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Comparison of Governance Structures in International Sustainable Cotton Standards Systems and China's Path Selection

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Abstract: The global cotton sector has witnessed the rapid proliferation of voluntary sustainability standards whose credibility depends less on their criteria than on their governance structures. This paper compares the governance of the Better Cotton Initiative, organic cotton certification under the Global Organic Textile Standard, Fairtrade cotton, the U.S. Cotton Trust Protocol, and China's emerging system of CCIA-certified sustainable cotton and digital traceability, using an analytical framework drawn from transnational private governance theory. Four governance dimensions are examined: standard-setting authority and stakeholder representation, assurance and verification, traceability and data governance, and accountability and market recognition. The comparison shows that systems trade off input legitimacy, assurance rigor, and traceability capacity in systematic ways. China's path selection should therefore combine a national standard and certification backbone with whole-chain digital traceability infrastructure, third-party assurance under national accreditation, and active alignment and mutual recognition with international systems, thereby avoiding the legitimacy deficits that have constrained purely market-driven schemes.

Keywords: Sustainable Cotton; Standards Governance; Certification; Traceability; China

1. Introduction

Cotton is the world's most widely produced natural fiber and the backbone of global textile value chains. China occupies a pivotal position: it is the largest cotton producer, supplying roughly 29 percent of world output in recent seasons, and the largest consumer and spinner, accounting for about one third of global mill use. Over the past two decades, the governance of sustainable cotton has shifted from intergovernmental rule-making toward a dense field of voluntary, non-state, market-driven systems, including the Better Cotton Initiative (BCI), organic cotton under the Global Organic Textile Standard (GOTS), Fairtrade cotton, and industry-led programs such as the U.S. Cotton Trust Protocol. Cotton value chains have long been shaped by commodity chain dynamics in which quality coordination and upgrading matter. China, in response to the suspension of international certification activities in its main producing region, has accelerated the development of its own system, centered on the China Cotton Association's sustainable cotton program, its CCIA certification, and digital traceability platforms.

Despite this proliferation, scholarship has paid more attention to criteria and market shares than to the governance structures through which these systems make their claims credible. Governance matters because it determines whether a label is trusted by buyers, regulators, and the public; a standard with weak assurance or narrow participation can devalue the claims of an entire value chain. This paper asks two questions: how do the governance structures of major sustainable cotton standards systems differ, and which path should China select in building a domestic system that is credible at home and recognized internationally? The paper develops a governance framework, compares five systems, and derives policy implications for China.

2. Analytical Framework

The analysis builds on the transnational private governance literature. Non-state market-driven governance systems acquire authority not from states but from markets and civil society, and their legitimacy must be earned rather than assumed . Legitimacy is multidimensional: input legitimacy concerns who participates in standard setting, throughput legitimacy concerns the fairness and transparency of procedures, and output legitimacy concerns effectiveness and recognition . Private regulation emerged from

the vulnerabilities of lead firms and the pressure of social movements , yet its achievements remain limited without the shadow of state authority . Within global value chains, lead firms govern suppliers through standards , and quality standards function as conventions that coordinate chain governance . Third-party certification institutionalizes trust through independent verification, while voluntary programs operate as clubs that provide reputation-based benefits to members . The prospects and limits of such private governance are debated.

From this literature, four governance dimensions are derived for comparing sustainable cotton systems: standard-setting authority and stakeholder representation, assurance and verification, traceability and data governance, and accountability and market recognition. The first dimension captures who is empowered to make rules and whether affected actors are represented; the second concerns how compliance is verified and by whom; the third addresses whether claims can be traced to specific fiber through data systems; the fourth concerns the incentives and recognition mechanisms that sustain participation. Traceability, in particular, is increasingly the dimension on which governance competition will be decided, because data systems determine whether a sustainability claim can be verified by third parties and regulators. These four dimensions structure the comparison of the five systems.

3. Comparative Analysis of Governance Structures

The Better Cotton Initiative is a multi-stakeholder initiative with more than two thousand members organized in four constituencies: retailers and brands, suppliers and manufacturers, producer organizations, and civil society. Its council is elected by a general assembly, and the system is aligned with the ISEAL Codes of Good Practice. Assurance combines third-party certification of farm performance with first- and second-party monitoring, while the chain of custody historically relied on mass balance and is now shifting toward physically traceable models in its 2026 standard. The BCI achieves scale and broad stakeholder input, but its producer voice is comparatively weak and its traceability claims were diluted by mass-balance accounting .

Organic cotton certification, represented by GOTS and the Organic Content Standard, exemplifies certification-based governance. The standard is owned by the Global Standard Foundation, developed by an international working group, and implemented by certification bodies accredited under ISO/IEC 17065 through the International Organic Accreditation Service. Full third-party certification and physical segregation along the chain produce strong assurance, yet compliance costs limit scale .

Fairtrade cotton embeds governance in producer organizations, which hold 50 percent of decision rights in the system's general assembly. Standards cover democratic organization, minimum prices, and a premium reinvested in producer communities, with third-party certification and documented chain of custody. This design maximizes input legitimacy and economic accountability but remains a niche .

The U.S. Cotton Trust Protocol, the successor of the earlier joint U.S.-Australia Cotton LEADS program, is an industry-led stewardship scheme in which U.S. grower organizations define data-driven sustainability metrics verified by third parties. It offers strong transparency through a traceability platform but lacks an independent, multi-stakeholder standard-setting council, illustrating the limits of industry self-governance .

