TRADE EXCHANGE

WHERE TRADE CONNECTS, OPTIMIZES, AND THRIVES



PRIZE DESIGN REPORT

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EXECUTIVE SUMMARY

Global trade has long been a powerful engine of development, lifting over a billion people out of poverty and driving more than 60% of global GDP, but it is increasingly fragile.

In 2020, COVID-19 exposed deep supply-chain vulnerabilities, triggering a 3% GDP decline, $28 trillion in losses, and 255 million jobs impacted - the sharpest downturn since the Great Depression. Companies responded with costly resilience measures, including 73% reshoring production. A brief rebound in 2024 masked deeper issues - by 2025, new trade restrictions cost $887.7 billion, and over 80% of chief economists warned of lasting structural risks. By 2026, mandatory due diligence and country-of-origin rules take effect, yet only 9% of companies are ready, and 71% still lack visibility beyond Tier 2 - where most labor, fraud, and environmental risks occur.

Small businesses drive outsized impact - Small businesses represent 95% of firms worldwide, generate two-thirds of jobs, and produce half of global GDP - yet remain underleveraged. While 93% of supply-chain leaders call for supplier diversification for resilience, only 20% of SMEs are incorporated, often trapped in hard-to-scale tiers where abuses concentrate. Meanwhile, over 2 billion workers lack protections, 27 million are in forced labor, and Scope 3 emissions exceed 70% of corporate impact. Resilient trade now requires ethics, sustainability, transparency, and inclusive, diversified networks.

Imagine a World in which global supply chains are resilient engines of community prosperity — from participatory economic development to sustainable environment

$10M XPRIZE Trade Exchange is a 3-year competition to transform trade modus operandi. From opaque, secretive, fragmented, and fragile, to, open, collaborative, inclusive, resilient.

The winning team will deliver a highly optimized exchange that drives ≥20% sustainable small-business revenue growth, halves supply-chain management time, and reroutes disruptions within one week.

In the competition, teams will operate a secure exchange with 1,000+ verifiable small businesses (≥50% underserved) and 200+ buyers and ecosystem actors over 12 months. By the end of the competition, over 30,000 SMEs could become contract-ready, unlocking ~$600M in revenue and 45,000 new jobs. More than 6,000 buyers, regulators, and ecosystem actors would connect through a trusted trade network, providing real-time insights on opportunities, risks, and compliance.

Beyond optimized efficiency, this system could open new markets and opportunities, strengthen communities, and build a resilient, fair, and sustainable global trading ecosystem.

THE XPRIZE FOUNDATION

XPRIZE is an established global leader in designing, launching, and executing large scale competitions to solve humanity's greatest challenges. Our unique model democratizes innovation by incentivizing crowd-sourced, scientifically viable solutions to create a more equitable and abundant future for all.

At XPRIZE, we accelerate breakthroughs to solve humanity's greatest challenges. We are the world-recognized leader in designing and operating large-scale incentive prize competitions.

Our role is to define the problems, set the targets, and crowdsource solutions through global competitions to incentivize the development of breakthroughs that accelerate humanity toward a future of equitable abundance. We provide the opportunity and the platform for people to take risks that ultimately lead to solutions that seemed out of reach or impossible. We celebrate great ideas and reward those who dare to follow through on their vision and create tangible solutions that are validated through extensive testing and judging.

The first-ever XPRIZE competition, the $10 million Ansari XPRIZE for sub-orbital spaceflight, captured the world's imagination and catalyzed a multi-billion-dollar commercial space industry, representing a massively leveraged initial philanthropic investment. Since then, we have launched competitions in the domains of Energy, Climate and Nature, Deep Tech, Space and Exploration; Food, Water and Waste, Health, and Learning and Society.

WHAT MAKES A GOOD XPRIZE?

An XPRIZE is a highly leveraged and incentivized prize competition that pushes the limits of what is possible to change the world for the better.

An XPRIZE aims to capture the world's imagination and inspire others to reach for truly transformative goals, thereby spurring innovation and accelerating the pace of positive change.

AN XPRIZE DOES THE FOLLOWING:

Set audacious but achievable goals. An XPRIZE aims to overcome challenges deemed impossible. It tackles some of humanity's most pressing issues by pushing the boundaries of human potential. At the same time, XPRIZE targets are achievable but audacious, thereby motivating teams to compete and believe that they can win.

Democratize innovation. An XPRIZE is for everyone, encouraging both expert and non-expert participation. The resulting multi-disciplinary collaboration brings together the creativity and ingenuity of experts and highly experienced professionals, ultimately pushing the boundaries of human potential.

Catalyze the formation of new markets that overcome market failures. In the same way that the $10M Ansari XPRIZE helped spark the commercial spaceflight industry, today's XPRIZEs aim to transform and reinvent stagnant industries to produce lasting benefits. They do so by targeting market and system failures that impede innovation or stand in the way of desired outcomes.

Define the problem, but not the solution. XPRIZEs are solution agnostic, defining the challenge that needs to be solved without specifying a means with which to solve it. In this way, a typical XPRIZE will typically see dozens, perhaps hundreds, of different approaches to solving grand challenges. This often leads to XPRIZE bringing multiple solutions into the commercial market.

Inspiring and easy to convey. To inspire, an XPRIZE competition has to capture the imagination of audiences everywhere with comprehensible, compelling narratives. When possible, a successful XPRIZE is also telegenic, creating a finish line that the world is excited to watch.

Highly leverageable and investment-ready. XPRIZE competitions enable teams to attract capital, support, and volunteers. They provide leverage for a sponsor's investment by driving additional investment in support of a solution.

Clear, measurable objectives and simple rules. The desired outcome of an XPRIZE must be concrete, measurable, and clearly defined. The rules of the competition must be transparent and easily understood by all and stated in advance.

Provide vision and hope. Above all, an XPRIZE inspires hope by providing a vision of a better future for all. All participants relentlessly pursue and compete for this future, and winning teams achieve the seemingly impossible.

PRIZE IMPACT

At XPRIZE, success is about more than who wins the prize. Our competitions are prize platforms that attract the world's attention and generate positive impact, both through the direct actions of our competing teams and the indirect impact that is initiated by launching a global incentive competition.

Our incentive model is inspired by the exponential impact of Charles Lindbergh and the Spirit of St. Louis, winning the Orteig Prize in 1919. This prize awarded $25,000 for the first airman to fly nonstop between New York and Paris, leading to a thirty-fold increase in the number of airline passengers and a 300% increase in the applications for pilot's licenses within eight years of awarding that competition.

In this chapter, we lay out how XPRIZE measures its impact and the theory of change that drives XPRIZE Trade Exchange. We then propose specific goals and activities that will support the competitors and effectively leverage the prize purse for the exponential impact that is a hallmark of all XPRIZE competitions.

XPRIZE'S THEORY OF CHANGE

As the world leader in incentive prize competitions, we have developed a rigorous framework to spark positive, long-term change. Our framework links the activities XPRIZE conducts to launch and run a competition, the outputs the competition yields, the changes or outcomes we see during and after the competition, and ultimately, the long-term impact that is the result of our prize competitions.

We start with a grand challenge, identifying an area where XPRIZE could intervene to drive transformative change. After analyzing the present-day landscape and expected trajectory of an industry, we identify a Preferred Future State - what could be, with a carefully designed intervention. We use our theory of change model to provide a conceptual framework to outline how an XPRIZE competition can address the grand challenge for lasting, long-term impact.

Finally, we quantify our impact, applying a concept we call prize-purse ROI. This measure indicates the effectiveness or extent to which a prize purse catalyzes impact. This impact metric examines the relationship between the cumulative prize purse and the financial value of a given impact. (The ways in which we measure impact are described below.) The prize-purse ROI is a measure of leverage, which is uniquely achieved via the investment into the purse on an XPRIZE competition, and can be calculated as such: Prize-Purse ROI = Impact Value / Prize Purse.

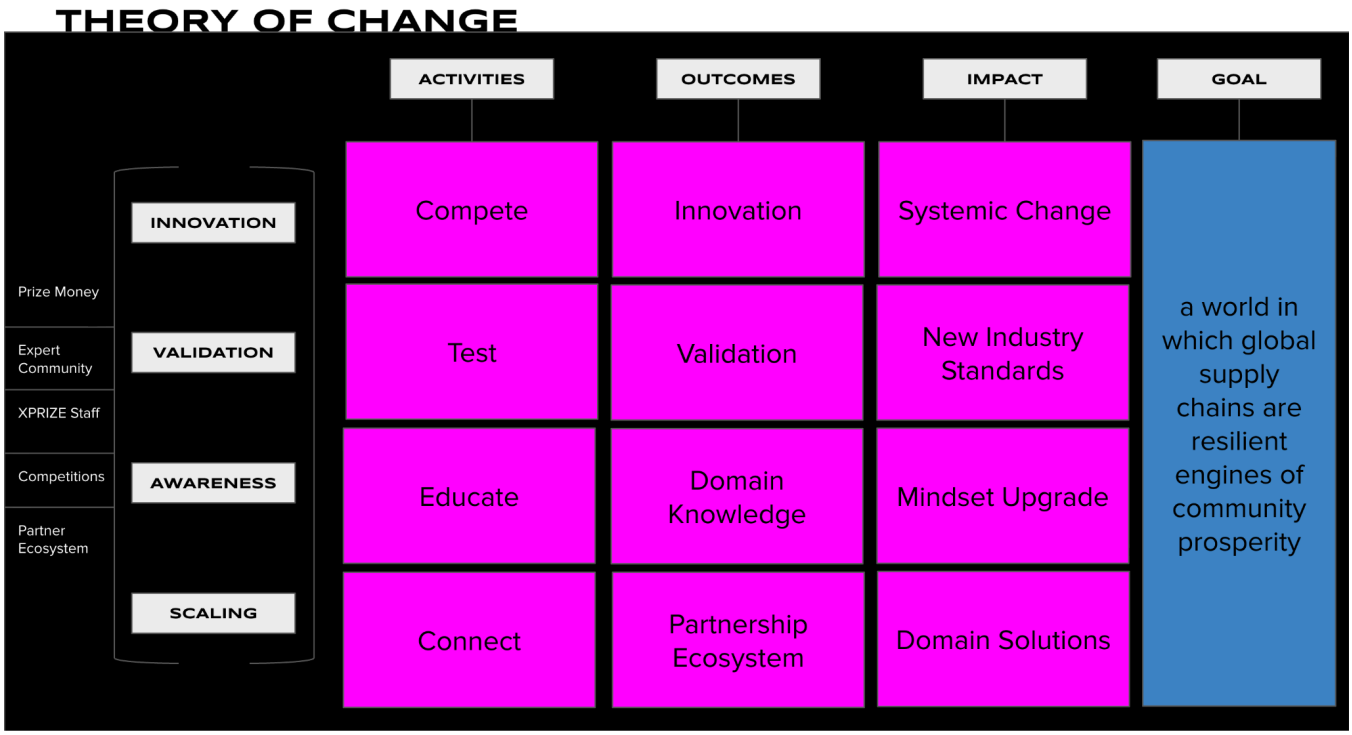


Figure 1. XPRIZE Theory of Change

FOUR CATEGORIES OF IMPACT

XPRIZE competitions have been shown to have direct and indirect impacts, extending beyond the years of a competition. Impacts fall under four categories:

INNOVATION
We design competitions to attract diverse teams of innovators and encourage cross-disciplinary collaboration to generate novel solutions to challenging world problems.

VALIDATION
We subject nascent industries and early-stage innovators to rigorous testing and technical analysis, not only validating breakthroughs but paving the way for acceptance and broader adoption of new technologies.

AWARENESS
We tackle significant global challenges and demonstrate that these problems can be solved, inspiring a future-positive movement of radical optimists.

SCALE
We develop an extensive ecosystem of partners who provide support, resources, and funding to help teams take the innovations catalyzed during competitions into the marketplace.

From the launch of an XPRIZE competition to long after it ends, we support teams to help change the world. We see these impacts occur directly through the efforts of XPRIZE-competing teams who are working to solve problems others deem impossible or too difficult. We also see impacts indirectly, through a ripple effect that changes perceptions and prompts others to see opportunities in previously overlooked areas. As demonstrated by the very first Ansari XPRIZE, it may even shift the course of history.

XPRIZE TRADE EXCHANGE IMPACT METRICS

XPRIZE Trade Exchange Goal: a world in which global supply chains are resilient engines of community prosperity — from participatory economic development to sustainable environment

Our ultimate goal is to achieve this preferred future state through the operations and awarding of a prize. This preferred future state will be made possible by the competition and extends beyond the direct actions of competitors. To help assess progress toward this goal, XPRIZE measures impact metrics under the four categories previously discussed. We track prize-specific metrics to evaluate the impact of the competition on the targeted area. We also consider general metrics across all XPRIZE competitions that validate our time-tested prize model.

PRIZE-SPECIFIC METRICS

Prize-specific metrics measure the impact of XPRIZE Trade Exchange specifically, evaluating the impact on buyers, small and medium enterprises (SMEs), and trade conduct as a whole. These metrics, which are meant to be illustrative and not exhaustive, can be reliably tracked throughout the competition and post-competition via alums, and are aligned with the four impact areas. As the operational execution of competition matures over time these metrics may be re-evaluated, altered, or changed.

TABLE 1: PRIZE-SPECIFIC IMPACT METRICS

CATEGORY	METRIC	PURPOSE
Innovation	# Novel technology integrations to form the Trade Exchange (e.g., AI + Blockchain + IoT)	Measures the successful creation and integration of frontier technologies into a single, functional trade platform, addressing the structural disconnect in supply chains.
	Novel Trade Integrity Framework deployed (certifiable standards/SME checks)	Tracks the creation and adoption of the first-of-its-kind, SME-friendly, certifiable framework that standardizes ethics, sustainability, and resilience for trade actors.

CATEGORY	METRIC	PURPOSE
	# Novel financing/business models for the Trade Exchange's sustained operation.	Assesses innovation in creating scalable, self-sustaining financial and business models that ensure the exchange operates and expands long-term post-prize.
	# Patents around verifiable tracking and tracing of goods/compliance.	Indicates innovation in using technology (IoT, blockchain) to provide real-time, tamper-proof visibility beyond Tier 2 of the supply chain.
	# Novel solutions to reroute supply chain disruptions (cyber, geopolitical, climate).	Captures the creation of cutting-edge algorithmic/platform approaches to automatically and effectively mitigate multi-layered supply chain risks.
Validation	Average Δ in SME total annual revenue (≥20% target).	Primary Economic Target: Demonstrates the effectiveness of the exchange in improving the commercial success and financial stability of participating SMEs.
	50% Reduction in supply chain management and compliance verification time. (Long tail optimization)	Primary Efficiency Target: Measures how effectively the solution eliminates friction, information gaps, and manual verification processes for both buyers and SMEs.
	50% Reduction in disruption rerouting time (target ≤7 days).	Primary Resilience Target: Measures the platform's shock-resistance by tracking how quickly it can adapt and provide alternative trade pathways during a major disruption.
	# of Verifiable SMEs (≥50% underserved, SMEs from tier 3 and under) integrated into the Exchange.	Demonstrates the solution's effectiveness in reaching the target demographic—the small, marginalized businesses that currently face the highest friction and cost-to-serve.
	# of Buyer/Ecosystem actors integrated and actively transacting on the Exchange.	Measures the solution's ability to create a two-sided market (liquidity), connecting SMEs with credible buyers and essential trade service providers.

CATEGORY	METRIC	PURPOSE
	Accuracy (%) of real-time risk alerts and predictive threat models.	Measures the quality and utility of the platform's intelligence layer, which is crucial for decision-making and pre-emptive resilience.
Awareness	Influencing global discourse on Resilient, Fair, Collaborative, Sustainable Trade, as well as trade transparency and inclusion	Tracks the prize's impact in reshaping narratives around the need for transparent, digital, and MSME-centric trade systems to replace outdated, opaque conventions.
	Influencing global targets and policy (e.g., WTO, UN SDG 8) on trade integrity standards and digital trade standards.	Measures the prize's contribution to shaping global policy and regulatory standards for transparent, equitable, and resilient trade, using the exchange as a new model.
Scale	# of SMEs reached during the 12-month Finals Deployment (≥1,000).	Tracks the direct scale of the solution's deployment during the competition, emphasizing the target reach in real-world environments.
	# of underserved SMEs reached (target ≥50% of total). SMEs from tier 3 and under	Measures the critical social impact component, ensuring the exchange reaches the hardest-to-reach small businesses that need the most support.
	# of countries, trade regions and trade corridors reached.	Captures the geographical scale of the solution, demonstrating its ability to operate across diverse regulatory, cultural, and logistical environments globally.
	Projected Δ in community revenue generated (via EIA) 2 years post-competition (via repeat contracts and contract value)	Reflects the long-term potential for the exchange to generate significant, quantifiable, sustained economic growth for the communities it serves.
	# of buyers and buyer progression: Adoption across First, Second, and Third-Wave Buyer Segments	Measures the successful transition of the Trade Exchange from a niche platform to a mainstream solution by tracking adoption across three progressive buyer segments: 1)

CATEGORY	METRIC	PURPOSE
		Ethics-Minded (mission-aligned early adopters); 2) Regulatory-Driven (organizations needing compliance solutions); and 3) Mainstream/Price-Focused (large corporations). Post competition goal is achieving significant transaction volume and buyer count in the Third-Wave segment, proving the exchange's efficiency and data value outweighs friction and achieves liquidity.

GENERAL IMPACT METRICS

General metrics validate the prize model and measure the impacts of all XPRIZE competitions, regardless of industry. These metrics can be meaningfully aggregated across all prizes, and can be collected reliably and regularly to demonstrate the impact of XPRIZE.

TABLE 2: GENERAL IMPACT METRICS

CATEGORY	METRIC	PURPOSE
Innovation	# new organizations formed for the prize.	Indicates the prize's ability to stimulate entrepreneurial activity and demonstrates the change in the industry as a result of the prize.
	# team hours spent working on the problem.	Shows the collective attention and energy utilized to solve the grand challenge, reflecting the prize's ability to attract the interest of talented individuals.
	# patents filed.	Measures the creation of novel intellectual property, pushing the boundaries of existing knowledge.
	# peer-reviewed publications.	Contributes to the scientific community, demonstrating the dissemination of knowledge and advancement of the prize's industry.
Validation	# expert hours spent designing the prize.	Demonstrates how the prize attracts and engages subject-matter experts.
	# hours spent validating solutions.	Indicates the rigor and effort invested in testing the solutions to create real-world impact.
	Adoption/impact of validation.	Shows the prize's contribution to setting standards and best practices.
	$ value of validation.	Highlights the practical impact of the solutions developed through the prize, underscoring the potential economic

CATEGORY	METRIC	PURPOSE
		value catalyzed by the prize.
Awareness	# media mentions of the prize and teams.	Reflects the prize's ability to attract attention and generate public interest to raise awareness about the problem and innovative solutions.
	# social media followers of prize teams.	Indicates the teams' ability to engage and connect with a broader audience, fostering a community around the challenge.
	# monthly visits to team websites.	Illustrates the interest and engagement of the public with the teams' work.
	# student team members.	Showcases the prize's ability to inspire and train the next generation of problem solvers.
Scale	$ team funding raised (grants and investments).	Indicates the prize's effectiveness in attracting funding for the development and implementation of solutions to make them viable for use outside of competition.
	$ investment in the market aligned with the prize.	Demonstrates the prize's influence to attract capital and resources to support solutions beyond the timeline of the prize.
	Monitoring of policy changes relative to that industry	Evaluates the prize's influence on regulatory and policy shifts, indicating how it drives systemic change and creates an enabling environment for innovation.
	Number and level of partnership support for the prize	Tracks the prize's credibility and ability to attract key industry players, funders, and collaborators.

CATEGORY	METRIC	PURPOSE
	Team revenue	Measures the financial success of participating teams post-prize, indicating whether their solutions are commercially viable and generating sustainable income.
	Market size pre- and post-prize	Assesses the prize's impact on industry growth, showing whether it contributed to market expansion, increased adoption, or the creation of new economic opportunities.
	Team commercial deployments post-prize	Tracks how many teams successfully bring their solutions to market, demonstrating the real-world implementation and scalability.

BACKGROUND + ANALYSIS

The XPRIZE competition design process begins with in-depth research designed to identify areas where we can intervene to drive transformative change and impact. This research serves as the foundation for XPRIZE Trade Exchange and informs the competition's targets and tests. We begin with assessing the grand challenge - where it stands today, where it is heading, and what an alternative, preferred future could look like. We next explore the industry and solutions landscape and detail the shortcomings of the current state of affairs. This analysis informs the core problems that keep us from realizing the preferred future and where this XPRIZE will be positioned.

THE GRAND CHALLENGE

Trade powers the modern economy, accounting for 63% of global GDP and contributing up to 25% additional growth.[1,2] Since 1990, globalization has helped lift over 1 billion people out of extreme poverty, cutting global poverty from 36% to 9%.[3] Global supply chains keep the world moving - from the clothes we wear to the food we eat and the medicine we rely on.

Yet beneath this efficiency lies a sobering reality: global trade is fragile, unsustainable, and often unethical and we are unprepared for the cracks already showing. Without change, these systems could fail overnight, but with decisive action - they could be reshaped for resilience, fairness, and shared prosperity.

COVID-19 shutdowns exposed the deep fragility of global supply chains. We witnessed instantaneous factory closures, shipping delays, and labor shortages rippling across industries, spiking shipping container costs by 500%.[4] It triggered the sharpest downturn in the world economy since the Great Depression: global GDP declined by 3%, resulting in an estimated $28 trillion in lost economic output in 2020.[5] 51 countries faced credit rating downgrades as debt burdens mounted.[6] Jobs disappeared at an unprecedented scale: the equivalent of 255 million full-time positions were lost in 2020, while 33 million full-time and 114 million informal workers lost their jobs.[7,8] Informal workers, who make up as much as 90% of employment in low- and middle-income countries, were hit first and hardest, often losing income overnight.[9] The pandemic highlighted just how fragile and interdependent global trade and production systems had become.

Companies responded with urgency, 93% of supply chain leaders pledged reforms aimed at resilience, diversification, and oversight, while 73% moved production closer to home, prioritizing nearshoring.[10,11] This fueled a temporary rebound in 2024.

In 2025, threats to trade resilience are rising. Merchandise trade is forecasted to decline 0.2% while the number of new restrictive trade measures is on the rise, particularly since 2020.[12,13] In 2024, import-restrictive measures accounted for $887.7 billion in value, over half a trillion higher than the previous year.[14] 82% of chief economists cite elevated uncertainty, with most expressing not knowing where we are heading, but that changes are permanent.[15]

At the same time, pressure is mounting for supply chains to become not just resilient, but fairer and more sustainable - a dynamic affecting trade resilience. Mandatory reporting on business ethics and sustainability is on the rise to replace voluntary reporting, with rules coming into effect in 2026-7.[16,17] Meanwhile, 88% of consumers already say that ethical and sustainable sourcing directly influences their purchasing decisions.[18] Yet companies remain largely unprepared - only 9% are ready for the mandatory reporting rules coming in 2026–27.[19]

2026 on, mandatory reporting rules coming in, business resilience means sustainable and ethical trade. The challenge to mitigate is great: the communities powering global supply chains often reap the least benefit while bearing the highest costs. Today, 27.6 million people are trapped in forced labor, 85% of them in the private sector, generating $236 billion in illicit profits, a 37% increase since 2014.[20,21] Informal work is even more widespread, affecting over 2 billion people who typically lack fair pay and basic protections.[22] Communities also face disproportionate environmental impacts: supply chains account for more than 70% of corporate emissions, known as scope 3 or upstream emissions, 26 times higher than direct operations, yet these emissions remain largely unaddressed.[23]

With risks growing, it's only a matter of time before the next major disruption - making now the moment to drive transformative change.

KEY DRIVERS

1. Financialization, Short-Termism, the Global Race to the Bottom

For half a century, global supply chains have been shaped by financial markets and investor demands for rapid, short-term returns.[24] This relentless pressure to maximize cost-efficiency and speed has given rise to the Just-in-Time model, often at the expense of long-term sustainability, worker well-being, and community development.[25] In this hyper-competitive environment, companies and countries compete not to raise standards but to lower them, fueling a race to the bottom that incentivizes exploitation and disempowers workers and communities.[26]

This dynamic has driven widespread offshoring to regions with weak labor and environmental protections, along with the systemic flexibilization of labor - shifting toward temporary, contract, gig, and informal work arrangements.[27] Today, over 2 billion workers, or 61% of the global workforce, are employed informally, lacking social protections, job security, or legal recourse.[28] The gig economy is growing 3x faster than the traditional workforce.[29] This model shifts financial risk onto workers, many of whom earn below minimum wage and face housing insecurity, debt, and health risks; Women, migrants, and low-income workers are most affected.[30] Without addressing this structural erosion of labor

protections, efforts to build fair and resilient supply chains will remain fundamentally constrained.

2. Centralized and Concentrated in Corporate Power

Micro, Small, and Medium-Sized Enterprises (MSMEs) are the backbone of economies and global supply chains, yet they are not equal participants. Representing 95% of businesses globally and accounting for two-thirds of global employment and 50% of GDP.[31] However, they are mainly found in tiers 2-4, and face persistent barriers to entering and fully benefiting from international trade.[32]

80% of global trade is linked to transnational corporations (TNCs), of which there are just over 100,000 worldwide.[33] The 10,000 largest listed companies account for 90% of global stock market value, and the top 10% capture 80% of all positive economic profit.[34,35] Many TNCs have economies larger than those of nation-states; the top 50 corporations alone generate 28% of global GDP.[36,37] Fewer than 20% of MSMEs are somewhat integrated into global supply chains.[38] This concentration gives TNCs outsized influence over suppliers, workers, and even governments.

