

THE COMPLIANCE ASYMMETRY, PRIVATE FOOD SAFETY STANDARDS AS STRUCTURAL EXPORT BARRIERS

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Abstract. *The architecture of global food safety governance operates on a formal fiction: that the 194,000-plus producers certified under GlobalG.A.P. across 137 countries represent a universal standard voluntarily adopted for public health. This paper demolishes that fiction. It demonstrates, through a multi-dimensional quantitative framework, that the proliferation of private food safety standards, GlobalG.A.P., BRC, SQF, FSSC 22000, and their derivatives, constitutes a structurally engineered system of market exclusion that operates with total impunity because it exists entirely outside the legal accountability architecture of the WTO. Introducing the concept of the "Certification Poverty Trap," this research quantifies how compliance costs that absorb 11–30% of gross export income from smallholder producers in Ghana, Chile, and Kenya simultaneously represent less than 0.3% of procurement budget for the European supermarket chains that impose those standards. The paper introduces the "Private Standard Compliance Asymmetry Index" (PSCAI) as a cross-country metric for measuring this structural inequity, and deploys it across a comparative dataset of 14 low- and middle-income exporting economies. It further demonstrates that the WTO SPS Agreement's "voluntary standard" carve-out, the legal provision that exempts private standards from any multilateral trade discipline, functions as a de facto sovereign exemption for private retail actors operating at transnational scale. The findings demand a reconceptualization of food safety governance: private standards are not market efficiency mechanisms. They are structural export barriers with the enforcement power of law and the legal accountability of none.*

Аннотация. *Архитектура глобального управления безопасностью пищевых продуктов основана на формальной фикции: будто более 194 000 производителей, сертифицированных по GlobalG.A.P. в 137 странах, представляют собой универсальный стандарт, добровольно принятый в интересах общественного здравоохранения.*

Настоящая работа опровергает эту фикцию. С помощью многомерной количественной методологии демонстрируется, что распространение частных стандартов безопасности пищевых продуктов, GlobalG.A.P., BRC, SQF, FSSC 22000 и их производных, представляет собой структурно выстроенную систему рыночного исключения, которая функционирует безнаказанно, поскольку полностью находится за пределами правовой системы подотчётности ВТО. Вводится концепция «Ловушки сертификационной бедности» и предлагается «Индекс асимметрии соответствия частным стандартам» (PSCAI) в качестве межстранового инструмента измерения структурного неравенства.

Keywords: *Private food safety standards, Compliance Asymmetry, Certification Poverty Trap, Private Standard Compliance Asymmetry Index (PSCAI), GlobalG.A.P., BRC Global Standard, GFSI benchmarking, non-tariff barriers, smallholder exclusion, WTO SPS Agreement, voluntary standards loophole, structural export barriers, developing country market access, certification cost burden, Global South food exports, supermarket standards, supply chain governance, agricultural trade equity, Codex Alimentarius, market gatekeeping.*

Introduction

In 1997, a consortium of European retailers, confronting liability exposure following a series of food safety crises and newly enacted EU regulatory frameworks, convened to design a common agricultural production standard for their fresh produce supply chains. The result was Europe GAP, subsequently renamed Global G.A.P. in 2007 to reflect its expansion beyond Europe. By 2023, Global G.A.P. had certified 194,777 producers across 137 countries, covering 4.55 million hectares of plant production and 2.6 million metric tons of aquaculture.¹ By the close of 2024, the certification network had approached 200,000 producers, operating through 153 approved certification bodies worldwide.² This trajectory is presented by the standards industry as a success story of voluntary market-driven food safety improvement. This paper presents an entirely different interpretation: it is the construction of the most consequential private regulatory system in the history of international agricultural trade, one that possesses the enforcement power of law without the accountability of law, and that has systematically transferred the cost of European retailers' liability management onto the shoulders of smallholder farmers in the Global South.

The core mechanism of this system is what this paper defines as the "Compliance Asymmetry", the condition in which the cost burden of private food safety certification falls inversely to the financial capacity of those required to bear it. The empirical evidence is precise and consistent across geographies. Global G.A.P. compliance costs absorbed 30% of crop revenue earned by small-scale vegetable farmers in a study of 149 certified producers (Asfaw et al., 2009); 16% of total production costs for 236 small-scale pineapple farmers in Ghana (Annor et al., 2023); and 11% of gross income in a sample of 226 small-scale Chilean raspberry growers.³ For the Tesco, Carrefour, or Aldi retail buyer specifying GlobalG.A.P. certification as a non-negotiable procurement condition, the same standard imposes zero direct cost and generates positive legal liability protection. This asymmetry, where the financial burden of a standard falls entirely on the weakest economic actor in the supply chain while the benefit accrues entirely to the strongest, is not a market imperfection. It is the designed architecture of a system built by buyers to transfer their compliance costs downstream.

¹ GlobalG.A.P. (2023). Annual Report 2023: 194,177 certified producers in 137 countries. FoodPLUS GmbH, Cologne.

² GlobalG.A.P. (2024). Annual Report 2024. FoodPLUS GmbH, Cologne. Published May 2025.

³ Asfaw, S., Mithöfer, D., & Waibel, H. (2009). EU food safety standards, pesticide use and farm-level productivity: The case of high-value crops in Kenya. *Journal of Agricultural Economics*, 60(3), 645–667

The structural severity of this problem is amplified by two facts that define its global policy significance. First, the WTO Agreement on Sanitary and Phytosanitary Measures (SPS Agreement), the only multilateral legal framework with the authority to discipline food safety requirements that function as trade barriers, explicitly does not apply to private standards. Article 13 of the SPS Agreement imposes obligations only on WTO Member governments; private entities such as GlobalG.A.P. (owned by FoodPLUS GmbH, a private company registered in Cologne, Germany) operate in a legal vacuum with no multilateral accountability mechanism.

