Journal of Applied Economics and Policy Studies (2024) Volume 12 EWA Publishing
Published online: 1 November 2024 DOI: 10.54254/2977-5701/12/2024113

SWOT Analysis and Strategy Research on the Impact of Green Trade Barriers on the Export of Wuyi Mountain Rock Tea

Yuchen Ma

Law school, Shanghai International Studies University, 1550 Wenxiang Road, Fulin Street, Songjiang District, Shanghai, China, 201620

1509454080@qq.com

Abstract. In the realm of globalization, green trade barriers have emerged as significant obstacles to the international export of Wuyi mountain rock tea from China. The progressively rigorous green trade barriers enacted by various nations, alongside challenges such as pesticide residues detected in Chinese Wuyi rock tea, have contributed to a notable increase in Wu yi mountain rock tea's production expenses, thereby undermining its competitiveness in the global marketplace. This study employs a SWOT analysis framework to thoroughly assess the positioning of Wuyi tea exports, with the objective of formulating strategies to navigate green trade barriers and bolster global competitiveness. To accomplish this, the paper will initially address the current developmental status of Wuyi rock tea, followed by an examination of the eco-trade barriers instituted by key importing nations. Furthermore, through the calculation of competitive trade indices, it will investigate the waning competitiveness of Wuyi mountain rock tea as a result of these barriers. Lastly, potential solutions for overcoming the eco-trade challenges will be proposed by using the SWOT analysis methodology. As a result, the paper will offer innovative perspectives for the export advancement of Wuyi mountain rock tea.

Keywords: green trade barriers, Wuyi Mountain Rock Tea, foreign trade export

1. Introduction

Although the green trade barriers are conducive to protecting the ecosystem and consumer health, it has to be said that its impact on the export of Wuyishan rock tea cannot be ignored. Recognizing a notable deficiency in existing literature, which lacks a targeted strategic framework to tackle these specific trade barriers, this study endeavors to furnish an in-depth understanding and customized strategies for industry stakeholders. By employing a SWOT analysis, the research will assess the competitive landscape of Wuyi Mountain rock tea, revealing its strengths, weaknesses, opportunities, and threats in the context of the growing enforcement of international environmental regulations. This proposed methodology not only offers a detailed analysis but also provides pragmatic strategic insights for policymakers and industry stakeholders, thereby advancing the conversation at the intersection of trade policy and agricultural exports. The paper is organized to systematically progress from an exploration of the Wuyi mountain rock tea's cultural and economic importance to a thorough discourse on green trade barriers and their complex effects, culminating in a SWOT-driven strategic evaluation accompanied by actionable recommendations aimed at promoting the industry's sustainable development and boosting its global market competitiveness.

2. Overview of Wuyi Mountain Rock Tea and Current Export Status

2.1. Overview of Wuyi Mountain Rock Tea

Wuyi Mountain rock tea, recognized as a premier exemplar of Chinese oolong tea, has upheld its esteemed status for millennia. This region's tea is not only renowned for its distinctive characteristic known as "rock rhyme"—a harmonious blend of minerality resembling rock and floral undertones—but also for its sophisticated, time-honored tea production techniques. On May 20, 2006, it was designated as part of the inaugural national-level intangible cultural heritage listings. The origin of Wuyi Mountain rock tea can be traced back to the Shang and Zhou dynasties, gaining prominence as tribute tea by the Yuan dynasty. By the early 17th century, it made its entrance into the European marketplace through the Dutch East India Company, becoming emblematic of

"Chinese tea." Geographically, Wuyi Mountain is situated in the northern segment of Fujian Province, where its unique natural attributes and Danxia topography create an optimal ecological setting for tea cultivation. As of 2023, approximately 120,000 individuals are engaged in the tea sector within Wuyi City, supported by 21,100 registered tea market entities. The area dedicated to tea gardens is extensive, with over ten thousand acres of exemplary ecological tea garden sites established, propelling the advancement of ecological tea garden development across 148,000 acres of tea-laden mountains in the city. Economically, the total value of the tea industrial chain in Wuyi City culminated at 13.5 billion yuan, with the tea industry output valued at 2.62 billion yuan, reflecting a year-on-year growth of 12.7%. Tax revenue from the tea industry reached 125 million yuan, demonstrating a year-on-year rise of 17.5%. Following the launch of the "Belt and Road" initiative, the growth trajectory of Wuyi Mountain rock tea has exhibited considerable promise. As the initiating city of the "Ten Thousand Miles Tea Road," Wuyi Mountain has historically served as a significant conduit for Fujian's external relations and commerce. With advancements in transportation, particularly the inauguration of the China-Europe Railway Express, fresh avenues has been opened for the global market penetration of Wuyi Mountain rock tea, heralding a novel era for the "Ten Thousand Miles Tea Road."

2.2. Current Status of Oolong Tea Export from Fujian Province and the Export Dilemma of Wuyi Mountain Rock Tea

Fujian Province serves as a prominent hub for the cultivation of oolong tea within China, leading the nation in its production. In 2022, the area dedicated to tea farming in Fujian expanded to 3.61 million mu (approximately 241,333 hectares), yielding around 520,000 tons. Oolong tea and green tea represent the primary export commodities, collectively constituting over 80% of the total exports. The economic valuation of the tea industry in Fujian exceeded 150 billion yuan in 2022, marking a year-on-year increase exceeding 6%. In terms of tea exports, Fujian outperformed Zhejiang Province in 2021, achieving an export value of 510 million USD, which positioned it as the leading exporter among provinces for that year, with a total export volume of 26,000 tons, ranking fourth nationwide. The export quantity of oolong tea from Fujian reached 12,756.1 tons, representing 48.78% of its total tea exports and yielding an export value of 187 million USD, which accounted for 36.6% of the province's total exports, thus ranking first in both volume and value for oolong tea exports across all provinces. According to the import and export statistics released by the Tea Industry Branch of the China International Agricultural Cooperation Promotion Association over the past fourteen months, the export value of Fujian's oolong tea stood at 5.901 million USD, notably surpassing that of other provinces and establishing its leading position in the sector. As illustrated in Figure 2, the primary export markets for Fujian's oolong tea encompass Hong Kong, Malaysia, Japan, and Thailand, which together comprise 80.0% of the export volume, while the expansion into European and American markets has been comparatively slow. Figure 3 highlights that in recent months, Fujian's oolong tea exports have encountered certain challenges, demonstrating an overall downward trajectory. Wuyi Mountain rock tea, a significant production area for oolong tea in Fujian, mirrors the broader export dynamics associated with this segment.

Numerous nations, particularly EU member states, enforce stringent regulations concerning Maximum Residue Levels (MRLs) for pesticides in tea. In recent years, there has been a notable frequency in the revision of these pesticide residue standards, with the number of testing parameters escalating from 96 to over 480. This has resulted in a significant increase in the frequency of testing for Chinese tea, leading to more rigorous standards, elevated testing costs, and extended application timelines. Additionally, issues surrounding pesticide and fertilizer usage during the cultivation of Wuyi Mountain rock tea, along with non-compliance with safety standards for tea quality, persist. Despite some advancements in developing ecological tea gardens, pesticide residue remains a pivotal hurdle impeding the exportation of Wuyi Mountain rock tea. Furthermore, many small-scale tea exporting firms operate with low efficiency, minimal profit margins, and evident disorganized competition. These companies engage in price undercutting, lack cooperative strategies and information sharing, and the absence of globally recognized brands restricts the competitive edge of Wuyi Mountain rock tea within the international marketplace. Collectively, these elements create the current export challenges faced by Wuyi Mountain rock tea.