3. Complex, Opaque, and Fragmented Governance

Global supply chains are sprawling, multi-tiered, and opaque. Most companies only monitor their immediate (Tier 1) suppliers, leaving deeper layers, where the worst abuses often occur, unchecked. Progress was seen on Tier 1, with 60% of companies now claiming oversight.[39] But only 13% of organizations can fully map their supply chain networks, while 71% have limited or no visibility beyond Tier 2.[40]

Pressure for better transparency in the deep-tier supply chain is rising. 83% and 88% of consumers consider, respectively, sustainability and ethical sourcing when making purchasing decisions.[41] Mandatory due diligence regulations like the EU's Deforestation Regulation (EUDR) and Corporate Sustainability Due Diligence Directive (CSDDD) are on the rise, aiming to improve oversight across entire value chains.[42] But only 9% of companies say that their supply chains are compliant with the new rules which will enter into effect in 2026-2027.[43]

Meanwhile, global trade continues to outpace governance. Weak, inconsistent labor and environmental protections across jurisdictions allow companies to shift operations and evade accountability.[44]

KEY TRENDS

1. Headwinds and Protectionism

Following a strong performance in 2024, global trade is heading into uncertainty in 2025, facing headwinds from a surge in tariffs and changes to trade policy.

In 2024, world trade saw record expansion to $33 trillion, up 3.7% from 2023 – driven by developing economies and strong services trade.[45] South-South trade, referring to commerce between developing countries, has seen significant growth. Between 2007 and 2023, it more than doubled from $2.3 trillion to $5.6 trillion, highlighting the emergence of new production and consumption centers beyond the traditional Global North–South dynamic.[46]

But, late 2024 marked a turning point: the UN Conference on Trade and Development (UNCTAD) warned of a false rebound, projecting continued stagnation at 2.7% growth for both 2024 and 2025, below the 3.0% pre-pandemic average (2011–2019).[47] By April 2025, the World Trade Organization (WTO) reversed its earlier projection of growth, forecasting a 0.2% decline in global merchandise trade volume.[48] In May, the World Economic Forum (WEF) survey of chief economists echoed the growing concern: 82% cited very high uncertainty, and nearly 80% saw recent trade policy shifts as signs of a lasting structural transformation in the global economy.[49]

The rise in protectionism is accelerating, with the WTO's latest monitoring report showing that members introduced 169 new trade-restrictive measures throughout 2024, covering an estimated USD 887.7 billion in trade, over half a trillion dollars higher than the restrictions imposed in the previous year. Meanwhile, the stockpile of restrictions since 2009 continues to grow. By October 2024, import restrictions affected USD 2,942 billion, 11.8% of world imports, while export restrictions surged to USD 276.7 billion (1.1% of world exports).[50] WTO Director-General Ngozi Okonjo-Iweala cautioned that these trends point to an "increasingly fragile, uncertain and precarious" global trading environment, with trade fragmentation deepening along geopolitical lines.[51]

On top of protectionism and turning inward, we are living through an era of unprecedented disruption in modern history, where climate change stands as the greatest security threat humanity has ever faced, per the UN.[52] UN Secretary-General António Guterres warned it is a "crisis multiplier" destabilizing food systems, water supplies, migration patterns, and fragile states, while unlike traditional crises, this disruption cannot be contained by borders or military power.[53]

In short, trade volumes are high, yet momentum is weakening and the direction ahead is unclear.

2. Shifting Search for Resilience through Reorganization

In response to COVID-19, climate shocks, and geopolitical tensions like the Red Sea Crisis where Houthis attacked trade ships, companies are rethinking reliance on long, fragile supply chains.[54] Disruptions have exposed the risks of just-in-time models - raising costs, stranding assets, and prompting shifts in sourcing.[55] Meanwhile, widening trade imbalances and shifting bilateral gaps (e.g. U.S.–China, India–Russia) are reshaping global trade dynamics and adding to long-term uncertainty.[56]

In 2024, reshoring, nearshoring, and friendshoring gained traction as the prime resilience strategies.[57] Between 2022–2024, 73% of companies shifted production locations, prioritizing nearshoring, and 86% of manufacturers worked to de-risk supply chains.[58] In 2024 alone, 73% advanced dual-sourcing, 60% pursued regionalization, and 81% aimed to localize supply, an 18-point increase from 2022.[59]

By 2025, the trend is shifting: from regional consolidation to global diversification, reducing risk concentration but increasing complexity.[60] Emerging economies like Vietnam, India, and Russia strengthen ties, while the EU and Australia reduce dependence on traditional partners.[61] According to the UNCTAD, the challenge in 2025 is to prevent global fragmentation, where nations form isolated trade blocs, while managing policy shifts without undermining long-term growth.[62]

Since the post world war, the focus of global trade has been on efficiency, since the Covid aftermath era, it has been about resilience first.[63] But the 2024 reorganization policy was costly, in 2025, companies are looking at optimization, encompassing resilience and efficiency, as their top priority - increase resilience but cost-effectively. Increasingly, resilience means flexibility, the ability to pivot fast.[64]

Shorter supply chains have been highlighted by companies also for their potential in improving oversight and cutting emissions, but without strong labor and climate protections, they risk simply relocating exploitation.[65,66]

3. Mandatory Due Diligence and Trade Policy

Global trade is undergoing a shift as governments and international governmental organizations move from voluntary reporting frameworks to enforceable supply chain legislation.[67] The European Union is leading the charge with the Deforestation Regulation (EUDR) and the Corporate Sustainability Due Diligence Directive (CSDDD), set to take effect in 2026 and 2027, respectively. These mandatory frameworks will require companies to identify and address human rights and environmental risks across their entire value chains in order to trade with the European market.[68] Similar legislation has emerged in Germany (Lieferkettengesetz), France (Duty of Vigilance), and the United Kingdom (Modern Slavery Act).[69] In parallel, the United States introduced significant changes to its

country-of-origin and import compliance regime in August 2025, requiring nearly all imported goods, regardless of value, to undergo full customs entry, origin disclosure, and duty assessment, sharply increasing enforcement of origin accuracy across supply chains.[70]

These policies aim to enhance transparency and accountability beyond Tier 1 suppliers. However, effective implementation will depend on cross-border coordination, adequate enforcement mechanisms, and support for MSMEs to comply without unintended consequences.[71] As noted, just 9% of companies say they are ready to meet the new rules.[72]

Trade policy is also becoming more tightly linked to national economic and climate priorities. Governments are increasingly using tools such as tariffs, subsidies, and industrial strategies to shape trade flows in strategic sectors like clean energy, semiconductors, and critical minerals.[73] For example, in 2025, the United States announced a plan to double tariffs on imported steel and aluminum to 50%, citing national security and industrial competitiveness.[74] Meanwhile, in 2024, the European Union launched the Green Deal Industrial Plan, which includes relaxed subsidy rules and a new Sovereignty Fund to support large-scale investments in green technologies such as hydrogen, batteries, and renewable energy infrastructure.[75]

Taken together, these regulatory and policy shifts are reshaping the operational and strategic landscape for global trade. Companies must now navigate not only physical supply chain risks but also a rapidly evolving legal, environmental, and economic environment.

4. The Digitization of Trade

In turn, we see an accelerated move toward the digitization of trade, which is transforming how goods and services are produced, exchanged, and monitored.

Trade is becoming increasingly digitized and services-based, reshaping supply chains. Digital technologies are reshaping trade by reducing transaction costs, enabling real-time coordination, and expanding access to global markets.[76] Retail e-commerce sales rose to $6.3 trillion in 2023, from $1.8 trillion in 2016, and are expected to grow to $8.1 trillion by 2026.[77] Digital services already exceed half of global services exports, enabling faster transactions, remote work, and cross-border collaboration.[78]

This shift can also lower barriers to entry and open new markets for MSMEs.[79] However, the benefits of digitization remain uneven, with persistent digital divides in infrastructure, skills, and regulatory capacity, particularly in low-income economies.[80]

5. The Changing Path of Economic Development

Throughout the 20th century, economic growth followed a relatively linear path: countries moved from agriculture to manufacturing to services. Manufacturing was key: labor-intensive, export-driven, and capable of absorbing large workforces.[81] In China alone, manufacturing created over 100 million jobs 1990-2010.[82] Bangladesh's garment manufacturing sector fueled decades of growth, now employing over 4 million workers.[83]

But this path is no longer viable for many low-income countries.[84] Today's manufacturing is increasingly automated, industrial robots have more than tripled globally since 2010 and are capital-intensive, limiting job creation. In Ethiopia, export manufacturing contributes less than 5% of total employment despite significant investment. Even Bangladesh struggles to climb the value chain, as design, branding, and higher-value functions remain fragmented and offshore.

Instead, many countries face "premature deindustrialization", a shift directly from agriculture to services without the manufacturing phase.[85] In sub-Saharan Africa, manufacturing's share of employment has stagnated below 10%. Meanwhile, over 60% of the workforce in low-income countries is self-employed, often in informal, low-productivity services such as vending, gig work, and micro-trading.

In this context, development strategies must adapt. Rather than assuming a manufacturing-led path, it should be treated as one option, with interventions focused on boosting community-level income, employment, and resilience across all sectors.

LOOKING AHEAD: A PIVOTAL MOMENT FOR TRADE TRANSFORMATION

Global supply chains are at a crossroads. The disruptions of recent years—from pandemics and climate shocks to geopolitical tensions—have exposed vulnerabilities in systems once praised for efficiency. At the same time, regulatory shifts and the rise of digital trade are creating both challenges and opportunities, while traditional pathways of economic development evolve, with manufacturing-led growth no longer a guaranteed route to employment or prosperity.

Global trade also faces mounting uncertainty. Structural changes are clearly underway, but the shape, scale, and timing remain unclear - a debate now taking place at the highest levels of policy and business leadership.

Within this disruption lies opportunity. 2025-6 present a rare opportunity to fundamentally rethink and transform global trade and supply chains. With bold, targeted action, we can move toward a new frontier for global trade - resilient, fair, and sustainable.

IMAGINE A WORLD IN WHICH GLOBAL SUPPLY CHAINS ARE RESILIENT ENGINES OF COMMUNITY PROSPERITY

— FROM PARTICIPATORY ECONOMIC DEVELOPMENT TO SUSTAINABLE ENVIRONMENT

SUPPLY CHAINS: INDUSTRY, MARKET & INNOVATION ACTIVITY OVERVIEW

Supply chains, or global value chains more broadly, form the invisible infrastructure behind global trade, enabling businesses to hyper-optimize by sourcing materials where they are cheapest, producing goods where labor or expertise is most available, and distributing them to markets where they yield the highest return.

In 2024, global trade in goods and services combined (the global value chains) is estimated to have reached approximately US$33 trillion.[86] The Supply Chain Management (SCM) services market, which includes logistics planning, procurement systems, inventory oversight, and risk management, was valued at US$23.26 billion in 2023 and is projected to grow to $48.60 billion by 2030, at a compounded annual growth rate of 11.2%.[87] This surge reflects heightened demand for smarter, more adaptable systems capable of withstanding geopolitical shocks, pandemics, climate disruptions, and market volatility.

In 2024–2025, companies prioritize innovation to drive optimization (including resilience and efficiency) and compliance, across four key categories: Traceability & Transparency, Resilience & Risk Management, ESG (Environmental, Social, and Governance) & Sustainability. Investing primarily in digital transformation, investment stretch from AI and Blockchain, to Digital Twin. These innovation trends reflect a shift from reactive risk management to proactive, intelligence-driven design. See full overview in *Table 3: Innovation Trends in Supply Chains.*

TABLE 3: INNOVATION TRENDS IN SUPPLY CHAINS

THEME	TECHNOLOGY INNOVATIONS	OVERVIEW
Efficiency	- AI & Generative AI: Automates planning, sourcing, logistics, and decision-making - Cobots & Polyfunctional Robots: Perform repetitive tasks in warehouses and manufacturing - Low-Code Platforms: Enable rapid automation and integration - Multimodal UI: Voice/gesture interfaces for safer, faster interaction - Autonomous Data Collection: Drones and mobile robots for inventory and inspection	Efficiency is the primary driver behind AI, robotics, and automation adoption. It underpins cost reduction, speed, and scalability.

	- Digital Integration: Cloud, APIs, and automation to reduce silos	
Resilience & Risk Management	- AI & ML: Predict disruptions and automate responses - Scenario Planning & Simulation: Digital twins and intelligent modeling - Agentic AI: Autonomous agents for adaptive execution - Big Data Analytics: Forecasting and risk modeling - Cybersecurity Tools: Protect digital supply chains and ensure continuity	Widely discussed in the context of geopolitical instability, supply shocks, and the need for agility.
Visibility, Traceability & Transparency	- IoT: Real-time tracking of goods, conditions, and assets - Blockchain: Immutable records for provenance and compliance - Digital Twins: Simulate and visualize supply chain operations - Control Towers: Centralized dashboards for end-to-end visibility - Ambient Invisible Intelligence: Smart tags and sensors for scalable tracking - Data Governance Tools: Ensure data quality, cadence, and consistency	Visibility is noted as foundational for compliance, customer trust, and operational optimization.
ESG & Sustainability	- Blockchain: Tracks sustainability and ethical sourcing - IoT & Sensors: Monitor environmental conditions and emissions - Scope 3 Emissions Platforms: Collect and integrate supplier data - Electric Vehicles & Telematics: Reduce transport emissions and optimize routes - Supplier Engagement Platforms: Capture ESG metrics and embed them into procurement	Gaining momentum, especially around Scope 3 emissions and regulatory pressure. However, it is less mature and less emphasized than the other themes in terms of current adoption and tech integration.

Synthesis of sources: Gartner 2025, ASCM 2025, KMPG 2024, Microsoft 2024, MAERSK 2024.[88]

Over the past decade, supply chain visibility has shifted from a compliance tool to a strategic necessity. Companies now depend on it not only to meet regulations but to boost

efficiency and gain deeper consumer insight.[89] In 2024, visibility ranked as the #1 logistics trend, with 77% of companies prioritizing investments and 80% pursuing visibility initiatives.[90,91] Yet, only 13% can fully map their supply chains, and even full mapping does not guarantee transparency.

In 2025, AI is driving the most dynamic innovation area in supply chain management, fundamentally reshaping how companies plan, source, fulfill, and govern. From strategic decision making and predictive inventory models to real-time procurement, AI is enabling greater efficiency and responsiveness.[92] GenAI tools now inform decisions at 71% of companies; 85% aimed for full-scale adoption by 2025, and 95% plan to increase investment over the next three years.[93,94,95] Companies who already embedded AI in operation have seen reductions of up to 30% in inventory, 20% in logistics costs, and 15% in procurement spend.[96]

Innovation and transformation in supply chains are increasingly driven by external pressures. The COVID-19 pandemic made resilience a non-negotiable priority, while the tariffs introduced in 2025 underscored continued vulnerability to shocks. Companies no longer equate optimization with efficiency alone, but with the balance of resilience and efficiency - many even placing resilience first.[97] Corporate language has shifted from “lean” operations to “resilient” systems, with optimization and resilience framed around adaptability rather than pure cost savings. In response, logistics leaders are prioritizing diversification and flexibility to withstand tariff pressures, accelerating the adoption of digital twins, scenario simulations, and advanced risk modeling.[98]

While 72% of procurement professionals cite Environmental, Social, and Governance (ESG) and Corporate Social Responsibility (CSR) as top priorities, many still struggle to integrate social and environmental priorities into daily operations.[99] In this context, visibility and digital traceability are emerging as practical enablers of more inclusive, transparent, and sustainable supply chains. The big procurement focus seems to be on sustainability, 62% of CPOs are targeting climate mitigation and 72% are attacking waste reduction and material circularity.[100]

As companies pursue further diversification and redundancies to achieve greater resilience, reliance on MSMEs grows.

Diversification and Inclusion

Supply chain diversification goals extend beyond geography to increase inclusion of suppliers from unrepresented groups. In the United States, supplier diversity initiatives began in the 1970s with mandates like Executive Order 11625, which directed federal agencies to support minority-owned businesses.[101] This has given rise to corporate supplier diversity programs and community-based organizations (CBOs) that curate supplier directories and connect them with buyers.[102] Similar models have since emerged

globally, including South Africa's Broad-Based Black Economic Empowerment (B-BBEE) and the U.K.'s Supplier Diversity Program, embedding diversity goals into both public and private procurement systems.[103]

While these models have increased visibility for diverse suppliers, they have evolved little in over five decades and remain limited in scope.[104] CBOs are often underfunded and overstretched, managing vast supplier lists with limited capacity to offer tailored support. As a result, corporate diversity officers tend to rely on a small pool of familiar vendors, limiting opportunities for new entrants.[105] MSMEs account for 95% of businesses worldwide yet fewer than 20% participate in global supply chains.[106,107] Even where mandates exist, only 10–15% of procurement budgets reach diverse suppliers, with growth slowing to under 5% annually in many markets.[108] Many corporate initiatives operate as pilots or CSR projects, not core procurement strategy, while outdated data systems and fragmented stakeholder efforts further limit scale.[109]

Intergovernmental organizations (IGOs) are also actively working to advance MSME participation in global trade as key enablers of sustainable economic development. As noted, MSMEs account for two-thirds of global employment and 50% of GDP.[110] Every $1 spent on a local business generates 3 times more community economic impact, as local businesses hire local workers, source local goods, and actively contribute to the community's growth.[111] IGOs such as the World Trade Organization (WTO), International Trade Centre (ITC), Organisation for Economic Co-operation and Development (OECD), United Nations Conference on Trade and Development (UNCTAD), and the World Intellectual Property Organization (WIPO) provide policy guidance, developing practical tools like e-commerce readiness assessments, offering training, and promoting inclusive trade policies (e.g., ITC's SheTrades).[112] However, as highlighted in the Trade4MSMEs platform and related guides, the gap between policy advice and practical, on-the-ground impact remains a challenge.[113]

Recent innovations (see Table 2, Key Supply Chains Diversity Innovations) to advance supply chain inclusion and resilience, tend to address discrete issues like compliance or access to credit, without dismantling the structural barriers that keep MSMEs on the margins. For instance, small enterprises may gain certifications or onboarding support but still lack the capital, infrastructure, or procurement access needed to thrive, grow, and go up the value chain. Equity is often treated as a side objective, not a strategic lever, leaving the core dynamics of supply chains largely unchanged.

TABLE 4: KEY SUPPLY CHAINS DIVERSITY INNOVATIONS (2015-2025)

TYPE	DESCRIPTION	EXAMPLES
Traceability	Tools for tracking the origin, sustainability, and compliance of goods across supply chains.	Sourcemap, Chaku Tech, BanQu, 60 Decibels, IBM Food Trust, IntegrityNext, Trase, Acclym
Ecosystem Platforms	Digital or hybrid platforms that connect MSMEs to sourcing, finance, and training resources to foster inclusive supply networks.	Zafin, IDH Farmfit Hub, FS6, Shopify, C2FO, M1exchange, Fauree, Sowit, Opportunity Network , ZipHQ, Fairmarket, Globality, Ipachi, Trustrace
Finance & Credit	AI-powered or mobile-based tools that provide credit scoring, loans, or financing tailored to informal and small enterprises.	Tala, Apollo Agriculture, ILFF, Impact Finance Center, Kiva, Finca, Colendi, Kissht, SoLo Funds, DigiFarm
Supplier Capacity Development	Initiatives supporting operational, financial, and technical capacity of MSMEs to participate in global supply chains.	TRANSFORM, Joseph Business School, SAFIN Network, Ascend, Kinjani, CDL-Supply Chain, Botswana Innovation Hub, Various Accelerators
Regional Trade Infrastructure	Cross-border programs that offer logistics, certification, and infrastructure to support regional trade and supply integration.	AfCFTA Guided Trade Initiative, AUDA-NEPAD, ECOWAS, COMESA, RCEP, CPTPP, CBC-EU, BMWE-ETC
Digital Cooperatives	Tech platforms enabling the formation of virtual cooperatives for better bargaining, logistics, and market access.	Twiga Foods, AgUnity, Tulaa, Namma Yatri, Goswadeshi, Just Coffee Co-Op, FairBnBcoop, SMECooperative
Incentive-Based Finance	Investment structures like blended or pay-for-impact finance tied to measurable	Roots of Impact, ILFF, ARAF (Acumen), Yunus Social Business, Convergence Blended Finance, The GIIN

	inclusion or sustainability outcomes.	
Corporate Inclusion Initiatives	Corporate supply chain efforts that integrate small suppliers and emphasize inclusive or regenerative sourcing.	Nestlé Regen Ag, PepsiCo Regen Ag, Unilever Living Wage, Mars Next Gen Supplier Program, AB InBev Smallholder Sourcing

A Unique Window for Structural Change

Until recently, supplier inclusion and diversification were often treated as charity or compliance work. In 2025, the narrative is shifting: advancing MSMEs is now seen as a critical lever for company optimization.[114] The convergence of shocks and digital transformation has led global leaders to reconsider long-standing models, opening space for questioning, experimentation, and bold redesign.[115]

PESTLE BARRIERS TO INCLUSIVE AND RESILIENT SUPPLY CHAINS

Utilizing the PESTLE framework, we unpack the supply chain management landscape to identify barriers inclusive and resilient trade. While this section highlights the vast majority of activity and its shortcomings, it is essential to recognize that there are innovators actively working to address challenges. Unless indicated otherwise, the insights and analysis in this section are drawn from numerous expert interviews conducted under Chatham House Rule, according to which, quotes and insights are unattributed. For more detailed information, see Appendix A. Interviewed Experts.

PESTLE | Political & Policy Barriers

- **Geopolitical Instability and Protectionism Complicating Trade Flows**

Conflicts, rising nationalism, and fracturing of multilateral trade institutions create volatility that disproportionately affects MSMEs. For instance, US-China tensions have triggered shifts excluding small suppliers from key markets.[116] Over 65% of newly introduced trade-related measures since 2020 have restrictive elements, and this trend is on the rise since 2023.[117] Regional trade agreements like AGOA (African Growth and Opportunity Act), for US-Sub-Saharan Trade face expiration uncertainties, disrupting export routes.[118]

- **Siloed Ministries, Misaligned Political Priorities & Underpowered Regional Action.**

Many national governments lack unified, cross-ministerial strategies to foster inclusive economic development. For example, relevant ministries like, trade, infrastructure, education, and economic development often operate in silos with limited coordination or budgets.[119] Meanwhile, infrastructure investments and industrial policy frequently prioritize large-scale sectors over MSMEs. Regional trade action and hubs, despite their potential, remain underfunded or politically fragmented. For example, the African Continental Free Trade Area (AfCFTA) has faced delays in implementation due to inadequate alignment among national agendas and financing gaps.[120] This fragmentation also prevents the development of localized value chains or regional trade corridors.

- **Corruption Burdens SMEs Most and Deters Trade Partners**

Available data strongly suggests that the smaller the firm is, the more likely it is to be affected by corruption, as a result, their profit margins and very survival are at stake.[121] The most prevalent and well-known form of corruption affecting SMEs is bribery sought by a public official - SMEs frequently face requests for additional payments for services they are entitled to anyway.[122] 60% of MSME managers say all or most companies are involved in bribery to acquire government contracts; 59% of SMEs and their advisors say standing up to bribery and corruption will cost them business trade or opportunities.[123] Transparency International's Corruption Perceptions Index highlights how low-trust environments deter investment and limit small business participation in public procurement.[124] Since SMEs are often the motor for development in societies vulnerable to poverty, the effects of corruption can be devastating.

PESTLE | Economic & Economic Governance Barriers

- **Trust, Familiarity Bias, and Inertia**

Trust is built over time and the human relationship aspect between long-time trusted parties cannot be undermined or ignored. Large corporations rely heavily on trusted, long-standing suppliers, fueled by risk aversion and legacy contracts. Risk-averse procurement systems favor established suppliers with proven track records, creating high barriers to entry for new or diverse businesses. SMEs are often operating informally and many still use only cash, the lack of business records and data deters trust by buyers or financiers, limiting contract eligibility and credit access, for financial institutions, they are considered high-risk.

- **Capacity Gaps and the Financing Paradox**

Most SMEs lack the physical infrastructure, skilled workforce, and quality assurance systems required to compete for large-scale contracts. Increasingly, buyers demand that

SMEs demonstrate capacity in place, or present an immediate plan to establish it, before awarding a contract. Yet financial institutions often require a signed contract before extending credit. Without the credit, the capacity cannot be developed and the contract cannot be awarded. This catch-22 leaves SMEs unable to secure financing nor contracts. Without capital investment in processing centers, laboratories, cold chains, or logistics, even high-quality producers remain locked out of higher-value opportunities. SMEs also rarely influence contract terms, pricing, or standards, and without guaranteed demand, they are reluctant to risk investing in costly capacity upgrades.

