

Significance of Sustainable Coffee Production in Sri Lanka Aligning with EU Standards for Market Access and Environmental Resilience

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Abstract

Coffee is one of the world's most popular beverages made from the seeds of the tropical coffee plant and global consumption is 2.25 billion cups per day. There is over 70 countries manufacturing coffee and two genres most important to the coffee industry are Arabica and Robusta. Indeed, the global coffee industry faces significant challenges including fluctuating production costs due to land scarcity, labor unavailability, water scarcity and environmental impacts. This study emphasizes need of manage climate variability, effectively improve production and improve the livelihoods of smallholder farmers while maintaining environmental integrity and sustainability in line with EU standards to gain European market access for Sri Lankan coffee. Indeed, Sri Lankan coffee can access the European market by managing the variables of coffee variety diversification, water management, exploration of new territory, soil conservation, research and development, cooperation and networking and market access.

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Keywords: Sustainable coffee production; EU market eligibility; Smallholder farmers

Introduction

It is an important milestone in Sri Lankan history when discussing the importance of growing coffee as a commercial export crop. By 1860, Sri Lanka was among the top three coffee producing countries along with Brazil and Indonesia. During this period, British colonial rulers and foreign investors played a crucial role in the development of the coffee industry. Coffee was also supplied to the European market. By 1864, Sri Lanka reached the peak of coffee production, exporting over 70,000 metric tons globally from 275,000 acres of cultivation. However, this success was short-lived. By 1868, the coffee industry was devastated by a fungal disease known as *Hemileia vastatrix* or coffee leaf rust (CLR), and many farmers and plantation owners resorted to destroying their coffee crops. Despite this setback, coffee exports experienced a revival by 1981, growing to 3.3 million kilograms (183 containers) with 30,000 acres under cultivation. This recovery demonstrates the resilience of Sri Lanka's coffee industry and highlights its potential for future growth. This historical context underscores the potential for the revival of coffee production as a major export crop in Sri Lanka today.

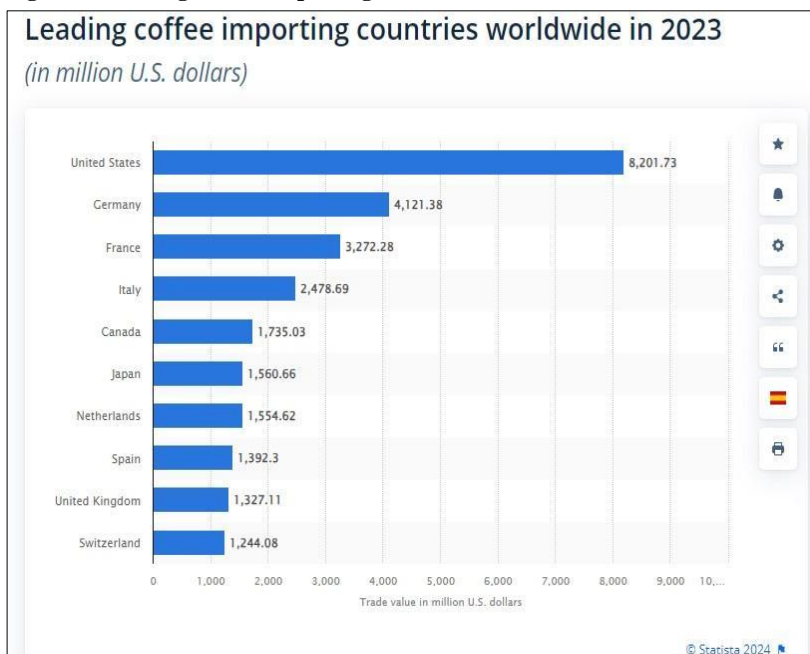
Currently, the Sri Lankan tea industry is making its mark in the market and Ceylon Tea has become prominent worldwide offering tea bags, instant tea, green tea, organic tea, handcrafted artisan tea, and various value-added products. Wine tea. As a result, this diverse product range contributes 15% to Sri Lanka's foreign exchange earnings. In light of this success, the cultivation of coffee as a commercial crop similar to tea can significantly boost the country's economy through increased foreign exchange earnings on current global demand. Hence it is imperative to adopt a strategy similar to "Ceylon Tea" for coffee production with a focus on value addition. This means offering higher prices and specialty coffees that can attract more market interest.

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On the other hand, Sri Lanka's coffee grown in different climatic conditions has different tastes, so the preference for Sri Lankan coffee is high abroad. It is important to take advantage of this favorable situation and improve the production of coffee in Sri Lanka by utilizing the cultivable land available in Sri Lanka.