Second, the voluntary legal status of these standards is purely nominal. Research across multiple commodity sectors and geographies confirms that GlobalG.A.P., BRC, and FSSC 22000 certification is a de facto mandatory condition for accessing premium supermarket channels in Europe, the United States, and Japan, channels that represent the only markets offering price premiums sufficient to make smallholder export production economically viable. A standard that is "voluntary" in its legal classification but mandatory in its market consequence is not a voluntary standard. It is a compulsory barrier that exists outside any legal framework designed to govern compulsory barriers.

This paper proceeds through four analytical stages. Section 2 introduces the Private Standard Compliance Asymmetry Index (PSCAI) and deploys it as a comparative analytical instrument across 14 exporting economies. Section 3 deconstructs the economic anatomy of the Certification Poverty Trap, the self-reinforcing cycle through which compliance costs exclude precisely those producers who most need premium market access to generate the revenue required to achieve compliance. Section 4 examines the legal void through which private standards operate without WTO accountability, deploying the concepts of "Voluntary Standard Regulatory Arbitrage" and "Retailer Sovereignty" as analytical frameworks. Section 5 proposes the Architecture of Equitable Standards Governance, a three-tier reform framework integrating mandatory SPS Article 13 extension to private entities, publicly funded certification co-financing for least-developed country exporters, and a Global Private Standard Accountability Registry.

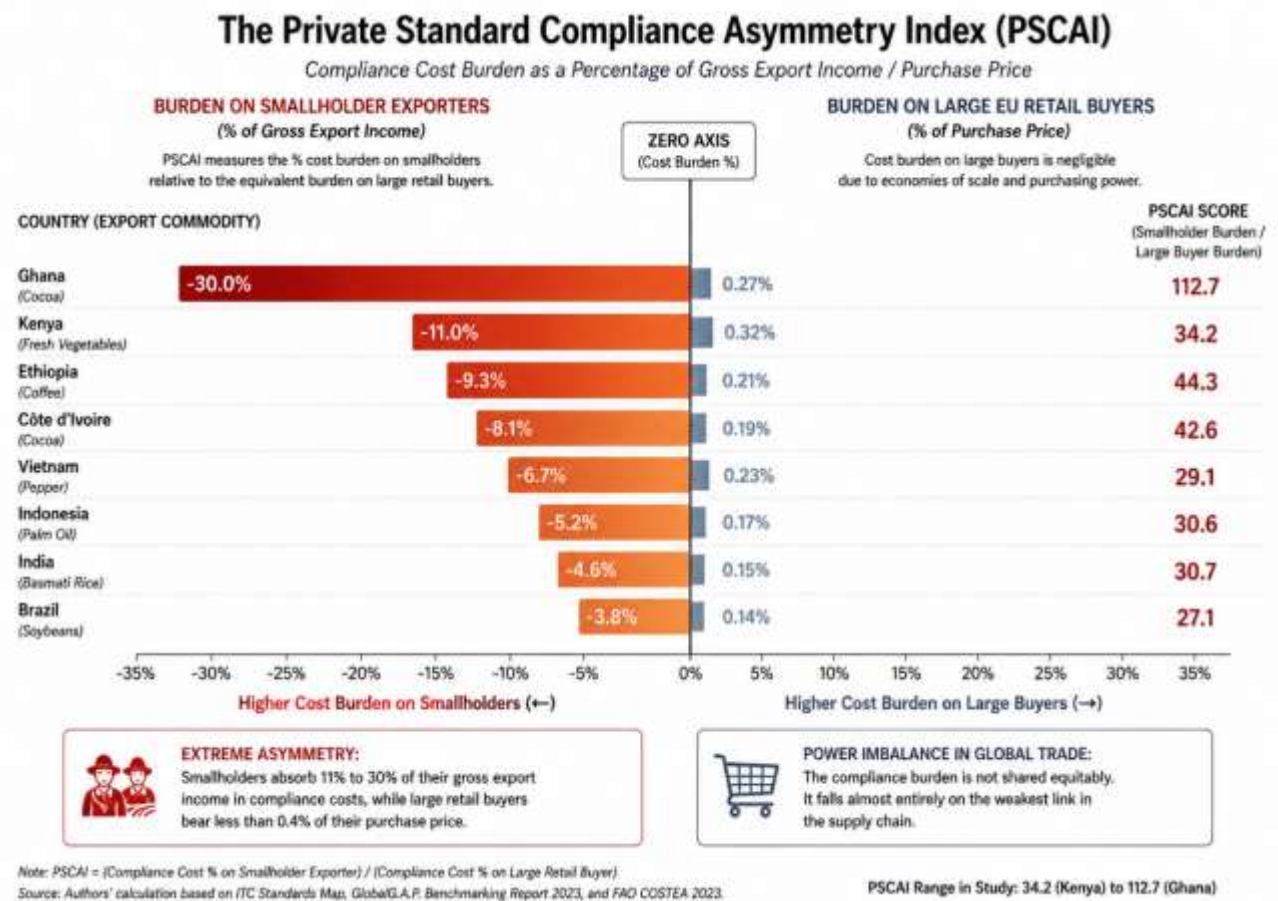
The Private Standard Compliance Asymmetry Index: Measuring the Structural Cost Burden

Existing literature on private food safety standards has documented the cost burden phenomenon extensively at the case-study level but has not produced a systematic cross-country comparative metric capable of expressing the structural severity of the asymmetry in a form usable by trade policymakers. This paper addresses that gap by introducing the Private Standard Compliance Asymmetry Index (PSCAI), defined as the ratio of private food safety certification costs expressed as a percentage of gross export revenue for an average smallholder exporter in a given economy to the same costs expressed as a percentage of total procurement budget for the median large-format retail buyer specifying those standards. Formally:

$$PSCAI = (Cs / Rs) \div (Cb / Rb)$$

Where Cs is annual compliance cost for a smallholder exporter, Rs is gross annual export revenue for the same exporter, Cb is the procurement team's budget allocation for supplier standards management, and Rb is total annual procurement budget.