Access to Capital, Not its Availability

SMEs face a $5.2 trillion global financing gap every year - not due to a lack of capital, but due to limited access.[125] While over $100 trillion is held in managed assets and numerous financing programs exist, SMEs remain persistently excluded.[126] Without credit histories, transaction data, or strong relationships with financial institutions, they are often deemed too risky. As a result, interest rates for SMEs in many emerging markets exceed 20%, compared to sub-5% rates in developed economies.[127] Cash flow is further strained by widespread delays in payments, with over 60% of SMEs report delays of more than 120 days, contributing to a staggering $3 trillion in outstanding payments globally.[128,129] Meanwhile, development finance tends to be short-term or grant-based, focused more on reporting than long-term business sustainability, with funds routed through intermediaries.[130]

Lack of Financial Literacy and Business Acumen and Trade Know-How

Many SMEs lack the financial literacy, business acumen, and trade expertise needed to compete and grow. Limited grasp of accounting, cash flow, and investment planning undermines their ability to manage resources, while weak strategic and managerial skills restrict long-term growth. At the same time, gaps in trade know-how, such as understanding compliance rules, export procedures, and cross-border logistics, prevent them from accessing wider markets and participating in global supply chains. And, there is no one place that consolidates all that knowledge. Without targeted training and advisory support, these deficits compound, leaving SMEs at a disadvantage.

Navigating a Complex, Opaque System Is a Two-Way Problem

SMEs face a complex, opaque system with limited visibility into buyer needs and requirements. Customized standards, decentralized operations, and informal employment create barriers to compliance, training, financing, and integration into formal supply chains. Administrative burdens are significant: SMEs may spend over 70% of their monthly time completing, submitting, and following up on applications for financing, certifications, or supplier onboarding, diverting attention and resources from core business activities.

We discussed earlier the concentration of the global supply chains, but beyond tier 1 it is extremely fragmented. Smallholders, artisanal producers, and other SMEs are dispersed and diverse, making it costly and logistically challenging to coordinate orders, ensure consistent quality, compliance, and maintain reliable supply. Despite the strong evidence behind SMEs enhancing resilience and innovation, spending on SMEs is low.[131] This is the Long Tail neglect, only 20% of a company's total spend is spread across a massive number of diverse small businesses, accounting for up to 90% of purchases.[132] Large buyers often prefer fewer, larger suppliers that offer scale and predictability, while even aggregated SMEs struggle to achieve economies of scale.

- **Global-Local Trade Opportunities Misalignment**

Even when SMEs have production capabilities, they often struggle due to weak local demand and limited intra-regional trade. In many African nations, for example, only about 15% of trade occurs within the continent, compared with over 60% in Europe.[133] Export-oriented models dominate, meaning raw materials are frequently sent abroad and re-imported as finished goods, inflating costs and reducing local value capture. Domestic markets for value-added products are often constrained by low incomes and limited industrial linkages, making local sales challenging. Many SMEs operate in import-heavy economies where selling processed goods locally is uneconomical. Innovations that rely on imported components may fail because of high costs and poor absorption in local markets, reinforcing dependence on global trade while leaving regional and domestic opportunities largely untapped.

- **Symbolic Inclusion and Fragmented Support**

Despite growing recognition of SMEs' critical role in economic growth, innovation, and resilience, support efforts remain fragmented, short-term, and largely symbolic. Many programs focus heavily on training or awareness-building rather than sustained capacity development. For example, in Ghana, between 2017 and 2022, 66% of Youth-initiatives emphasized entrepreneurship, and only 2% provided direct MSME support, illustrating a gap between recognition and actionable support.[134]

Innovation hubs, incubation programs, and industry support initiatives also face coordination challenges, unstable funding, and misalignment with local market needs. Many programs are structured as short-term pilots or fragmented training sessions, often reaching only a limited subset of SMEs. Impact assessments frequently rely on activity-based metrics, such as the number of suppliers onboarded, or emphasize short-term reporting, rather than measuring outcomes like income growth, business resilience, market integration, or local value capture. As a result, even well-intentioned initiatives often fall short of generating sustained improvements for SMEs.

PESTLE | Social & Cultural Barriers

Entrenched Power and Resistance to Change

Elite interests and entrenched economic structures often protect powerful incumbents, reinforcing existing power dynamics and creating a zero-sum perception in which gains for new or smaller suppliers are seen as losses for established players. Moreover, export-dependent economies and rigid supply chain practices frequently resist transitioning to value-added production and inclusive procurement, prioritizing efficiency and control over broader economic development. In Ghana, for instance, approximately 80% of cocoa is exported in raw form, rather than being processed locally into chocolate or other finished goods. This reliance on raw exports not only forfeits billions in potential value addition but also constrains industrial development, reinforces extractive economic models, and perpetuates dependence on global markets.

2020-2024, many companies experimented boldly with new business models, digital tools, and more inclusive sourcing practices, testing ways to disrupt entrenched supply chains and drive resilience. However, the experience of 2025 demonstrated the fragility of these innovations in the face of persistent structural pressures, economic shocks, and institutional inertia. As a result, many firms retreated to a more risk-averse culture, prioritizing familiar practices over experimentation; this reinforces the dominance of established incumbents.

Relationships and Networks: Who You Know Matters

Entrepreneurs from marginalized backgrounds often face barriers not just in resources, but in access to critical networks, spaces, and relationships that enable business growth. They may be excluded from corporate offices, industry events, global summits, and elite educational institutions, venues where high-value deals are negotiated, strategic knowledge is shared, and partnerships are formed. This exclusion limits their visibility to potential buyers and investors and restricts their ability to learn from the field. These relational and spatial barriers reinforce inequalities and prevent many SMEs from participating fully in higher-value segments of the economy.

Access to Vocational Education & Training

Access to formal education, vocational training, and business development programs remains highly uneven, particularly in rural or underserved regions. For example, digital literacy among SMEs in Sub-Saharan Africa is in high demand, but less than 7% use a smartphone, less than 6% use a computer, and roughly 20% still do not use a mobile phone.[135,136] Many lack exposure to strategic tools and programs teaching growth planning, government contracting, and international procurement systems, this constrains the ability to find and leverage opportunities.

- **Gendered and Generational Constraints**

Entrepreneurship opportunities are shaped by both structural barriers and societal biases. Globally, women own approximately 32% of formal SMEs, reflecting persistent challenges and bias in access to finance, land, legal recognition, and professional networks.[137] Representation tends to be far lower in high-income countries, highlighting regional disparities.[138] Young entrepreneurs often face perceptions of inexperience or lack of credibility, with youth unemployment rates exceeding 30% in Middle East and North Africa regions.[139, 140] Older entrepreneurs are often stereotyped as less capable of innovating and creating successful new ventures, the cutoff age is said to be 32.[141] Collectively, these structural and societal biases result in key segments of the population underrepresented in economic growth and value chains.

- **Language and Cultural Mismatches**

Business platforms, tools, and support programs are frequently designed around dominant languages (English, French) and Western business practices. These misalignments can limit adoption, reduce effectiveness, and prevent SMEs from fully leveraging resources, networks, and market opportunities.

PESTLE | Technological Barriers

- **Technology Misaligned: Designed for SMEs or Corporate, Not Both, and Often for the Wrong User.**

Nearly 3 billion people are offline globally, while many digital solutions are designed for high-bandwidth,[142] enterprise environments, rather than low-bandwidth or mobile-first contexts. Tools are often developed without consulting end users, resulting in solutions that are expensive, overly complex, or irrelevant for SMEs. For example, sophisticated sensors and software for measuring carbon output or supply chain compliance are typically designed for large corporations, yet SMEs are those expected to purchase and operate these tools, which they cannot afford or lack the skills to use effectively. Meanwhile, AI applications in procurement and logistics often encode biases or favor larger firms with cleaner, structured data, keeping the invisible SMEs excluded.

At the same time, there are effective models for tracking and tracing that have existed for decades, the postman or traditional ledger systems, for instance, demonstrating that simple, reliable methods can work. With today's technology, these models could be digitized and scaled efficiently, yet current tools are rarely designed with the user in mind, leaving SMEs without accessible solutions.

Siloed Systems

Many traceability, procurement, and reporting tools and platforms operate in silos, forcing SMEs to manage each customer individually. Each corporate buyer, regulator, or grant-making body often has its own platform, custom standards, reporting formats, and identification codes, requiring SMEs to duplicate efforts and maintain multiple parallel systems. This fragmentation significantly increases administrative burdens, creates opportunities for errors, and limits transparency. Even as digital transactions grow, the lack of interoperability keeps SMEs isolated from streamlined supply chain processes and integrated market opportunities.

Data Gaps: Invisible Beyond Tier 1

Current traceability systems and digital infrastructure rarely capture data at the farming, extraction, or upstream production level. In industries like cotton or cashew, traceability often begins only after raw materials have been processed, rendering upstream labor and smaller suppliers effectively invisible. SMEs beyond tier 1 are frequently overlooked, marginalized, or assumed “untrustworthy”. This data gap reinforces systemic exclusion, as procurement, certification, and financing systems rely on documented histories that many upstream SMEs cannot provide.

Data Ownership and Asymmetry

Data asymmetry strips SMEs of the ability to build credit histories, prove compliance, or negotiate directly with buyers - locking them into dependent relationships. Operational and compliance data is usually captured and controlled by intermediaries, brands, or large corporate buyers. Legal and procurement teams often resist granting SMEs ownership or even shared access, fearing a loss of leverage and profit. The result is inefficiency and exclusion: SMEs remain cut off from the very data flows that determine trust, value, and market access. Even when capacity is strong, this imbalance of data control entrenches marginalization and prevents moving into direct trading relationships.

Algorithmic Sorting and Bias

Even when digital platforms are intended to create equitable opportunities, the algorithms and sorting mechanisms they use can inadvertently reinforce inequality. For instance, procurement, marketplace, or traceability platforms often prioritize suppliers based on historical performance, structured data quality, or compliance metrics, factors that favor larger firms or well-documented, larger SMEs. Smaller or newer SMEs, particularly those from marginalized regions, may be deprioritized or hidden from view, limiting their access to contracts, financing, or visibility. Over time, this creates a self-reinforcing cycle: those already advantaged gain more opportunities, while the very SMEs the system is meant to

support remain excluded. Without deliberate attention to algorithmic fairness, such "equity-focused" tools can unintentionally entrench existing disparities.

PESTLE | Legal and Regulatory Barriers

Compliance and Reporting Burdens

Mandatory compliance due diligence is on the rise, targeting multinational corporations, but the burden is increasingly transferred to SMEs. Active regulations such as the EU's Carbon Border Adjustment Mechanism (CBAM) and Corporate Sustainability Reporting Directive (CSRD) require extensive reporting on carbon content throughout the value chain.[143] One multinational has already invested $18 million to automate carbon reporting with another $50–60 million projected.[144] For an MSME exporting to a European buyer, Carbon reporting, including, carbon audit (Scopes 1–3), carbon accounting software and tools, third-party verification and additional corporate compliance requirements (like cybersecurity), can cost $30,000-$66,000 per year.[145] These costs represent a substantial burden for small businesses with limited cash flow and competing operational priorities.

The compliance burden extends beyond regulation. Large buyers now demand adherence to a patchwork of corporate standards covering cybersecurity, labor rights, human rights due diligence, and supply-chain traceability. Full ESG certification costs often run into thousands of dollars annually. In cybersecurity, corporate procurement teams increasingly require SMEs to meet enterprise-grade protocols. For SMEs, these compliance requirements without support can shut out also those who have the needed capacity.

Cross-Border Bureaucratic Disparities

Cross-border gaps in infrastructure and governance weigh heavily on SMEs in underserved communities. Exporting from low-income countries is on average 57% more expensive than from high-income countries, largely due to slow customs clearance, outdated ports, and complex bureaucratic procedures.[146] In Namibia, for example, fish exporters spend 120 hours navigating border procedures compared to just 36 hours for meat exporters in Australia, and completing documentary compliance takes 13 times longer.[147] These inefficiencies, combined with high administrative costs, inconsistent enforcement and even corruption, hinder even the SMEs capable of meeting regulatory and corporate standards.

Legal Corporate Resistance to Data Sharing

Corporates frequently cite intellectual property concerns as a reason for limiting data sharing, which can stall transparency and hinder trust-building with SMEs. Despite public commitments to traceability and responsible sourcing, many companies resist full supply chain transparency to protect profit margins and maintain control. Legal and procurement

teams often block contracts that would grant SMEs ownership of or access to operational and compliance data, effectively restricting smaller suppliers from participating fully in global value chains. However, newer companies have already moved away from trade-partner secrecy, recognizing that their competitive edge lies in design and innovation rather than withholding information.

■ Legal Vulnerabilities

It often begins with SMEs having little to no say over contract terms and conditions. Contracts frequently include late-payment clauses, shifting expectations, or other provisions that small suppliers have limited power to challenge, while constrained legal awareness and access to justice leave them vulnerable to exploitation and unfair agreements. As noted, informal labor arrangements are widespread and rising, leaving many workers without social protections or legal recourse. This lack of formal recognition also hinders unionization and collective bargaining, further limiting workers' ability to improve their working conditions.

Cooperative business models can empower small-scale producers by pooling resources, sharing knowledge, and increasing bargaining power in markets. However, they frequently encounter legal barriers that restrict access to credit, land, or export licenses, limiting their ability to formalize, scale, or participate in supply chains.[148] Insecure land tenure, particularly in Indigenous and rural communities, further constrains investment, as it prevents the use of land as collateral or the development of essential infrastructure.[149] Together, these legal and structural barriers create a fragile operating environment for SMEs.

PESTL**E | Environmental Barriers**

■ Smallholders Most Vulnerable to Climate Shocks

Smallholder farmers and last-mile producers are highly exposed to climate disruption, facing droughts, floods, and wildfires that damage crops, block logistics routes, and raise transportation and insurance costs. In many high-risk regions, essential resilience infrastructure, such as cold storage, irrigation systems, and all-weather roads, is lacking. Current estimates suggest that post-harvest losses in fruit and vegetables can reach 50% in Africa, 44% in South Asia, and over 40% in Latin America.[150] In the United States, small-scale farmers often lack access to crop insurance and disaster relief, leaving them more vulnerable to the increasing frequency and severity of extreme weather events.[151] Limited cash flow and the absence of formal safety nets make it difficult for these farmers to invest in adaptive measures or recover from climate shocks.

CORE PROBLEMS PREVENTING RESILIENT, FAIR, SUSTAINABLE TRADE

The ‘Core Problems’ are the key levers that competition will ultimately work to bring us closer to the vision of a world in which global supply chains are resilient engines of community prosperity - from economic to sustainable impact. To identify the core problems we analyze the drivers, trends, and barriers and harness the power of collective minds (see Appendix A. for details). The analysis of the core problems helps inform the competition focus (‘prize direction') as well as criteria, targets, and tests.

■ Structural disconnect: highly visible and concentrated at the top (tier 1), extremely fragmented and opaque below

Global supply chains are highly concentrated at the top - 80% of global trade is linked to ~100,000 transnational corporations, the top 10% capture 80% of profits, and the top 50 generate 28% of global GDP. But below, at Tiers 2-4 and vis-a-vis Tier 1, the value chains are deeply fragmented, operating through siloed networks where actors are largely invisible to one another. Visibility is typically one-way and often stops at Tier 1, which is highly concentrated and consolidating, while Tier 2-4, and beyond, are incredibly fragmented, leaving most SMEs “below the radar” of buyers, financiers, and regulators. Relationships often rely on decades-old personal ties, family connections, or long-standing contracts, and even grant-making organizations and intermediaries struggle to identify and reach those most in need.

Each actor, from corporations and regulators to international organizations, maintains its own systems, reporting requirements, and application processes, often with customized variations of industry standards. This patchwork creates a maze of incompatible codes, data formats, and portals, often consuming in some months well over 70% of an SME’s time. The consequences are significant: credible suppliers go undiscovered, corporations miss opportunities to diversify and de-risk operations, SMEs cannot access contracts or financing, and donors fail to allocate resources effectively. Ultimately, critical opportunities are lost.

■ Supplier diversification: Small businesses fuel resilience and economic impact but missing

SMEs make up 95% of all businesses globally, and in some countries, like the U.S., as much as 99%. Worldwide, they generate two-thirds of jobs and contribute 50% of GDP, positioning them as the backbone of community economic development. Beyond their scale, SMEs strengthen local economies in ways large corporations cannot. Every $1 invested in local businesses delivers three times more community impact. They tend to reinvest earnings locally, create pathways to fair wages, and embed sustainable practices

that reflect the needs and values of their communities. In doing so, SMEs foster resilience, inclusive growth, and long-term prosperity.

Yet, despite their outsized economic, social and environmental impact, SMEs remain largely absent from global trade. Only about 20% participate in global value chains, and account for just 10–15% of companies' spend. They are often confined to the lower tiers (3 and 4) of supply chains, where earnings are minimal. Expanding SMEs' access to global trade has an economic, social, and environmental imperative, while also presenting an opportunity to optimize trade systems and increase trade resilience.

Historically, SME inclusion has been treated as philanthropy or a CSR/ESG "nice to have," rather than a core business imperative. Funding has been limited, programs narrow in scope and timeframe, and initiatives frequently the first to be cut during downturns. But today, the strategic value of SME integration is undeniable - corporations are increasingly focused on optimization and diversification, recognizing that a diversified supplier base is a competitive advantage - strengthening business and innovation. However, long-tail supplier management remains costly and complex, especially in light of rising compliance demands, deterring expanding diversification to more than just 2-3 suppliers.

- **Information and trust gaps: strong incumbents, secrecy norms, and uneven trade know-how**

Global supply chains rely heavily on trust built over years, even decades, with established suppliers. These long-standing relationships, reinforced by performance data, compliance records, and financial histories, enhance efficiency but also entrench incumbents. Powerful actors have little incentive to open doors to new entrants, and large buyers often prefer the certainty of existing relationships.

Many SMEs, particularly in the Global South, operate without formal systems for accounting, transaction histories, or quality documentation. This lack of verifiable records undermines credibility, prevents compliance with sustainability regulations, and increases perceived financial risk. Financial institutions frequently respond with 20% and higher interest rates or deny financing altogether.

Recent regulatory trends, speered by Europe, now require full visibility, traceable proof of origin down to the farm plot and full lifecycle emissions. Without digital records or geolocation data, SMEs are effectively blocked from these key markets. Even in less regulated sectors, the absence of verifiable revenue histories excludes SMEs from fintech lending algorithms. Without transparent operations and measurable performance, SMEs remain invisible and untrusted.

Beyond trust and verification, SMEs face steep capability gaps. While many entrepreneurs have strong product expertise, few have access to the full spectrum of business, financial,

and regulatory knowledge required to navigate global trade - financing instruments, logistics, customs, sustainability standards, buyer audits, and more. Support programs exist but are fragmented, underfunded, and hard to access, leaving most SMEs to face these challenges alone. The result: they remain invisible, untrusted, and locked out of opportunity, even as demand for diversification grows.

- **Financing catch-22: capacity is required for contracts; but SMEs need a contract to finance building capacity**

For many SMEs, breaking into high-value supply chains is constrained by corporate expectations for scale, consistency, and quality. Winning contracts requires demonstrating the ability to deliver agreed quantities, at uniform quality, on time, across multiple cycles. Yet to build that capacity, SMEs need financing, but without existing contracts to serve as collateral, banks view them as high-risk and are reluctant to provide loans for essential investments in equipment, infrastructure, or workforce development.

This creates a catch-22: SMEs must prove capacity to secure contracts, but contracts are the very mechanism that unlocks financing to build that capacity. As a result, even highly competitive SMEs are shut out of procurement pipelines, leaving their potential unrealized, local economies underdeveloped, and corporations missing opportunities to diversify, de-risk, and strengthen their supply chains.

- **Fragmented, misaligned innovation across sectors and actors - reinforcing structure**

A rapidly growing array of technologies, from compliance and ESG tools to AI-driven forecasting and digital twin simulations, is emerging, but they are often designed for corporations and imposed on SMEs, creating friction and misalignment. Carbon measurement, traceability, and ESG reporting tools are increasingly mandatory for global supply chain participation, yet remain costly, complex, and poorly aligned with SME realities. Primarily built for corporate or regulatory compliance, they demand specialized knowledge, costly audits, high-speed bandwidth, and resources most SMEs simply do not have.

At the same time, effective models for tracking and tracing have existed for decades—simple, reliable systems like postal networks or paper-based ledgers show that traceability is possible without complex technology. With today's digital tools, these models could be digitized, scaled, and made widely accessible. Yet current solutions are rarely designed with SMEs in mind, leaving practical, user-friendly systems out of reach and widening the gap between the promise of technology and the realities faced by small businesses.

While sourcing, verification, and reporting challenges are common across sectors, efforts to address them remain siloed and misaligned, forcing SMEs to navigate multiple disconnected systems. Platforms often serve either SMEs or corporations but rarely both, leaving trust, data, and opportunities trapped in silos. Many small producers struggle to generate verifiable data on transactions, quality, sustainability, or compliance, blocking access to contracts, financing, and global markets. Emerging regulations such as EUDR, CSDDD, and CBAM amplify these barriers, reinforcing exclusion and limiting small-scale participation in global trade.

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Global trade is at a crossroads.

From pandemics to geopolitical tensions and climate shocks, the weaknesses of the “just-in-time” model have been laid bare. Today, businesses are pivoting toward optimization, a strategic balance of resilience, agility, and cost-efficiency, driven not just by crises, but by mounting regulatory pressure and consumer demand for transparency and ethical and sustainable sourcing and conduct.

Yet for all this change, systemic barriers remain. Fragmentation, concentrated power, and knowledge gaps continue to keep small businesses on the sidelines. These businesses, the lifeblood of local economies, are exactly what the global supply chain needs to be stronger, more adaptable, and fairer.

2025 has been a challenging year for global trade, marked by uncertainty and rapidly shifting conditions. Yet it also presents a rare opportunity for transformative action that could redefine how global trade operates. The next chapter will explore prize directions and outline recommended strategies to transform global supply chains into resilient engines of trade and community prosperity.

COMPETITION OVERVIEW

$10M XPRIZE Trade Exchange is a 3-year competition to transform trade modus operandi.
From fragile, opaque, secretive, and fragmented,
To resilient, open, collaborative, and inclusive.

XPRIZE TRADE EXCHANGE

Where Supply Chains Connect, Optimize, and Thrive

Empower All
Small businesses rapidly verified and contract-ready

Connect All
Suppliers, buyers, financiers, regulators, accelerators, etc.

Trust & Visibility
Live operational visibility and accountability

Optimize
Smart tools match, comply, standardize, customize, adapt

Plug & Play
Seamless integration across platforms, no costly builds



Teams will Develop the World's First Shock-Resistant Trade Exchange, by integrating frontier tech, including:

- Tracking: real-time visibility & automated compliance
- AI Tutors: smart tools for contract-ready small businesses
- Agentic Platforms & On-Chain: open, secure core infrastructure, distributed, coordinated operations
- Ontology Systems & Knowledge Graphs: informed, coordinated decision
- Cloud & Edge Computing: interoperable, distributed integration

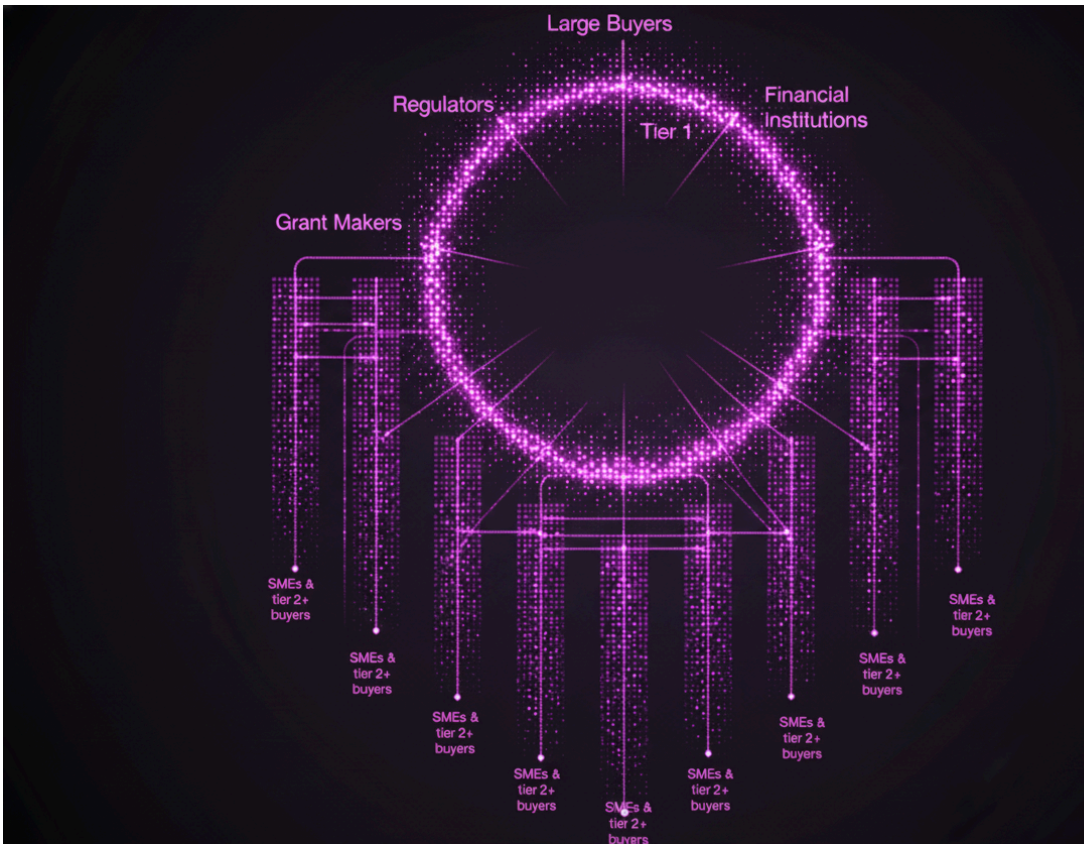
The Winning Team will deliver a highly optimized exchange that drives ≥20% sustainable small-business revenue growth, halves supply-chain management time, and reroutes disruptions within one week.