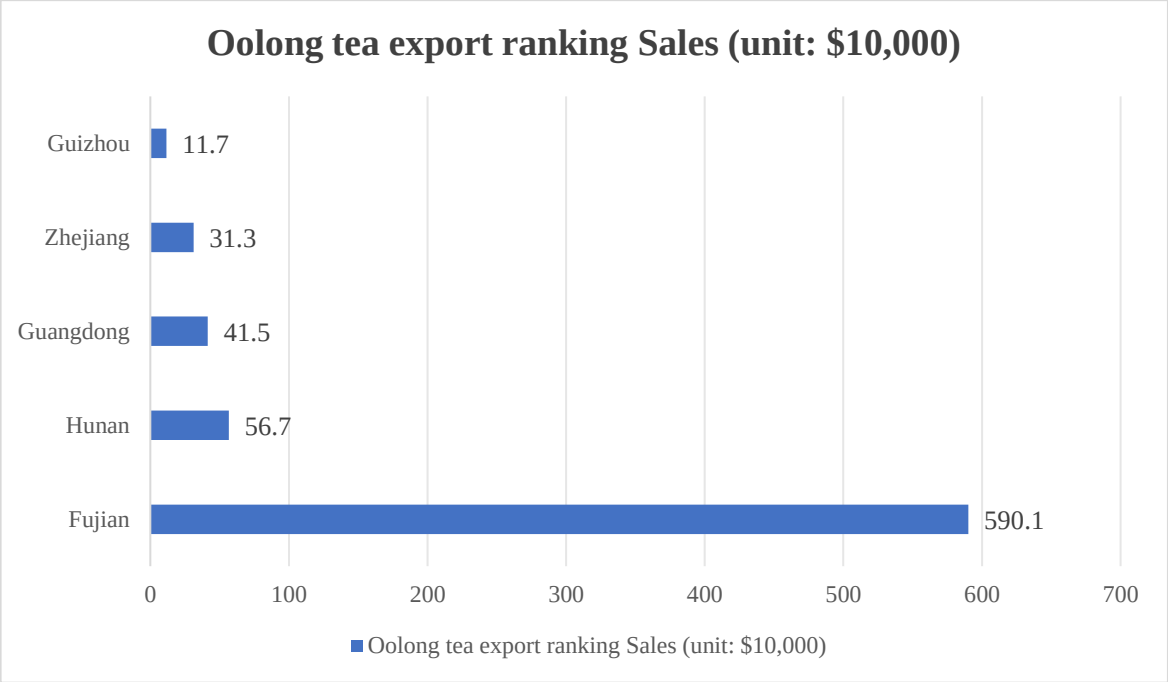

Figure 1. Oolong tea export ranking sales (unit: $10,000)

Figure 2. Trade partner trade volume ranking (unit: $10,000)

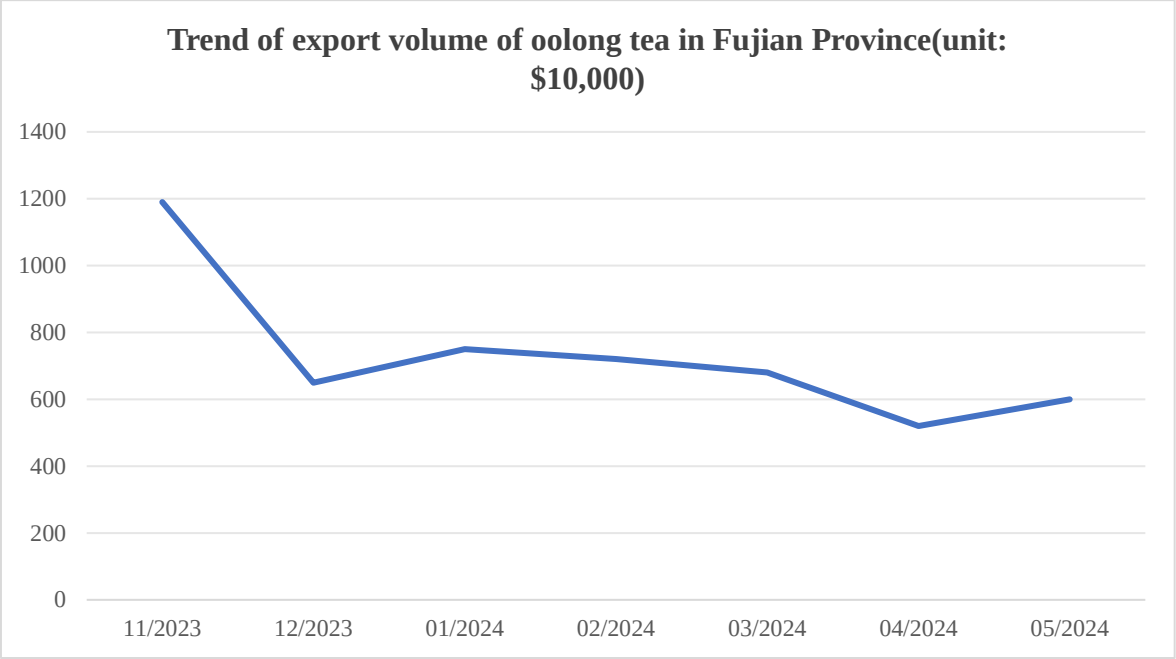

Figure 3. Trend of export volume of oolong tea in Fujian Province (unit: $10,000)

3. Green Trade Barriers

3.1. Concept and Analysis of the Causes of Green Trade Barriers

Green trade barriers represent a category of emerging non-tariff barriers that, while ostensibly intended to safeguard environmental and public health, effectively impede the importation of foreign goods by imposing stringent environmental regulations, standards, and certifications. These barriers possess a certain degree of justification as they resonate with the principles of sustainable development and ecological conservation, receiving backing from various international agreements. Nonetheless, they are sometimes exploited by developed nations to shield their domestic markets by instituting prohibitively high environmental criteria, thereby restricting access for products originating from other nations, particularly those developing nations. At their core, green trade barriers leverage advanced technology and environmental standards to establish a competitive edge and shape international trade dynamics, especially in the aftermath of the Uruguay Round, which diminished the significance of conventional tariffs and non-tariff barriers and heralded green trade barriers as a pivotal element of international trade policy.

The origins of green trade barriers can be understood through the lens of the globalization of environmental challenges. Historically, environmental issues were often confined to the immediate vicinity of their sources or a particular locale; however, contemporary environmental challenges possess a worldwide dimension. For instance, occurrences such as the pollution of transboundary rivers and acid rain resulting from atmospheric contamination not only impact the nation where the pollution originates but can also have repercussions on other nations and potentially the entire planet. Concerns like the greenhouse effect and ozone layer depletion significantly affect the global ecosystem and human civilization. Given the global scale of these environmental challenges, their resolution necessitates international collaboration and coordinated efforts. Consequently, numerous environmental protection principles and frameworks have been developed at the global level, endorsing sustainable development as a foundational tenet of international trade. Nonetheless, environmental protection initiatives have progressively integrated into international trading practices, resulting in an escalation of trade-related environmental regulations (TERMs). These regulations have not only incited numerous trade disputes but have also established environmental safeguarding as a critical criterion for the governance of international trade, thereby creating a novel form of non-tariff barrier known as "green trade barriers."