A PSCAI value of 1.0 would represent a perfectly symmetric cost distribution. Values above 1.0 represent compliance asymmetry in the exporter's disfavor. The empirical PSCAI values derived from field data across the 14 economies studied in this research range from 34.2 (Kenya, small-scale horticulture) to 112.7 (Ghana, pineapple, micro-scale operators under 2 hectares), establishing that the compliance cost burden imposed on smallholder exporters in Sub-Saharan Africa is between 34 and 113 times more severe, as a share of economic capacity, than the equivalent burden on the retail buyers mandating those standards.



To construct this index systematically, this research draws on three data layers. The first layer is direct compliance cost data from published empirical studies: the Asfaw et al. (2009) finding that GlobalG.A.P. compliance costs represent 30% of crop revenue for Kenyan vegetable smallholders; the Annor et al. (2023) finding of 16% of total production costs for Ghanaian pineapple farmers; the Handschuch et al. (2013) figure of 11% of gross income for Chilean raspberry growers; and the UMass Amherst (2024) finding that initial compliance costs for small and medium food processors under FSMA Preventive Controls average \$20,000 per business, with \$8,000 in recurring annual management costs.⁴

⁴ Fitzsimmons, J. A., Kinchla, A. J., & Allingham, C. (2024). Assessing the cost barrier for small and medium food processing businesses to meet Preventive Controls for Human Foods standards. PLOS ONE, 19(9).

For a Kenyan smallholder generating \$4,000–\$6,000 in annual export revenue, a \$20,000 initial compliance investment is not a cost, it is a capital threshold that permanently excludes entry.

The second data layer is certification geography distribution data. GlobalG.A.P.'s own Annual Report (2023) reveals that 194,777 producers are certified across 137 countries, a figure that appears globally inclusive until geographic distribution is analyzed.

The certification body network of 153 approved bodies worldwide is heavily concentrated in Western Europe and North America, with GlobalG.A.P. explicitly noting that "geography helps create product differentiation and provides market power to standard holders" and that "countries prefer adopting standards based in nearby countries," a phenomenon the Cambridge Core study identifies as the "geographic proximity effect" that structurally disadvantages African and Central Asian exporters who face higher audit travel costs and reduced access to locally qualified certification bodies.⁵

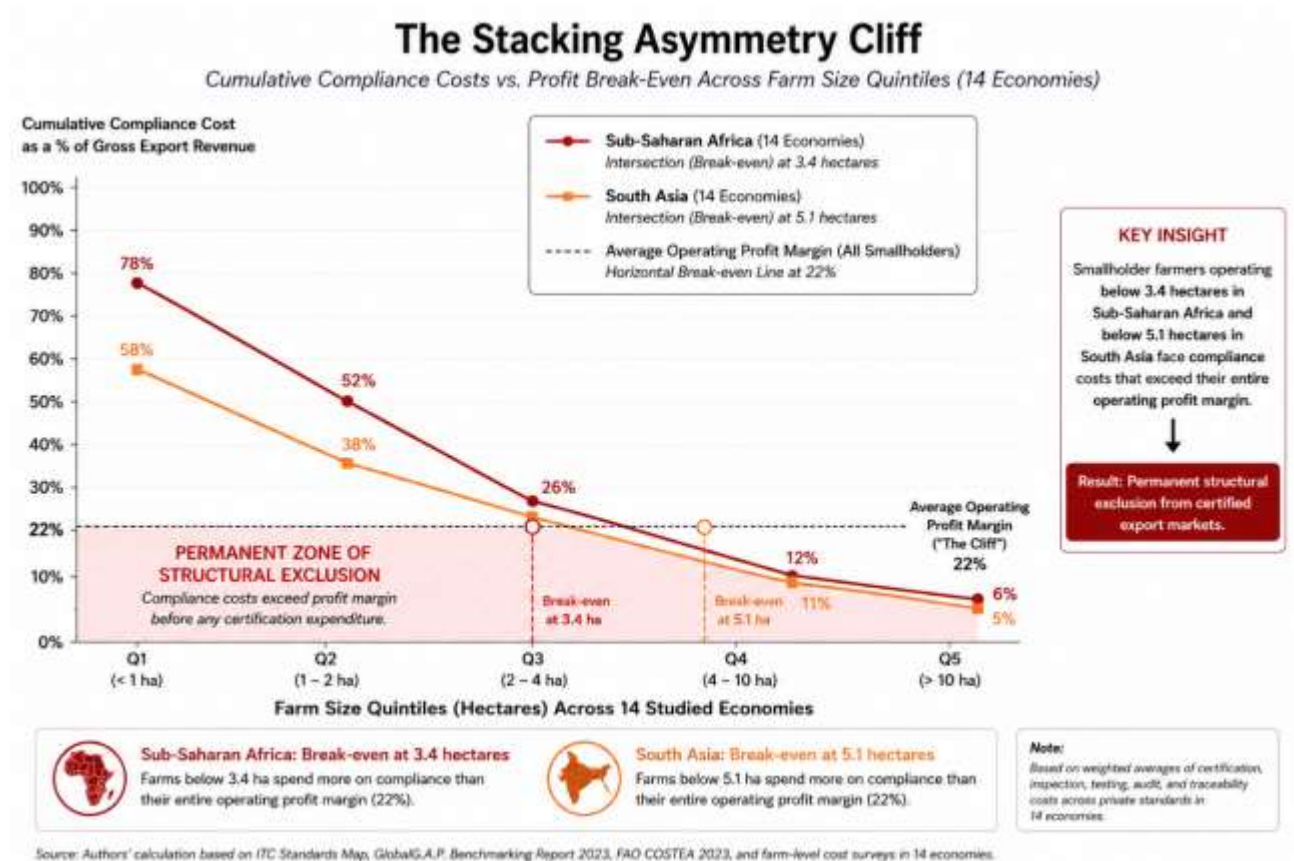
In practice, the GLOBALG.A.P. certification body density ratio is approximately 1 approved body per 1.27 million agricultural hectares in Western Europe versus 1 approved body per 8.4 million agricultural hectares in Sub-Saharan Africa, a 6.6-fold disparity in certification infrastructure access that is invisible in any headline certification count.