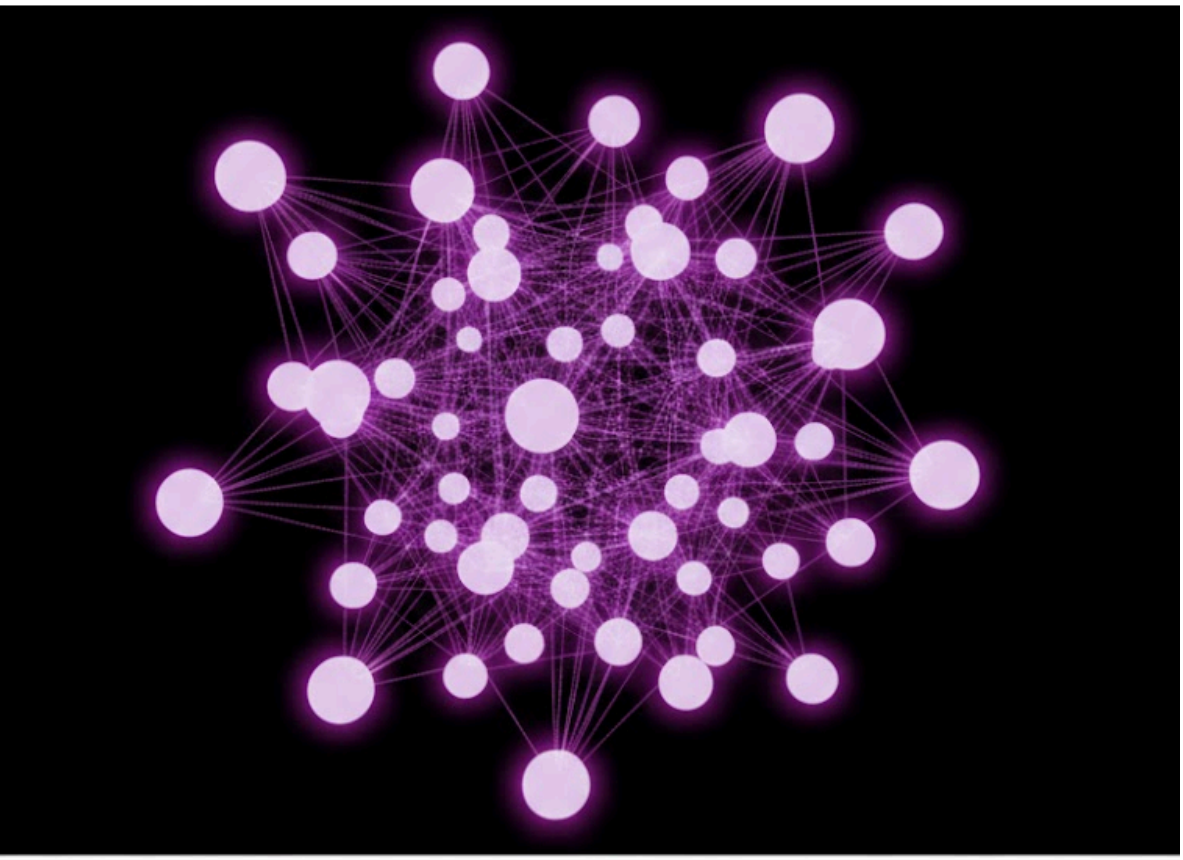
Testing & Judging (Finals Demo)

Over 12 months, team will operate a secure exchange with 1,000+ verifiable SMEs (≥50% underserved) and 200+ buyers and ecosystem actors:

- SMEs verified and contract-ready within 14 days through a single profile
- Halve long-tail management and verification time
- 20%+ SME total revenue growth with 50%+ securing repeat business
- Strongest economic impact: jobs, margins, and tax revenue growth trajectory
- ≥95% accuracy in (near) real-time risk alerts and forecasts
- Reroute disruptions within one week

EMPOWER + INTEGRATE

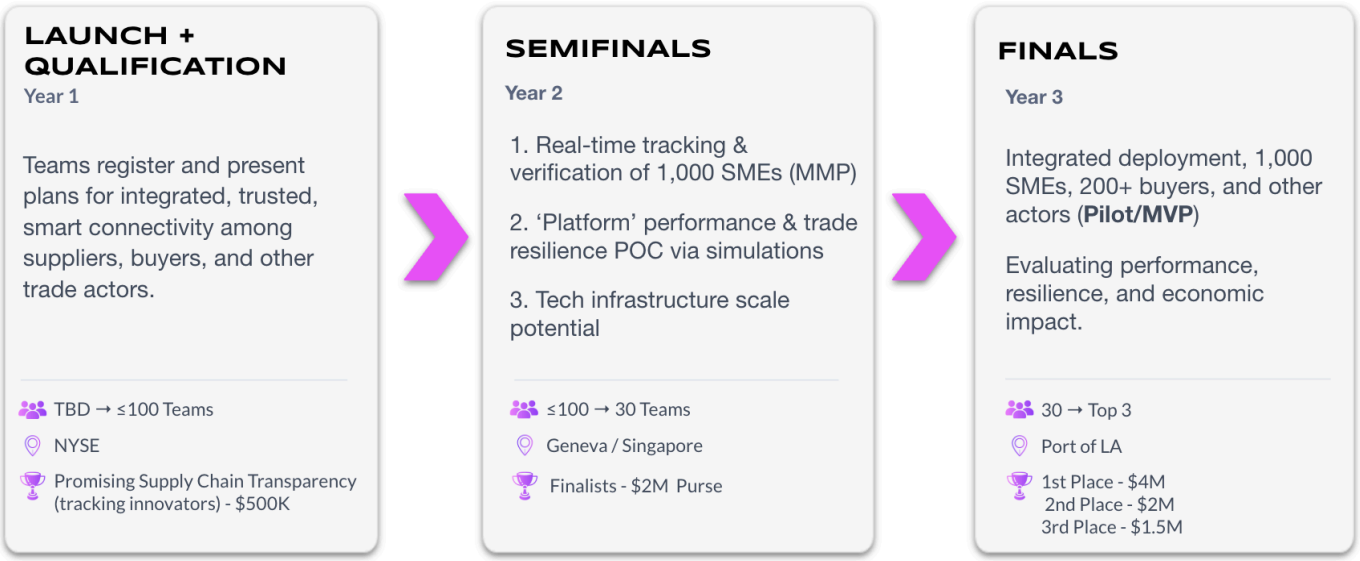




OPERATE + SCALE

TESTING + EVALUATION ROUNDS

This competition integrates frontier technology with behavioral change, deliberately structured to maximize strategic engagement of key trade actors.



- NYSE Launch: Engage sustainable, ethical, innovation-focused investors and buyers leading ESG integration.

- Geneva / Singapore (Global Hubs): Facilitate high-level dialogue with cross-border trade stakeholders.

- Port of LA: Drive practical adoption among major buyers and suppliers operating under regulatory pressure for sustainable supply chains.

- Post-Competition: Market mainstreaming

Teams are encouraged to strategically identify and onboard suppliers and buyers to their solutions in order to deliver impactful demonstrations that support rapid adoption and scaling far beyond the competition timeline. To ensure teams empower small businesses strategically, the XPRIZE Trade Integrity Framework should be shared with prospective teams in the competition guidelines.

Qualifying Submission

> Evaluating: all teams

> Moving Forward: 100 Semifinalists

> Bonus Prize: $500K awarded for promising Supply Chain Transparency (tracking innovators), per judges' discretion

Teams will submit written submissions detailing their proposed solution. Judges will weigh solution pathway promise holistically against the overall aims of the competition, including:

- The proposed solution rationale, including a description of the challenges it aims to address
- The degree of innovation with respect to the evaluation criteria
- The team's ability to meaningfully demonstrate capabilities within the prize timeline, including detailing their plan to integrate technologies and run integrated operations
- Challenges that may hinder the demonstration of solutions, including capital needs
- Scalability pathways throughout and following the competition

Semifinals

> Evaluating: Up to 100 Teams
> Moving Forward: Up to 30 Teams
> Prize Purse: $2,000,000, equally divided among Finalists

The Semifinals phase is designed to rigorously stress-test each team's system capabilities across three core areas: real-time transparency, system resilience, and potential scalability.

The first element, Real-Time Tracking and Verification of 1,000 SMEs, represents a Minimum Marketable Product (MMP)–level demonstration. Over the course of a year, teams will build the relationships and integrations necessary to provide verified visibility into 1,000 SMEs. During the three-week testing period, judges will cross-reference real-time dashboard metrics and timestamped database logs with on-the-ground realities. Verification is conducted via remote audits, issuing 100 random sample challenges that require SMEs to provide immediate, live demonstrations of specific data via WhatsApp video. Results are synthesized during Week 4, with support from auditing partners such as Deloitte.

The second element, Platform Performance and Resilience, represents a Proof-of-Concept (PoC)–level demonstration in which teams are evaluated on both functional performance and operational resilience and recovery. Assessment relies on digital twin simulations hosted locally by the teams at their respective sites. All teams receive the same baseline dataset with embedded, scripted disruptions, exposing their platforms to realistic, multi-layered shocks—including cyber, geopolitical, and climate-related events applied in tandem. Throughout the four-week testing period, performance metrics are streamed in real time to a centralized leaderboard. Simulation scenario design may be supported by partners such as Georgia Tech and MIT, while datasets and disruption inputs may be complemented through partnerships with organizations such as FedEx or UPS.

The final element, Technical Infrastructure Scalability Potential, is evaluated through a detailed paper submission. This review examines critical scaling vectors, including system modularity, throughput (TPS/RPS), compute scaling, data storage, network architecture, deployment models, and security (attack vectors). At least three technically expert judges assess the solution's long-term viability and readiness for global-scale deployment.

Upon completion of the testing period, teams and Judges will gather at the centralized test site for their respective Testing and Judging Summits, prior to the announcement of finalists.

Finals

> Evaluating: Up to 30 Finalists
> Prize Purse: $7,500,000
1st Place: $4,000,000
2nd Place: $2,000,000
3rd place: $1,500,000

The Finals phase will bring the top 30 teams from the Semifinals into a real-world Pilot/MVP deployment over a 12-month period. Teams will operate their solutions among 1,000 SMEs, 200+ buyers, and other trade actors, creating a fully integrated, multi-way trade facilitation ecosystem. During this phase, teams will be evaluated on performance, operational resilience, and economic impact.

Teams will deploy their solutions in a cloud-enabled, integrated environment, ensuring seamless connectivity and visibility across SMEs and buyers. Systems must support secure onboarding, real-time tracking, and multi-stakeholder interactions. Throughout the deployment, teams are required to maintain time-logged reports and real-time dashboards documenting system performance and engagement metrics.

Performance and resilience will be evaluated using a triangulation principle, including automated dashboards, logs, and remote SME audit. Judges and auditors will have secure, read-only access to team systems, and remote audits will validate compliance metrics. Reported data will be cross-checked against benchmarks and anomaly detection methods. Potential testing partners include accounting firms like Deloitte for auditing, and cloud providers such as AWS for direct data access and collection.

Economic impact will be measured through the value of contracts, revenue streams, and other trade activities, capturing direct, indirect, and induced effects across the ecosystem. Teams will use Economic Impact Analysis as defined by the U.S. Bureau of Economic Analysis (BEA), along with standardized templates such as RIMS II or optional commercial tools like IMPLAN, to quantify the total economic effect of their solution. At least three judges with economic expertise will validate results.

Throughout the deployment, teams will submit quarterly reports detailing SME performance, transactions, and system metrics, culminating in a final annual report summarizing overall performance. During the first two weeks of the evaluation window, judges will review operational performance while teams prepare their economic impact reports. In the final two weeks, judges will evaluate the economic impact reports. During the last four weeks, teams and judges will travel to a centralized site for the Team and Judging Summits at the Port of Los Angeles, culminating in the announcement of the Top 3 winners and the awards ceremony.

TABLE 5: EVALUATION CRITERIA - DEMONSTRATION ROUNDS

Screening criteria builds the foundation of a trustworthy, interoperable, open trade platform; **scoring** criteria identifies which teams best use that foundation to deliver breakthrough economic impact, resilience, and buyer–supplier value.

CRITERIA	INDICATOR	SEMIFINALS	FINALS
Empower	Multi-Way Visibility	**- Screening:** Track/trace 1,000 SMEs (IFC definition), at least 50% SMEs from "valley-of-death tiers (tier 3 and under, hard to scale from tiers) Teams are advised to strategize who to recruit in order to yield the greatest economic impact for their MVP demonstration in Finals. **- Screening:** Create a shared economic ecosystem where anyone can be a buyer and/or supplier:	Create as shared economic ecosystem where anyone can be a buyer and/or supplier: **- Screening:** Onboard the 1,000 SMEs and 200 buyers and other actors (incl. financiers, certifying bodies, grant making orgs, and regulators) **- Screening:** At least 50% SMEs from "valley-of-death tiers (tier 3 and under, hard to scale from tiers) **- Screening:** Participating companies to share near real-time inventory and capacity data to be shared with contract ready SMEs in an anonymous, aggregated manner (e.g., X amount of Y quantity in North America)
	Contract Readiness	**Screening:** Upload to 'Platform' synthetic data (provided by XPRIZE): - 1,000 SMEs, at least 50%	**- Screening:** SMEs are contract-ready within 14 days (SME Procurement-Ready Enterprise Showcase, see details under criteria rationale). **- Screening:** SMEs submit one standardized profile

		SMEs from “valley of death tiers” (tier 3 and under, hard to scale from tiers) - SMEs are contract-ready, with one standardized profile for system-powered buyer/stakeholder-specific customization (including support to multi-language and multi-currency) - 200 buyers and other actors (incl. financiers, certifying bodies, grant making orgs, and regulators),	for system-powered buyer/stakeholder-specific customization (including support to multi-language and multi-currency)
Trust & Safety	Data Verification	**- Screening:** Automated compliance checks against XPRIZE Trade Integrity Framework	
	Data Security	**- Screening:** Zero data breaches reported annually	
	Privacy	**- Screening:** Privacy-by-design data architecture that applies data minimization principles. All Personally Identifiable Information (PII) and Commercially Sensitive Data (CSD) must be protected and, where possible, kept separate from public or shared environments. The system should use cryptographic or equivalent privacy-preserving methods and anonymized, aggregated data to ensure transparency, auditability, and compliance with privacy ethics and data subject rights (e.g., the Right to be Forgotten).	
Unlock Opportunities	Long-Tail Optimization	**- Screening + Scoring:** ≥50% faster supplier discovery time, within 3 months (current	

		average is 3-6 months)	
		- Screening + Scoring: ≥50% faster buyer-specific compliance verification, within 90 days (current average is 180 days)	
	Economic Impact		**- Screening + Scoring:** Increase SME total revenue the most, at least ≥20% **- Screening + Scoring:** ≥50% of SMEs secure repeat contract and/or credit and/or investment (indicates business sustainability and growth) **- Scoring:** Path to profitable revenue (margins), greatest jobs growth, and tax revenues (state, local, and federal when applicable): ≥15,000 new jobs, meet or exceed local living or national minimum wage (whichever higher); extrapolated via contracts' value and time
Resilience	Adaptive Supply Chains	**- Screening + Scoring:** Real-time supply risk alerts with 95% accuracy; Scoring for predictive, advance warning	
		- Screening: Disrupted supply rerouted within a week.	
Scaling Considerations	Interoperability	**- Screening:** Integrates with cloud (to access ERPs), XPRIZE to offer a cloud partner, but allow teams the option to integrate to their preferred cloud.	

	Technical Infrastructure Scalability Potential	**- Screening:** Capable of scaling; submit plan detailing: System modularity / decoupling, Throughput (TPS / RPS) & latency, Data storage & state management, Compute scaling (CPU/GPU, autoscaling), Network & connectivity, Deployment model (cloud / hybrid / edge), Attack Vectors	

CRITERIA AND TARGETS RATIONALE

The evaluation criteria, indicators, and targets are grounded in background research and have been developed and validated through extensive consultations with globally recognized experts (see *Background + Analysis Chapter* and *Appendix A: Expert Ecosystem*).

Each category, along with its associated indicators and targets, is designed to address the identified Core Problems, aiming to transform trade into an open, inclusive, fair, and resilient system. Unless otherwise noted, the insights presented here are drawn from expert interviews and workshops (see *Appendix A: Expert Ecosystem*).

1. Empower

1.1 Multi-Way Visibility among 1,000+ SMEs (at least 50% Underserved) and 200+ buyers and other actors

Multi-Way Visibility is designed to prove that open, collaborative, and trusted trade is commercially viable at a meaningful scale. Multi-way information sharing is critical for the success of this future exchange. While it is required, we acknowledge that it must be implemented with the highest respect for privacy, security, and commercial confidentiality. Thus, the system must include a robust aggregation and anonymization function that enables the safe exchange of trade-facilitating information among all parties with confidence.

Today's supply chains depend on information asymmetry and a narrow set of incumbent partners, limiting competition, innovation, and SME inclusion. Multi-directional transparency, protected by secure data structures - breaks this pattern. SMEs gain access to demand signals and opportunities previously out of reach, while buyers gain a wider pool of contract-ready suppliers. Crucially, transparency does not require exposing sensitive information. Aggregation and anonymization ensure companies can participate openly while maintaining confidentiality wherever needed.

Requiring each team to **track and engage 1,000 SMEs and 200 buyers and other actors** strikes the balance between being ambitious enough to demonstrate real market potential and achievable for today's leading innovators. The hardest part of this challenge is not technical - it is relational. Building the partnerships, trust, and workflows required to track 1,000 SMEs is itself transformative for driving ethical, sustainable, and resilient trade. This is why the competition allocates a full year for teams to meet this milestone.

Ensuring that **at least 50% of SMEs** (IFC definition, see *Table 6*) **come from 'valley-of-death tiers'** (hard to scale up from tiers, Tier 3 and below) ensures the platform empowers the businesses most often excluded from global markets - unlocking

opportunity where it is most needed and where the economic multiplier is highest. Teams are encouraged to strategically recruit the organizations that will generate the greatest economic impact for their Finals MVP demonstration.

TABLE 6: SME DEFINITION IFC, 2025[152]

INDICATOR	TOTAL ASSETS US$	ANNUAL SALES US$
Small enterprise	$100,000 - <$3 million	$100,000 - <$3 million
Medium enterprise	$3 million - $15 million	$3 million -$15 million

> Considered and excluded:

- **The number of employees in SME definition** is intentionally excluded due to evolving enterprise models and technology-driven efficiencies; employee count is no longer a reliable indicator of business size or economic capacity.[153]
- **Micro enterprises (by asset size) in SME definition** are intentionally excluded to focus on delivering a powerful showcase of solution performance, setting the stage for a preferred future where all trade actors participate in the Trade Exchange. While micro enterprises are vital to local livelihoods, their structural constraints limit their ability to secure contracts within the competition timeframe. By prioritizing small and medium enterprises, the competition aims to generate credible proof points with meaningful community-level economic impact, forming the foundation for a post-competition platform that ultimately serves all trade actors - from micro enterprises to Fortune 100 companies.

> Considered and excluded: Targets of 5,000 or 10,000 SMEs per team were too ambitious for the competition timeline.

> Considered and excluded: Requiring at least 50% of SMEs to be from low- and middle-income countries. Supplier-diversity challenges are global, and in many high-income countries diverse representation is often even more constrained. Given current market dynamics, including rising protectionism, we chose to exclude this requirement and instead focus on empowering SMEs in hard-to-scale-from tiers, namely, Tier 3 and under.

1.2 Contract Readiness

Readiness focuses on ensuring SMEs are rapidly prepared to begin operations - a fully established Contract-Readiness Profile within 14 days, demonstrating their credibility and compliance to engage with buyers.

The Contract-Readiness Profile acts as a buyer-facing “shopfront” and includes:

- Product/Service
- Quantity (available volumes)
- Price
- Time to delivery
- Credibility and Compliance per the XPRIZE Trade Integrity Framework, covering: License to Operate, Quality, Safety (OH&S), Safety (Cyber & Data), Sustainability, Ethics & Labor, Governance, and Resilience. See *Appendix A. XPRIZE Trade Integrity Framework* for full details.
- Financial health

Central to this is the requirement for one standardized, system-customizable profile for each MSME, supporting multi-language and multi-currency functionality. At present, SMEs could spend over 70% of their time each month navigating massively variable applications, codes, and customized standards, creating a major barrier to participation. By simplifying and standardizing the profile, SMEs can focus on their core business, growth, and delivering value, while buyers can quickly and confidently assess their readiness. This profile is what establishes an MSME's credibility and operational trustworthiness.

2. Trust & Safety

The Trust & Safety category ensures the platform operates as a secure, reliable, and ethically responsible marketplace, which is essential for building and maintaining the confidence of buyers, suppliers, and other ecosystem participants. Because trust is foundational, all criteria in this category are screening-level requirements - without meeting these standards, no platform can be considered viable.

2.1 Data Verification

Automated compliance checks against the XPRIZE Trade Integrity Framework ensure that SMEs and other participants meet verified standards for operational, ethical, and regulatory integrity. This verification establishes that all actors in the system are credible, compliant, and trustworthy from the outset.

2.2 Data Security

Platforms must maintain zero data breaches annually, ensuring sensitive operational and commercial information is protected. Strong data security safeguards reduce risk to all participants and support confidence in the system.

2.3 Privacy

A privacy-by-design architecture must be implemented, applying data minimization principles. All Personally Identifiable Information (PII) and Commercially Sensitive Data (CSD) must be rigorously protected and, where feasible, kept separate from public or shared environments. Cryptographic or equivalent privacy-preserving methods, along with anonymization and aggregation, ensure transparency, auditability, and compliance with privacy ethics and data subject rights (e.g., the Right to be Forgotten). This is critical so all participants feel confident that sensitive data, personal and commercial, is secure.

3. Unlock Opportunities

The Unlock Opportunities category emphasizes creating a win-win marketplace that benefits both buyers and suppliers. For buyers, this means long-tail optimization—faster, more efficient discovery of diverse suppliers and quicker verification of compliance. For SMEs, it focuses on economic impact through increased revenue, sustainable growth, and community economic development.

3.1 Long-Tail Optimization

This subcategory evaluates the platform's ability to accelerate supplier discovery by at least 50% within three months, compared to the current 3–6 month average. Similarly, compliance verification must be at least 50% faster within 90 days, compared to the typical 180-day process. These efficiencies reduce transaction friction, expand access to diverse suppliers, and allow buyers to act on opportunities faster and with greater confidence. Long-tail optimization will be simulated in semifinals to assess platform performance prior to a full deployment in finals.

3.2 Economic Impact

Economic impact focuses on measurable MSME growth and sustainability, including ≥20% increase in total revenue and ensuring ≥50% of SMEs secure repeat contracts, credit, or investment. Additional scoring considers the path to profitable revenue, jobs growth, and tax contributions, with targets of ≥15,000 new jobs meeting or exceeding local living or national minimum wage.

To accurately measure real-world economic impact, platform deployment runs for a full year in finals. Calculations are based on the Economic Impact Analysis Framework, extrapolating effects from contracts' value and other financial revenue sources using input-output modeling to measure direct, indirect, and induced impacts. Teams are expected to complete the BEA RIMS II template[154] or a paid software equivalent like IMPLAN[155] with at least three judges having expertise in economic impact assessment.

4. Resilience

This category emphasizes that resilience requires both diversification and the ability to rapidly adapt and shift operations in response to changing conditions. Current technology

enables forecasting, preparedness, and real-time visibility of opportunities, and integrating these functions, as required for this competition, allows supply chains to respond quickly once risks or disruptions are detected.

In semifinals, teams will be evaluated by exposing their platforms to these simulated disruptions—spanning logistical, regulatory, and demand shocks—to stress-test forecasting, detection, and response capabilities before a real-world, year-long deployment in Finals.

To maximize innovation, the competition will not use a single, centralized simulation model. Instead, each team will operate within its own digital twin environment, while XPRIZE provides the common data inputs and embedded, multilayered disruptions. A centralized model would constrain digital innovation pathways, whereas this decentralized approach allows teams to design, customize, and iterate their own simulation logic, architectures, and adaptive strategies.

4.1 Risk Management

Measures the ability to detect potential disruptions in advance, with real-time supply risk alerts at 95% accuracy. Predictive capability provides advance warning of emerging risks, enabling proactive planning and minimizing operational interruptions.

4.2 Adaptive

Measures the ability to reroute disrupted supply within a week, a transformative benchmark compared with traditional supply chains, where identifying alternatives can take three months or more. During COVID-19, full supply disruptions occurred in as little as two weeks, highlighting the critical importance of rapid adaptation.