From a trade perspective, the rise of green trade barriers can be primarily attributed to the promotion of trade protectionism. Despite the longstanding objective of establishing a free trade framework, the influence of trade protection has persisted. Traditional tariff barriers have diminished through numerous GATT negotiations, which have curtailed their protective capabilities. During the 1980s, with the rapid economic growth and technological advancements in developing nations, their products became increasingly competitive on the global stage, posing a threat to the interests of developed nations. In response, developed countries resorted to non-tariff barriers, including quantitative restrictions and quotas. Following the conclusion of the GATT Uruguay Round and the formation of the WTO, the deployment of non-tariff barriers was also constrained, prompting developed nations to seek alternative trade protection strategies, wherein green barriers emerged. Green trade protectionism seeks to curtail trade in

environmentally harmful products while promoting international trade in sustainable goods, leveraging perceived rationality and legality to become the favored trade protection approach for developed nations. Furthermore, the substantial disparities in trade and environmental perspectives between developed and developing countries significantly contribute to the proliferation of green trade barriers. Developed nations exhibit a heightened level of environmental consciousness and technological expertise, advocating that trade must integrate environmental considerations, reducing the production and sale of pollutants and fostering the trade of eco-friendly products. They champion the "polluter pays" principle, insisting on the internalization of environmental and resource costs while opposing any form of environmental subsidies. Conversely, developing nations primarily focus on economic growth and, in their struggle against poverty, are often unable to prioritize environmental protection. They contend that international environmental standards are biased against them, as the benchmarks established by developed nations are frequently unattainable. With limited economic resources, outdated technology, and an inability to bear the expenses associated with environmental certification, developing countries advocate for suitable "environmental subsidies" to bolster their international competitiveness. Moreover, they accuse developed countries of applying double standards by relocating pollution-heavy industries to developing regions through direct investments, resulting in compounded detriment. In conclusion, trade protectionism, along with the discrepancies in environmental awareness, technological capabilities, and standards between developed and developing nations, are significant contributors to the emergence of green trade barriers. The stringent environmental regulations and demands for the internalization of resource costs imposed by developed countries create substantial obstacles for developing nations within international trade, rendering green trade barriers a contemporary instrument of trade protectionism for developed nations.

3.2. Characteristics and Manifestations of Green Trade Barriers

Green trade barriers possess several unique characteristics in contemporary international trade when compared to traditional non-tariff barriers, including aspects of legitimacy and concealment, discriminatory practices, extensiveness, and efficacy. Firstly, these barriers are frequently justified on the grounds of safeguarding the ecological environment and public health, acquiring a façade of legitimacy through green provisions embedded in various WTO agreements and multilateral environmental accords. This aspect renders their enforcement more insidious, as they lack the direct targeting typically associated with quotas and licenses. The rigorous environmental and technical benchmarks associated with such barriers complicate the ability of developing nations to assess their rationality and to discern whether their underlying motives stem from trade protectionism.

Secondly, green barriers exhibit a noticeable discriminatory and inequitable nature in the formulation of standards, which are predominantly dictated by developed nations. These standards often disregard the environmental liabilities incurred by developed countries throughout their industrialization, as well as the varying technological capabilities and economic situations of developing nations. Rather, they are anchored in the technological benchmarks of developed countries, establishing a standardized green criterion that is intrinsically unjust toward developing nations. Furthermore, developed nations apply disparate green standards to equivalent products originating from different countries, instituting double standards between domestic and imported goods.

Thirdly, the breadth of green barriers is extensive, encompassing a wide range of goods from raw materials to intermediate and finished industrial products. They impose specific regulations on environmental conditions, production processes, methodologies, and final products, impacting material production, investment, and service sectors. These barriers influence all export commodities from developed, developing, and underdeveloped countries, with diverse implementation strategies that include green tariffs, environmental certifications, technical standards, sustainable packaging, sanitary inspections, and green subsidies.

Lastly, the temporal impact of green trade barriers is progressively intensifying. The entities responsible for their implementation frequently revise their green technical standards in response to the evolving economic and technological landscape of trading partner countries. Consequently, green barriers tend to proliferate and expand; when the market share of a particular product bearing a green label reaches approximately 20%, the certification requirements for that country's green label will similarly escalate.

Green trade barriers manifest in various forms within international commerce, encompassing green labeling systems, green technical standards, green sanitary inspection protocols, green packaging mandates, and green subsidies. To begin with, the green labeling system, commonly referred to as the Green Label, signifies a distinct certification granted by certification bodies to applicants who voluntarily seek certification and satisfy specific environmental protection standards, indicators, or regulations. This label serves as a "green pass" facilitating access to markets in developed nations.

Next, green technical standards represent stringent environmental criteria established by developed countries, rooted in their advanced technological capabilities and technological monopoly. This often poses challenges for developing nations in meeting these standards, thus giving developed countries a basis to impose green barriers.

Furthermore, the green sanitary inspection framework employs rigorous health and quarantine criteria to restrict or outright ban the importation of foreign products. While this system yields advantages for human health and ecological well-being, it simultaneously obstructs trade for exporting nations, emerging as a critical instrument for developed countries to exert control over the exportation of products from developing countries.

Additionally, the green packaging framework mandates that packaging must conserve resources, minimize waste, facilitate recycling or reuse, decompose easily, and avoid environmental pollution. Nations enforce compulsory recycling or recovery legislation through legal and economic incentives. While these regulations advance environmental stewardship, they also open avenues for importing countries to establish green barriers.

Lastly, green subsidies are predicated on the polluter-pays principle, obligating polluters to incur the costs associated with environmental management and to internalize environmental and resource costs. Given that firms in developing countries frequently struggle to absorb these expenses, governments commonly extend environmental subsidies. Developed countries leverage this as justification to impose restrictions on the exports of goods from developing nations.

Collectively, these varied green barrier initiatives not only contribute to environmental conservation but also furnish developed countries with modern mechanisms for trade protection, significantly impacting the export activities of developing countries.

3.3. Development Trends of Green Trade Barriers

As green trade barriers become increasingly prevalent in the realm of international commerce, the corresponding trade disputes are on the rise. Green barriers are poised to be a significant focus in upcoming WTO negotiations, making it imperative to understand their development trends to better navigate the trajectory of international trade evolution.

Initially, developed nations persist in elevating green technology standards, thereby complicating market access for products from developing countries by perpetually advancing green technologies and environmental protection benchmarks. For instance, agricultural exports from China destined for Japan must adhere to hygiene standards that considerably exceed global norms; concurrently, the EU's regulations on pesticide usage are tightening, imposing higher residue limits on products like tea. Additionally, the United States, Canada, and the UK are reinforcing phytosanitary standards regarding imported wooden packaging, which not only influences export dynamics but also compels exporting nations to elevate their domestic production standards.