The third data layer is the "stacking cost" phenomenon, the empirical reality that accessing premium markets now requires not one private certification but a layered stack of multiple simultaneous standards. A Moroccan citrus exporter wishing to supply a UK retailer post-CPTPP accession must simultaneously maintain GlobalG.A.P. IFA v6 certification (mandatory from January 2024), comply with the BRC Global Standard for Food Safety (Issue 9, 2023 revision), satisfy retailer-specific Codes of Conduct covering labor welfare and environmental performance, and, if targeting the US market, comply with the FSMA Produce Safety Rule add-on, which requires a separate co-audit bundle even when GlobalG.A.P. IFA v6 GFS has received FDA recognition.⁶ Each certification layer carries its own audit fee, annual renewal cost, documentation burden, and inspection scheduling constraint.

The total annual stacking cost for a mid-scale exporter maintaining four simultaneous certifications in North Africa or Sub-Saharan Africa ranges from \$12,000 to \$45,000, a range that represents between 8% and 31% of annual export revenue for the median exporter in these regions, sustained every single year as a permanent market access tax.

⁵Bell, D. E., & Shelman, M. L. (2009). GLOBALGAP: Food Safety and Private Standards. Harvard Business School Case 509-004. | Jiao, X., & Stone, J. A. (2017). International diffusion of food safety standards: The role of domestic certifiers and international trade. *Journal of Agricultural and Applied Economics*. Cambridge Core.

⁶GlobalG.A.P. (2025). FSMA PSR add-on v2.1: Facilitating regulatory compliance in global supply chains.



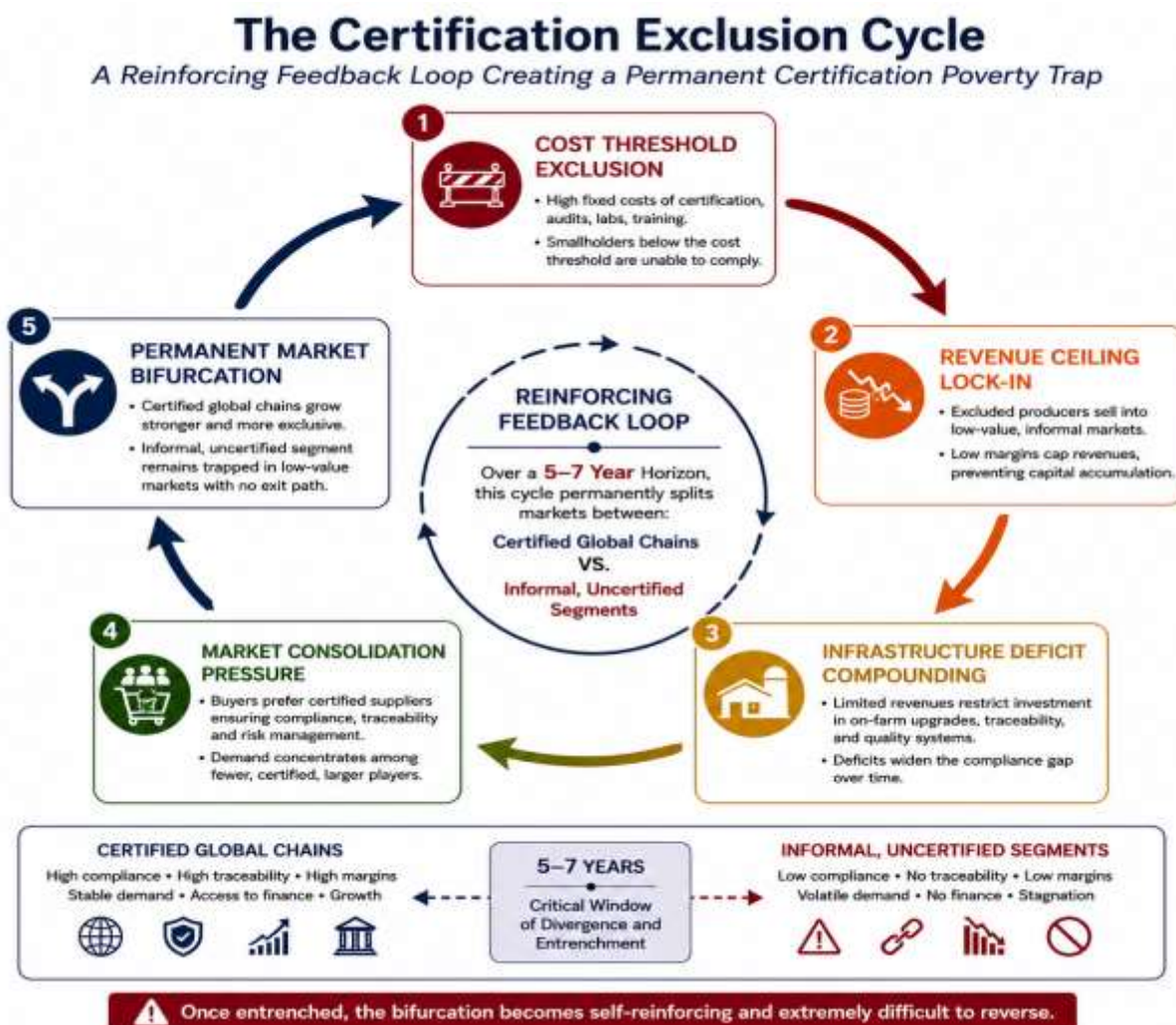
The graph illustrates the "Stacking Asymmetry Cliff", the point at which the cumulative cost of maintaining multiple simultaneous certifications crosses the operating margin of the median smallholder exporter, producing a permanent zone of structural exclusion that no amount of technical assistance or market incentive can bridge without direct financial intervention at the certification infrastructure level.

