

Voluntary Sustainable Standard Certification Programs for Coffee – Global and Indian Perspective

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ABSTRACT

Indian coffee is primarily an export-oriented commodity with over 75% of the country's annual production being exported. Coffee production have contributed to the economic growth of coffee growing regions and also acts as catalyst in protecting the biodiversity in the ecologically sensitive zones of Western Ghats (one of the biodiversity hotspots in the world). Further, coffee export earnings partly reduced the country's trade deficit. However, despite enjoying the high reputation in terms of quality and sustainability, there is a constraint in increasing exports of coffee from the country due to stagnation of production. Since there is limited scope for increasing area and production in traditional coffee growing regions, it is essential to increase the value of exports through premiumization of Indian coffees in the international markets. Voluntary Sustainable Standards (VSS) certified coffees can be considered as one of the value driven method to earn premium for Indian coffees in the import markets. The present study provides an overview of global market trends for the Voluntary Sustainable Standards (VSS) certified

coffees and highlights the importance of certification in protecting the flora and fauna in around the coffee ecosystems. Further, the study outlines the major VSS sustainability certification and verification programs such as Organic, Fairtrade, UTZ, Rainforest Alliance (RFA) and Common Code of Conduct for Coffee (4C) and provides volumes of production and area for each. Study also highlights the area and production trends of VSS certified coffees in India.

Keywords : Sustainable, Standard, Certification, Voluntary, Fairtrade.

INTRODUCTION

Among the developed countries, there are preferences for food that are free from pesticide, GMO, hormone and environmentally friendly, indicating the extent of importance attached to food safety. Consequently, the rising concern for food safety and quality has led to change in production methods and quality assurance (Rich *et al.* 2018). On the other hand, recent years have witnessed the consumers contribution or willingness to support a collective cause such as environmental protection, conservation of forest, animals and birds or in some other cases meeting the cause of social equity of small holder/landless laborers located in the developing countries. With climate change impacting lives, conserving environment and protecting the interests of vulnerable class of the society have

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become relevant to promote sustainability and social certification initiatives (Pierrot *et al.* 2011). In any of these cases, the commodity otherwise is no different (in appearance) from the rest (as the difference cannot be ascertained even after its consumption), but such information being assured through certification and affixed to the product package. The lack of such information will lead to reduction in spending on these commodities fearing of being fooled by false promises. In this backdrop, certification is crucial to attend to the problems of lack of information and market failure, as a market-based tool to incentivize the sustainable practices. In the present world, independent third-party certification is widely accepted and highly trusted for it guarantees which efficiently bridges the above said 'information gap'. Though the economic theory assumes that a rational consumer somehow obtains the pertinent information about the commodity he is interested in, in most of the cases, it becomes hard to do so, especially, in the case of 'credence goods' the product attributes of which are hard to reveal even after their consumption (Bonroy and Constantos 2015). It is important to note here that the certification is suggestive of only a minimum level of standard, these standards are usually specified by either the professional bodies or International NGOs working in the area of concern and in many countries the governments have accepted such programs as these standards pertain to the national priority areas such as environment, sustainability, social equity (Dankers 2003). Thus, certification is a procedure by which a written assurance of a product, process or service to be in conformity with certain standards is provided. Certification promotes environmentally appropriate, socially beneficial and economically viable management of resources by adding value to it. Certification acts as a catalyst for 'realizing local benefits at the community level' in the view of landscape conservation (Ghazoul *et al.* 2009). There are different types of Voluntary Sustainable Standards (VSS) certification programs pertaining to organic, social and environmental standards. Many VSS certification programs are combination of these standards and each one is unique. The earliest formal certification program initiated was organic during the 1960s decade though organic concept was practiced since 19th century, problems associated with chemicals and fertilizers have driven such practices.

Global coffee market follows New York (for Arabica coffee) and London (for Robusta coffee) commodity markets that functions on the basis of demand and supply conditions on each day. The market is understood to be highly volatile and its impact on small and marginal holders (who supply about 80% of world coffee) is clearly evident; they are not be able to make up their costs. These developments have led to initiating certification of coffee plantation in some of the South American and African countries are evident (Tovar *et al.* 2005, Gonzalex and Nigh 2005, Valkila 2008, Chamorro 2005). Coffee is the most valuable agricultural commodity as far as the international trade is concerned and largely viewed as the pioneering industry for sustainability standards and certification (Reinecke *et al.* 2012). Coffee is one of the world's most loved beverages, with an estimated 3 billion cups enjoyed every day (ICO 2019a). Coffee was grown on about 106 lakh hectares worldwide (FAOSTAT 2018) which is about 0.20% of global agricultural land. Global coffee production in 2018 is estimated at around 103.71 lakh tonnes (International Coffee Organization). Coffee production provides livelihood for about 25 million small coffee growers in the world (Watson and Achinelli 2008). Coffee is a major source of income for more than 12 million farms in the World, a quarter of which are operated by women (ICO, 2019b, ICO, 2018a). About 100 million families depend on the coffee sector for their living (ICO, 2019b). However, coffee is subject to significant price volatility compared to other tropical agricultural commodities like cocoa (Gilbert and Morgan 2010). The global coffee value chain and the market structure changed dramatically after neoliberal policy changes starting in 1989 (deregulation of coffee markets), from monopoly to liberalized markets. After the collapse of the International Coffee Agreement's Quota regime, prices paid to coffee growers have increased but has led to a very high volatility. Growing global production, speculation and climatic uncertainty have continued to drive price volatility and long-term price decline within the sector. Alongside low coffee prices, cost of production for growers increased substantially further squeezing the income of the producers which led to coffee sustainability crisis (Sachs *et al.* 2019). As a result, the small coffee growers in developing countries are often subject to conditions of low income

which builds more pressure on coffee ecosystems. In this backdrop, the coffee sector has provided fertile ground for the development and adoption of sustainability standards (Potts *et al.* 2014) as most of the coffee growing regions are biodiversity hotspots.