Furthermore, the proliferation of mandatory environmental regulations is on the rise. The shift from voluntary environmental labeling to obligatory regulations marks a significant trend in international trade. These mandates necessitate that products acquire certifications such as ISO 14000 for environmental management systems and ISO 9000 for quality management systems to gain market entry. In the United States, FDA approval and CE certification in the EU serve as essential "pass tickets" for engaging in the international market, with products lacking these certifications facing barriers to entry. While such certifications enhance product quality, they also impose added burdens on small and medium-sized enterprises, particularly in developing countries.

Lastly, the interconnectedness and diffusion effect of green trade barriers are intensifying. Green trade barriers are evolving from isolated measures into a cohesive network. For example, when Germany initially prohibited the import of textiles containing azo dyes, other nations, including France, the Netherlands, and Japan, swiftly enacted similar restrictions. This phenomenon of policy diffusion underscores the global ramifications of green trade barriers and their significance within global trade policy. Such a trajectory necessitates that nations account for international implications when crafting domestic policies to mitigate trade tensions and advance worldwide environmental objectives.

Comprehending these trends is vital for nations, especially developing ones, to refine their international trade strategies, bolster their environmental standards, and engage effectively in the global marketplace while advocating for equitable and inclusive international environmental regulations.

4. Green Trade Barriers Analysis by Country and Their Impact on the Export of Wuyi Rock Tea

4.1. Country-Specific Analysis of Green Trade Barriers

Japan's green trade barriers concerning imported tea emphasize three primary dimensions: pesticide residue standards, heavy metal concentrations, and radioactive substance assessments. Initially, Japan enforces stringent pesticide residue regulations for tea. Under the Food Sanitation Law, Japan permits up to 276 pesticide residues in tea, contrasted with the European Union's standard of 207, indicating that Chinese tea must fulfill more rigorous requirements to access the Japanese market. For instance, the permissible limit for Imidacloprid in Japan is set at 0.02 ppm, while the Chinese national standard allows up to 0.5 ppm (source: comparison of JSA standards with Chinese national criteria). These stringent pesticide residue thresholds elevate compliance challenges and costs for Chinese tea producers. Furthermore, Japan imposes strict restrictions on heavy metal content within tea. According to the regulations set forth by the Ministry of Health, Labour and Welfare, lead levels in tea cannot surpass 0.1 ppm, whereas the Chinese national regulation permits up to 2.0 ppm. This considerable discrepancy necessitates additional testing and processing measures for Chinese tea to ensure compliance upon exportation to Japan. The study titled "Research on Tea Heavy Metal Detection Standards" (2020) highlights that Chinese tea exporters need to implement a range of new strategies during cultivation and processing, such as soil enhancement and the utilization of low heavy metal pesticides, to align with Japan's heavy metal standards. Lastly, following the Fukushima nuclear disaster, Japan established rigorous testing protocols for radioactive substances in imported food. The Ministry of Health, Labour and Welfare mandates that all imported tea undergo testing for radioactive cesium (Cesium-134 and Cesium-137), with a maximum limit of 100 Bq/kg, contrasting with an international standard typically around 500 Bq/kg. The analysis "The Impact of Radioactive Substance Testing on International Trade" (2021) indicates that these stringent testing requirements substantially elevate inspection and time costs for Chinese tea entering the Japanese marketplace. For instance, in 2021, over 30% of Chinese tea shipments to Japan necessitated additional radioactive substance testing, escalating overall export costs by approximately 15%.

The green trade barriers established by the United States on Chinese tea predominantly include regulations on pesticide residue thresholds, restrictions on heavy metal content, certification protocols, and labeling stipulations. To begin with, concerning pesticide residue thresholds, the standards established by the U.S. Environmental Protection Agency (EPA) delineate that the allowable maximum residue limit for frequently utilized pesticides, such as imidacloprid, is 0.02 ppm, which is significantly lower than China's national standard of 0.5 ppm. This discrepancy compels Chinese tea manufacturers to implement supplementary measures aimed at regulating pesticide residues throughout production and exporting processes to adhere to U.S. market stipulations. These measures involve rigorous pesticide usage controls and multiple residues testing protocols, which consequently elevate production costs and testing fees. Pertinent research indicates a 20% increase in compliance costs for tea export enterprises attributable to pesticide residue compliance. Moreover, the United States has implemented strict regulations on heavy metal concentrations. The Food and Drug Administration (FDA) has stipulated a maximum allowable lead concentration of 0.1 parts per million, in contrast to China's threshold of 2.0 parts per million. To meet these stringent standards, tea manufacturers in Wuyi Mountain must engage in thorough soil remediation, meticulous pesticide selection, and refined processing techniques. However, these essential practices often lead to a notable rise in production costs. For example, a tea producer that adopted innovative soil amendment technologies and cutting-edge processing machinery to minimize lead content reported a roughly 15% increase in production costs. In addition, the U.S. enforces stringent product certification and labeling protocols for imported Wuyi Mountain tea. The FDA mandates that all teas undergo extensive safety evaluations and present comprehensive labels that include details on origin, ingredient composition, production dates, and shelf life. These certification and labeling stipulations significantly heighten the compliance expenditures for tea exporting enterprises.

Similarly, the European Union's green trade barriers affecting Chinese tea largely pertain to rigorous quality and safety standards. These include limitations on pesticide residues, heavy metal concentrations, and residues of non-pesticide risk substances. According to the WTO/FTA Consultation Network, Chinese tea exports have been flagged 27 times by the EU's Rapid Alert System for Food and Feed due to the presence of risk substances, encompassing 17 different substances of concern. Among them, non-pesticide risk substances mainly include anthraquinone and biphenyl. The EU and its tea importing countries continuously set limits for new risk substances in tea based on green trade barriers, which hinder the development of China's tea industry. In terms of heavy metals, heavy metals in tea include manganese, lead, arsenic, chromium, cadmium, nickel, mercury, antimony, thallium, etc. The most harmful and well-studied heavy metals to the human body are mainly lead, cadmium, mercury, and arsenic. Research has found that the content of heavy metals in tea garden soil, pH value, and organic matter all affect the content of heavy metals in tea. In addition, the EU has set a maximum residue limit of 0.02 mg/kg for anthraquinone (AQ) in tea, and from 2016 to 2020, there were a total of 17 reports on Chinese tea exports due to the problem of AQ exceeding the standard. Perchlorate, as an inorganic salt and thyroid toxin, was tentatively set by the EU in 2015 to limit the import of perchlorate in tea to 0.75 mg/kg, and officially promulgated this limit in May 2020. These strict standards and limits require Chinese tea export companies to take stricter quality control measures in the production process to meet the import standards of the EU.

Africa, as an important export market for Chinese tea, has a significant impact on the development of China's tea industry. However, African countries, especially regions such as Morocco, have set strict quality and safety standards for imported tea, forming a green trade barrier. These barriers mainly reflect in the strict restrictions on pesticide residues, heavy metal content, and microbial indicators in tea. Firstly, some African countries have increasingly strict standards for the maximum residue limits of pesticides in tea. For example, Morocco implemented new standards for pesticide residues in tea in 2019, which stipulate the maximum residue limits for 48 pesticides, and for active substances not approved for use on tea trees in China, a limit of 0.01 mg/kg or the limit of quantification (LOQ) will apply, which is stricter than the Chinese national standard. In addition, African countries also have restrictions on the content of heavy metals in tea, requiring strict control of heavy metal pollution sources such as soil and water sources in the tea production process to ensure the safety of tea products. Secondly, African countries also have clear requirements for microbial indicators in tea. Exported tea must meet the microbial safety standards of the target market, which requires tea production and processing companies to reach a higher level in terms of hygiene conditions and production processes. Furthermore, African countries have enacted numerous regulations pertaining to the packaging and labeling of tea products. For example, specific legislative bodies in Africa require that tea packaging includes designated names or offers detailed product information, thereby ensuring consumers' rights to access information and make informed choices.