This data shows that Europe has the highest coffee consumption. Coffee production in growing countries must align with European standards to maximize export potential and revenue. In 2023, the United States was the leading coffee importer bringing in coffee worth 8.2 billion U.S. dollars and Germany imported around 4.12 billion U.S. dollars

Figure 1: Leading Coffee Importing Countries Worldwide in 2023



In Sri Lanka, as tourism and recreational lifestyles is a drive opening more cafes in the suburbs. It leads to coffee supply remains insufficient for the local market. Currently, 20% of coffee comes from commercially maintained plantations while supplying 80% of coffee from smallholder farmers in rural villages.

The study outcome will reveal significant benefit for both rural communities and the national economy in Sri Lanka. Primarily, it emphasizes enhancing the lifestyles of rural communities through sustainable coffee production, enabling smallholder farmers to improve their income and access vital services like education and healthcare. This approach will promote community development by empowering farmers with training and resources to produce high-quality coffee. Assuredly, the study highlights the potential for increased foreign earnings as Sri Lanka aligns its coffee sector with international market demands, particularly in the European Union. Result driven by diversifying exports and focusing on value-added products, the country can enhance its economic stability.

In summary, this study drives to gain knowledge advocates for a comprehensive strategy that uplifts rural communities while boosting foreign earnings by leveraging stakeholder partnerships and investments in sustainability. Sri Lanka will successfully cultivate a thriving coffee sector that benefits all stakeholders involved.

Objective of the study

The objective of this study is to assess the impact of climate variability on coffee production in Sri Lanka and to develop strategies that will improve the productivity and livelihoods of smallholder farmers while ensuring environmental sustainability. The study aims to align farming practices with European Union (EU) standards, thus enabling Sri Lankan coffee to gain and maintain access to European market.

Literature Review

The environmental, economic, and social sustainability frameworks are specific to coffee production and EU market certification.

Globally, Coffee is the second most traded commodity after petroleum; it is a vital cash crop influencing millions of rural households in developing countries. Indeed, like other major industries, the coffee sector must adopt sustainable practices to address environmental, social, and economic issues.

Climate change can affect the coffee industry in Sri Lanka by altering air temperatures and rainfall patterns. These changes could affect the conditions needed for growing coffee, affecting both quality and yield. Nonetheless, with proactive planning and adaptability, the risks can be managed and there may be opportunities for new coffee producers to the coffee market. Its ability to adapt to these risks will depend on a complex interplay of social, economic, and environmental factors.

Indeed, several sustainability initiatives have been introduced in the coffee sector to ensure social and environmental standards are met throughout the production chain. These initiatives provide structured frameworks for implementing, administering, and monitoring these standards. As a result, certification and labeling systems have been established to help consumers easily identify and choose products that adhere to these sustainability practices. Some of the certification bodies and their characteristics are as follows:

1. Fair Trade Certification ensures that coffee is produced and traded under fair labor conditions and that farmers receive fair prices for their products.
2. Organic Certification guarantees that coffee is produced without the use of synthetic pesticides, herbicides, or genetically modified organisms, promoting environmental stewardship.
3. Bird-Friendly Certification (Smithsonian Migratory Bird Center) focuses on shade-grown coffee, promoting biodiversity and conservation of migratory bird habitats.
4. UTZ Certification emphasizes responsible and sustainable farming practices, covering aspects such as environmental conservation, social responsibility, and economic viability.
5. Rainforest Alliance Certification focuses on promoting environmental sustainability, social responsibility, and economic viability in coffee production.

The above five certifications are unique to their professional bodies to secure sustainable practices within the coffee industry. Before choosing a coffee with a sustainability certification, it's crucial to understand the specific criteria and standards linked to each certification. While some certifications focus broadly on sustainability, addressing social, economic, and environmental aspects, others may concentrate on specific practices, such as shade-grown methods or fair trade principles. By being informed about these distinctions, consumers and industry professionals can effectively use these certifications as tools to promote a more sustainable and ethical coffee industry. This understanding empowers them to make choices that align with their values and contribute positively to the coffee supply chain.

The International Institute for Sustainable Development has identified five principles for sustainable development, offering a broad foundation for an integrated approach within the coffee sector.

Principle 1: Fair price wage to producers that covers production, living, and environmental costs within a competitive framework with a measured degree of stability.

Principle 2: Maintain employment relationships by core International Labor Organization (ILO) conventions and local law.

