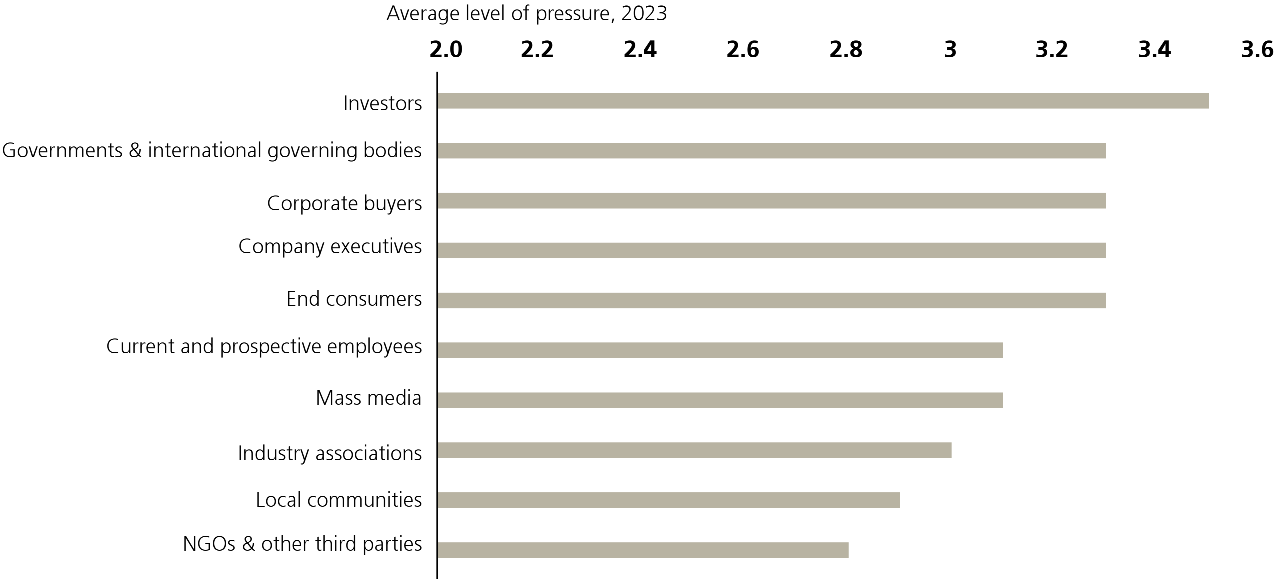
[27] UBS, (2024), *Decarbonization unleashed*

## 3.3. Finance

The cross-value chain position occupied by financial sector stakeholders allows them to exert both push and pull factors at different points of the supply chain, from the primary resources' extraction, through to the delivery of the final product to consumers, and beyond (i.e., circular supply chain models). Perhaps most importantly though, companies feel pressure from their finance partners more keenly than that of any other stakeholder, including government (Figure 6).

**Figure 6:** Average level of pressure on supply chain sustainability from top sources in 2023

*Investors (and other financial stakeholders) can have a significant impact on companies' sustainability measures*




Note: 1 = Not a priority; 5 = Very high priority. Global survey of companies by MIT Center for Transportation & Logistics and the Council of Supply Chain Management Professionals. Approximately 2,300 anonymous responses were collected in 2023. See Interview 2.
Source: MIT Center for Transportation & Logistics; Council of Supply Chain Management Professionals; UBS

Investors can take various steps, including:

**Request data** on Scope 1, 2, and 3 emissions and, in time, broader impact data, like water use and impacts on human health, from investee and potential investee companies.

**Expand transition finance** to include supply chain transition financing and improvements on social goals.

**Facilitate blended finance**, i.e., act as an intermediary between governments and other public finance providers to multiply public financial firepower by mobilizing additional private capital.

**Provide lending incentives** to encourage sustainability risk-reducing activity. One example might be to offer more favorable financing terms to those companies that commit to improved monitoring and surveillance of their operations.

**Exert pressure on the C-suite.** Our conversations with industry indicate that there is often less awareness of supply chain related sustainability requirements at the level of final decision-makers than those lower down the chain.

**Encourage companies to go beyond compliance level.** Compliance is the minimum. Investors can make the case to investee companies to go beyond this on the grounds of future-proofing against future regulations, reducing reputational risk, maintaining the social license to operate as well as the morale of their own workforce. These factors and others can contribute to resilience, performance, and, ultimately, returns.

Interview 2

**Good disruption, bad disruption: David Correll**, MIT, co-author of *State of Supply Chain Sustainability* report series

**What would you say is the state of understanding among companies regarding the environmental and social footprint of their supply chains?**

Currently it is lacking. Looking at emissions, a lot of companies I work with say, we understand our Scope 1 emissions; we understand Scope 2; but as far as Scope 3, we are really struggling. The problem is it's not clear even what the rules are for measuring and accounting. Companies don't know who to call for the data, assuming it was accurately collected in the first place.

**Do supply chain disruptions make it easier or harder for companies to improve the sustainability of their supply chains?**

It depends on the nature of the disruption—if it's an acute inbound disruption, e.g., critical supply lines lost, our data indicate that this actually improves sustainability. Management deploys more money to redraw and reorient the supply chain, and sustainability is often a beneficiary of that process. Other disruptions make it harder—a downstream crisis, e.g., falling sales, which reduces the money available and makes it harder to make the case for sustainability.

**Are some sectors further along than others in prioritizing supply chain sustainability?**

We divided respondents among upstream, midstream, and downstream, and tended to see more activity in the downstream, especially in terms of net zero goals. It looks like the closer a company is to its customers, the more progress we see.

**How do you divide the responsibility among key stakeholders—policymakers, financial stakeholders, companies themselves, consumers—for improving global supply chains?**

This was one of the headline findings from the *State of Supply Chain Sustainability 2023* report. Investors were by far the highest source of pressure—they have a big role to play. Respondents rate investor pressure to be the most intense and I think you can infer from that that they are probably the most likely to be listened to.

But while we can say investors are not excused, policymakers are equally culpable in that it's their job to protect the commons and to make the rules to keep investors interested in these world-saving efforts. If you don't have the policymakers providing a basis for action, then you risk getting a race to the bottom.

# 4. Summing up

1. Global supply chains are facing a profound realignment. As disruptive as this can be, it is also a sustainability opportunity—companies aiming to de-risk their supply chains also tend to look harder at the environmental and social risks that may be lurking among their direct and indirect suppliers, with an eye on enhancing sustainability performance and future-proofing.

2. This requires a fundamental shift. For decades, if not centuries, supply chains have been built around maximizing quality and reliability while minimizing cost. The inclusion of sustainability concerns in this mix requires a change from a "least cost" to a "least risk" mindset.

3. In practice, concurrent action on multiple fronts will be required, as captured in our Four-Pillar Framework—Evaluate; Optimize; Collaborate; Develop.

4. These pillars aim at improving the currently lacking understanding of existing supply chains, improving risk mitigation, but most importantly focusing just as much on proactively working with suppliers to achieve sustainability enhancements, rather than simply dispensing with the low performers.

5. Failure to take the opportunity presented by current supply chain realignment pressures risks further disruptions in the future, as the regulatory environment tightens, and investor and consumer expectations become more demanding.

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The UBS Sustainability and Impact Institute was founded in 2021 to contribute to the sustainability debate, with a focus on actionable and timely contributions. The Institute is a collaborative effort with sustainability experts from across UBS's business divisions. We strive to encourage objective and fact-based debate, provide new impulses for action, and identify innovations that will help shape our collective efforts and awareness about sustainability and impact.

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