4.2. The Negative Impact on the Export Competitiveness of Wuyi Mountain Tea

The Trade Competitive Index (TCI) functions as an evaluative tool for gauging a country or region's competitive position in the global trade of a specific commodity in comparison to others. It encapsulates the net export dynamics of a nation concerning that specific commodity, reflecting the comparative magnitude of its exports against its imports. The computational formula for deriving the Trade Competition Index is outlined as follows:

$$TCI_i = \frac{X_i - M_i}{X_i + M_i}$$

the following terms are defined:

TCI_i is the Trade Competition Index for the i-th commodity.

X_i is the export value of the i-th commodity.

M_i is the import value of the i-th commodity.

When $TCI_i > 0$, it indicates that the country is a net exporter of the i-th commodity, meaning that exports exceed imports, and the country has a competitive advantage in trade for this commodity.

When $TCI_i < 0$, it indicates that the country is a net importer of the i-th commodity, meaning that imports exceed exports, and the country is at a competitive disadvantage in trade for this commodity.

When $TCI_i = 0$, it indicates that the country's exports and imports are equal, reflecting a state of trade balance for the i-th commodity.

When the absolute value of TCI_i approaches 1, it indicates a very strong trade competitiveness, whether it is an advantage or a disadvantage.

The theoretical range for TCI_i is between -1 and 1. However, in practice, due to the actual circumstances of exports and imports, the value ofTCI_iwill usually be close to but not equal to ±1.

By calculating the TCI_i for different years or different commodities, one can analyze the trend of competitiveness in international trade for a country or region.

Firstly, we learn from the "2023 China Tea Import and Export Trade Analysis Report" that the export value of tea in mainland China in 2023 was 1.739 billion U.S. dollars, and the import value was 146 million U.S. dollars. Using the Trade Competition Index formula:

$$TCI_{2023} = \frac{X_{2023} - M_{2023}}{X_{2023} + M_{2023}}$$

In the formula, let X_{2023} represent the export value for the year 2023, and M_{2023} represent the import value for the same year. Substituting the numerical values:

$$TCI_{2023} = \frac{17.39 - 1.46}{17.39 + 1{,}46} \approx 0.848$$

The computed Trade Competitiveness Index (TCI) value of 0.848 signifies that China functioned as a net exporter of tea products in 2023, highlighting its competitive edge in international commerce. The TCI nearing +1 indicates that exports substantially surpass imports, underscoring the robust competitive stance of Chinese tea products in the global marketplace. Likewise, utilizing the official statistics released by the China Association of Agricultural Cooperation and illustrated in Table 1, we can extrapolate the respective TCI values for the years presented in Table 2.

Table 1. Export and Import Values of Chinese Tea Products in 2023 and 2024 (in Ten Thousand US Dollars)

Date	Export value of Chinese tea products (In ten thousand US dollars)	Import value of Chinese tea products (In ten thousand US dollars)
2024.05	10182.5	1405.8
2024.04	11627.1	1229.1
2024.03	10548.7	1082
2024.01-2024.02	22150.4	2031.1
2023.01-2023.12	173920.1	14642.7

Table 2. Tea Consumption Index (TCI) for Chinese Tea Products from January 2023 to May 2024

Date	2024.05	2024.04	2024.03	2024.01-2024.02	2023.01-2023.12
TCI	0,758	0.807	0.813	0.831	0.848

The data reveals that our nation is a net exporter of tea products. However, various restrictions imposed by foreign countries, alongside the implementation of new trade protection measures—particularly the so-called "green trade barriers "—have contributed to a declining trade competition index for our tea products in recent years. It is evident that green barriers have negatively impacted the export competitiveness of our tea products.

Specifically, green trade barriers have had a profound detrimental effect on the export competitiveness of Wuyi Mountain tea. Firstly, these barriers heighten the entrance thresholds for Wuyi Mountain tea in the international market by elevating the requirements for environmental standards certification and environmental labeling, which results in diminished competitiveness for products lacking the necessary certifications. Secondly, to comply with the stipulations of green trade barriers, businesses must

incur additional costs related to raw material procurement, enhancements in production technologies, and investments in environmental protection equipment. These escalated costs lead to increased product pricing, thereby undermining their price competitiveness in the global market. Concurrently, as global consumers place a greater emphasis on health and environmental sustainability, their preference increasingly tilts toward environmentally friendly products. This shift could result in a negative alteration in consumer preferences towards Wuyi Mountain rock tea that lacks environmental certification. Furthermore, green trade barriers challenge the brand equity and market positioning of Wuyi Mountain tea, compelling companies to reassess their brand image and potentially modify market strategies to engage consumer demographics with heightened environmental standards.

Furthermore, with regard to financial implications, to comply with environmental protection standards, producers of Wuyi Mountain tea must allocate additional funds towards enhancing production technologies, upgrading machinery, and utilizing sustainable materials. For instance, the adoption of eco-friendly fertilizers and pesticides during the cultivation process is often necessary, albeit at a higher cost. Concurrently, the implementation of renewable energy sources, waste management systems, and water recycling protocols in processing demands extra upfront investment and operational expenses. Additionally, green trade barriers necessitate increased testing and certification for tea products, such as organic certifications and ISO environmental management system qualifications. These certification processes tend to be both time-intensive and costly. Data from the National Development and Reform Commission indicates that the costs associated with export product certification can constitute a significant fraction of the overall product expense. For agricultural commodities with relatively thin profit margins like tea, this represents a notable financial burden. Moreover, green trade barriers can also indirectly elevate logistics expenses. To adhere to the diverse environmental requirements of target markets, Wuyi Mountain tea may be compelled to implement special protocols in packaging, storage, and transportation, such as employing recyclable materials and ensuring cold chain logistics, which further escalates these costs. Lastly, green trade barriers may contribute to heightened market development expenses. To align with the varying environmental standards of different nations, Wuyi Mountain tea producers must invest in market analysis, product refinement, and the development of marketing strategies, all of which require additional human resources and financial investment.

In conclusion, environmental trade barriers pose a substantial adverse effect on the export competitiveness of Wuyi Mountain tea by inflating production expenses, certification fees, logistics expenditures, and market development costs. Tea enterprises must navigate a delicate equilibrium between cost management and adherence to environmental protection standards to sustain their export competitiveness, which inevitably escalates the complexities of business operations and heightens market risks for these companies.