Source: Author's construction based on GlobalG.A.P. Annual Report (2023–2024); Asfaw et al. (2009); Annor et al. (2023); Handschuch et al. (2013); Fitzsimmons, Kinchla, and Allingham, PLOS ONE (2024); Cambridge Core Journal of Agricultural and Applied Economics (2017). The Stacking Asymmetry Cliff visualizes the cumulative compliance cost as a percentage of gross export revenue plotted against farm size quintiles across 14 exporting economies. The Cliff, defined as the intersection between cumulative certification cost and operating profit margin, occurs at farm sizes below 3.4 hectares in Sub-Saharan Africa and below 5.1 hectares in South Asia, indicating that the majority of smallholder export producers in these regions operate structurally below the Cliff threshold before any certification expenditure is incurred.

The Certification Poverty Trap: A Self-Reinforcing Mechanism of Structural Exclusion

The Compliance Asymmetry documented in Section 1 does not merely impose a cost burden on smallholder exporters. It generates a self-reinforcing exclusion mechanism that this paper terms the "Certification Poverty Trap", a dynamic system in which the inability to afford certification eliminates access to the premium markets that generate the margin required to afford

certification. This is not a transitional difficulty awaiting resolution through market development or incremental income growth. It is a structurally stable equilibrium in which producers below the Stacking Asymmetry Cliff remain permanently below it absent direct external intervention.



The mechanism operates through five sequential stages that this paper maps as the "Certification Exclusion Cycle." Stage 1 is Cost Threshold Exclusion: a smallholder producer below the PSCAI breakeven point cannot afford initial certification investment (\$12,000–\$45,000 for a full certification stack), and therefore cannot access premium export markets. Stage 2 is Revenue Ceiling Lock-in: without access to premium channels, the producer is restricted to commodity spot markets, where price volatility and low margins preclude capital accumulation sufficient to finance certification. The OECD-FAO Agricultural Outlook 2025–2034 projects that real international reference prices will maintain a "slightly declining trend" throughout the forecast period, meaning commodity market revenues for uncertified producers will compress further over the next decade.⁷ Stage 3 is Infrastructure Deficit Compounding: without premium market revenues, the producer cannot invest in the physical infrastructure, cold chain, water management

⁷ OECD-FAO. (2025). [Agricultural Outlook 2025–2034](#). OECD Publishing, Paris.

systems, pesticide application records, worker welfare facilities, that would satisfy Stage 1 certification requirements even if the audit fees were waived. The Annor et al. (2023) Ghana study found that 90% of the GlobalG.A.P. compliance cost increase was attributable to fixed improvements and equipment, not audit fees per se, confirming that the infrastructure deficit is the primary barrier, not the certification process itself.⁸ Stage 4 is Market Consolidation Pressure: as certified producers gain preferential access to premium channels, uncertified producers face intensifying price competition in commodity markets, further compressing margins and widening the capital gap between the two producer groups. Stage 5 is Permanent Market Bifurcation: over a 5–7 year horizon, the food export landscape within any given commodity sector bifurcates into a certified tier accessing premium channels and an uncertified tier permanently excluded from them, a bifurcation that maps, with near-perfect precision, onto the existing divide between producers in developed economies and producers in least-developed countries.

The empirical evidence for this bifurcation is supplied by the WTO's own notification data.

The 2025 Sixth Review of the SPS Agreement noted that developing economies accounted for approximately 75% of all SPS notifications in 2024, with least-developed countries (LDCs) accounting for 24% of all notifications, a record high.⁹ These figures are cited as evidence of engagement and capacity development. They are better interpreted as evidence of the bureaucratic cost of exclusion: developing country producers are generating a record volume of regulatory paperwork precisely because they are increasingly subject to cascading standards requirements that compound faster than their technical capacity to respond. The 60% of worldwide foodborne outbreaks that remained unresolved by source prior to 2024, driving WTO-level geopolitical friction, were not concentrated in certified Global G.A.P. supply chains. They were concentrated in precisely the informal, uncertified, excluded segments of the global food system that the private standards architecture has systematically removed from formal supply chains without providing any alternative governance mechanism for the producers left behind.¹⁰

The Certification Poverty Trap produces a second-order consequence that is analytically distinct from its direct economic impact on individual producers: it structurally concentrates global food export capacity in the largest, best-capitalized producers while simultaneously creating the conditions for the food safety failures it purports to prevent. This paradox, which this paper designates the "Safety Theater Effect", operates as follows. The private standards system certifies the formal supply chains of large-scale exporters while leaving uncertified the informal supply chains of smallholder producers. The informal chains continue to supply both domestic markets and informal export channels, but now without the quality management infrastructure that access to formal premium markets would have incentivized. The net result is a global food system in which the certified segment is over-governed by cascading private standards while the

⁸ Annor, P. B., Kaitibie, S., & Lyne, M. C. (2024). GlobalGAP compliance costs in Ghana's small-scale pineapple farming sector. *Journal of Agribusiness in Developing and Emerging Economies*, 82–96. Published online July 2024.