Principle 3: Implement environmentally sustainable production practices.

Principle 4: Enhanced access to credit and opportunities for diversification for producers.

Principle 5: Enhanced access to trade information and trade channels for producers.

Improving coffee sector sustainability requires better collaboration and coordination between existing initiatives. Enhancing the adoption of sustainable practices and integrating economic, social, and environmental sustainability is valued to develop an opportunity to adopt multilateral, multi-stakeholder, market-based approaches to advance overall sustainability in the coffee industry.

Critically assess existing sustainability initiatives (Fairtrade, Organic, and Bird-Friendly) concerning the Sri Lankan context.

Europe has pioneered the sustainability of coffee through the fair-trade movement. While the North American specialty coffee industry has advanced sustainability, before selecting a coffee with a sustainability certification, it is essential to understand the specific criteria and standards associated with each certification. In addition, sustainability Certification operates on five main strategic pillars. Such as empowerment of farmers and workers, growth and innovation, advocacy and citizen engagement, digitalization for fairer supply chain operations, and serving as a launching pad for future strategic partnerships.

To uphold its standards, Fair-trade provides certification advisory services, auditing, and project planning, and conducts workshops and training programs. In addition, it is actively engaged in addressing critical social issues through initiatives such as a baseline study on school dropouts in coffee-growing areas, gender leadership programs, youth engagement initiatives, and women empowerment programs. Furthermore, Fair Trade raises awareness of workers' rights and is committed to eliminating child labor and sexual harassment within supply chains. This comprehensive approach underscores Fair Trade's dedication to fostering a more equitable and sustainable coffee industry.

Indeed, need to keep in mind that some certifications may have a broader focus on sustainability, covering social, economic, and environmental aspects, while others may emphasize specific areas such as shade-grown practices or fair trade principles.

The latest specific introduced law by the European Union Deforestation Regulation (EUDR) aims to prevent products linked to deforestation from entering the EU market. EU Regulation 2023/1115, signed in December 2022, is part of the EU's strategy to combat deforestation. It targets environmentally impactful products like coffee, cocoa, soy, and palm oil. Starting in December 2024, companies selling these products in the EU must prove their supply chains are deforestation-free and comply with local environmental laws. Non-compliance can lead to product bans in the EU, significant financial penalties, and reputational damage that may threaten business sustainability. To ensure compliance with new sustainability standards, conducting a thorough supply chain audit is the essential first step. This audit should verify that suppliers possess crucial certifications, such as Rainforest Alliance or UTZ, which validate their sustainable production practices. Following the audit, implementing product-tracking systems is vital for achieving full traceability of product

origins, ensuring compliance with regulations, and fostering consumer trust as sustainability gains importance.

Next, it is essential to verify suppliers. If any do not meet the requirements, consider collaborating with compliant ones. Moreover, Updating contracts with existing suppliers to include sustainability clauses will further reinforce of the commitment to ethical practices.

Finally, clear communication with customers is critical. Integrating sustainability, certifications, and transparent practices of marketing strategy can build consumer trust and enhance the brand's environmental credentials. This comprehensive approach not only ensures compliance but also positions your business favourably in a market that increasingly values sustainability.

Challenges for Sri Lankan coffee producers in adapting to EU standards

Making specialty coffee is a comprehensive journey and experience. Hence, we need aware of the major consumption markets of coffee. Commodity coffee is mass-produced and traded on the New York Coffee futures market (Commodity "C" price scale) without a focus on intrinsic quality. Coffees graded below 80 points on the Q grading system are classified as commodity coffee. Specialty coffee is graded 80 to 100 points on the "Q Grading" system by the Coffee Quality Institute. Making specialty coffee is considered Consumer factors like cup quality, ethical value chain, elevation, farm gate details, and processing techniques. Specialty coffee is a trendy export commodity, with the global market valued at USD 35.9 billion in 2018 and expected to grow to USD 83.5 billion by 2025. As its popularity rises, consumers and large-scale buyers focus on coffee quality. For countries like Sri Lanka, meeting this demand requires attention to factors such as the genetic diversity of specialty coffee.

There are two things to remember about specialty coffee one has to do with quality and the other is the prices farmers are paid. The economics of coffee production has shifted recently, with declining international prices and rising input costs. Nonetheless, the demand for specialty coffee is at an all-time high. Therefore, needs work on to ensure sustainable coffee production for focus on improving quality through sustainable and environmentally friendly cultivation practices, which can yield higher net returns.