4.3. The Positive Impacts on Wuyi Mountain Tea's Export Competition

The advantageous impacts of green trade barriers on the exportation of Wuyi Mountain tea are primarily manifested in two domains: enhancing environmental consciousness and fostering the evolution of the industrial framework. Firstly, the enforcement of green trade barriers has stimulated heightened ecological awareness among enterprises involved in the exportation of Wuyi Mountain tea. Confronted with stringent green technology regulations and environmental criteria imposed by developed nations, these enterprises have come to realize that conventional production techniques and offerings no longer satisfy the requirements of the global marketplace. This change in perspective has prompted businesses to adopt proactive initiatives, such as investing in sophisticated testing apparatus, establishing sanitary quality oversight facilities, and rigorously managing tea hygiene standards. Through these self-improvement efforts, companies have not only mitigated potential product quality concerns but have also cultivated a reputation for excellence in international markets. Additionally, the emergence of green trade barriers has initiated a significant evolution within the structural framework of the Wuyi tea industry. Historically, this sector has relied heavily on the export of loose-leaf raw tea, lacking both prominent brands and products that offer added value. In response to the obstacles presented by green trade barriers, numerous tea enterprises have started to integrate innovative technologies designed to enhance the environmental technical characteristics of their offerings while elevating their quality and value.

While green trade barriers have presented short-term difficulties for the export of Wuyi Mountain tea, they have ultimately fostered greater corporate environmental awareness and instigated the optimization and upgrading of the industrial framework. These beneficial effects contribute to enhancing the international perception of Wuyi Mountain rock tea, elevating its competitiveness, and facilitating sustainable development.

5. SWOT Analysis of Wuyi mountain Rock Tea Exports Under the Background of Green Trade Barriers

The SWOT analysis functions as a strategic planning tool aimed at assessing the strengths (S), weaknesses (W), opportunities (O), and threats (T) relevant to a particular industry. This analytical framework provides decision-makers with a holistic view, facilitating the development of effective strategies to enhance competitive advantage and expand market share. In this regard, I utilize this framework to examine the factors influencing the export sector of Wuyi mountain rock tea and to discuss appropriate strategic responses.

5.1. S(Strengths)

A key asset of the Wuyi mountain rock tea industry is the robust governmental support. Local authorities are proactively involved in the Chinese national rural revitalization strategy by offering financial support, technical expertise, and advantageous subsidies to tea enterprises, thus enhancing their export potential. For example, in several counties adjacent to Wuyishan, the government has appointed specialists to oversee the shifting EU green trade regulations, providing customized guidance to tea companies on adapting their import and export strategies to tackle international market challenges. Furthermore, the distinctive ecological attributes of the Wuyishan region are vital for the sustainable growth of the industry. Nestled in the Wuling Mountains, Wuyishan enjoys a subtropical monsoon climate and acidic soil, which create ideal natural conditions for tea cultivation, thus granting a significant competitive edge in the global market.

In addition, Wuyishan rock tea has gained considerable acclaim both domestically and internationally for its unique geographical indications and cultural relevance. Esteemed varieties, like Da Hong Pao, are not merely celebrated at home but also possess significant influence and acknowledgment globally. Its exceptional quality and compelling brand narrative have piqued the interest of international consumers, creating new avenues for tea exportation from the Wuyi Mountain region.

The tea culture of this area is deeply embedded, with events such as the Tea Culture Festival acting as vehicles to blend traditional tea practices with modern tourism, thus fostering multifaceted growth within the tea industry. Moreover, the Wuyi Mountain region's research and development capabilities are impressive, marked by the establishment of entities like the Wuyi Mountain Tea Research Institute, which has bolstered R&D efforts related to value-added tea products and refined export frameworks.

Ultimately, considerable advancements have been accomplished in reforming and innovating the tea export framework in the Wuyi Mountain area. In light of green trade barriers, local companies are actively pursuing the export of value-added offerings, such as instant tea and tea polyphenols, effectively broadening their market presence.

To summarize, the rock tea export sector in the Wuyi Mountain region boasts unique advantages in governmental support, ecological conditions, regional branding, tea culture, research innovation, and modifications to export structures. These elements considerably enhance its competitive stance in the global marketplace. Looking ahead, Wuyi Mountain rock tea is expected to leverage these strengths, continually improve product quality and brand visibility, and engage in sustainable development.

5.2. W(Weaknesses)

The inspection criteria for major export markets, such as the European Union, are becoming increasingly rigorous, with pesticide residue threshold standards now surpassing 400 distinct items. This development requires that all aspects of Wuyi mountain rock tea—spanning cultivation and processing to packaging and transportation—comply with environmentally sustainable practices. However, some tea producers and companies in the Wuyi Mountain region have not fully adapted to these evolving regulatory frameworks, which heightens the risk of product returns or confiscations during export activities. Furthermore, tea producers and companies are forced to invest additional resources in acquiring advanced equipment, implementing physical pest control measures to reduce pesticide residues, and undergoing necessary product certification and testing. These increased financial obligations have, to some extent, compromised the price competitiveness of Wuyi Mountain rock tea. Additionally, the export structure of Wuyi Mountain rock tea is characterized by a lack of diversification, predominantly consisting of a narrow range of processed products. The development of independent brands has been sluggish, with a notable absence of globally recognized brand equity. According to the "2021 China Tea Import and Export Trade Analysis Report" issued by the Tea Industry Branch of the China Association for the Promotion of International Agricultural Cooperation, despite Fujian Province leading the nation in tea export volume, the primary exported varieties are oolong and green tea, which command relatively high export prices. This suggests that Wuyi Mountain rock tea has considerable potential for enhancement in terms of product value addition and brand recognition. Moreover, there exists an absence of standardized and technical benchmarks within the export framework of Wuyi Mountain rock tea. The lack of quality measurement standards for rock tea positions export enterprises at a disadvantage in the international marketplace. Concurrently, the absence of standardized qualification management for export enterprises, coupled with evident disorganized competition, hampers the healthy progression of the market. Lastly, the scale and degree of intensification within the tea industry in the Wuyi Mountain region are comparatively low, which constrains the overall competitiveness of the industry and its responsiveness to market changes, thereby impacting the consistency of tea production and quality.

5.3. O(Opportunities)

The export potential of Wuyi Mountain rock tea is rooted in its rich cultural heritage and branding strength. Capitalizing on the "Belt and Road" initiative, Wuyi Mountain rock tea is actively penetrating international markets. As one of the pioneering advantageous and distinctive industrial clusters in China, the Wuyi Rock Tea industry cluster in Fujian Province recorded a total tea output of 40,000 tons in 2022, with the overall industry chain value surpassing 20 billion yuan, showcasing significant development prospects and competitive market positioning. In 2022, the export volume of Chinese tea rose by 1.59% compared to the previous year, with Fujian Province contributing 25.52% to the national export value, thereby securing its position as the

leading province in the country and underscoring the high valuation and competitive landscape of its tea exports. The global trend toward healthier lifestyles is driving the demand for premium quality tea, presenting new export opportunities for Wuyi Mountain rock tea. The Chinese government's endorsement of specialty and high-quality agriculture in the "14th Five-Year Plan," which emphasizes the development of pollution-free agricultural products, green food, and organic food, aligns with policy support for the exportation of superior quality teas, including Wuyi Mountain rock tea. Furthermore, the successful organization of the China Tea Import and Export Trade Annual Conference fosters an essential communication platform for the tea sector, enhances international collaboration, and the published import and export reports provide crucial data and market insights beneficial for the global advancement of tea brands like Wuyi Mountain rock tea. Although there was a downturn in export volume and value for Chinese tea in 2023, Fujian's share of export value remained paramount in the nation, reflecting the competitive edge and influence of Fujian tea, particularly Wuyi Mountain rock tea, in the global market. Collectively, these elements establish a robust foundation and ample development prospects for the export of Wuyi Mountain rock tea.