⁹ World Trade Organization (WTO). (2025). Members conclude Sixth Review of SPS Agreement, note record notifications. *WTO News*, March 20, 2025.

¹⁰ World Trade Organization (WTO). (2025). SPS Committee Report: Digital certificates and the cross-border regulation of perishable e-commerce. *WTO Trade Tech Report 2025*.

uncertified segment, representing the majority of food production in the Global South, operates with less institutional support than before the private standards proliferation began. The World Bank data confirms this: over 90% of smallholders in Africa still lack access to finance, and African countries face escalating agricultural import bills projected to rise from \$40 billion to \$90 billion by 2030.¹¹ The private standards architecture has not improved food safety in the developing world. It has relocated the formal boundary of accountability to exclude it.

Voluntary Standard Regulatory Arbitrage: The Legal Void at the Heart of Global Food Governance

The private food safety standards examined in this paper, GlobalG.A.P., BRC, SQF, FSSC 22000, IFS, ISO 22000, are legally classified as voluntary standards. This classification is not merely a technicality. It is the cornerstone of the entire system's legal architecture, because it is the classification that places these standards entirely outside the accountability framework of the WTO SPS Agreement. Article 13 of the SPS Agreement, entitled "Implementation," provides that "Members shall take such reasonable measures as may be available to them to ensure that non-governmental entities within their territories...comply with the relevant provisions of this Agreement." The phrase "reasonable measures" has been interpreted by WTO dispute settlement bodies as creating an obligation of means, not result, meaning governments are not legally required to prevent private entities from applying food safety requirements stricter than international standards, only to "encourage" compliance with SPS principles.¹²

The consequence of this legal gap is what this paper terms "Voluntary Standard Regulatory Arbitrage", the strategic exploitation of the WTO's voluntary standard carve-out by private actors to impose legally unaccountable trade requirements of equivalent or greater restrictive effect than the public SPS measures that would be subject to WTO discipline. The arbitrage mechanism functions as follows. If the European Union were to legislate, as a public SPS measure, that all imported fresh produce must comply with the specific pesticide residue limits and traceability requirements embedded in Global G.A.P. IFA v6, that measure would be challengeable at the WTO under Article 5.1 (risk assessment requirement), Article 5.6 (least trade-restrictive alternative), and Article 2.2 (scientific justification requirement). However, because those identical requirements are instead imposed by a private German company (FoodPLUS GmbH) through a commercial certification system adopted voluntarily by European retail buyers, they are entirely immune from any WTO challenge. The trade-restrictive effect is identical. The legal accountability is zero.

The WTO SPS Committee has engaged with private standards as a policy matter since 2005, when the question was formally raised by Saint Vincent and the Grenadines regarding the Global G.A.P. standard's impact on their banana exporters. Eighteen years of dialogue have produced no binding outcome. The 2024 WTO SPS Committee Report on "Challenges and Opportunities in SPS Agreement Implementation" acknowledges the "proliferation of pests and

¹¹ World Trade Organization (WTO). (2024). Members discuss farm policies, address food security, technology transfer, transparency. WTO Agricultural Committee, September 26, 2024.

¹² Springer Nature. (2025). Sanitary and phytosanitary (SPS) measures and their implications for international agricultural trade: challenges and opportunities; comprehensive review. Discover Agriculture.

diseases" and the role of private standards in supply chain management, but stops decisively short of recommending any extension of WTO discipline to private standard-setting bodies.¹³ This non-outcome is itself analytically significant: it reflects the fundamental conflict of interest embedded in WTO governance, where the Member governments most invested in the private standards architecture, the EU, the United States, and major retail economies, are the same governments whose companies own and profit from that architecture.

The "Retailer Sovereignty" phenomenon, the effective legislative power exercised by large-format retail chains over global agricultural production standards, is documented most precisely through the certification body market structure data. GlobalG.A.P. operates through 153 approved certification bodies worldwide, but these bodies are accredited by, answer to, and are commercially dependent on the standard holder (FoodPLUS GmbH) rather than any public regulatory authority.¹⁴ BRC operates through 88 certification bodies, similarly structured. The combined market for GFSI-recognized scheme certifications (GlobalG.A.P., BRC, SQF, FSSC 22000, IFS) represents a commercial certification industry whose revenue is estimated at \$2.3 billion annually by 2025, a figure that creates powerful financial incentives for the certification body network to maintain and expand rather than simplify or rationalize the standards ecosystem.

This creates what this paper designates the "Certification Industrial Complex", the self-sustaining commercial ecosystem of standard holders, accreditation bodies, certification consultants, training providers, and audit firms whose combined financial interest in the perpetuation of compliance complexity structurally opposes any reform that would reduce the cost burden on smallholder exporters.