Specially, in Sri Lanka urgent action is needed to mitigate the negative impacts of climate change on coffee production by minimizing deforestation and forest degradation. Hence, immediate conservation strategies should be designed and implemented to protect coffee ecology and production.

The coffee producers in Sri Lanka need adopted to improve resilience to climate impacts and manage climate change risks. They need concerns to special attention to the following variables.

1. Diversification of coffee varieties – This considers growing climate-tolerant coffee varieties that are resistant to heat, drought, and disease.
2. Water Management – Invest in improved water management systems and irrigation to address water scarcity.
3. Explore new growing areas - Consider land use priorities and identify areas previously unsuitable for coffee cultivation and develop those lands under suitable climatic conditions and minimal deforestation.
4. Soil Conservation - Use soil conservation practices to maintain soil health and reduce erosion.
5. Pest and Disease Control – Develop strategies to manage changing patterns of pests and diseases.

6. Research and Development – Invest in research into innovative agricultural techniques to make coffee production sustainable.
7. Access to Finance – Provision of financial resources and cooperative insurance to support adaptation efforts.
8. Collaboration and Networking – Encouraging collaboration and information sharing among farmers, cooperatives, and government agencies.
9. Climate Early Warning and Monitoring – Using weather forecasts for better planning and decision-making and improving climate monitoring.
10. Education and Training – Provide training and resources to help farmers understand and adapt to climate change.

Thus, if key climatic variables are effectively managed, this adaptation can improve the overall coffee industry in Sri Lanka, leading to growth and development opportunities in Arabica and Robusta farming. Moreover, Ensuring environmental sustainability and biodiversity conservation requires measures that offer incentives and equitable benefit sharing, such as premium prices for quality coffees.

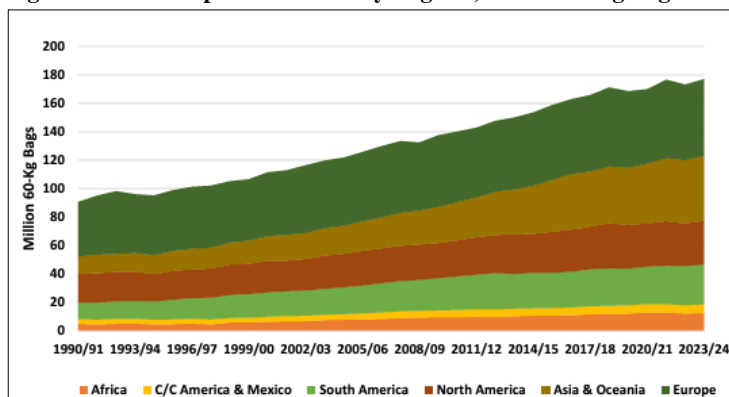
Methods

The charts illustrating global coffee consumption by country and region provide valuable insights for coffee producers aiming to identify prospective buyers. By analyzing the data, we can pinpoint regions with the highest demand, which in turn can help producers target markets willing to pay a premium for quality coffee.

Moreover, understanding consumption trends allows producers to tailor their marketing strategies effectively, focusing on regions where coffee appreciation is growing. As a result, this strategic approach not only enhances the potential for higher selling prices but also strengthens the overall market position of coffee producers. In summary, leveraging this data enables producers to navigate the competitive landscape and optimize their sales efforts producers to navigate the competitive landscape and optimize their sales efforts.

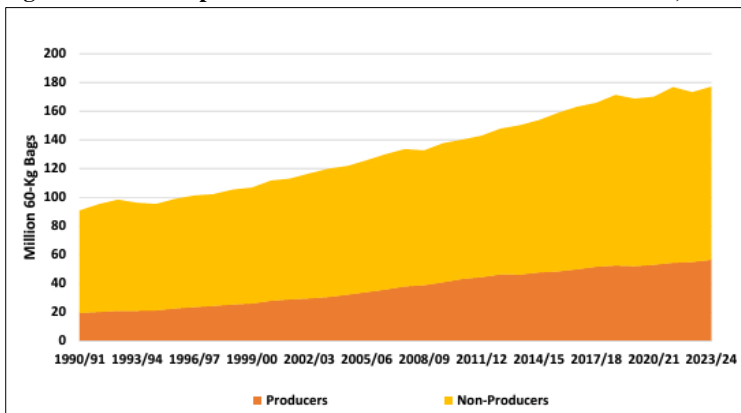
When considering the leading coffee-importing countries in Figure 1, Sri Lanka exports the highest volume of coffee to the United States in third place, followed by Canada and Japan. Japan ranks in exporting 10th place for the quantity 210 kilograms, but its earnings are \$16.75 per kilogram. The Netherlands and the United Kingdom are the two European countries where we supply roasted coffee beans for more than earning US\$ 20 and \$15 per 1 kilogram.