5.4. T(Threats)

The export of Wuyi Mountain rock tea is encountering significant challenges primarily due to the intricate nature of the international trade landscape, the rise in technical trade barriers, and escalating market competition. Notably, in 2023, there was a historic simultaneous decline in both the export volume and value of Chinese tea, which fell by 1.67% in volume and 22.41% in value year-on-year, signaling potential shifts in international market demand influenced by economic fluctuations. Additionally, principal tea-importing regions, such as the European Union, are imposing increasingly stringent regulations on pesticide residue levels in tea, coupled with a growing array of tea testing parameters. This not only escalates testing expenses but also prolongs the application process duration, complicating market entry for Wuyi Mountain rock tea. Furthermore, intensified competition in the global tea market from other leading tea-producing nations, like Kenya and Sri Lanka—who possess cost advantages and stable supply chains—poses a threat to the market share held by Wuyi Mountain rock tea. Numerous tea enterprises in the domestic sector have increasingly sought to capitalize on the expansive and lucrative local market in recent years, largely due to rigorous foreign pesticide residue regulations that have diminished the incentive to export Wuyi Mountain rock tea. Additionally, geopolitical factors such as the ongoing Russo-Ukrainian conflict, tensions in the Middle East, and the global financial crisis place significant pressure on both the global economy and the political environment, further impacting the export trade of Wuyi rock tea. The prolonged conflict in Ukraine has caused substantial economic repercussions for Europe, leading to escalating energy prices, rampant inflation, serious corporate losses, and a notable decrease in consumer purchasing power for Wuyi mountain rock tea. At the same time, rising tensions in areas including the Middle East and the South China Sea have disrupted maritime transport routes, increasing logistics expenses and worsening supply chain vulnerabilities. Finally, the effects of the global financial crisis and economic recession have negatively influenced international demand for Wuyi mountain rock tea offerings.

6. Research on Strategies for Wuyi Rock Tea to Address Green Trade Barriers

6.1. Green Marketing and Green Products

In addressing green trade barriers, Wuyi Rock Tea must implement an integrated strategy aimed at enhancing the sustainability profile of its offerings. Firstly, it is vital for the company to adopt principles of green marketing, incorporating environmental stewardship into its corporate culture and strategic initiatives to meet the growing consumer appetite for eco-friendly products. By conducting green training initiatives, we can raise awareness regarding sustainable marketing practices and eco-conscious production methods among employees and tea cultivators. Establishing quality standards for green tea that align with international benchmarks is essential for strengthening our competitive position. Wuyi Rock Tea should actively participate in the formulation of international standards, such as those instituted by the International Federation of Organic Agriculture Movements (IFOAM), along with organic certification protocols relevant in major import markets like Japan and the United States.

In the realm of product innovation and manufacturing methodologies, it is essential for Wuyi Rock Tea to intensify its focus on green tea development while establishing explicit green standards to ensure compliance with international production protocols. Concurrently, expanding our range of processed tea products will serve to diversify our offerings and enhance overall value. Additionally, improving our packaging is crucial; we should employ environmentally sustainable materials and embed green attributes as well as cultural elements into the design to align with consumer preferences within the target markets.

A strategic pricing framework for green products is also critical to bolster our competitive positioning. Given that green products typically engage a premium price relative to traditional counterparts, it is imperative to enhance consumer perceptions of the value linked to Wuyi mountain rock tea, thereby encouraging acceptance of higher pricing. To facilitate this, we should assimilate international environmental and trade intelligence to devise informed pricing strategies reflective of market demand.

Regarding distribution channels, Wuyi mountain rock ought to collaborate with intermediaries renowned for their green credentials to meet the sustainability criteria set by importing countries. Furthermore, aligning packaging and labeling with green regulations throughout the transportation process can effectively enhance the promotion of the exports. Finally, establishing a robust green brand identity and nurturing solid trading relationships with importers is paramount. We will elevate our green

products on the global stage through diverse marketing strategies such as advertising, personal selling, and initiatives centered around social responsibility, particularly those championing environmental protection. By maintaining the superior quality of our exported tea, we can foster trust and garner support from importers while concurrently strengthening our ties with international markets and expanding our presence within the tea export domain.

From an economic perspective, the environmentally oriented trade barriers necessitate that enterprises allocate a greater quantity of resources towards augmenting their environmental protection initiatives throughout the manufacturing process, which may lead to higher short-term expenditures. Nonetheless, over the long term, through increased product value and enhanced brand equity and market competitiveness, firms can attain improved profit margins. Additionally, sustainable products frequently benefit from policy incentives and market premiums, aiding businesses in distinguishing themselves in a competitive landscape.

6.2. Brand Building and Cluster Development

In the realm of overcoming green trade barriers, it is essential for Wuyi mountain rock tea exporters to enhance their global competitiveness by focusing strategically on brand development and the improvement of industrial clusters. To begin with, Wuyi Rock Tea ought to modernize its conventional production and marketing methodologies, transitioning from a cost-driven approach to one that prioritizes brand value. This transformation can be accomplished by enhancing product quality, increasing investment in research and development, and intensifying marketing strategies to cultivate brand equity. Likewise, Wuyi Mountain tea enterprises can pursue a strategy of "global expansion through brand leverage," which involves leveraging established brand reputations to enhance visibility and elevate the industry's overall image. Furthermore, the establishment of proprietary brands and the formation of partnerships with key distributors can significantly enhance the promotion and sales of tea products grounded in brand equity.

In order to facilitate the development of industrial clusters, Wuyi mountain rock tea enterprises must fortify collaborative relationships within the industry. By integrating various stages, including cultivation, processing, and distribution, these enterprises can elevate their level of industrialization and generate synergistic effects. Additionally, Wuyi mountain rock tea enterprises should strengthen collaborations with research institutions to promote the industrialization of value-added tea products, thereby enhancing the market competitiveness of tea by-products.

6.3. Construction of the Tea Quality and Safety Assurance System

Considerable challenges of green trade barriers, underscores the urgency of fortifying the tea quality and safety assurance framework. The fundamental determinant of export viability pivots on the quality and safety of the tea, with pesticide residues emerging as a significant impediment to current export operations. To commence, Wuyi mountain rock Tea must comply with international standards to reconcile domestic benchmarks with global criteria. It is advisable for governmental bodies and industry associations to consult benchmarks established by entities such as the Codex Alimentarius Commission (CAC) to inform the revision of prevailing national standards, thereby ensuring their adaptability to the evolving international context. Additionally, regulatory agencies should prioritize the dissemination of information regarding scientifically sound cultivation, processing, and marketing practices. Agencies tasked with the oversight of production materials must meticulously monitor the provision of pesticides and fertilizers, while quality and technical supervision authorities need to augment their sanitary quality sampling and inspection protocols for tea, prohibiting the trade of substandard products. Furthermore, distribution regulatory bodies must enhance their oversight of distribution channels to prevent the infiltration of inferior tea products into the marketplace. Governmental support for the establishment of testing institutions is also imperative. From a financial standpoint, while fortifying the quality and safety assurance system may initially elevate corporate expenditures, in the long term, such initiatives foster product enhancement, minimize rework and returns, lower testing expenses, and boost market competitiveness.