5. Scaling Considerations

The category evaluates platforms' ability to operate at scale while maintaining performance, flexibility, and resilience. Transformative trade solutions require both interoperability across systems and tiers and robust technical infrastructure, ensuring that the marketplace can grow without creating new silos or bottlenecks.

5.1 Interoperability

Platforms must integrate with cloud systems, to reach ERPs, to enable seamless interaction across all tiers and verticals. While XPRIZE will work to offer a cloud partner, teams have the flexibility to integrate with their preferred cloud environment, ensuring compatibility with diverse enterprise setups. Interoperability is critical to enable broad adoption, break existing silos, and support a connected, open trade ecosystem.

5.2 Technical Infrastructure Scalability Potential

In semifinals, teams will submit a detailed plan describing system modularity/decoupling, throughput (TPS/RPS) and latency, data storage and state management, compute scaling (CPU/GPU, autoscaling), network and connectivity, deployment model (cloud/hybrid/edge), and security/attack vectors. This screening assesses whether the platform is capable of scaling effectively under high-demand conditions and accommodate future growth.

> Considered and excluded: Limiting Trade Exchange to 3–4 Vertical Industries (vs. Maintaining Flexibility Across Sectors) - The decision to maintain a cross-sector, horizontally oriented Trade Exchange platform is grounded in the need to maximize scalability, inclusion, and systemic impact. Limiting the platform to three or four verticals may simplify regulatory compliance, partner recruitment, and sector-specific disruption analysis, but it also reinforces existing silos, constrains innovation, and narrows MSME and teams participation. The ultimate mission of the Trade Exchange is to remove these silos and enable “Connect” and “Plug & Play” interoperability. By keeping the platform open to all industries, it aligns with modern buyer and financier priorities and operations - most operate across sectors and require integrated, cross-industry solutions, while providing a more resilient and diversified network that can adapt to disruptions and create systemic economic benefits. Horizontal and vertical barriers removal maximizes inclusion for SMEs, encourages cross-sector innovation, and supports the development of a truly scalable, trusted, and flexible trade ecosystem.

JUDGING

Two diverse groups of subject-matter experts will join XPRIZE in conducting the competition:

The Advisory Board - is composed of a select group of topical experts and global thought leaders who contribute their expertise, knowledge, and guidance to help ensure the competition’s success and impact. The board typically includes 10 members, and should include subject matter diversity as well as gender, age and geographic diversity. The Advisory Board operates in support of XPRIZE, namely the prize operations team and operation, and is independent of the Judging Panel.

The Judging Panel - is composed of subject matter and technical experts who serve as an impartial and independent evaluation team for all aspects of the competition. Judges evaluate, score and determine advancing teams and ultimately select the final award winners based upon the judging criteria of the competition. The panel typically includes 10 members, and should include subject matter diversity as well as gender, age and geographic diversity. The Judging Panel will be independent of XPRIZE, the Sponsor(s),

Competing Team and all Affiliates of such entities. The Judging Panel has the sole authority to judge the Competition, independent of the Parties.

To ensure that teams' solutions meet all expectations, the Advisory Board and Judging Panel will include, to the best of our abilities, representatives from key fields, including (but not limited to): procurement, supplier diversification, international economics, behavioral economics, cross-border trade, technical infrastructure - including: on-chain systems, geotracking, artificial intelligence, agentic models, smart tools, ontology systems, knowledge graphs, cloud and edge computing, simulations, digital twins, due-diligence and audit, trade standards and policy and compliance, ESG.

Minimum judging expertise requirements: At least 3 judges with expertise in economic analysis, and at least 3 judges with expertise in technical infrastructure scalability.

SCORES

Judges will evaluate teams' performance using two types of scores:

- **'Screening'** criteria have minimum thresholds that must be met and are judged as 'pass/fail.'
- **'Scoring'** criteria are optional to demonstrate for additional points and will determine who, of all the teams that pass the screening criteria, advances or wins.

Points collected at any round inform the results of that round only.

SCORING WEIGHTING

The scoring strategy for the Trade Exchange is designed to reflect the core priorities and interdependencies necessary to transform global trade: enabling economic opportunities for businesses, building resilient supply chains, and fostering sustainable community impact.

Screening determines whether each solution meets the must-have capabilities required for participation, while scoring evaluates the strategy and performance of those solutions.

Each criteria category is scored on a 1–100 point scale, with weighting recommended to emphasize the platform's real-world economic impact while ensuring strong technical and operational performance:

- Economic Impact (40%)
- Long Tail Optimization (30%)
- Resilience (30%)

Rationale for Weighting: While all three pillars are essential, Economic Impact received the greatest weight because it captures the elements that are hardest to achieve and most crucial for system transformation - human behavior change, business adoption, local value creation, and the strategy required to drive real economic outcomes.

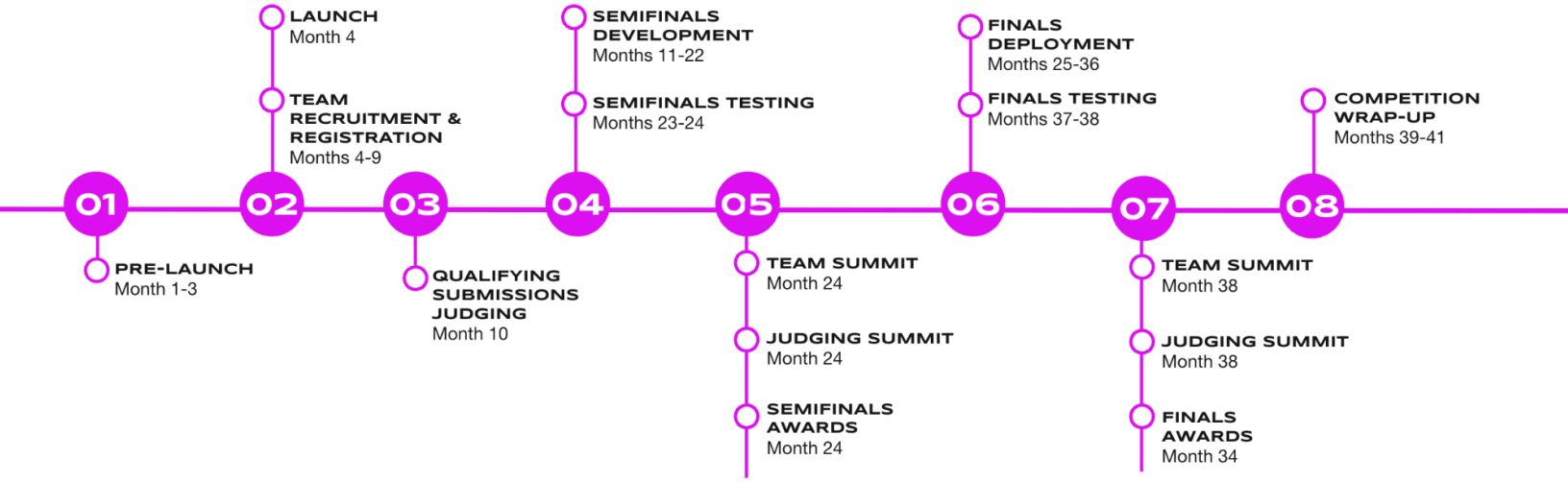
Technical performance (Long Tail Optimization and Resilience) can be measured objectively, while innovators already work on those functions; economic value creation varies significantly by strategy and design choices and requires intentional innovation. This weighting encourages teams to go beyond building technically strong systems and to design platforms that meaningfully improve discovery, contracting, revenue growth, community prosperity, and long-term adoption.

At the same time, the three pillars remain mutually reinforcing: economic impact without resilience cannot be sustained under disruption; resilience without optimization limits scale and usability; and technical performance alone cannot produce long-term prosperity without real market uptake. The proposed weighting acknowledges their interdependence while signaling that strategic, human-centered impact is the ultimate objective.

TIMELINE & ACTIVITIES

The timelines described below contain a notional sequence of events developed with input from XPRIZE stakeholders as well as guidance from technical experts. In order to protect the quality of the competition, the sequence and dates are subject to change throughout the competition.

COMPETITION OVERVIEW TIMELINE



01 PRE-LAUNCH ACTIVITIES

Pre-launch activities will primarily focus on hiring staff, recruiting partners for support in various capacities (e.g., advisory, judging, etc.), developing additional documentation needed, etc.

1. Recruit and Onboard Prize Operations staff
2. Prepare Prize Launch Event
3. Develop Competition Guidelines
4. Recruit and Onboard Advisory Board
5. Identify candidates for Judging Panel
6. Finalize Competition Guidelines

02 LAUNCH + TEAM RECRUITMENT & REGISTRATION

7. Execute public prize launch, recommended at NYSE
8. Actively recruit teams

9. Onboard Judging Panel
10. Track registration
11. Collect Qualifying Submissions with registration

03 QUALIFYING SUBMISSIONS

12. Judging Panel (remotely) will evaluate and announce Qualified Teams, up to 100 Semifinalists
13. $500K will be awarded for promising Supply Chain Transparency (tracking innovators), per judges' discretion

04 SEMIFINALS DEVELOPMENT + TESTING

14. Up to 100 Semifinalists will develop their solutions and demonstrations across three fronts, over 12 months: Real-time tracking & verification of 1,000 SMEs (MMP); 'Platform' performance & trade resilience POC via simulations; Tech infrastructure scale potential
15. XPRIZE will monitor and support teams, including potential visits to teams
16. XPRIZE and partners will validate and review the transparency/tracking data, oversee and review the simulation and multi-layered disruption to the platform, and review the infrastructure scale paper submission.

05 SEMIFINALS TEAMS + JUDGING SUMMITS, recommended in Geneva / Singapore

17. Team Summit for all Semifinalists (while data reviewed by judges).
18. The Judging Panel will meet in-person to evaluate the submissions in accordance with the judging criteria and targets and announce the Finalists.
19. $2,000,000 equally divided among Finalists, up to 30.

06 FINALS DEVELOPMENT + TESTING

20. Up to 30 Finalists deploy and run their solutions with 1,000+ validated SMEs and 200+ Buyers and other actors, over 12 months.
21. XPRIZE and partners will validate and review system operations data and economic impact paper submission.

07 FINALS TEAMS + JUDGING SUMMITS, recommended in Port of LA

22. Team Summit for all Finalists (while data reviewed by the judges).
23. The Judging Panel will meet in-person to evaluate the submissions in accordance with the judging criteria and targets and select the 1st, 2nd, and 3rd places.
24. Conduct awards ceremony

25. Award the Grand Prize - 1st place to be awarded $US4,000,000, 2nd place US$2,000,000, and 3rd place $US1,500,000, totalling $US7,500,000.

08 COMPETITION CLOSEOUT

26. Execute prize closeout activities and post-prize impact activities, including adoption workshops and ecosystem matchmaking.

PRIZE PURSE

By providing a clear goal and a financial incentive for teams to work towards, an XPRIZE competition helps accelerate the development of new solutions that address some of humankind's most difficult and persistent challenges. XPRIZE Trade Exchange will have a total Prize Purse of US$10,00,000 and will be distributed as detailed in the following table.

TABLE 8: PRIZE PURSE BREAKDOWN

PRIZE CATEGORY	DESCRIPTION	RECIPIENTS	AMOUNT PER AWARD	TOTAL VALUE (US$)
Bonus Prize	Promising Supply Chain Transparency solution(s) that could reach scale and drive a future of full supply chains transparency	Among Qualified Teams, per judges' discretion		US$500,000
Milestone Awards	Best to satisfy Semifinals demonstration	30 Finalists	US$66,666	US$2,000,000
Grand Prize	Best to satisfy Finals demonstration	First Place	US$4,000,000	US$7,500,000
		Second Place	US$2,000,000	
		Third Place	US$1,500,000	
Total Prize Purse				US$10,000,000



KEY PARTNERSHIPS

An XPRIZE with global impact requires global support.

Successful competitions require strong partnerships to yield the desired future outcomes. To this end, XPRIZE will cultivate a curated ecosystem of partners to deliver on the massive impact potential of this prize. Partners can be individuals, government entities, businesses, nonprofits, coalitions, or other foundations. The following section details what types of partnerships entail, while in practice, many partners fill more than one role.

TYPE	DESCRIPTION	XP TRADE EXCHANGE RECOMMENDED PARTNERS:
Amplification	Promotes awareness and visibility of competitions to their own audiences	World Economic Forum (WEF), NYSE, SAP, AWS, Google, JP Morgan Chase, UC Procurement, Hashgraph Online, S&P (Standard & Poor's), Financial Times (FT), Bloomberg, CNBC, Global Trade Review (GTR), WTO, UNCTAD,
Team Recruitment + Networking	Helps recruit potential competitors and support team formation. Facilitates and engages in events like conferences and workshops, enhancing dialogue, referrals and collaboration on prizes.	**key events/platforms for frontier tech innovators:** World Economic Forum (WEF) Uplink Platform, AWS re:Invent, Google Cloud Next, Hashgraph Online, Hedera, ETHDenver, ETHGlobal Events, Consensus (CoinDesk), Paris Blockchain Week, Legalweek (New York), Money20/20, NVIDIA GTC, Manifest, IoT Tech Expo Global, Embedded World, International Semantic Web Conference (ISWC), The Knowledge Graph Conference (KGC), Microsoft Ignite, Edge Computing World, Dynamo Ventures Summits, Plug and Play (Supply Chain/Fintech Verticals), and Singapore Fintech Festival (SFF), Paris Blockchain Week **Key Supply Chain / Trade events:** Money20/20, WEF Events, Major UN/ICC Forums, Procurement & Supply Chain LIVE, Gartner Supply Chain Symposium/Xpo, Multimodal, SAP Spend Connect Live, Manifest, CIPS Excellence in Procurement & Supply Awards, Supply Chain Europe, European Supply Chain Summit, CHAINge North America, edie Sustainable Supply Chains, MARS Winter Meeting, RILA LINK, Manifest, AirCargo Conference.
Testing	Supports competitions by providing resources like expertise, equipment, and facilities to facilitate solution testing	**T&J Events:** ■ Launch - NYSE ■ Semifinals - World Economic Forum, World Trade Organization (WTO), Singapore Economic Development Board (EDB). ■ Finals - Port of Los Angeles Authority (Finals Deployment),

	during competition round	**Independent Verification:** globally recognized accounting firms such as: Deloitte, KPMG, EY, PwC. **Technical Simulation & Integration:** Infrastructure, leading cloud providers, such as: SAP HANA, Google Cloud, AWS, Microsoft Azure. Providing cloud credits and technical expertise to the team and/or hosting the 3-week resilience simulation and evaluation environment (via teams digital twins). **Simulation Disruptions Design and Test Run:** Universities with supply chain simulation expertise, such as Georgia Tech, UC Berkeley, MIT, Rutgers University, Carnegie Mellon University, University of Miami.
Expertise + Research	Partners work with XPRIZE to offer insights and expertise, advisory, judging, support research, and promote innovative solutions through publications and dissemination.	**Global, Regional, National Trade Policy & Economic Analysis:** World Economic Forum, World Trade Organization (WTO), World Bank, IMF, UNCTAD, US BEA (for I-O modeling templates and validation). **Technical Infrastructure & Frontier Tech:** NVIDIA, ARM, Intel, Siemens, Cisco, Ansys, Altair, AnyLogic, Academic Centers (e.g., MIT, Georgia Tech, UC Berkeley) **Procurement & Supplier Diversity:** WBENC, NMSDC, WEConnect International, Chartered Institute of Procurement & Supply (CIPS). **Standards** (for continuous evolution of XPRIZE Trade Exchange Integrity Framework and potential new standards for frontier tech): ISO, NIST
Operational Support	Contribute in-kind goods and services or other support to facilitate successful prize operations.	**Major Cloud Providers** - e.g., SAP, Google Cloud, AWS, Microsoft Azure; **Compute, simulation** - NVIDIA (GPU compute/Omniverse); Intel (CPU/AI Accelerator resources); HPE (HPC infrastructure); Rescale (HPC-as-a-Service platform)

		Airlines (that engage in passenger travel and cargo): Delta Air Lines, United Airlines, American Airlines, Air France-KLM, Virgin Atlantic, Alaska Airlines, Air Canada, British Airways, Cathay Pacific, Emirates, Etihad Airways, Korean Air, Lufthansa, Qantas, Qatar Airways, Singapore Airlines, Turkish Airlines
Team Support	Provide in-kind support and/or resources to teams to help them successfully compete and deploy their solutions post-prize.	**Access to Traditional Capital:** Venture Capital (VC) Funds specializing in Supply Chain/Fintech (e.g., Dynamo Ventures, Prologis Ventures); Angel Investor Networks; Development Finance Institutions (DFIs). **Access to On-Chain Capital:** A16z Crypto, Paradigm, Coinbase Ventures, Pantera Capital (Specialized Web3/DeFi VCs). **Access to Compute/Cloud Credits:** AWS, Google Cloud, Microsoft Azure, NVIDIA (Dedicated credits/access to resources). **Legal/IP:** Avanci
Scale + Impact	Collaborate with XPRIZE and alumni teams to scale their technology and achieve impact goals.	■ NYSE - For public market validation and access to universal capital) ■ Large Multinational Corporations (MNCs) - For mass adoption and high-value contracts/margins ■ Development Banks (For financing in emerging markets); ■ Global Logistics Integrators (e.g., DHL, FedEx) (For integrating solutions into physical infrastructure).

RISK ANALYSIS

Audacious competitions, especially those involving activity within communities, carry inherent risks. This section outlines potential risks and proposed mitigation strategies for XPRIZE Trade Exchange. The list provided is a preliminary assessment; XPRIZE will continuously evaluate and plan for potential risks throughout each competition phase, adjusting as needed in consultation with the advisory board, judges, and sponsor(s).

TABLE 9: RISKS, KEY DRIVERS, MITIGATIONS

GENERAL COMPETITION RISKS		
RISK	**KEY DRIVERS**	**MITIGATION STRATEGY**
Insufficient number of qualified teams register	Lack of exposure to specialized frontier tech communities not currently engaged in trade/supply chain innovation	- Target outreach to Web3/DeFi innovators, Industrial IoT firms, Logistics Tech VCs, and specialized SCM programs- Leverage amplification partners such as NYSE, Bloomberg, and Global Trade Review to ensure broad exposure
Potential teams see the prize as conflicting with core business objectives	Requirements may conflict with existing enterprise standards or proprietary tech roadmaps	- Design requirements around interoperability and open standards (e.g., Trade Integrity Framework, Ontology Systems)- Conduct public comment periods to gather feedback from major trade and tech incumbents
Teams hesitant to register due to cost concerns	High costs for AI models, blockchain infrastructure, and edge hardware	- Provide cloud credits (AWS, Google, Azure), GPU/HPC resources (NVIDIA, Intel), and specialized software licenses (Ansys, AnyLogic)- Offer milestone prizes and access to non-dilutive and dilutive funding through VC/On-Chain Capital

Unqualified teams advance to testing	Teams over-promise AI performance, resilience, or financial viability	- Enforce rigorous Stage-Gate technical audits led by Judging Panel and experts from Deloitte/KPMG (verification), MIT/Georgia Tech (simulation), and NIST (technical standards)
Teams drop out early to go to market	Early commercial success reduces incentive for prize participation	- Design Finals Deployment as a 12-month, subsidized real-world pilot with 1,000+ verifiable SMEs- Offer access to Third-Wave Buyers and NYSE market validation
Teams fail to raise capital during the competition	Investor reluctance toward enterprise blockchain or unproven resilience tech	- Organize direct matchmaking events with traditional VCs (Dynamo Ventures) and on-chain VCs (a16z Crypto, Paradigm)- Provide Economic Impact Analysis (EIA) framework for validated ROI data
Successful solutions do not scale post-competition	Lack of trust in the exchange or insufficient Third-Wave Buyer adoption	- Engage Scale + Impact partners (NYSE, Multinational Corporations, Development Banks) from the outset- Structure competition to demonstrate sustainable revenue growth, long-tail optimization, and tangible commercial impact

PRIZE SPECIFIC RISKS

RISK	KEY DRIVERS	MITIGATION STRATEGY
Failure to achieve regulatory buy-in	Exchange protocols may conflict with national trade laws or data sovereignty regulations	- Heavily weight Expertise & Research category toward WTO, ICC, and legal compliance experts- Form Regulatory Advisory Board for multi-jurisdictional compliance and interoperability

Simulation does not reflect real-world resilience	3-week simulation may not capture multi-layered disruptions (cyber, geopolitical, climate)	- Design simulation using multi-method modeling (Agent-Based, System Dynamics) with partners MIT, Georgia Tech, Carnegie Mellon- Host simulation on secure, distributed cloud platforms (NVIDIA Omniverse, AWS, Azure)
Lack of MSME adoption and data sharing	SMEs hesitant to share sensitive operational/financial data	- Target underserved SMEs (≥50%) with clear incentives: ≥20% revenue growth and access to financing- Ensure privacy protocols leveraging on-chain architecture- Provide immediate tangible benefits (automated compliance, inexpensive financing)
Frontier tech stack vulnerability	AI, Blockchain, and IoT integration creates security or system failure points	- Technical Infrastructure Standards Partners (NIST, ARM, NVIDIA, Cisco) review integration architecture- Semifinals audits by Deloitte/KPMG and technical judges focused on cybersecurity and system integrity
Finals deployment failure (Port of LA)	Logistical, political, or operational challenges may disrupt 12-month deployment	- Secure commitment from Port of Los Angeles Authority or equivalent hub- Phase-in deployment starting small and scaling up- Continuous oversight and risk mitigation from Global Consulting Firms

PRIZE BUDGET AND STAFF

Detailed Competition Operational Budget Proposal

The prize operational team will be responsible for the successful execution of the prize competition. The following section describes the typical allocation of operational resources to an XPRIZE competition. Exact allocation will be finalized during pre-launch based on scope and duration of the project.

COMPETITION BUDGET

The Competition Budget, inclusive of Prize Purse, operations, awareness and education, impact and foundation support are described in the table below.

XPRIZE reserves the right to update the Competition Budget no later than 30 days prior to Prize Launch. Notwithstanding any changes to the Competition Budget, Parties agree that the Sponsorship Commitment shall not change without Parties' approval.

The following budget section has been prepared to aid sponsors in better understanding how program funds are spent toward achieving the objective of the prize competition. Over the course of a competition, XPRIZE will carry out a variety of tasks and services. These include, but are not limited to, conducting additional research on the state of the problem, the state of solutions or approaches, any critical barriers to solving the problem, and investment in the field. These also include recruiting a diverse community of experts in the field and adjacent fields, identifying critical criteria for a solution and measuring them. Once the competition is sponsored, a marketing and recruitment plan is established to publicly launch the competition, identify and invite potential teams, and educate the public on the topic through powerful content and media campaigns on several platforms and with various tools, as well as implementing procedural and legal activities around registration, communication, and signing of team agreements.

Throughout the competition, XPRIZE will be engaging with the teams to host team support events and other activities to help promote the teams and solutions under development. In addition, XPRIZE will support the teams with identifying resources, connecting them with each other and our partner organizations, and also helping with identifying and acquiring test sites and necessary equipment. For activities related to field test operations, XPRIZE will be hosting testing/validation events, recruiting judges and advisors, convening judges and guiding the judging process, creating support ecosystems globally, educating stakeholders and policy makers, organizing the awarding of the prize purses and promoting the winning solutions and companies, and monitoring their progress so they can go to market faster and achieve scale.

The following items detail how a sponsor's funds are used to support the overall competition. While the prize purse is fixed, other competition expenses can vary. The expenses detailed below are a close estimate based on our experience and the current prize scope and timeline, the actual spending may have some variation. XPRIZE monitors the budget closely so as not to exceed it unless agreed upon by the sponsors. Quarterly budget actual reports are sent to the sponsor in addition to a final report at the conclusion of the competition. During the competition, XPRIZE may reallocate funds from one area of the competition to other areas without exceeding the total budget at its discretion in line with achieving the objectives of the competition. All costs are presented in United States Dollars (USD).

TABLE 10: OVERALL BUDGET BREAKDOWN

ACCOUNT	AMOUNT	DESCRIPTION
Prize Purse	$10,000,000	Includes all milestones, bonus prizes, and grand prizes.
Foundation Support	$1,000,000	Covers the support of the rest of the foundation of the prize and the development and enhancement of the Foundation's mission and to ensure the sustained operation in the future to continue to measure and publish the impact of XPRIZE and its competitions.
Personnel Expense	$7,263,266	Includes the domain lead, the prize operations team - including technical director, project manager, and team lead, as well as cross-functional support service from Finance, Legal, IT, HR, and Partnerships. Covering salaries, wages, and benefits for all core project staff and team members.
Team Activities	$70,000	Budget for competing teams recruitment, engagement, support, including external sponsorship appearances
Testing Activities	$1,152,500	Funds for the critical evaluation phases, covering judging stipends, testing consultants, software/data licenses, and validation processes.
Events	$350,000	Costs associated with hosting major prize milestones (e.g., Launch, Finals), covering production, venue costs, awards, and merchandise. This covers in person or virtual aimed at promoting the competition to create public awareness and engagement.
Marketing, Education & Awareness	$356,750	Will cover videographers, photographers, content creation, social media ads, storytelling efforts, signage, printed materials, merchandise, and PR efforts over the life of the prize, data and content acquisition.