Figure 02: Consumption of Coffee by Regions, Million 60-kg Bags



Source: *Coffee Report and Outlook, 2023*

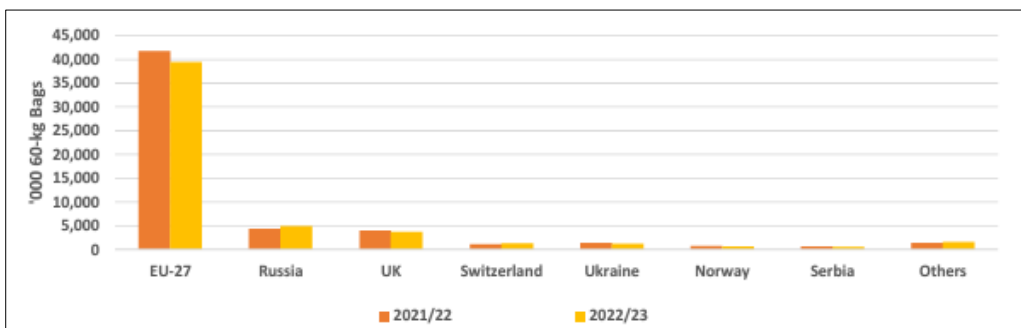
Figure 03: Consumption of Coffee – Producers Vs Non-Producers, Million 60-kg Bags



Source: Coffee Report and Outlook, 2023

Nonetheless, the above tables prove that their having the opportunity to earn more US\$ by exporting our roasted coffee to European countries rather than other. For that purpose, we have to acquire our coffee industry to the utmost level they prefer. Then automatically our coffee industry come to a higher level and the demand will increase simultaneously among European and other countries.

Figure 04: Coffee Consumption of Europe, '000 60-kg Bags



Source: Coffee Report and Outlook, 2023

Figure 05: Roasted Coffee Export Volumes from Sri Lanka

Item	Export Country	2020			2021			2022			2023			Country-wise Data Calculation						
		Quantity (kg)	Value (USD)	USD per kg	Quantity (kg)	Value (USD)	USD per kg	Quantity (kg)	Value (USD)	USD per kg	Quantity (kg)	Value (USD)	USD per kg	Total Qty. (kg)	Rank (base on qt)	Total Value (USD)	Avg Rate per kg (USD)	Rank (base on rate per kg)		
1	Uzbekistan												1068	25,704	24	1,068.00	5	25,704.00	24.07	1
2	United States America	731	12,904	18	448	8,073	18	446	7,016	16	800	25,381	32	2,425.00	3	53,374.00	22.01	2		
3	United Arab Emirates	2,470	24,424	10	1522	20,326	13	3249	34,594	11	2,013	22,771	11	9,254.00	1	102,115.00	11.03	11		
4	Chile	616	12,224	20	1238	23,940	19	1,692	29,586	17	388	6,535	23	3,833.00	2	72,285.00	18.85	4		
5	Australia	14	111	8	2	47	24													
6	Japan							40	622	16	170	2,896	17	210.00	10	3,518.00	16.75	9		
7	Bolivia	72	1,334	18				72	1,006	14	72	1,461	20	216.00	9	3,791.00	17.55	7		
8	Maldives					69	7													
9	Canada				209	945	5	359	3,698	10	950	3,860	6	1,518.00	4	10,503.00	6.92	13		
10	Netherlands				432	10,008	23	259	4,646	18				691.00	6	14,654.00	21.21	3		
11	China	264	1,689	6				122	2,309	19				386.00	7	3,998.00	10.36	12		
12	United Kingdom	4	54	14	97	1,111	11	89	1,583	18				190.00	11	2,748.00	14.46	10		
13	Botswana				50	922	18	50	887	18				100.00	13	1,809.00	18.09	6		
14	Oman	60	1,094	18	36	686	19	48	702	15				144.00	12	2,482.00	17.24	8		
15	Singapore	44	499	11	56	638	11	145	546	4				245.00	8	1,683.00	6.87	14		
	Annual Total Qty.	4,275.00			4,100.00			6,571.00			5,308.00			20,754.00		304,145.00				

Source: Sri Lanka Export Development Board

Figure 05, consider the last four years' historical data for the Volume of exporting to the different countries.