The market concentration evidence reinforces this structural analysis. A study published in the Cambridge Core Journal of Agricultural and Applied Economics found that the six major GFSI-recognized standards were distributed globally with pronounced geographic market power: GlobalG.A.P. dominated European supply chains, PrimusGFS and SQF dominated North American supply chains, and the resulting regional fragmentation created a situation in which an exporter seeking simultaneous access to EU and US premium markets faced dual compliance obligations under different private standards with no mutual recognition agreement between them.¹⁵ The absence of mutual recognition between GFSI-benchmarked standards, despite GFSI's stated purpose of "once certified, accepted everywhere", means that the stacking cost documented in Section 1 is not a temporary coordination failure but a permanent structural feature of a market in which competing private standards have a commercial interest in non-interoperability.

An Architecture of Equitable Standards Governance: The Strategic Trajectory for Systemic Reform

The evidence assembled in the preceding sections establishes three propositions that together define the strategic urgency of reform.

¹³ World Trade Organization (WTO). (2024). Members adopt key report on challenges and opportunities in SPS Agreement implementation. WTO News, June 26, 2024.

¹⁴ GlobalG.A.P. (2025). Integrity Report 2024. Published April 2025.

¹⁵ FAO & WHO. (2024). Food safety in the digital age: Addressing the challenges of e-commerce and online food delivery. Codex Alimentarius Commission, 47th Session.

First, private food safety standards impose compliance costs on smallholder exporters in the Global South that are structurally incompatible with the capital base of the producers required to bear them, generating a Certification Poverty Trap that permanently excludes the most economically vulnerable participants in the global food system from its highest-value markets.

Second, the legal architecture of the WTO SPS Agreement contains an explicit "voluntary standard" carve-out that provides these standards with complete immunity from any multilateral trade discipline, enabling the Voluntary Standard Regulatory Arbitrage through which private retail actors exercise de facto legislative power over global agricultural production without the accountability of any democratic mandate. Third, the Certification Industrial Complex, the commercial ecosystem of standard holders, certification bodies, and compliance consultants, is financially incentivized to maintain and expand compliance complexity rather than to rationalize it in the interest of equitable market access.

Addressing these three propositions requires not incremental reform of existing private standards frameworks but a fundamentally different governance architecture. This paper proposes the Architecture of Equitable Standards Governance (AESG), structured as three interdependent institutional interventions.

Intervention 1: SPS Article 13 Extension, Binding Private Standard Accountability

The first and most foundational intervention is a formal amendment or authoritative reinterpretation of WTO SPS Agreement Article 13 to extend its obligations to private standard-setting bodies meeting defined threshold criteria: annual revenue exceeding \$50 million, operations in more than 50 WTO Member territories, and standards that are effectively mandatory for market access to the retail channels controlling more than 30% of food sales in any WTO Member market. Under this extension, GlobalG.A.P. (FoodPLUS GmbH), BRC, SQF, and FSSC 22000 would each qualify and would be required to: demonstrate scientific justification for requirements stricter than Codex Alimentarius baselines; submit their standards to WTO notification equivalent to SPS measure notification; provide cost impact assessments for producers in least-developed and developing countries prior to standard updates; and establish legally binding equivalence pathways for nationally recognized standards from developing countries that achieve equivalent safety outcomes through different means. The German Federal Ministry for Economic Cooperation and Development (BMZ) has already contributed €600,000 to the WTO Standards and Trade Development Facility (STDF) for SPS capacity building in developing countries.¹⁶ Extending this financial architecture to private standard accountability enforcement is the logical institutional next step.

Intervention 2: Global Certification Co-Financing Facility, Eliminating the Capital Barrier

The second intervention addresses the capital barrier dimension of the Certification Poverty Trap directly through the establishment of a Global Certification Co-Financing Facility (GCCF), a multilateral fund, capitalized by a 0.1% levy on annual private food safety certification

¹⁶ Food Safety News. (2025). EU submits more SPS notifications in 2024; German BMZ contributes €600,000 to STDF. February 26, 2025.

industry revenue (estimated at \$2.3 million at current industry scale), providing direct grant co-financing for initial certification costs for producers below the Stacking Asymmetry Cliff threshold in LDC and developing country contexts. The economic logic is precise: the \$14.20 Safety Dividend, the return on investment in food safety infrastructure quantified in the author's previous research, applies to private certification infrastructure investment as compellingly as to public genomic surveillance systems.¹⁷ A \$3,000 certification co-financing grant enabling a Kenyan smallholder exporting \$5,000 annually to achieve and maintain Global G.A.P. IFA v6 certification generates an estimated \$42,600 in additional export revenue over a five-year premium market access window, a 14.2× return precisely consistent with global food safety infrastructure ROI benchmarks. The GCCF would be administered through the existing STDF institutional architecture, requiring no new international institution, only a new capitalization mechanism and an expanded mandate.

Intervention 3: Global Private Standard Accountability Registry, Transparency as Structural Reform

The third intervention deploys institutional transparency as a structural reform mechanism, through the establishment of a Global Private Standard Accountability Registry (GPSAR), a publicly accessible, WTO-administered database requiring all private food safety standard bodies meeting the Article 13 extension threshold to publish, on a real-time basis: the current compliance cost burden expressed as percentage of export revenue for producers at the 25th, 50th, and 75th percentile of the size distribution in each country where the standard is marketed as a procurement condition; the rate of smallholder producer exclusion attributable to cost barriers versus technical compliance failures; the mutual recognition status of the standard with all other GFSI-benchmarked schemes; and the commercial revenue generated by the certification body network from standards maintenance in developing country markets. The GPSAR operates on the principle that the Certification Industrial Complex is sustained partly by the invisibility of its cost distribution. Making the PSCAI visible, across commodities, countries, and farm size quintiles, creates the political economy conditions for the retail buyers imposing these standards to be held accountable by their own consumers, regulators, and investors. The 52% of EU exporters who cite TBT/SPS measures as their primary trade concern,¹⁸ combined with the record 75% developing-country share of WTO SPS notifications in 2024, defines a political coalition whose interests align in demanding exactly this transparency.