ACCOUNT	AMOUNT	DESCRIPTION
Impact	$320,000	Dedicated funds for educational programming, public awareness campaigns, and measuring the broader societal impact of the initiative.
Travel	$284,000	Covers all travel costs, including non-testing related events such as Launch event, visiting teams, conferences not related to recruitment, and summits, and may also be applied to teams' travel to test sites.
G&A	$69,072	Covers logistics support, IT infrastructure, and/or shipping, postage, printing, subscription and registration fees.
Total	$20,865,588	

PRIZE OPERATIONS FULL-TIME STAFF

The operational team will be responsible for the successful execution of the prize competition. The following table describes the typical allocation of operational resources to an XPRIZE competition.

TABLE 11: LIST OF PRIZE OPERATIONS DEDICATED STAFF

TITLE/ROLE	DESCRIPTION
Domain Lead	Drives operational best practices and overall excellence within the domain. Plays a key leadership role by leading strategy execution across the domain. Accountable for all program teams within the domain. Leads continued crafting of domain vision as well as prize ideation, networking, and fundraising. Budget authority on program spending within the domain.
Program Technical Director	Oversees program strategy, execution, and success, driving operational excellence, managing budgets and ensuring all technical aspects, rules, and testing plans are delivered effectively. Serves as a Subject Matter Expert and spokesperson for external communities and media, and manages the advisory and judging panels and winner selection process.
Project Manager	Drives the project management efforts. This includes building project plans, coordinating between multiple vendors, organizing site visits and events, reporting progress against project objectives and managing other day-to-day activities. Also responsible for reviewing vendor invoices and expenses, managing procurements, initiating contracts, and supporting

TITLE/ROLE	DESCRIPTION
	budget management. Responsible for managing projects and deliverables in consultation with cross functional groups.
Community Manager	Responsible for recruitment and supporting of teams. Supports the management of the larger prize ecosystem to include Partners, etc. This person is also responsible for administrative tasks as well as supporting the Prize Manager in addition to organizing outreach events for the prize.

PRIZE OPERATIONS SUPPORT STAFF

The operational team will be complemented by a team of internal specialists who are assigned to the prize on a part-time basis as part of their regular responsibilities.

TABLE 12: LIST OF PRIZE OPERATIONS SUPPORT STAFF

TITLE/ROLE	DESCRIPTION
Compliance Associate	Ensures adherence to contractual obligations and regulatory requirements through reviews of contracts, monitoring compliance activities, etc.
Office of Project Management	Advises the Prize Operations team on project management standards in alignment with company best practices.
Partnerships & Impact	Assists with developing and maintaining partnerships beneficial to the prize competition. Gathers information and data to validate prize impact.

APPENDIX

A. EXPERT ECOSYSTEM

We express immense gratitude to the dozens of experts from around the world engaged in the competition design. Thank you for inspiring us, stress-testing assumptions, and challenging conventions to design a transformative XPRIZE Trade Exchange. A special note of appreciation goes to the experts who closely advised us in regular workshop meetings.

Disclaimer: Statements made by individuals in interviews, focus groups, and workshops during the prize research and design phase are representative of their own knowledge and opinion as experts in their fields and not necessarily of their affiliated company or organization. All interviews are conducted under the Chatham House rule, and no information can be attributed to a listed expert without their explicit consent.

NAME (A-Z)	TITLE	AFFILIATION
Abim Odusoga	Economic Development & Policy Director	University of California Office of the President
Adrian Lotter	Co-Founder	BoomBio
Agustin Dellagiovanna	Sr. Procurement Manager, Community Impact & Sustainability	Amazon
Ahmer Inam	Founder and CEO	Consignee AI
Al Limaye	President and Founder	LSInextGen
Alex Aceves	Senior Procurement Supplier Engagement Manager	Google
Anant Dinamani	Principal	Deloitte Consulting LLP
Angelique Solorio Alvarez	Assistant Vice President, Supplier Diversity Project Manager	U.S. Bank
Anthony Holland	SVP, SAP Global Partner Sales and Marketing	SAP
Ashish Gadnis	Co-Founder & CEO	BanQu Inc.
Bogadi Letsile	Founder	NanoPula
Brandon Tidwell	Communications Principal, Global Citizenship	FedEx
Caitlin Wale	Founder, CEO	Kinjani
Chloe Cormack	CEO	EcoRestore

NAME (A-Z)	TITLE	AFFILIATION
Chuck Pettid	EVP, Founding Member	Republic
Craig Fuller	Founder and CEO	Freightwaves
Prof. Dale Rogers	ON Semiconductor Professor of Business and Professor, Department of Supply Chain Management	ASU (Arizona State University)
Daniel Park	Owner	Eclaro International
David Huges	Founder, PlantVillage+ Huck Chair in Global Food Security, Penn State Director of USAID Innovation Lab on Current and Emerging Threats to Crops, Penn State	PlantVillage+ Penn State
Daynise Joseph	External Relations Manager	Google
Deloris Thomas, Dr.	President	Joseph Business School
Denia Katsuda	Software Development Manager, AWS Supply Chain and AWS Security - Global Trade and Product Compliance, AWS Industry Products - Manufacturing, Healthcare and Life Sciences	Amazon Web Services
Devon Whittle	Australia Director	Global Shield Australia
Dr. Akin-Olusoji (Soji) Akinyele	Dean, JBS Nigeria Chair, Technical Committee on Advocacy Framework, CIoD Public Sector Group	Joseph Business School Nigeria The Chartered Institute Of Directors, Nigeria
Dr. Marc Spencer	CEO	The Battery Oakland
Dr. Ted Blackmon	Founding Partner	Jovian Ventures
Elizabeth Brown	Executive Director	Building Markets
Estefania Palomino	Senior Manager, Philanthropic Relations	UN Global Compact
Fahd Diouri	Operations Officer, SME Banking and SCF Specialist for Middle East and Africa Region (Advisory Services)	IFC - International Finance Corporation World Bank Group

NAME (A-Z)	TITLE	AFFILIATION
Frantz Alphonse	Executive Fellow, Harvard Business School Co-Founder, Project Black at Ariel Alternatives	Harvard Ariel Alternatives
Gary Sutton	Sourcing and Procurement, Specialist Leader	Deloitte
Jahed Momand	Founder, Product Leader	Applied AI
Jason Trimiew	Director, Supplier Strategy	Meta (formerly)
Javier Valadez	Director of Operations, Corporate / Government Affairs & CSR	PACCAR México
Jim Lowery	Senior Advisor, BCG President & CEO, JHL & Associates	BCG James H. Lowry & Associates
Joan Kerr, Dr.	CEO	Joan Kerr Strategies PG&E (formerly) AT&T (formerly)
John Henderson	Executive Vice President, Walker Supply Chain Management Chairman and CEO, AEL Holdings Founder & CEO, The Pivot Mind and Deep Waters Ventures, LLC	Walker Supply Chain Management AEL Holdings The Pivot Mind Deep Waters Ventures, LLC
John Powers	Executive in Residence	Mod-Op Formerly, Principal, Global Chief Transformation Officer and Chief Information Officer, Deloitte (formerly
Jon Seneger	Director, Digital Simulation	ARM
Joseph Spence	Chief Investment Officer	NativelyAI
Joset Wright-Lacy	Founder and President	Waypoint Strategies Formerly, President, National Minority Supplier Development Council (NMSDC)
Josue Munoz	Board Member	WiZenz Technologies Formerly, Vice President, Global Supply Chain Demand & Systems, Colgate-Palmolive

NAME (A-Z)	TITLE	AFFILIATION
Joy Nyang'or	COO	EcoRestore
Karine Nahi	Director of Operations	Creative Destruction Lab
Kyle Winters	Initiatives and Community Lead, North America Initiatives and Community Specialist, Advanced Manufacturing and Supply Chains	World Economic Forum
Laurie Dowling	Executive Director	NUDC (National Utilities Diversity Council)
Leamon Sowell	President and Managing Partner	Sowell Law Partners
Linda Denny	Former President & CEO	WBENC (Women's Business Enterprise National Council)
Marie-Sarah Chataing	Head of Communication and Partnership, SME Finance Forum	IFC - International Finance Corporation World Bank Group
Martin Smith	Co-Founder and CEO	CommonShare
Matan Eden	Head of Capital Markets, New York Region	NYSE
Michael Kantor	President	Hashgraph Online
Michael Marus	Chief Information Officer and Director of IT	FSC (Forest Stewardship Council)
Michael Verchot	Founder and Director, Consulting and Business Development Center, Ascend	University of Washington
Mike Jette	Sr. Vice President, Growth & Client Success - North America	WNS Procurement GEP Worldwide (formerly)
Mitchell Weller	Co-Founder	Deepinvent.ai
Monika Firl	Independent Consultant, Regenerative Coffee Ecosystems	Fairtrade International (formerly)
Nedra L. Dickson	President & CEO (Interim)	WBENC Formerly, Global Supplier Inclusion and Sustainability Managing Director, Accenture
Nikki Okrah	CEO & Founder	Chaku Foods & Chaku Tech

NAME (A-Z)	TITLE	AFFILIATION
O.T. Wells II	Chief Procurement Officer	UCLA (University of California, Los Angeles)
Obakeng Segwagwe	Programmes Manager	Botswana Innovation Hub
Paul Musser	Board Member, Building Markets Formerly, SVP in Mastercard and Visa	Building Markets Mastercard (formerly) Visa (formerly)
Paul Williams	Associate Vice President & Chief Procurement Officer	University of California Office of the President Formerly, Mondelēz International
Pedro Conceição	Director, Human Development Report	United Nations Development Programme (UNDP)
Petya Miteva	Head of Tech & Data Center Sustainability	SeaBridge Sustainability
Prashanth Irudayaraj	Managing Director	Swarm AI consulting
Qingfang Wang, Prof.	Professor of Public Policy, SPP Deans Office Dept	UC Riverside
Samantha Neilson	Climate & Health Lead	AWS
Shaila Rao Mistry	Founder and President	Jayco Interface Technology Inc.
Susan David Carevic	Sr. Technical Program Manager	Amazon Web Services / Amazon
Ted Archer	Managing Director, Global Head of Business Partner Diversity at JPMorgan Chase & Co.	JP Morgen Chase
Van Jones	CNN Host, Founder of DreamMachine.org and NYT Bestselling Author	DreamMachine CNN
Vittorina Solano	Venture Manager, Supply Chain Stream	Creative Destruction Lab

B. TRADE INTEGRITY FRAMEWORK

Core credibility standards (risk-based framework)

The XPRIZE Trade Integrity Framework is the first of its kind practical approach to making global trade standards accessible and actionable for small businesses. It builds on the most common and fundamental standards across industries and aligns them with recognized ISO, ILO, OECD, and other certifications. To overcome the barriers of costly, static certifications, these standards are translated into simple, demonstrable functions and actionable tasks, enabling small businesses (SMEs) to show credibility and compliance in real time. This dynamic approach opens doors for businesses that would otherwise be excluded, while maintaining alignment with global regulations. By turning static standards into a continuously visible and verifiable system, the framework provides a practical benchmark for inclusive, ethical, and transparent trade, supporting both innovation and opportunity.

Designed as an early, structured step to launch a broader global dialogue, the framework invites industries, regulators, and trade actors to rethink how standards are applied and shared to include more diverse businesses.

CATEGORY	FUNCTIONAL REQUIREMENT / INTENT	MSME-FRIENDLY DEMONSTRABLE CHECK	STANDARD(S) BEHIND FRAMEWORK	ORIGIN REGULATORY FRAMEWORKS	PURPOSE / SCOPE
License to Operate	To ensure the MSME is legally authorized to operate in its sector	Proof of required business licenses, permits, or registrations issued by a national authority (e.g., scanned documents, registration number, or government registry link).	ISO 37301	National regulatory authorities; UNGPs Pillar 1: Protect; OSHA Standards	Confirms legal right to operate and compliance with local laws, reducing regulatory risk
Quality	To ensure consistency in product/service delivery and continuous improvement.	Documented Quality Control Process: Document the key steps in production/service process and demonstrate a system for handling	ISO 9001	UNGPs Pillar 2: Respect (Due Diligence); ISO 9000 Principles	Consistent quality and reliability in

		defects, complaints, and non-conforming products (e.g., a simple manual, a checklist, or a complaint log).			products/services
Safety (OH&S)	To proactively identify hazards, prevent workplace injuries/illness, and ensure legal compliance.	Basic Hazard & Risk Checklist, Injury Tracking, and Remediation: Document an OH&S Policy, perform a simple annual hazard identification/risk assessment, show compliance with mandated safety equipment/training, and have a documented system to track, manage, and remediate occupational injuries/illnesses.	ISO 45001	UNGPs Pillar 2: Respect (Due Diligence); ILO Conventions; OSHA Standards; ILO Occupational Safety Guidelines	Worker well-being and safe workplaces
Safety (Cyber & Data)	To protect sensitive data, customer privacy, and the operational integrity of systems.	Cyber Security Safety Check: Demonstrate basic data protection measures: Multi-Factor Authentication (MFA) for all critical accounts, regular software/antivirus updates, and a Data Privacy Policy for customer information (e.g., a written policy and system screenshots).	ISO/IEC 27001; ISO/IEC 27701	UNGPs Pillar 2: Respect (Data Privacy); NIST CSF; GDPR	Cyber and data protection aligned with global and EU privacy norms
Sustainability	To manage environmental impact, conserve resources, ensure supply chain traceability, and respect natural resource rights.	Environmental Compliance, Resource Tracking, & Land Rights Policy: Certify adherence to all local environmental regulations, provide an estimate of key resource consumption/waste, a plan for resource reduction, and a documented policy that respects	ISO 14001	UNGPs Pillar 2: Respect (Due Diligence); ISO 26000; UN Global Compact; EUDR	Environmental stewardship, traceability, deforestation-free sourcing

		land rights (including Free, Prior, and Informed Consent - FPIC) of local communities.			
Ethics & Labor	To uphold core human rights, ensure fair working conditions, and prohibit forced/child labor while ensuring full non-discrimination and prohibiting worker fees.	Core Labor Rights, Non-Discrimination, & No-Fee Policy: Evidence of employee contracts, minimum wage/hour compliance, a no-tolerance policy against forced/child labor, a comprehensive non-discrimination policy, and a signed declaration that workers are not required to pay recruitment or related fees (with a reimbursement plan if violated).	SA8000	UNGPs Pillar 2: Respect (Commitment); ILO Conventions; OECD RBC; CSDDD	Human rights and due diligence in supply chains
Governance & Transparency	To establish accountable leadership and ensure transparency in financial dealings and legal compliance, including timely remediation.	Transparent Operations, Anti-Corruption, & Remediation Policy: Legally mandated financial statements, a signed Zero-Bribery/Anti-Corruption Policy with a whistleblowing process, and a documented process for timely remediation of nonconformance.	ISO 37001	UNGPs Pillar 2: Respect (Accountability); UNGPs Pillar 3: Remedy; OSHA Standards; ICC Rules; UNCAC	Integrity, anti-corruption, and transparent governance
			ISO 37000	UNGPs Pillar 2: Respect (Accountability); GRI Standards; WEF Stakeholder Capitalism Metrics	Responsible governance, disclosure, and accountability

Resilience & Continuity	To maintain critical operations, minimize downtime during disruptions, and ensure rapid recovery.	Simple Business Continuity Plan (BCP): Identify their 1-3 most critical operations, the maximum tolerable downtime, and a basic, documented recovery strategy for a common disruption (e.g., a power outage or a critical IT system failure).	ISO 22301	UNGPs Pillar 2: Respect (Due Diligence); GS1 GTS; WEF Resilience Principles	Business and supply chain continuity

C. OTHER PRIZE DIRECTIONS CONSIDERED

PRIZE DIRECTION	BREAKTHROUGH AREA	PROS	CONS
Personal Enterprise Coach	An intelligent, personalized AI tutor guiding SMEs step-by-step: from learning critical business and supply chain know-how to implementing best practices, completing accounting, compliance, and reporting documentation. Adapts to each user's context and pace; Produces business enterprise value portfolio to approach opportunities.	Empowers SMEs to build capacity and credibility; translates learning into tangible enterprise outcomes.	Adoption may vary across tech literacy levels; limited in addressing broader system-level fragmentation.
Trust Chains	Low-cost, user-owned tools for verifiable data (transactions, quality, quantity, ESG compliance) and optimization. SMEs build digital trust profiles reflecting reliability, sustainability, and performance.	Unlocks access to trade and finance; builds local capacity; strengthens trust in transactions.	Still challenging for SMEs and buyers to discover each other without the "Internet of Supply Chains."
Internet of Supply Chains and Smart Marketplace	Inclusive platform for anyone involved in global trade. Intelligent matchmaking between SMEs, buyers, and financiers, providing two-way visibility. Facilitates mutual trust and de-risking for procurement. Easy onboarding allows SMEs to become contract-ready in <90 days, with standardized inputs and AI/ML-driven customization.	Solves discovery and access bottlenecks; strengthens fragmented ecosystems; streamlines access to funding, contracts, and markets.	May favor more established SMEs without complementary inputs such as Trust Chains or the Personal Enterprise Coach.
Regional Supply Chain Gateways	Shared infrastructure hubs for processing, energy, logistics, and buyer access.	Builds critical local capacity; reduces emissions; supports regional trade.	High CapEx; requires political coordination and buy-in; bias toward manufacturing and goods-based growth paths.

Supply Chain Services	High-performing intermediaries offering sustained value across financing, mentorship, compliance, procurement access, and backend services (e.g., QA, fulfillment, carbon reporting, traceability) delivered “as a service.”	Reduces the need for SMEs to build costly compliance and logistics infrastructure; accelerates readiness and growth.	Risk of overlap with existing development programs; dependency on strong intermediaries; potential high operational cost.
Local Step Toward Global	Build local/regional markets first, leveraging buyers, distributors, and trade networks, and then scale to global trade. Integrates with existing systems (e.g., ERPs) to create replicable templates for regional success.	Builds resilience and trust locally; reduces dependence on global systems; creates scalable pathways to global trade.	May face resistance from corporates; slower global integration.
Procurement Disruption / Long Tail Management	Opens global procurement to new entrants with tools for modular contracts, open RFPs, risk-sharing, and smart vetting. Integrates with existing ERPs and procurement systems, providing transparent workflows and automated compliance checks.	Expands procurement access to new entrants; drives systemic reform; reduces onboarding friction for both buyers and suppliers.	Legal and policy friction; less effective in advancing MSME capacity alone; better if combined with capacity-building.
Redefine Market Incentives	Aligns private capital with social and environmental outcomes. Redirects investment flows; Integrates with financial platforms, ESG frameworks, and investment pipelines to create measurable, market-driven incentives for SMEs and investors.	Enables long-term equity and sustainability; supports a just transition; attracts private capital to underserved communities.	measurement and validation is challenging; requires strong alignment with policymakers; limited near-term economic benefits for communities.

D. CONTACT

This prize design report has been written and prepared by XPRIZE Prize Design and approved by XPRIZE's Executive Leadership Team. For any inquires, please contact:

Eti Shechtman,
Research and Design Lead, XPRIZE Trade Exchange
eti.shechtman@xprize.org

REFERENCES

1. Ortiz-Ospina, Esteban . 2022. “In 2022, the Sum of Imports and Exports across Countries Amounted to 63% of Global GDP.” Our World in Data. 2022. https://ourworldindata.org/data-insights/in-2022-the-sum-of-imports-and-exports-across-countries-amounted-to-63-of-global-gdp.

2. Avishai, Bernard. 2016. “The Meaning of Open Trade and Open Borders.” The New Yorker. The New Yorker. October 17, 2016. https://www.newyorker.com/business/currency/the-meaning-of-open-trade-and-open-borders.

3. World Bank. 2023. “Trade Has Been a Powerful Driver of Economic Development and Poverty Reduction.” World Bank. 2023. https://www.worldbank.org/en/topic/trade/brief/trade-has-been-a-powerful-driver-of-economic-development-and-poverty-reduction.

4. Carrière-Swallow, Yan, Pragyan Deb, Davide Furceri, Daniel Jimenez, and Jonathan D. Ostry. 2022. “Shipping Costs and Inflation.” *Journal of International Money and Finance* 130 (November): 102771. https://doi.org/10.1016/j.jimonfin.2022.102771.

5. I. Ornelas, Emanuel, Huimin Shi, and Xuepeng Liu. 2021. “The 2020 Trade Impact of the Covid-19 Pandemic.” CEPR. June 9, 2021. https://cepr.org/voxeu/columns/2020-trade-impact-covid-19-pandemic.

II. Gagnon, Joseph, Steve Kamin, and John Kearns. 2023. “The Impact of the COVID-19 Pandemic on Global GDP Growth.” Journal of the Japanese and International Economies 68 (68). https://doi.org/10.1016/j.jjie.2023.101258.

III. Gopinath, Gita. 2020. “The Great Lockdown: Worst Economic Downturn since the Great Depression.” International Monetary Fund. April 14, 2020.

IV. Elliott, Larry. 2020. “IMF Estimates Global Covid Cost at $28tn in Lost Output.” *The Guardian*, October 13, 2020, sec. Business. https://www.theguardian.com/business/2020/oct/13/imf-covid-cost-world-economic-outlook. https://www.imf.org/en/Blogs/Articles/2020/04/14/blog-weo-the-great-lockdown-worst-economic-downturn-since-the-great-depression.

6. World Bank Group. 2022. “The Economic Impacts of the COVID-19 Crisis.” The World Bank. The World Bank. 2022. https://www.worldbank.org/en/publication/wdr2022/brief/chapter-1-introduction-the-economic-impacts-of-the-covid-19-crisis.

7. I. ILO. 2021. “ILO: Uncertain and Uneven Recovery Expected Following Unprecedented Labour Market Crisis | International Labour Organization.” www.ilo.org. January 25, 2021. https://www.ilo.org/resource/news/ilo-uncertain-and-uneven-recovery-expected-following-unprecedented-labour.

II. United Nations. 2021. “COVID’s Led to ‘Massive’ Income and Productivity Losses, UN Labour Estimates Show.” UN News. January 25, 2021. https://news.un.org/en/story/2021/01/1082852.

8. Richter, Felix. 2021. “How Many Jobs Were Lost in 2020 due to COVID-19?” World Economic Forum. February 4, 2021. https://www.weforum.org/stories/2021/02/covid-employment-global-job-loss/.

9. I. United Nations. 2020. “Policy Brief: COVID-19 in an Urban World.” https://unsdg.un.org/sites/default/files/2020-07/sg_policy_brief_covid_urban_world.pdf.

II. ILO. 2020. “ILO Brief: COVID-19 Crisis and the Informal Economy Immediate Responses and Policy Challenges .” ILO.org. May 2020. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@ed_protect/@protrav/@travail/documents/briefingnote/wcms_743623.pdf.

10. Alicke, Knut. 2020. “Resetting Supply Chains for the next Normal | McKinsey.” Www.mckinsey.com. July 21, 2020. https://www.mckinsey.com/capabilities/operations/

our-insights/resetting-supply-chains-for-the-next-normal.

11. I. Gartner. 2024. “Gartner Survey Shows 73% of Companies Have Made Supply Chain Network Changes in the Past Two Years.” Gartner. August 14, 2024. https://www.gartner.com/en/newsroom/press-releases/2024-08-14-gartner-survey-shows-73-percent-of-companies-have-made-supply-chain-network-changes-in-the-past-two-years.

II. Kilpatrick, Jim , Lindsey Berckman, Alan D. Faver, Kate Hardin, and Matt Sloane. 2024. “Restructuring the Supply Base: Prioritizing a Resilient, yet Efficient Supply Chain.” Deloitte Insights. Deloitte. 2024. https://www2.deloitte.com/us/en/insights/industry/manufacturing/global-supply-chain-resilience-amid-disruptions.html.

12. Ossa, Ralph. 2025. “Global Trade Faces Setback amid Rising Tariffs.” WTO Blog. April 16, 2025. https://www.wto.org/english/blogs_e/ce_ralph_ossa_e/blog_ro_16apr25_e.htm.

13. WTO. 2024a. “World Trade Report 2024: Trade and Inclusiveness - How to Make Trade Work for All.” World Trade Organization (WTO). https://www.wto.org/english/res_e/booksp_e/wtr24_e/wtr24_e.pdf.

14. WTO. 2024b. “WTO Report Shows Increase in Trade Restrictions against Backdrop of Unilateral Policies.” World Trade Organization (WTO). 2024. https://www.wto.org/english/news_e/news24_e/trdev_11dec24_e.htm.

15. I. World Economic Forum. 2025. “Chief Economists Outlook: May 2025.” World Economic Forum. May 28, 2025. https://www.weforum.org/publications/chief-economists-outlook-may-2025.

II. Letzing, John, and Philipp Grosskurth. 2025. “Buckling up for a Long Ride: Chief Economists Add Detail to a Downbeat Outlook.” World Economic Forum. May 28, 2025. https://www.weforum.org/stories/2025/05/wef-chief-economists-uncertainty-global-outlook/.

16. I. ESW. 2022. “Sustainable Global Growth and Shopper Expectations - Global Voices Survey.” ESW. November 2022. https://www.dairycheckoff.com/getmedia/658191b7-5b21-4d68-928f-ad3f089fbd27/Global-Voices-Sustainability.pdf

II. OpenText. 2021. “OpenText Survey Shows Increase in Demand for Ethically Sourced Goods.” OpenText. 2021. https://investors.opentext.com/press-releases/press-releases-details/2021/OpenText-Survey-Shows-Increase-in-Demand-for-Ethically-Sourced-Goods/default.aspx.