When we consider the above Table 5, the UAE is the country where we exported a high volume of Roasted coffee beans in last four years. It is more than 9000 Kilograms. However, the rate per Kg is less than USD 15. When we rank it based on the last four years comes under the 11th position rate at \$11.03. The second most exported country is Chile having around 3800 Kilograms. However, the rate per Kg is more than USD 15. When we rank it based on the last four years, it comes under the fourth position rate at \$18.85. The third most exported country is the United States having around 2400 Kilograms. However, the rate per Kg is more than USD 20. When we rank it based on the last four years comes under the second position rate at \$22.01. The fourth most exported country is Canada having around 1500 Kilograms.

However, the rate per Kg is less than USD 15. When we rank it based on the last three years, it comes under the 13th position rate at \$6.92. The Fifth most exported country is Uzbekistan having around 1000 kilograms. However, the rate per Kg is more than USD 20. When we rank it based on the last year, it comes under the first position rate of \$24.07. The Sixth most exported country is the Netherlands having around 700 kilograms. However, the rate per Kg is more than USD 20. When we rank it based on the last two years, it comes under the third position at \$21.21.

Figure 06: Not Roasted Coffee Export Volumes from Sri Lanka

Item	Export Country	2020			2021			2022			2023			Country-wise Data Calculation				
		Quantity (Kg)	Value (USD)	USD per kg	Quantity (Kg)	Value (USD)	USD per kg	Quantity (Kg)	Value (USD)	USD per kg	Quantity (Kg)	Value (USD)	USD per kg	Total Qty. (Kg)	Rank (base on pp)	Total Value (USD)	Avg Rate per kg (USD)	Rank (base on rate per kg)
1	United Arab Emirates	115	1,405	12	355	2,864	8	289	4,120	14	1878	14,416	8	2,637.00	2	22,805.00	8.65	11
2	Australia	882	6,238	7	4564	22,564	5	2884	19,967	7	1046	11,200	11	9,376.00	1	59,969.00	6.40	15
3	Italy										1320	9,908	8	1,320.00	4	9,908.00	7.51	12
4	Kuwait				300	5,623	19	400	6,520	16	140	1,578	11	840.00	8	13,721.00	16.33	1
5	Japan	329	4,513	14	768	7,321	10	451	3,237	7	233	1,417	6	1,781.00	3	16,488.00	9.26	8
6	Qatar	55	136	2	644	7,330	11	164	745	5	166	1,157	7	1,029.00	7	9,368.00	9.10	9
7	Canada	860	7,837	9				199	1,833	9	95	1,040	11	1,154.00	6	10,710.00	9.28	7
8	Korea South										104	977	9	104.00	13	977.00	9.39	6
9	New Zealand	50	476	10	110	1,112	10				40	308	8	200.00	11	1,896.00	9.48	5
10	Samoa (Western)							10	109	11	20	270	14	30.00	14	379.00	12.63	2
11	Maldives	23	85	4	86	1,019	12	112	390	3	29	174	6	230.00	10	1,668.00	6.67	13
12	Philippines										25	166	7	25.00	15	166.00	6.64	14
13	United Kingdom	150	1,865	12	92	1,279	14	25	162	6	8	72	9	275.00	9	3,378.00	12.28	3
14	Saudi Arabia							1265	15,502	12				1,265.00	5	15,502.00	12.25	4
15	Netherlands							180	1,570	9				180.00	12	1,570.00	8.72	10
	Annual Total Qty.	2,464.00			6,919.00			5,979.00			5,104.00			20,466.00		148,505.00		

Source: Sri Lanka Export Development Board

When we consider the above Figure 6, Australia is the country where we exported a high volume of Green bean coffee in four years. It is more than 9000 Kilograms. However, the rate per Kg is less than USD 8. When we rank it based on the last four years comes under the 15th position rate at \$6.40. The second most exported country is the United Arab Emirates having around 2600 Kilograms. However, the rate per Kg is more than USD 8. When we rank it based on the last four years, it comes under the 11th position rate at \$8.65. The third most exported country is Japan having around 1700 Kilograms. However, the rate per Kg is more than USD 8. When we rank it based on the last four years, it comes under the eighth position rate at \$9.26.