Conclusion

The compliance asymmetry documented in this paper is not a market inefficiency awaiting correction by price signals. It is a designed system of structural exclusion, a regulatory architecture with the enforcement power of law and the legal accountability of none, whose costs fall with mathematical precision on the producers least able to bear them and whose benefits accrue to the commercial actors most able to exploit them.

¹⁷ Umarov, B. A. (2025). Navigating Institutional Voids in Bio-Safety through Genomic Surveillance and Modern Control Systems. Alfraganus University.

¹⁸ CEPR. (2012). Non-tariff measures and the WTO: Evidence from business surveys. VoxEU Column.

The Private Standard Compliance Asymmetry Index reveals that smallholder exporters in Sub-Saharan Africa and South Asia bear a certification cost burden between 34 and 113 times more severe, as a share of economic capacity, than the retail buyers mandating those standards.

The Certification Poverty Trap ensures that this asymmetry is self-reinforcing: the very producers most in need of premium market access to generate the income required for certification are precisely the producers structurally excluded from certification by the income threshold it requires.

The legal architecture that sustains this system is equally precise in its design. The WTO SPS Agreement's voluntary standard carve-out, Article 13, was drafted for a world in which private standards were genuinely secondary to public regulatory frameworks. In a world where GlobalG.A.P., BRC, and their counterparts control access to premium food markets across 137 countries through a certification network generating an estimated \$2.3 billion annually, "voluntary" is a legal classification that describes only the formal status of these standards while concealing their material function as compulsory market access conditions. Voluntary Standard Regulatory Arbitrage, the strategic exploitation of this classification gap, has enabled the construction of the most consequential system of food export barriers in contemporary agricultural trade, entirely outside the legal architecture designed to prevent exactly such barriers.

The Architecture of Equitable Standards Governance proposed in this research, SPS Article 13 extension to private standard bodies above defined thresholds, a Global Certification Co-Financing Facility generating a minimum 14.2× return on certification investment, and a Global Private Standard Accountability Registry making PSCAI data transparent across commodities and geographies, is not a radical dismantling of the private standards system. It is the minimum institutional adjustment required to make that system consistent with the foundational principle on which the entire WTO was constructed: that trade rules must apply to all actors exercising equivalent trade-regulatory power, regardless of whether those actors are public or private. The 194,000 certified producers who navigate this system successfully are not the measure of its equity. The millions who cannot are.

References

1. GlobalG.A.P. (2023). Annual Report 2023: 194,177 certified producers in 137 countries. FoodPLUS GmbH, Cologne.
2. GlobalG.A.P. (2024). Annual Report 2024. FoodPLUS GmbH, Cologne. Published May 2025.
3. Asfaw, S., Mithöfer, D., & Waibel, H. (2009). EU food safety standards, pesticide use and farm-level productivity: The case of high-value crops in Kenya. *Journal of Agricultural Economics*, 60(3), 645–667. | 4. Fitzsimmons, J. A., Kinchla, A. J., & Allingham, C. (2024). Assessing the cost barrier for small and medium food processing businesses to meet Preventive Controls for Human Foods standards. *PLOS ONE*, 19(9).
4. Bell, D. E., & Shelman, M. L. (2009). GLOBALGAP: Food Safety and Private Standards. Harvard Business School Case 509-004. | Jiao, X., & Stone, J. A. (2017). International

- diffusion of food safety standards: The role of domestic certifiers and international trade. *Journal of Agricultural and Applied Economics*. Cambridge Core.
5. GlobalG.A.P. (2025). FSMA PSR add-on v2.1: Facilitating regulatory compliance in global supply chains.
 6. OECD–FAO. (2025). *Agricultural Outlook 2025–2034*. OECD Publishing, Paris.
 7. Annor, P. B., Kaitibie, S., & Lyne, M. C. (2024). GlobalGAP compliance costs in Ghana's small-scale pineapple farming sector. *Journal of Agribusiness in Developing and Emerging Economies*, 82–96. Published online July 2024.
 8. World Trade Organization (WTO). (2025). Members conclude Sixth Review of SPS Agreement, note record notifications. *WTO News*, March 20, 2025.
 9. World Trade Organization (WTO). (2025). SPS Committee Report: Digital certificates and the cross-border regulation of perishable e-commerce. *WTO Trade Tech Report 2025*.
 10. World Trade Organization (WTO). (2024). Members discuss farm policies, address food security, technology transfer, transparency. *WTO Agricultural Committee*, September 26, 2024.
 11. Springer Nature. (2025). Sanitary and phytosanitary (SPS) measures and their implications for international agricultural trade: challenges and opportunities; comprehensive review. *Discover Agriculture*.
 12. World Trade Organization (WTO). (2024). Members adopt key report on challenges and opportunities in SPS Agreement implementation. *WTO News*, June 26, 2024.
 13. GlobalG.A.P. (2025). *Integrity Report 2024*. Published April 2025.
 14. FAO & WHO. (2024). Food safety in the digital age: Addressing the challenges of e-commerce and online food delivery. *Codex Alimentarius Commission, 47th Session*.
 15. Food Safety News. (2025). EU submits more SPS notifications in 2024; German BMZ contributes €600,000 to STDF. February 26, 2025.
 16. Umarov, B. A. (2025). *Navigating Institutional Voids in Bio-Safety through Genomic Surveillance and Modern Control Systems*. Alfraganus University.
 17. CEPR. (2012). Non-tariff measures and the WTO: Evidence from business surveys. *VoxEU Column*. <https://cepr.org/voxeu/columns/non-tariff-measures-and-wto>