III. Marquette University. 2023. “Ethical Business Practices.” Marquette University Business. June 22, 2023. https://online.marquette.edu/business/blog/ethical-business-practices.

17. UNCTAD. 2014. “The Future of Sustainable Trade: Due Diligence Initiatives, Voluntary Sustainability Standards and Developing Countries.” United Nations. https://unctad.org/system/files/official-document/ditctab2024d5_en.pdf.

18. I. ESW. 2022. “Sustainable Global Growth and Shopper Expectations - Global Voices Survey.” ESW. November 2022. https://www.dairycheckoff.com/getmedia/658191b7-5b21-4d68-928f-ad3f089fbd27/Global-Voices-Sustainability.pdf

II. OpenText. 2021. “OpenText Survey Shows Increase in Demand for Ethically Sourced Goods.” OpenText. 2021. https://investors.opentext.com/press-releases/press-releases-details/2021/OpenText-Survey-Shows-Increase-in-Demand-for-Ethically-Sourced-Goods/default.aspx.

III. Marquette University. 2023. “Ethical Business Practices.” Marquette University Business. June 22, 2023. https://online.marquette.edu/business/blog/ethical-business-practices.

19. I. Allen , Brooks E. , Maxim Mayer-Cesiano , Jonathan Benson , and Tatiana O. Sullivan. 2025.

"Now More than Ever, Supply Chains Demand the Attention of Multinationals' Boards." Skadden.com. Skadden, Arps, Slate, Meagher & Flom LLP. February 19, 2025. https://www.skadden.com/insights/publications/2025/02/the-informed-board/now-more-than-ever-supply-chains-demand-the-attention-of-multinationals-boards.

II. Alicke, Knut, and Tacy Foster. 2024. "Supply Chains: Still Vulnerable." McKinsey & Company. October 14, 2024. https://www.mckinsey.com/capabilities/operations/our-insights/supply-chain-risk-survey.

20. International Labour Organization. 2024. "Forced Labour, Modern Slavery and Trafficking in Persons." International Labour Organization. 2024. https://www.ilo.org/topics-and-sectors/forced-labour-modern-slavery-and-trafficking-persons.

21. Keaten, Jamey. 2024. "Sex Trade to Slavery: A UN Agency Says Criminals Reap $236B a Year in Profits from Forced Labor." AP News. March 19, 2024. https://apnews.com/article/sexual-exploitation-slavery-forced-labor-united-nations-report-e6a4910e246aa738810e937aac68d8aa.

22. ILO. 2018. "More than 60 per Cent of the World's Employed Population Are in the Informal Economy: ILO." International Labour Organization. April 30, 2018. https://www.ilo.org/resource/news/more-60-cent-worlds-employed-population-are-informal-economy-ilo.

23. I. Boston Consulting Group (BCG) and CDP. 2025. "Corporates' Supply Chain Scope 3 Emissions Are 26 Times Higher than Their Operational Emissions." CDP and BCG. 2025. https://www.cdp.net/en/press-releases/corporates-supply-chain-scope-3-emissions-are-26-times-higher-than-their-operational-emissions

II. BCG. 2024. "Corporates' Supply Chain Scope 3 Emissions Are 26 Times Higher than Their Operational Emissions." BCG Global. June 25, 2024. https://www.bcg.com/press/25june2024-corporates-supply-chain-scope-3-emissions-higher-than-operational-emissions.

III. World III. Economic Forum. 2023. "The 'No-Excuse' Opportunities to Tackle Scope 3 Emissions in Manufacturing and Value Chains Industry Net Zero Accelerator Initiative." https://www3.weforum.org/docs/WEF_No-Excuse%E2%80%9D_Opportunities_to_Tackle_Scope_3_Emissions_in_Manufacturing_and_Value_Chains_2023.pdf.

24. I. Bonizzi, Bruno, Annina Kaltenbrunner, and Jeff Powell. 2023. "Financialization and the Challenges of Sustainable Structural Transformation Background Paper for the UN Financing for Sustainable Development Report 2023." UN Financing for Sustainable Development Report . https://financing.desa.un.org/sites/default/files/2023-05/F%20and%20SST%20FfD%202023.pdf.

II. Nicita, Alessandro, Victor Ognivtsev, and Miho Shirotori. 2013. "Global Supply Chains: Trade and Economic Policies for Developing Countries Policy Issues in International Trade and Commodities Study Series No. 55." Geneva: UNCTAD. https://unctad.org/system/files/official-document/itcdtab56_en.pdf.

25. I. Haessler, Philipp. 2020. "Strategic Decisions between Short-Term Profit and Sustainability." *Administrative Sciences* 10 (3): 63. https://doi.org/10.3390/admsci10030063.

II. Bonizzi, Bruno, Annina Kaltenbrunner, and Jeff Powell. 2023. "Financialization and the Challenges of Sustainable Structural Transformation Background Paper for the UN Financing for Sustainable Development Report 2023." UN Financing for Sustainable Development Report . https://financing.desa.un.org/sites/default/files/2023-05/F%20and%20SST%20FfD%202023.pdf.

III. Nicita, Alessandro, Victor Ognivtsev, and Miho Shirotori. 2013. "Global Supply Chains: Trade and Economic Policies for Developing Countries Policy Issues in International Trade and Commodities Study Series No. 55." Geneva: UNCTAD. https://unctad.org/system/files/official-document/itcdtab56_en.pdf.

26. I. C.W. 2013. “Racing to the Bottom.” The Economist. November 27, 2013. https://www.economist.com/free-exchange/2013/11/27/racing-to-the-bottom.

II. Nicita, Alessandro, Victor Ognivtsev, and Miho Shirotori. 2013. “Global Supply Chains: Trade and Economic Policies for Developing Countries Policy Issues in International Trade and Commodities Study Series No. 55.” Geneva: UNCTAD. https://unctad.org/system/files/official-document/itcdtab56_en.pdf.

27. I. McKinsey Global Institute. 2003. “Offshoring: Is It a Win-Win Game? McKinsey Global Institute.” McKinsey & Company. https://www.mckinsey.com/~/media/McKinsey/Featured%20Insights/Employment%20and%20Growth/Offshoring%20Is%20it%20a%20win%20win%20game/MGI_Is_offshoring_a_win_win_game_perspective.ashx.

II. Kozak, Tamas, Lajos Kasza, and Patricia Nemeth. 2023. “Examining the Impact of the Gig-Economy, as a New Challenge for Supply Chain Strategy.” *Journal of Business and Retail Management Research* Volume 18 (Issue 01). https://jbrmr.com/details&cid=586.

28. ILO. 2018. “More than 60 per Cent of the World’s Employed Population Are in the Informal Economy: ILO.” International Labour Organization. April 30, 2018. https://www.ilo.org/resource/news/more-60-cent-worlds-employed-population-are-informal-economy-ilo.

29. Braun, Sara. 2025. “The Gig Economy Is Growing 3x Faster than the Traditional Workforce, and Gen Z Is Leading the Charge: ‘They Don’t Trust the Old System.’” Fortune. April 16, 2025. https://fortune.com/2025/04/16/the-gig-economy-is-growing-3x-faster-than-the-traditional-workforce-and-gen-z-is-leading-the-charge-they-dont-trust-the-old-system/.

30. I. Simet, Lena. 2025. “The Platform Economy Runs on Inequality – and Sidesteps Labor Rights.” Human Rights Watch. May 28, 2025. https://www.hrw.org/news/2025/05/28/platform-economy-runs-inequality-and-sidesteps-labor-rights.

II. ILO. 2018. “More than 60 per Cent of the World’s Employed Population Are in the Informal Economy: ILO.” International Labour Organization. April 30, 2018. https://www.ilo.org/resource/news/more-60-cent-worlds-employed-population-are-informal-economy-ilo.

31. I. UN. 2024. “Micro-, Small and Medium-Sized Enterprises Day.” United Nations. 2024. https://www.un.org/en/observances/micro-small-medium-businesses-day.

II. Informal Working Group on Micro, Small and Medium-sized Enterprises (MSMEs). 2025. “WTO | Informal Working Group on Micro, Small and Medium-Sized Enterprises (MSMEs).” World Trade Organization (WTO). February 4, 2025. https://www.wto.org/english/tratop_e/msmes_e/msmes_e.htm.

III. UN Global Compact. 2025. “The Unique Role of SMEs and Supply Chains in Charting a Positive Future | UN Global Compact.” UN Global Compact. 2025. https://unglobalcompact.org/compactjournal/unique-role-smes-and-supply-chains-charting-positive-future.

32. I. Wilson, Matthew, and Ratnakar Adhikari. 2025. “How Small Businesses Can Navigate Global Trade in an Era of Polycrisis.” World Economic Forum. May 20, 2025. https://www.weforum.org/stories/2025/05/small-businesses-msmes-global-trade-polycrisis.

II. Expert Interviews, for details, see Appendix A. Interviewed Experts.

33. I. UNCTAD. 2013. “80% of Trade Takes Place in ‘Value Chains’ Linked to Transnational Corporations.” UNCTAD. February 27, 2013. https://unctad.org/press-material/80-trade-takes-place-value-chains-linked-transnational-corporations-unctad-report

II. Baum, Frances E., David M. Sanders, Matt Fisher, Julia Anaf, Nicholas Freudenberg, Sharon Friel, Ronald Labonté, et al. 2016. “Assessing the Health Impact of Transnational Corporations: Its Importance and a Framework.” *Globalization and*

Health 12 (1). https://doi.org/10.1186/s12992-016-0164-x.

III. World Bank. 2021. "Multinational Corporations Shape Global Value Chain Development Chapter 2." https://thedocs.worldbank.org/en/doc/c9af0143184de77cb58ddd5adf024508-0350012021/related/9781464816833-ch2-1.pdf.

34. OECD . 2019. "OECD Capital Market Series: Owners of the World's Listed Companies." OECD. https://www.oecd.org/en/publications/owners-of-the-world-s-listed-companies_ed7ca2f3-en.html.

35. Ramaswamy, Sree , Michael Birshan, James Manyika, Jacques Bughin, and Lola Woetzel. 2019. "What Every CEO Needs to Know about 'Superstar' Companies." McKinsey & Company. April 2, 2019. https://www.mckinsey.com/featured-insights/innovation-and-growth/what-every-ceo-needs-to-know-about-superstar-companies.

36. Baum F. The new public health. 4th ed. Melbourne: Oxford University Press; 2015. In https://globalizationandhealth.biomedcentral.com/articles/10.1186/s12992-016-0164-x

37. I. Orlik, Tom , Justin Jimenez, and Cedric Sam. 2021. "World Dominating Superstar Firms Get Bigger, Techier, and More Chinese." Www.bloomberg.com. May 30, 2021. https://www.bloomberg.com/graphics/2021-biggest-global-companies-growth-trends/.

II. Adams, Rose. 2022. "Big Business Games the Supply Chain." *The American Prospect*, February 9, 2022. https://prospect.org/economy/big-business-games-the-supply-chain/.

38. OECD. 2023. "OECD SME and Entrepreneurship Outlook 2023." OECD. June 27, 2023. https://www.oecd.org/en/publications/oecd-sme-and-entrepreneurship-outlook-2023_342b8564-en.html.

39. Alicke, Knut, and Tacy Foster. 2024. "Supply Chains: Still Vulnerable." McKinsey & Company. October 14, 2024. https://www.mckinsey.com/capabilities/operations/our-insights/supply-chain-risk-survey.

40. I. Ashcroft, Sean . 2023. "Supply Chains 'Playing Catch up on Visibility Technology.'" Supplychaindigital.com. February 8, 2023. https://supplychaindigital.com/technology/supply-chains-must-catch-up-on-visibility-tech-fourkites.

II. Deloitte UK. 2022. "The Imperative for Increased Supply Chain Resilience | Deloitte UK." Deloitte. October 18, 2022. https://www.deloitte.com/uk/en/services/risk-advisory/research/the-imperative-for-increased-supply-chain-resilience.html.

41. I. ESW. 2022. "Sustainable Global Growth and Shopper Expectations - Global Voices Survey." ESW. November 2022. https://www.dairycheckoff.com/getmedia/658191b7-5b21-4d68-928f-ad3f089fbd27/Global-Voices-Sustainability.pdf

II. OpenText. 2021. "OpenText Survey Shows Increase in Demand for Ethically Sourced Goods." OpenText. 2021. https://investors.opentext.com/press-releases/press-releases-details/2021/OpenText-Survey-Shows-Increase-in-Demand-for-Ethically-Sourced-Goods/default.aspx.

III. Marquette University. 2023. "Ethical Business Practices." Marquette University Business. June 22, 2023. https://online.marquette.edu/business/blog/ethical-business-practices.

42. I. UNCTAD. 2025b. "The Future of Sustainable Trade: Due Diligence Initiatives, Voluntary Sustainability Standards and Developing Countries." United Nations. https://unctad.org/system/files/official-document/ditctab2024d5_en.pdf.

II. European Commission. 2023. "Regulation on Deforestation-Free Products." European Commission. 2023. https://environment.ec.europa.eu/topics/forests/deforestation/regulation-deforestation-free-products_en.

III. European Commission. 2025. “Corporate Sustainability Due Diligence.” European Commission. February 26, 2025. https://commission.europa.eu/business-economy-euro/doing-business-eu/sustainability-due-diligence-responsible-business/corporate-sustainability-due-diligence_en.

43. I. Allen , Brooks E. , Maxim Mayer-Cesiano , Jonathan Benson , and Tatiana O. Sullivan. 2025. “Now More than Ever, Supply Chains Demand the Attention of Multinationals’ Boards.” Skadden.com. Skadden, Arps, Slate, Meagher & Flom LLP. February 19, 2025. https://www.skadden.com/insights/publications/2025/02/the-informed-board/now-more-than-ever-supply-chains-demand-the-attention-of-multinationals-boards.

II. Alicke, Knut, and Tacy Foster. 2024. “Supply Chains: Still Vulnerable.” McKinsey & Company. October 14, 2024. https://www.mckinsey.com/capabilities/operations/our-insights/supply-chain-risk-survey.

44. Descartes. 2025. “2025 Trade Compliance Trends: Insights Shaped by 2024.” Descartes System Group. 2025. https://www.descartes.com/resources/knowledge-center/2025-trade-compliance-trends-insights-shaped-2024.

45. UNCTAD. 2025b. “Global Trade in 2025: Resilience under Pressure.” UN Trade and Development (UNCTAD). March 14, 2025. https://unctad.org/news/global-trade-2025-resilience-under-pressure.

46. UNCTAD. 2024. “Trade and Development Report 2024 - Overview.” UNCTAD. October 29, 2024. https://unctad.org/publication/trade-and-development-report-2024

47. I. Macroeconomic and Development Policies Branch. 2024. “Trade and Development Report 2024 - Rethinking Development in the Age of Discontent.” UNCTAD. 2024. https://unctad.org/system/files/official-document/tdr2024_en.pdf

II. UNCTAD. 2024. “Trade and Development Report 2024 - Overview.” UNCTAD. October 29, 2024. https://unctad.org/publication/trade-and-development-report-2024

48. Ossa, Ralph. 2025. “Global Trade Faces Setback amid Rising Tariffs.” WTO Blog. April 16, 2025. https://www.wto.org/english/blogs_e/ce_ralph_ossa_e/blog_ro_16apr25_e.htm.

49. I. World Economic Forum. 2025. “Chief Economists Outlook: May 2025.” World Economic Forum. May 28, 2025. https://www.weforum.org/publications/chief-economists-outlook-may-2025.

II. Letzing, John, and Philipp Grosskurth. 2025. “Buckling up for a Long Ride: Chief Economists Add Detail to a Downbeat Outlook.” World Economic Forum. May 28, 2025. https://www.weforum.org/stories/2025/05/wef-chief-economists-uncertainty-global-outlook/.

50. WTO. 2024b. “WTO Report Shows Increase in Trade Restrictions against Backdrop of Unilateral Policies.” World Trade Organization (WTO). 2024. https://www.wto.org/english/news_e/news24_e/trdev_11dec24_e.htm.

51. DG Okonjo-Iweala. 2024. “Report of the TPRB from the Director-General on Trade-Related Developments.” Wto.org. December 2024. https://www.wto.org/english/news_e/spno_e/spno53_e.htm.

52. UN. 2021b. “Climate Change ‘Biggest Threat Modern Humans Have Ever Faced’, World-Renowned Naturalist Tells Security Council, Calls for Greater Global Cooperation | UN Press.” Press.un.org. United Nations. February 23, 2021. https://press.un.org/en/2021/sc14445.doc.htm.

53. UN. 2021b. “Climate Change ‘Biggest Threat Modern Humans Have Ever Faced’, World-Renowned Naturalist Tells Security Council, Calls for Greater Global Cooperation | UN Press.” Press.un.org. United Nations. February 23, 2021. https://press.un.org/en/2021/sc14445.doc.htm.

54. I. S&P Global. 2024. “Supply Chain Look Forward.” S&P Global. https://www.spglobal.com/content/dam/spglobal/corporate/en/images/general/look-forward/lookforward_supplychain_2024.pdf.

II. Alicke, Knut, and Tacy Foster. 2024. “Supply Chains: Still Vulnerable.” McKinsey & Company. October 14, 2024. https://www.mckinsey.com/capabilities/operations/our-insights/supply-chain-risk-survey.

III. KPMG. 2024. “Global Supply Chain Fragility: Five Trends and Their Impact on the Global Economy.” Kpmg.com. July 2024. https://kpmg.com/us/en/articles/2024/2024-supply-chain-update.html.

55. I. S&P Global. 2024. “Supply Chain Look Forward.” S&P Global. https://www.spglobal.com/content/dam/spglobal/corporate/en/images/general/look-forward/lookforward_supplychain_2024.pdf.

II. Alicke, Knut, and Tacy Foster. 2024. “Supply Chains: Still Vulnerable.” McKinsey & Company. October 14, 2024. https://www.mckinsey.com/capabilities/operations/our-insights/supply-chain-risk-survey.

56. UNCTAD. 2025b. “Global Trade in 2025: Resilience under Pressure.” UN Trade and Development (UNCTAD). March 14, 2025. https://unctad.org/news/global-trade-2025-resilience-under-pressure.

57. I. Santos, Elle. 2024. “Nearshoring vs. Reshoring: Boosting Supply Chain Resilience.” The Armstrong Company. April 19, 2024. https://www.goarmstrong.com/resources/nearshoring-vs-reshoring/.

II. Birshan, Michael, Jeongmin Seong, and Olivia White. 2024. “How Shockproof Is Your Supply Chain, Really?” McKinsey & Company. April 1, 2024. https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/how-shockproof-is-your-supply-chain-really.

III. George, Katy, Sree Ramaswamy, and Lou Rassey. 2014. “Next-Shoring: A CEO’s Guide.” McKinsey & Company. https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/Operations/Our%20Insights/Next%20shoring%20A%20CEOs%20guide/Next_shoring_A_CEOs_guide.pdf.

58. I. Gartner. 2024. “Gartner Survey Shows 73% of Companies Have Made Supply Chain Network Changes in the Past Two Years.” Gartner. August 14, 2024. https://www.gartner.com/en/newsroom/press-releases/2024-08-14-gartner-survey-shows-73-percent-of-companies-have-made-supply-chain-network-changes-in-the-past-two-years.

II. Kilpatrick, Jim , Lindsey Berckman, Alan D. Faver, Kate Hardin, and Matt Sloane. 2024. “Restructuring the Supply Base: Prioritizing a Resilient, yet Efficient Supply Chain.” Deloitte Insights. Deloitte. 2024. https://www2.deloitte.com/us/en/insights/industry/manufacturing/global-supply-chain-resilience-amid-disruptions.html.

59. I. Alicke, Knut, and Tacy Foster. 2024. “Supply Chains: Still Vulnerable.” McKinsey & Company. October 14, 2024. https://www.mckinsey.com/capabilities/operations/our-insights/supply-chain-risk-survey.

II. Saenz, Hernan, and Adam Borchert. 2024. “Businesses Accelerate Reshoring and Near-Shoring amid Heightened Geopolitical Uncertainties and Rising Costs.” Bain & Company. 2024. https://www.bain.com/about/media-center/press-releases/2024/businesses-accelerate-reshoring-and-near-shoring-amid-heightened-geopolitical-uncertainties-and-rising-costs-bain--company-finds/.

60. Seong, Jeongmin, Olivia White, Lola Woetzel, Sven Smit, Tiago Devesa, Michael Birshan, and Hamid Samandari. 2022. “Global Flows: The Ties That Bind in an Interconnected World | McKinsey.” Www.mckinsey.com. November 15, 2022. https://www.mckinsey.com/capabilities/strategy-and-corporate-finance/our-insights/global-flows-the-ties-that-bind-in-an-interconnected-world#/.

61. UNCTAD. 2025b. “Global Trade in 2025: Resilience under Pressure.” UN Trade and Development (UNCTAD). March 14, 2025. https://unctad.org/news/global-trade-2025-resilience-under-pressure.

62. UNCTAD. 2025b. “Global Trade in 2025: Resilience under Pressure.” UN Trade and Development (UNCTAD). March 14, 2025. https://unctad.org/news/global-trade-2025-resilience-under-pressure.

63. Expert Interviews, for details, see Appendix A. Interviewed Experts.

64. Expert Interviews, for details, see Appendix A. Interviewed Experts.

65. I. Gibson, Kate. 2024. “How Businesses Can Measure & Reduce Carbon Emissions.” Business Insights Blog. Harvard Business School. July 11, 2024. https://online.hbs.edu/blog/post/how-to-reduce-carbon-emissions.

II. Lublin, Joann S. 2023. “This Fortune 500 CEO Is Obsessed with Gender Parity, but She Still Hasn’t Achieved It. Here’s Why.” TIME. Time. March 5, 2023. https://time.com/6259808/revathi-advaithi-flex-ceo-gender-parity/.

66. I. WTO. 2024. “World Trade Report 2024: Trade and Inclusiveness - How to Make Trade Work for All.” World Trade Organization (WTO). https://www.wto.org/english/res_e/booksp_e/wtr24_e/wtr24_e.pdf.

II. UN Climate Change. 2024. “Mandatory Environmental and Human Rights Safeguards Agreed for UN Carbon Market.” UNFCCC. October 7, 2024. https://unfccc.int/news/mandatory-environmental-and-human-rights-safeguards-agreed-for-un-carbon-market.

III. Ciuriak, Dan. 2023. “Friendshoring, Nearshoring and the Limitations of Supply Chain Politics – C.D. Howe Institute.” C.D. Howe Institute. May 25, 2023. https://cdhowe.org/publication/friendshoring-nearshoring-and-limitations-supply-chain-politics/.

IV. Ruban, Oleg. 2023. “Nearshoring, Friendshoring and Reshoring: Heads up to Equity Allocators | MSCI.” MSCI. 2023. https://www.msci.com/research-and-insights/blog-post/nearshoring-friendshoring-and-reshoring-heads-up-to-equity-allocators.

V. Berkey, Brian. 2025. “Exploitation, Human Rights and Corporate Obligations.” *Business and Human Rights Journal*, January, 1–20. https://doi.org/10.1017/bhj.2024.25.

VI. Hummels, David, Jakob R. Munch, and Chong Xiang. 2018. “Offshoring and Labor Markets.” *Journal of Economic Literature* 56 (3): 981–1028. https://doi.org/10.1257/jel.20161150.

67. Allen , Brooks E. , Maxim Mayer-Cesiano , Jonathan Benson , and Tatiana O. Sullivan. 2025. “Now More than Ever, Supply Chains Demand the Attention of Multinationals’ Boards.” Skadden.com. Skadden, Arps, Slate, Meagher & Flom LLP., 2025. https://www.skadden.com/insights/publications/2025/02/the-informed-board/now-more-than-ever-supply-chains-demand-the-attention-of-multinationals-boards.

68. I. European Commission. 2023. “Regulation on Deforestation-Free Products.” European Commission. 2023. https://environment.ec.europa.eu/topics/forests/deforestation/regulation-deforestation-free-products_en.

II. European Commission. 2025. “Corporate Sustainability Due Diligence.” European Commission. February 26, 2025. https://commission.europa.eu/business-economy-euro/doing-business-eu/sustainability-due-diligence-responsible-business/corporate-sustainability-due-diligence_en.

69. I. Thoms, Anahita , Dr Alexander Ehrle, Kimberley Fischer, and Caroline Walka. 2024a. “Supply Chain Due Diligence in the EU and Germany: Navigating the Evolving Landscape.” Global Supply Chain Compliance. Baker McKenzie. February 1, 2024. https://supplychaincompliance.bakermckenzie.com/2024/02/01/supply-chain-due-diligence-in-the-e

u-and-germany-navigating-the-evolving-landscape/.

II. Thoms, Anahita, Dr Alexander Ehrle, Kimberley Fischer, and Caroline Walka. 2024b. “European Union and Germany: Sustainable Supply Chains - Comparing Legal Requirements.” Global Compliance News. Baker McKenzie. April 3, 2024. https://www.globalcompliancenews.com/2024/04/03/https-insightplus-bakermckenzie-com-bm-investigations-compliance-ethics-european-union-and-germany-sustainable-supply-chains-comparing-legal-requirements_03202024/.