Kuwait is the Rank 1st in the list for earning more dollars from 1 kg. It is \$ 16.33 per 1kg. However, the volume based on export rank is 8th by exporting Green Bean Coffee 840 kilogram for the three years. Samoa is the Rank 2nd in the list for earning more dollars from 1 kg. It is \$ 12.63 per 1kg. However, the volume based on export rank is 14th by exporting Green Bean Coffee 30 kilogram for the last two years. United Kingdom is the Rank third in the list for earning more dollars from 1 kg. It is \$ 12.28 per 1kg. However, the volume based on export rank is 9th by exporting Green Bean Coffee 275 kilogram for the four years. When we consider the leading coffee-importing countries under Table 1, we exporting coffee at the highest rate for Japan, Canada, UK & Netherlands in orderly Japan ranks in exporting 3rd place by supplying green coffee beans quantity 1781 kilograms, but its earning is \$9.26 per kilogram in 8th place. The United Kingdom is a European country ranked in 9th place; we supply green coffee beans and earn more than \$12.28 per 1 kilogram in 3rd place.

The above tables show that there is an opportunity to earn more USD by exporting our roasted coffee to European or American countries compared to others. To capitalize on this, we need to elevate our coffee industry to meet their standards. As a result, our coffee industry will advance, and demand will increase accordingly. Comparing the two tables above, exporting roasted coffee beans is more profitable than exporting green coffee beans. While green coffee beans are sold at USD 8–12, roasted coffee beans can be sold at USD 15–22. This represents an increase of approximately 80% in price compared to selling raw green coffee beans. Nonetheless, Coffee farming in fields, processing in rural villages, roasting in factories, and finally brewing in cafés and serving is referred to as the bean-to-cup chain. In the stages described above, we discuss how to grow coffee with smallholder farmers and process it in a sustainable manner village by village.

Now we are focusing on the roasting process and its local impact, particularly in creating new job opportunities in the specialty coffee sector under the brand name “Ceylon” This situation will not only create positions for coffee roasters but also promote the design and fabrication of coffee roasting machines within the country. The design work may be undertaken by universities, while, the fabrication can be handled by high-tech industrial companies. This will enhance our workforce in the mechanical and electrical industries.

Currently, artisanal roasting machines are been largely made in Israel, Turkey, and Vietnam, with high import costs. These companies not only produce industrial coffee roasters but also engage in research and development of domestic coffee roasting machines. Over the next 10 years, a trend may emerge where coffee lovers and café owners prefer to roast their coffee with customized roast profiles and brewing methods. In the future, coffee could become more than just a beverage; it could represent a lifestyle among high-end individuals. This shift will create additional job opportunities within a practical framework.

Indeed, the above prediction underscores the need for the coffee industry to focus on producing high-quality green coffee beans with specific parameters to ensure success and resilience. Adopting standards with sustainable practices and implementing good processing methods will secure the coffee industry and help stakeholders achieve greater profits.

Results & Discussion

Sri Lanka's coffee production is influenced by a unique interplay of climatic, socio-economic, and logistical factors that both facilitate and hinder the implementation of sustainable practices. According to the climatic conditions Geographical Diversity in Sri Lanka's varied topography includes mountains, valleys, and coastal areas, leading to diverse microclimates. While the central highlands provide ideal conditions for high-quality Arabica coffee, other regions may face challenges like excessive rainfall or drought, which can affect yield and quality. in monsoon Patterns country experiences two monsoon seasons, which can lead to both beneficial moisture and detrimental flooding. Sustainable practices must consider water management strategies to harness rainfall without causing soil erosion or runoff. In Temperature Fluctuations of Coffee, plants require specific temperature ranges for optimal growth. Rising temperatures due to climate change pose risks, potentially pushing coffee cultivation to higher elevations where soil and conditions may be less favourable.

Smallholder farmers are a significant portion of Sri Lanka's coffee production and stand to benefit from sustainable practices like shade-grown coffee. However, their limited access to resources, education, and markets hinders the adoption of these methods. While global demand for sustainable coffee offers opportunities, fluctuating prices and lack of direct market access can discourage farmers from investing in sustainable practices. Additionally, although coffee holds historical significance in Sri Lanka, the dominance of tea in the agricultural landscape affects the willingness, particularly among older generations, to invest in coffee as a sustainable crop. Thus, addressing these socio-economic challenges is crucial for fostering sustainable coffee production in the country.

Logistical conditions in Sri Lanka pose significant challenges to coffee production. Poor road networks and inadequate storage facilities complicate the transport of coffee to markets, resulting in post-harvest losses and hindering the maintenance of quality standards essential for sustainable certification. Additionally, the complexity of the supply chain, with multiple intermediaries, can dilute the benefits of sustainable practices, leaving farmers with minimal returns on their sustainably produced coffee if they lack direct links to consumers. Furthermore, limited access to modern agricultural technologies and research restricts the adoption of sustainable practices that could enhance productivity while conserving resources. Consequently, addressing these logistical hurdles is vital for improving the sustainability and profitability of coffee production in Sri Lanka.