China's system is a hybrid of public and private governance. The China Cotton Association launched the China Cotton Sustainable Development (CCSD) program in 2021 together with four industry associations, established a sustainable cotton production standard, and introduced CCIA certification of sustainably produced cotton with third-party certification under national accreditation. Uniquely, China has built whole-chain digital infrastructure: national cotton exchange platforms serve the large majority of cotton enterprises, regional quality traceability platforms cover the main producing areas, and the Digital Cotton Initiative (DCI), launched in 2023, applies blockchain-based carbon accounting and traceability. The scale of this infrastructure is significant: cotton is among the few agricultural products for which whole-chain digitalization has been achieved at national scale, giving China a governance asset that most international systems lack. This data governance capacity is the defining feature of China's path.

Taken together, the five systems occupy

different positions along a governance spectrum. The BCI and Fairtrade approximate transnational multi-stakeholder governance, GOTS and the organic cluster rely on certification authority, the Trust Protocol represents producer-led stewardship, and China's system is a state-anchored hybrid that combines association standard setting, accreditation, and digital infrastructure. These differences matter because they shape not only who bears the cost of assurance but also whose data, rules, and values prevail in the global market.

Table 1. Governance Dimensions of Major Sustainable Cotton Standards Systems

System	Standard-Setting Authority	Stakeholder Representation	Assurance Model	Traceability and Data Governance	Accountability and Recognition
Better Cotton Initiative	Multi-stakeholder council elected by general assembly	Retailers, suppliers, producers, and civil society	Third-party certification plus first- and second-party monitoring	Mass balance historically; physical traceability phased in	ISEAL aligned; scale-based market recognition
Organic cotton (GOTS/OCS)	Standard owned by a foundation and developed by an international working group	Standard setters, certification bodies, industry, and NGOs	Third-party certification with ISO/IEC 17065 accredited bodies	Physical segregation with documented chain of custody	Premium market recognition; stringent assurance
Fairtrade cotton	Standards set by Fairtrade International with producer participation	Producer organizations hold 50 percent of decision rights	Third-party certification of producer organizations	Documented chain of custody	Minimum price, premium, and market access
U.S. Cotton Trust Protocol	Industry-led program of U.S. grower organizations	Grower members and industry stakeholders	Third-party verification of reported data	Data-driven metrics and traceability platform	ISEAL aligned; market recognition in the United States
China (CCSD/CCIA and DCI)	State-linked industry association standard setting	Industry associations, growers, and state agencies	Third-party certification under national accreditation	Whole-chain digital platforms and blockchain-based carbon accounts	Domestic recognition; international alignment pending

Note. GOTS = Global Organic Textile Standard; OCS = Organic Content Standard; CCSD = China Cotton Sustainable Development; CCIA = China Cotton Association; DCI = Digital Cotton Initiative.

4.Discussion: Implications and China's Path Selection

The comparison reveals three systematic patterns. First, systems face a legitimacy trade-off: multi-stakeholder initiatives such as the BCI and Fairtrade maximize input legitimacy, whereas industry-led schemes such as the U.S. Cotton Trust Protocol trade procedural openness for producer autonomy. Second, assurance rigor and scale pull in opposite directions: certification-based systems such as GOTS deliver strong verification but limited volumes, echoing the general finding that third-party certification is credible yet costly . Third, traceability has become the new frontier of governance. European regulation is extending traceability and due-diligence expectations to textiles through the Ecodesign for Sustainable Products Regulation and its planned digital product passport, even though cotton is not among the commodities covered by the current EU deforestation regulation. Demand-side requirements of this kind privilege systems with verifiable data infrastructure . Recognition is therefore the currency of governance competition: systems that fail to produce credible data or inclusive procedures risk being bypassed by buyers and regulators alike.

For China, the comparison supports a path of graded, integrated governance rather than the imitation of any single international model. First, the national standard and CCIA certification should remain the backbone, but procedural transparency and structured consultation with growers, industry, and civil society should be strengthened to build input legitimacy . Second, China should leverage its unique advantage in whole-chain digital traceability, including the DCI and exchange-based platforms, as the core of a data-driven assurance system; this aligns with the regulatory trajectory in major import

markets. Third, third-party certification under national accreditation should be aligned with international norms such as ISO/IEC 17065 and the ISEAL codes to secure output legitimacy. Fourth, China should pursue explicit alignment and mutual recognition with BCI, GOTS, and the Trust Protocol, converting coexistence into interoperability and reducing compliance costs for exporters. Fifth, producer inclusion and independent monitoring should be institutionalized to avoid the credibility gaps observed in purely market-driven schemes.

The main risks are fragmentation of standards, a persistent recognition gap in Western markets, cost burdens falling on smallholders, and data governance conflicts over traceability information. China's path selection should therefore be sequenced: consolidate domestic credibility first, internationalize the data infrastructure second, and pursue recognition agreements third .

5.Conclusion

The governance structure of a sustainability standard determines whether its rules are converted into trust. International systems differ systematically in who sets the rules, how compliance is assured, how traceability is governed, and how recognition is secured. China's path selection integrates these lessons: a national standard and certification backbone, whole-chain digital traceability as infrastructure, third-party assurance under national accreditation, and active alignment and mutual recognition with international systems. This graded, integrated approach can make China's sustainable cotton governance credible at home and interoperable abroad, while avoiding the legitimacy deficits that have constrained purely market-driven schemes. The framework developed here can also inform standard development in other fibers and commodities, where the same trade-offs among participation, assurance, and traceability recur. Future research should examine the effectiveness of digital traceability in improving on-farm outcomes and the conditions under which mutual recognition among cotton standards systems can be achieved.

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