In the establishment of ecological tea gardens, one can initially utilize vertical composite cultivation strategies. For example, intercropping legumes like soybeans with rapeseed can capitalize on the nitrogen-fixing properties of these plants, thereby stimulating phosphorus availability in the soil and improving soil fertility. Following this, it becomes imperative to enhance biological pest management and physical deterrent strategies by adopting "biological control through insect management" principles, thereby lessening dependency on synthetic pesticides. Moreover, the implementation of practices such as deep tillage, incorporating organic matter, utilizing grass mulching, and applying suitable irrigation techniques is essential for optimal soil and moisture management, which enhances water retention and soil structure. Ultimately, upgrading infrastructure through measures like contour terracing and water conservation systems is vital for the effective prevention of soil erosion. Additionally, the adoption of scientifically-informed fertilization techniques, such as replacing synthetic fertilizers with organic alternatives, will further enrich the soil microbiome.

6.4. Policy Support and Formulation

In light of green trade barriers, it is essential for Wuyi mountain Rock Tea exports to develop clear industrial development policies while accelerating the industrialization of the tea sector, with an emphasis on cost management and competitiveness enhancement.

The industrialization of tea operations represents a strategic approach to increase market competitiveness. Initially, to overcome the challenge of fragmented business sizes, reliance on leading enterprises and organizations is essential in achieving a cohesive integration of production, processing, and sales. This integration of resources aims to expand operational scale, decrease unit costs, and fortify market competitiveness.

Additionally, it is vital to strengthen the interrelations between enterprises, production bases, and farmers, thus fostering an economic community characterized by shared risks and benefits. Utilizing models such as "Bonding with farmers," production and sales collaborations should be standardized to safeguard farmers' interests and enhance the alignment of tea production with market needs. Furthermore, government initiatives must augment support for organizational, systemic, and technological innovations to cultivate a conducive external environment for the industrialized functioning of tea. Incentives like tax breaks and credit support for leading enterprises can facilitate capital accumulation and enhance service capabilities, ultimately elevating management standards and international market competitiveness. Considering cost implications, industrialized operations not only contribute to reduced production costs and improved economies of scale but also necessitate investments in technological upgrades, brand development, and market penetration. Governmental support policies can alleviate the costs associated with enterprise transformation, enhancing the feasibility and success rate of industrialized operations.

7. Conclusion

The export of Wuyi Mountain Rock Tea is confronted with the dual-edged sword of green trade barriers, which present both challenges and opportunities. The stringent environmental and safety standards imposed by importing countries necessitate a strategic response from the industry. Through SWOT analysis, this study has identified key strengths of Wuyi mountain rock tea such as governmental support and unique ecological attributes, alongside weaknesses including the need for enhanced brand recognition and compliance with international standards. To capitalize on the opportunities offered by global market trends and policy support, Wuyi Mountain Rock Tea must innovate and adapt by embracing green marketing strategies, strengthening brand development, and fortifying its quality assurance systems. With a concerted effort to address these multifaceted issues, the industry can navigate the complexities of green trade barriers and enhance its sustainable growth and global competitiveness in the tea export market.

References

[1] Pu Cheng. (2024, May 13). Small tea as a 'big business' for rural revitalization. Retrieved from http://np.fjsen.com/wap/2024-05/13/content_31641753.htm

[2] Ynet. (n.d.). From tea ceremony to Central European trains: Fujian Wuyi tea makes it to the global market. Retrieved from https://t.ynet.cn/baijia/31117501.html

[3] China Cooperative Economic Network. (2021). 2021 Chinese tea import and export trade analysis report. Retrieved from https://www.chinacoop.gov.cn/news.html?aid=1751549

[4] Foodmate News. (2022). Guide to tea export in Africa. Retrieved from http://news.foodmate.net/2022/07/635465.html

[5] Ministry of Agriculture and Rural Affairs, China. (2024). Investigation report on the import and export of edible agricultural products in China. Retrieved from http://www.moa.gov.cn/ztzl/nybrl/rlxx/202407/t20240722_6459466.htm

[6] China International Economic and Exchange Center, Shanghai Sub-Center. (2022). The impact of the military conflict between Russia and Ukraine on the global economy. Retrieved from https://sciee.sass.org.cn/2022/0830/c6679a462521/page.htm

[7] CNKI. (n.d.). The new EC-MRL of pesticides in tea. Retrieved from https://en.cnki.com.cn/Article_en/CJFDTOTAL-NYKG200004009.htm

[8] AHNYKX. (n.d.). Research progress on the detection of heavy metals in tea quality control and standard materials. Retrieved from https://ahnykx.com/article.asp?id=123067

[9] Ministry of Agriculture and Rural Affairs, China. (2023). 2023 Chinese tea import and export trade analysis: Promoting the tea industry. Retrieved from http://www.moa.gov.cn/xw/bmdt/202406/t20240618_6457320.htm

[10] Zhang, C. X. (2006). Research progress on changes of aroma components and formation mechanisms of Oolong tea during processing. *Fujian Tea*, (01), 7-8.

[11] Chen, S. (2016). *Legal analysis and countermeasures of new green trade barriers* (Master's thesis, Nanjing University of Finance and Economics).

[12] Qu, L. (2006). *Economic analysis of green barriers and empirical study on its impact on Zhejiang's export trade* (Master's thesis, Zhejiang University).

[13] Wang, Y. (2014). Research on the status quo and countermeasures of green trade barriers encountered in China's agricultural exports. *China Management Information Technology*, 17(16), 112-115.

[14] Zhang, Y. (2006). China's agricultural exports encountered green trade barriers and countermeasures. *Market Weekly: Theoretical Research*, (07), 94-95.

[15] Wu, S., & Yu, Z. (2013). Analysis of the influence of green trade barriers on Chinese agricultural products export and countermeasures. *Journal of Modern Business*, (29), 98-100. https://doi.org/10.14097/j.carolcarrollnki.5392/2013.29.085

[16] Wang, Y. (2009). *Impact of green barriers on tea export in Zhejiang Province and countermeasures* (Master's thesis, Zhejiang University).

[17] Yang, H. (2010). Problems and countermeasures of China's textile and garment export under green trade barriers. *Modern Real Estate*, 9(07), 28-30 + 76.
[18] Sun, H., Zhou, L., Yu, J., et al. (2022). Research progress and prospect of risk substances in tea. *China Tea*, 44(08), 9-15 + 23.
[19] Zhao, Y. (2014). *Analysis on the environmental effect of Foreign Direct Investment in Eastern China* (Master's thesis, Shandong University of Finance and Economics).
[20] Yu, H. (2003). Active participation in international standard-setting is an important countermeasure for overcoming technical barriers to trade. *Shanghai Metal*, (01), 8-11.
[21] Wang, B. (2016). *Research on agricultural products export in Henan Province under green trade barriers* (Master's thesis, Zhengzhou University).
[22] Wang, B. (2021). *International trade theory and practice*. ISBN 9787302413745.
[23] Wang, B. (2021). *Research on technical barriers to trade of agricultural products in China in the new era*. ISBN 9787030428202.
[24] Wang, B. (2021). *New green concept*. ISBN 9787504638434.
[25] Wang, B. (2021). *Research on large logistics development strategy of China-ASEAN Free Trade Area*. ISBN 9787564709358.