Aligning Sri Lankan coffee production with EU market eligibility standards requires strategic prioritization of certifications, capacity building, and infrastructural improvements. Addressing the challenges faced by smallholder farmers, particularly in terms of financial constraints and access to resources, is crucial for enhancing their competitiveness in the EU market. By investing in education, infrastructure, and support systems, Sri Lanka can position its coffee industry for success in a rapidly evolving global market.

The synergistic efforts of the Sri Lankan government, NGOs, and international trade bodies are essential for promoting sustainable practices and improving market access for Sri Lankan coffee.

By leveraging their respective strengths, these stakeholders can empower smallholder farmers, enhance the sustainability of coffee production, and elevate Sri Lanka's position in the global coffee market, particularly in the lucrative EU sector. The government provides critical policy support and infrastructure development, while NGOs offer hands-on training and capacity building to help farmers adopt sustainable methods. Simultaneously, international trade bodies set the quality and sustainability standards necessary for entering competitive markets and provide valuable market insights.

Together, these coordinated efforts create a robust ecosystem that not only supports the farmers but also ensures that Sri Lankan coffee meets international standards. This collaborative approach not only enhances production practices but also opens up new avenues for market access, ultimately positioning Sri Lankan coffee as a competitive player in the global arena. Thus, by working together, these stakeholders can create a sustainable coffee industry that benefits all parties involved and contributes to the economic growth of the country.

Sri Lanka's potential in the EU coffee market is marked by several key strengths. Notably, the country offers a unique flavor profile that can attract niche markets, while its biodiversity and agroecological practices appeal to eco-conscious consumers. Additionally, a growing reputation for Sri Lankan coffee is being bolstered by increased promotional efforts, and its ethical production practices resonate with the rising demand for sustainably sourced products.

However, there are notable weaknesses that need addressing. The prevalence of smallholder production poses challenges in consistently meeting EU quality standards. Compounding this issue are infrastructure challenges, which can hinder the transport of fresh, high-quality coffee. Furthermore, limited processing capacity may restrict competitiveness in the premium segment, and a lack of market knowledge can prevent farmers from effectively navigating EU regulations.

Despite these challenges, there are significant opportunities on the horizon. The rising demand for specialty coffee in the EU presents a promising niche for Sri Lankan producers. Additionally, the promotion of sustainable practices aligns well with increasing consumer awareness, and collaborative support from NGOs and cooperatives can provide crucial resources and training. Furthermore, favourable trade agreements may facilitate better market access by reducing tariffs. Nonetheless, Sri Lanka must remain vigilant about external threats. The intense competition from established coffee producers in Latin America and Africa presents a significant challenge. Additionally, climate change risks could affect yields and quality, while regulatory challenges related to safety and quality

standards may act as barriers to entry. Finally, market volatility due to fluctuating prices and changing consumer preferences could destabilize the sector.

In conclusion, while Sri Lanka has considerable potential to thrive in the EU coffee market through its unique offerings and sustainable practices, overcoming existing weaknesses and navigating external threats will be essential for capitalizing on this opportunity.

Conclusion

In conclusion, the significance of sustainable coffee production in Sri Lanka is underscored by its potential to enhance both market access and environmental resilience, particularly in light of EU regulations. By prioritizing sustainable cultivation methods that protect forests and support smallholder farmers, Sri Lanka can not only comply with the European Union Deforestation Regulation (EUDR) but also create a differentiated product that appeals to environmentally conscious consumers.

The research highlights that Ceylon coffee exports possess inherent advantages over those from EU and American countries, particularly when aligned with sustainable practices. To capitalize on these advantages, Sri Lanka must invest in advanced processing techniques, ensure traceability, and develop strong coffee brands that resonate in competitive markets. This strategic focus will allow Sri Lanka to boost its coffee exports to the EU and beyond, generating higher profits from a more sustainable and ethically produced product. Moreover, the commitment to sustainable coffee production aligns with global efforts to preserve coffee genetic resources and promote collaboration among stakeholders. By fostering this ecosystem of sustainability, Sri Lanka can secure its position in the global coffee market while contributing to environmental conservation and the economic well-being of its farmers. Ultimately, embracing sustainability is not just a compliance measure; it is a pathway to long-term growth and resilience in Sri Lanka's coffee industry.

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