III. Gottlieb, Cleary. 2024. “Supply Chain Due Diligence Obligations in Germany, France, and the EU: An Overview.” Cleary Gottlieb Steen & Hamilton LLP. March 5, 2024. https://www.clearygottlieb.com/news-and-insights/publication-listing/supply-chain-due-diligence-obligations-in-germany-france-and-the-eu-an-overview.

IV. Allen , Brooks E. , Ryan D. Junck , Jonathan Benson , and Karolina A Kopczynska-Grobelny. 2024. “UK Modern Slavery Act: The Future of Transparency in Supply Chains.” Skadden. Skadden, Arps, Slate, Meagher & Flom LLP. September 19, 2024. https://www.skadden.com/insights/publications/2024/09/uk-modern-slavery-act.

70. McLymore, Arriana, and Helen Reid. 2025. “How W the End of the de Minimis Exemption Impact US Shopp and Businesses?” *Reuters*, August 29, 2025. https://www.reuters.com/business/retail-consumer/whad-de-minimis-exemption-means-us-shoppers-business025-08-29.

71. I. Runyon, Natalie. 2025. “Addressing the Key Challenges for SMEs in Sustainability & Reporting - Thomson Reuters Institute.” Thomson Reuters Institute. February 18, 2025. https://www.thomsonreuters.com/en-us/posts/international-trade-and-supply-chain/smes-sustainability-reporting/.

II. InFlow Inventory. 2025. “The CSDDD Explained: What It Means for SMEs.” InFlow Inventory. May 5, 2025. https://www.inflowinventory.com/blog/what-is-the-csddd/.

III. Pschera, Maxime. 2025. “EU CSDDD Directive: Compliance Timeline & Key Requirements.” Atlas Metrics. March 17, 2025. https://www.atlasmetrics.io/blog/csddd.

72. I. Allen , Brooks E. , Maxim Mayer-Cesiano , Jonathan Benson , and Tatiana O. Sullivan. 2025. “Now More than Ever, Supply Chains Demand the Attention of Multinationals’ Boards.” Skadden.com. Skadden, Arps, Slate, Meagher & Flom LLP. February 19, 2025. https://www.skadden.com/insights/publications/2025/02/the-informed-board/now-more-than-ever-supply-chains-demand-the-attention-of-multinationals-boards.

II. Alicke, Knut, and Tacy Foster. 2024. “Supply Chains: Still Vulnerable.” McKinsey & Company. October 14, 2024. https://www.mckinsey.com/capabilities/operations/our-insights/supply-chain-risk-survey.

73. I. UNCTAD. 2025b. “Global Trade in 2025: Resilience under Pressure.” UN Trade and Development (UNCTAD). March 14, 2025. https://unctad.org/news/global-trade-2025-resilience-under-pressure.

II. International Energy Agency (IEA) and the Organisation for Economic Co-operation and Development (OECD). 2025. “The Role of Traceability in Critical Mineral Supply Chains.” https://iea.blob.core.windows.net/assets/aa827202-9d85-4805-b3ac-d489d3b900e3/TheRoleofTraceabilityinCriticalMineralSupplyChains.pdf.

74. Keith, Tamara, and Franco Ordoñez. 2025. “Trump Announces Plan to Double Tariffs on Imported Steel to 50%.” WSKG. May 30, 2025. https://wskg.org/npr-news/2025-05-30/trump-announces-plan-to-double-tariffs-on-imported-steel-to-50.

75. German Institute of Development and Sustainability. 2023. “The Global Race to Subsidise Green Technologies.” IDOS. 2023. https://www.idos-research.de/en/the-current-colu

mn/article/the-global-race-to-subsidise-green-technologies/.

76. WTO. 2024. “World Trade Report 2024: Trade and Inclusiveness - How to Make Trade Work for All.” World Trade Organization (WTO). https://www.wto.org/english/res_e/booksp_e/wtr24_e/wtr24_e.pdf.

77. Simons, Tad. 2024. “The Race to Regulate E-Commerce Is Just Beginning - Thomson Reuters Institute.” Thomson Reuters Institute. February 7, 2024. https://www.thomsonreuters.com/en-us/posts/international-trade-and-supply-chain/regulating-e-commerce.

78. Ossa, Ralph . 2023. “Digital Trade Is Key to Boosting Growth in Developing Economies.” World Trade Organization (WTO). December 15, 2023. https://www.wto.org/english/blogs_e/ce_ralph_ossa_e/blog_ro_15dec23_e.htm.

79. Ossa, Ralph . 2023. “Digital Trade Is Key to Boosting Growth in Developing Economies.” World Trade Organization (WTO). December 15, 2023. https://www.wto.org/english/blogs_e/ce_ralph_ossa_e/blog_ro_15dec23_e.htm.

80. WTO. 2024. “World Trade Report 2024: Trade and Inclusiveness - How to Make Trade Work for All.” World Trade Organization (WTO). https://www.wto.org/english/res_e/booksp_e/wtr24_e/wtr24_e.pdf.

81. Expert Interviews, for details, see Appendix A. Interviewed Experts.

82. Gill, Indermit. 2017. “Future Development Reads: China’s Shifting Manufacturing Labor Pool Is Creating Global Dreams—and Nightmares.” Brookings. November 17, 2017. https://www.brookings.edu/articles/future-development-reads-the-manufacturing-dreams-and-nightmares-of-china/.

83. Textile Focus. 2025. “Bangladesh’s Garment Sector at a Crossroads: Tariff Relief, Wage Pressures, and the Quest for Long-Term Competitiveness.” Textile Focus. August 19, 2025. https://textilefocus.com/bangladeshs-garment-sector-at-a-crossroads-tariff-relief-wage-pressures-and-the-quest-for-long-term-competitiveness/.

84. Expert Interviews, for details, see Appendix A. Interviewed Experts.

85. Expert Interviews, for details, see Appendix A. Interviewed Experts.

86. UNCTAD. 2025a. “Key Statistics and Trends in International Trade 2024.” Geneva: United Nations. https://unctad.org/system/files/official-document/ditctab2025d2_en.pdf

87. Grand View Research. 2024. “Supply Chain Management Market Size, Share & Trends Report Supply Chain Management Market Size, Share & Trends Analysis Report by Component (Solution, Services), by Deployment, by Enterprise Size, by Vertical, by Region, and Segment Forecasts, 2024 - 2030.” Grand View Research. 2024. https://www.grandviewresearch.com/industry-analysis/supply-chain-management-market-report.

88. I. Gartner. 2025. “Gartner Identifies Top Supply Chain Technology Trends for 2025.” Gartner. 2025. https://www.gartner.com/en/newsroom/press-releases/2025-03-18-gartner-identifies-top-supply-chain-technology-trends-for-2025

II. Association for Supply Chain Management. 2025. “Top 10 Supply Chain Trends 2025.” ASCM. 2025. https://www.ascm.org/globalassets/ascm_website_assets/docs/top-10-trends-report-2025.pdf.

III. KPMG. 2024a. “Supply Chain Trends 2024: The Digital Shake-Up.” KPMG. 2024. https://kpmg.com/xx/en/our-insights/ai-and-technology/supply-chain-trends-2024.html.

IV. Microsoft. 2024. “Supply Chain Innovation and Trends | Microsoft Dynamics 365.” Microsoft.com. 2024. https://www.microsoft.com/en-us/dynamics-365/topics/supply-chain-management/supply-chain-technology-innovation-trends.

V. MAERSK. 2024. “Supply Chain Visibility.” MAERSK. https://www.maersk.com/insights/logistics-trend-m

ap/supply-chain-visibility?exit=logistics-trend-map-report.

89. Expert Interviews, for details, see Appendix A. Interviewed Experts.

90. MAERSK. 2024. “Supply Chain Visibility.” MAERSK. https://www.maersk.com/insights/logistics-trend-map/supply-chain-visibility?exit=logistics-trend-map-report.

91. Cara Clinton Vollmer. 2023. “Supply Chain Visibility (SCV): An Introduction.” Oracle.com. Oracle. December 20, 2023. https://www.oracle.com/scm/supply-chain-visibility/.

92. Association for Supply Chain Management. 2025. “Top 10 Supply Chain Trends 2025.” ASCM. 2025. https://www.ascm.org/globalassets/ascm_website_assets/docs/top-10-trends-report-2025.pdf.

93. KPMG. 2024b. “Finance as a Service: Empowering Finance at the Speed of AI.” KPMG. https://kpmg.com/kpmg-us/content/dam/kpmg/pdf/2025/empowering-finance-speed-ai.pdf.

94. Linder, Jannik. 2025. “Ai in the Supply Chain Industry Statistics Statistics: Market Data Report 2025.” Gitnux.org. 2025. https://gitnux.org/ai-in-the-supply-chain-industry-statistics.

95. Tullio, Drew. 2024. “8 Stats That Show Trends for AI in Procurement in 2024 .” Airbase by Paylocity . July 31, 2024. https://www.airbase.com/blog/ai-in-procurement.

96. Oca, Alberto, Rohit Panikkar, Chetan Sampat, and Thorne Brown. 2024. “Harnessing the Power of AI in Distribution Operations.” McKinsey & Company. November 15, 2024. https://www.mckinsey.com/industries/industrials-and-electronics/our-insights/distribution-blog/harnessing-the-power-of-ai-in-distribution-operations.

97. Expert Interviews, for details, see Appendix A. Interviewed Experts.

98. I. Sousan, Tony. 2025. “Navigating 2025 Tariffs: Strategies for Supply Chain Resilience.” Sousangroup.com. The Sousan Group. April 24, 2025. https://sousangroup.com/blog/navigating-2025-tariff-turbulence-supply-chain-resilience.

II. Expert Interviews, for details, see Appendix A. Interviewed Experts.

99. I. Deloitte US. 2023. “2023 Global Chief Procurement Officer Survey.” Deloitte. 2023. https://www.deloitte.com/us/en/services/consulting/services/procurement-strategy.html.

II. Expert Interviews, for details, see Appendix A. Interviewed Experts.

100. Deloitte US. 2023. “2023 Global Chief Procurement Officer Survey.” Deloitte. 2023. https://www.deloitte.com/us/en/services/consulting/services/procurement-strategy.html.

101. I. Expert Interviews, for details, see Appendix A. Interviewed Experts.

II. U.S. Secretary of Commerce. 2003. “Directive: Minority Business Development Agency.” U.S. Office of Privacy and Open Government. 2003. https://www.commerce.gov/opog/directives/DOO_25-4A.

102. Expert Interviews, for details, see Appendix A. Interviewed Experts

103. I. DTIC. 2019. “Broad-Based Black Economic Empowerment - the Department of Trade Industry and Competition.” Www.thedtic.gov.za. March 8, 2019. https://www.thedtic.gov.za/financial-and-non-financial-support/b-bbee/broad-based-black-economic-empowerment/.

II. MSDUK. 2025. “Advancing Ethnic Minority Businesses through Supplier Diversity.” MSDUK. 2025. https://www.msduk.org.uk/.

104. Expert Interviews, for details, see Appendix A. Interviewed Experts

105. Expert Interviews, for details, see Appendix A. Interviewed Experts

106. Informal Working Group on Micro, Small and Medium-sized Enterprises (SMEs). 2025. “WTO | Informal Working Group on Micro, Small and Medium-Sized Enterprises (MSMEs).” World Trade Organization (WTO). February 4, 2025. https://www.wto.org/english/tratop_e/msmes_e/msmes_e.htm.

107. OECD. 2023. “OECD SME and Entrepreneurship Outlook 2023.” OECD. June 27, 2023. https://www.oecd.org/en/publications/oecd-sme-and-entrepreneurship-outlook-2023_342b8564-en.html.

108. Hackett Group and Supplier.io . 2024. “The 2023 State of Supplier Diversity.” Supplier.io. November 12, 2024. https://supplier.io/resources/webinars-podcasts/the-state-of-supplier-diversity-with-supplier-io-and-the-hackett-group-2023.

109. Expert Interviews, for details, see Appendix A. Interviewed Experts

110. I. UN. 2024. “Micro-, Small and Medium-Sized Enterprises Day.” United Nations. 2024. https://www.un.org/en/observances/micro-small-medium-businesses-day.

II. Informal Working Group on Micro, Small and Medium-sized Enterprises (MSMEs). 2025. “WTO | Informal Working Group on Micro, Small and Medium-Sized Enterprises (MSMEs).” World Trade Organization (WTO). February 4, 2025. https://www.wto.org/english/tratop_e/msmes_e/msmes_e.htm.

III. UN Global Compact. 2025. “The Unique Role of SMEs and Supply Chains in Charting a Positive Future | UN Global Compact.” UN Global Compact. 2025. https://unglobalcompact.org/compactjournal/unique-role-smes-and-supply-chains-charting-positive-future.

111. Melançon, Rebecca. 2025. “Locally-Owned, Independent Businesses Are the Backbone of Our Local Economy and the Foundation of Communities’ Unique Culture. - Local Business Institute.” Local Business Institute. February 11, 2025. https://localbusinessinstitute.org/2025/02/locallly-owned-backbone-of-economy/.

112. Trade4MSMEs - WTO Informal Working Group on Micro, Small and Medium-sized Enterprises . n.d. “A Handbook for Policymakers to Support Micro-, Small-and Medium-Sized Enterprises to Engage in International Trade.” WTO / IFC. https://www.wto.org/english/tratop_e/msmes_e/handbook_policymaker_guides_e.pdf.

113. Trade4MSMEs - WTO Informal Working Group on Micro, Small and Medium-sized Enterprises . n.d. “A Handbook for Policymakers to Support Micro-, Small-and Medium-Sized Enterprises to Engage in International Trade.” WTO / IFC. https://www.wto.org/english/tratop_e/msmes_e/handbook_policymaker_guides_e.pdf.

114. Expert Interviews, for details, see Appendix A. Interviewed Experts.

115. Expert Interviews, for details, see Appendix A. Interviewed Experts.

116. Cai, Yifei. 2025. “US-China Tensions, Global Supply Chains Pressure, and Global Economy.” *Economics Letters* 250 (April): 112283. https://doi.org/10.1016/j.econlet.2025.112283.

117. I. Evenett, Simon, and Johannes Fritz. 2020. “Collateral Damage Cross-Border Fallout from Pandemic Policy Overdrive the 26th Global Trade Alert Report.” https://www.wita.org/wp-content/uploads/2020/11/GTA26disseminated.pdf.

II. WTO. 2024b. “Report on G20 Trade Measures.” World Trade Organization (WTO). https://www.wto.org/english/news_e/news24_e/trdev_13nov24_wto_report_e.pdf.

III.WTO. 2024b. “WTO Report Shows Increase in Trade Restrictions against Backdrop of Unilateral Policies.” World Trade Organization (WTO). 2024. https://www.wto.org/english/news_e/news24_e/trdev_11dec24_e.htm.

IV. George, Libby. 2024. “EBRD Sees Global Resurgence in Protective Industrial Policies.” *Reuters*, November 26, 2024. https://www.reuters.com/business/global-resurgence-protective-industrial-policies-ebrd-says-2024-11-26/.

118. Khumalo, Elizabeth. 2025. “The Future of US-Africa Trade: Navigating Uncertainty beyond AGOA.” FurtherAfrica. February 24, 2025. https://furtherafrica.com/2025/02/24/the-future-of-us-africa-trade-navigating-uncertainty-beyond-agoa.

119. Froy, Francesca, and Giguère Sylvain. 2010. *Local Economic and Employment Development (LEED) Breaking out of Policy Silos Doing More with Less*. OECD Publishing. https://www.oecd.org/content/dam/oecd/en/publications/reports/2010/10/breaking-out-of-policy-silos_g1g11a76/9789264094987-en.pdf.

120. Shikwati, James. 2024. “AfCFTA: A Beacon of Hope or a Failed Project?” www.freiheit.org. May 2, 2024. https://www.freiheit.org/sub-saharan-africa/beacon-hope-or-failed-project.

121. UNIDO. 2007. “Corruption Prevention to Foster Small and Medium-Sized Enterprise Development: Providing Anti-Corruption Assistance to Small Businesses in the Developing World. Volume I .” *Unido.org*. United Nations. https://doi.org/4789011.

122. UNIDO. 2007. “Corruption Prevention to Foster Small and Medium-Sized Enterprise Development: Providing Anti-Corruption Assistance to Small Businesses in the Developing World. Volume I .” *Unido.org*. United Nations. https://doi.org/4789011.

123. I. UNIDO. 2007. “Corruption Prevention to Foster Small and Medium-Sized Enterprise Development: Providing Anti-Corruption Assistance to Small Businesses in the Developing World. Volume I .” *Unido.org*. United Nations. https://doi.org/4789011.

II. Pickard, Joe. 2023. “Survey Results: Transparency and Accountability Key to Ethical Behaviour.” *The Accountant*, June. https://doi.org/10/2022/01/cropped-The-Accountant-Online-Favicon-150x150.

124. Transparency International. 2024. “Corruption Perceptions Index 2024.” Transparency.org. Transparency International. 2024. https://www.transparency.org/en/cpi/2024.

125. I. World Bank. 2019. “Small and Medium Enterprises (SMEs) Finance.” World Bank. www.worldbank.org. October 16, 2019. https://www.worldbank.org/en/topic/smefinance.

II. SME Finance Forum. 2024. “What We Do.” SME Finance Forum. IFC. 2024. https://www.smefinanceforum.org/about/what-we-do.

III. Expert Interviews, for details, see Appendix A. Interviewed Experts.

126. I. BCG Global. 2021. “Global Asset Management 2021: The $100 Trillion Machine.” BCG. June 29, 2021. https://www.bcg.com/publications/2021/global-asset-management-industry-report.

II. Expert Interviews, for details, see Appendix A. Interviewed Experts.

127. Expert Interviews, for details, see Appendix A. Interviewed Experts.

128. Payall. 2024. “SMEs & Payments – Overlooked, Under-Appreciated, and Underserved.” Thepaymentsassociation.org. August 16, 2024. https://thepaymentsassociation.org/article/smes-payments-overlooked-under-appreciated-and-underserved/.

129. Treadway, Clint. 2017. “Late Payments Cost Small Businesses $3 Trillion per Year.” CPA Practice Advisor. December 22, 2017. https://www.cpapracticeadvisor.com/2017/12/22/late-payments-cost-small-businesses-3-trillion-per-year/28188/.

130. Expert Interviews, for details, see Appendix A. Interviewed Experts.

131. United Nations. 2024. “Micro-, Small and Medium-Sized Enterprises Day.” United Nations. 2024. https://www.un.org/en/observances/micro-small-medium-businesses-day.

132. Drentin, Riccardo, Mauro Erriquez, Carsten Nee, and Marco Ziegler. 2018. “Long Tail, Big Savings: Digital Unlocks Hidden Value in Procurement.” McKinsey & Company. June 6, 2018. https://www.mckinsey.com/capabilities/operations/our-insights/long-tail-big-savings-digital-unlocks-hidden-value-in-procurement#/.

133. MCB Group. 2025. “Trade Report 2025: The True Potential of Africa Lies in Trading with Itself.” MCB Group. 2025. https://mcbgroup.com/think/article/trade-report-2025-intra-trade.

134. Carsis Consulting. 2025. “Gap Analysis of the Business and Policy Environment for Youth and Women’s Entrepreneurship in Ghana.” Ghana Chamber of Young Entrepreneurs (GCYE) and ICR Facility. https://gcyegh.org/wp-content/uploads/2025/06/Gap-Analysis_NBA-Launch-Event_Final-Version.pdf.

135. IFC. 2021. “Demand for Digital Skills in Sub-Saharan Africa.” World Bank Group. https://documents1.worldbank.org/curated/en/099614312152318607/pdf/IDU0b36e9e030767f0417e0afb806e2ffdf1e8bf.pdf.

136. Atiyas, Izak, and Mark Dutz. 2023. “Digital Technology Uses among Microenterprises - Why Is Productive Use so Low across Sub-Saharan Africa?” World Bank Group. https://documents1.worldbank.org/curated/en/099553001242342863/pdf/IDU03cab9d8307d8f04f0c0a82e0c1ac48d75560.pdf

137. Muckerheide, Mark. 2023. “The Finance Gap for Women Entrepreneurs Is $1.7 Trillion. Here’s How to Close It.” World Economic Forum. October 26, 2023. https://www.weforum.org/stories/2023/10/women-entrepreneurs-finance-banking/.

138. GEM . 2025. “GEM 2024/2025 Global Report: Entrepreneurship Reality Check.” *Global Entrepreneurship Monitor*. Global Entrepreneurship Monitor. https://www.gemconsortium.org/file/open/?fileId=51621.

139. Hasoglu, Cem. 2024. “7 Challenges Young Entrepreneurs Face and How to Overcome Them.” *Forbes*, August 12, 2024. https://www.forbes.com/councils/forbesagencycouncil/2024/02/02/7-challenges-young-entrepreneurs-face-and-how-to-overcome-them/.

140. ILO. 2024. “Global Employment Trends for Youth 2024 Decent Work, Brighter Futures 20th Anniversary Edition.” Geneva: International Labour Office. https://www.ilo.org/sites/default/files/2024-11/GET_2024_EN_web4.pdf.

141. Azoulay, Pierre, Nber Benjamin, F Jones, J Kim, Javier Miranda, and U Census Bureau. 2018. “Age and High-Growth Entrepreneurship.” U.S. Census Bureau. https://www.kellogg.northwestern.edu/faculty/jones-ben/htm/Age%20and%20High%20Growth%20Entrepreneurship.pdf.

142. Vestberg, Hans. 2022. “Nearly 3 Billion People Are Offline: How to Bridge the Digital Divide.” World Economic Forum. May 23, 2022. https://www.weforum.org/stories/2022/05/nearly-3-billion-people-are-offline-how-to-bridge-the-digital-divide/.

143. European Commission. n.d. “Access2Markets.” European Commission. https://trade.ec.europa.eu/access-to-markets/en/content/welcome-access2markets-market-access-database-users.

144. Bounds, Andy. 2024. “Companies Count the Cost of Compliance with Green Regulation.” *Financial Times*, May 16, 2024, sec. EU business regulation. https://www.ft.com/content/276028dc-a492-44ec-9eee-58d9fb51c159.

145. I. D-Carbonize. 2025. “How Much Cost a Carbon Accounting? | D-Carbonize.” D-Carbonize.

June 18, 2025. https://d-carbonize.eu/carbon-accounting/cost.

II. EcoHedge. 2023. “Calculating Scope 3 Emissions: A Step-By-Step Guide.” EcoHedge. December 17, 2023. https://www.ecohedge.com/blog/calculating-scope-3-emissions-a-step-by-step-guide.

III. EcoHedge. 2023b. “Carbon Accounting Methodologies: Your SME Guide.” EcoHedge. December 18, 2023. https://www.ecohedge.com/blog/carbon-accounting-methodologies-your-sme-guide.

IV. Wastiaux, Max. 2025. “Carbon Footprint Accounting for SMEs: A Complete Guide.” Hedgehog. 2025. https://www.hhc.earth/knowledge-base/guides/carbon-footprint.

146. Herrera Dappe, Matias, Mathilde Lebrand, and Aiga Stokenberga. 2024. “Transport Costs Are Stifling Growth in Developing Countries and How to Fix It.” World Bank. 2024. https://blogs.worldbank.org/en/transport/why-transport-costs-are-stifling-growth-in-developing-countries-#.

147. Subnational Studies. 2019. “Trading across Borders Good Practices - Doing Business - World Bank Group.” World Bank Group. https://subnational.doingbusiness.org/en/data/exploretopics/trading-across-borders/good-practics.

148. FAO. 2024. “Agricultural Cooperatives, Responsible Sourcing and Risk-Based Due Diligence.” FAO. https://openknowledge.fao.org/server/api/core/bitstreams/a33b508d-9429-4f01-b6a2-eba1be940f79/content.

149. Pierri, Francesco Maria, Ward Anseeuw, and Adriano Campolina. 2025. “Land Tenure for Resilient and Inclusive Rural Transformation.” *Global Food Security* 44 (February): 100835. https://doi.org/10.1016/j.gfs.2025.100835.

150. Amjad, Waseem, Anjum Munir, Fatima Akram, Aditya Parmar, Marcelo Precoppe, Furqan Asghar, and Faisal Mahmood. 2023. “Decentralized Solar-Powered Cooling Systems for Fresh Fruit and Vegetables to Reduce Post-Harvest Losses in Developing Regions: A Review.” *Clean Energy* 7 (3): 635–53. https://doi.org/10.1093/ce/zkad015.

151. Blackmore, Emma, Alejandro Guarín, and Giulia Nicolini. 2025. “Making Crop Insurance Work for Small-Scale Farmers - a Review of Recent Evidence.” IIED. https://www.iied.org/sites/default/files/pdfs/2025-04/22605iied.pdf.

152. IFC. 2025. “IFC’s Definitions of Targeted Sectors.” IFC, World Bank Group. 2025. https://www.ifc.org/en/what-we-do/sector-expertise/financial-institutions/definitions-of-targeted-sectors.

153. Expert Interviews, for details, see Appendix A. Interviewed Experts.

154. The U.S. Bureau of Economic Analysis. 2013. “RIMS II - an Essential Tool for Regional Developers and Planners.” https://www.bea.gov/sites/default/files/methodologies/RIMSII_User_Guide.pdf.

155. IMPLAN. 2025. “IMPLAN | Economic Impact Analysis Software.” IMPLAN | Economic Impact Modeling. October 24, 2025. https://implan.com/.