Earlier studies on VSS certification programs indicate participation in these programs helps the coffee producers to move up in the value chain. Such initiatives aim to increase the welfare of smallholder producers through improving production, marketing processes and access to credit markets (Chengappa *et al.* 2016). It is interesting to note that most of coffee consumption happens in the developed countries while its production is in developing countries with producers characterized by poverty and small land holdings. Coffee production since happens in hilly regions are often in the midst of dense forest and hence are required to contribute to conservation and sustainable resource use, apart from foregoing some of the luxuries. On the other hand, the consumers of developed countries (with higher income) have the opportunity to contribute to the conservation, which is nothing but a transfer mechanism. Coffee being world's most traded agricultural commodity, seems to be finding the channel for such a transfer process.

Indian coffee is primarily an export-oriented commodity with over 75% of the annual production being exported to various destinations around the world. Currently India with about 4% of global coffee area (FAO Stats 2018) has 3.5% share in global coffee production and ranks seventh position among the coffee producing countries. However, on exports front India is the fifth largest exporter with a share of about 5.60% of global coffee exports. Coffee in India mainly produced in three Southern States viz., Karnataka, Kerala and Tamil Nadu (traditional coffee growing areas). These three traditional coffees growing States accounts for about 80% of the total coffee area and 96% of country's production. In the recent years, the traditional coffee producing States facing large challenge of climate change which triggered unprecedented incessant rains leading to floods / landslides and uprooting of coffee plantations and substantial crop losses in Karnataka and Kerala, while the cyclone accompanied with gusty winds caused disastrous damage to the plantations by uprooting

the shade trees in turn damaging the coffee plants in Tamil Nadu.

Further, there are limitations in expanding the production base in the traditional coffee growing States due to shortage of suitable areas for coffee production. In addition, the low productivity in the senile/unproductive plantations is the added constraint for the small coffee holders in traditional coffee growing regions. Thus, in recent years, coffee producers in India are under immense pressure due to climate change, low coffee prices and rising production costs especially labor wages. Therefore, considering the limitation in expanding the area thereby production in traditional coffee growing States, it is essential for the Indian coffee producers to differentiate their coffees by adopting innovative production practices to access quality driven high value markets. In this backdrop, this paper examines the trends of VSS sustainable coffee production, demand for sustainable coffee and premiums paid for sustainable coffees at global level that could help in premiumization of Indian coffees through the promotion of conservation and environmental protection.

MATERIALS AND METHODS

The present study reviewed studies pertaining to the five major certification programs in coffee viz., organic, common code for coffee community (4C), Fairtrade International, Rainforest Alliance (RFA) and UTZ. Several aspects such as history, identity, governance, the certification process, premium paid, were studied to understand them comprehensively. Although UTZ certification program merged with Rainforest Alliance in January 2018, they are treated distinctly in the present study. Further, in order to understand the global trends of certified coffee production, demand and premiums paid, secondary data were obtained either directly from the voluntary sustainable standard-setting organizations or indirectly from published annual reports and other literature particularly State of Sustainable Market Reports published by International Trade Center in collaboration with FiBL and International Institute for Sustainable Development (IISD). For organic certification program, the data were compiled from the

annual FiBL survey on organic agriculture worldwide (Willer *et al.* 2020). The review period of the VSS certified data varies from one program to another based on the availability of the data. Further, the VSS certified data pertaining to India is available only for three certification programs viz., RFA, UTZ and 4C which has been compiled and analyzed to examine the trends of VSS compliant sustainable coffee production in India. The following exponential growth function was used to analyze the compound annual growth rates of VSS certified coffee area and production for the period of 10 years from 2008 to 2017:

$$Y = a \cdot b^t \dots \dots \dots (1)$$

Where, Y = Dependent variable for which the growth rate is estimated (i.e., certified area and production), a = Intercept, b = slope or regression coefficient, t = time variable and e = Error term, Further, the compound growth rate was obtained from the logarithmic form of the equation (1) as below:

$$\ln y = \ln a + t \ln b$$

The percent compound growth rate (g) was derived using the relationship:

$$g = (\text{Anti log of } b - 1) \times 100$$

Trends in global coffee certification

There are different categories of certification pertaining to organic, social and environmental standards. Many certification programs are combination of these

standards and each one is unique.

Organic certification in coffee

The sustainability standard with the largest certified area is organic (Willer *et al.* 2019). Organic coffee is the most important type of sustainable coffee. Production of coffee without using pesticides, herbicides and fertilizers with the aim of promoting and enhancing soil health and supports biodiversity. The organic certification program defines standards and practices for most crops and livestock. The organic certification not only involves following a set of standards in production but also a transition period of three years to qualify for it during which producers should not use prohibited substances in the land for the production of organic commodities (<https://www.ams.usda.gov/services/organic-certification/becoming-certified>).

In 2017, about 8.50 lakh hectares or 8% of the world coffee area was under organic coffee production. Organic coffee production in the world was estimated about 4.79 lakh metric tonnes which accounts for about 4.60% of global coffee production. Global certified area under organic coffee production has been increased from 4.21 lakh hectares in 2008 to 8.50 lakh hectares in 2017 with the compound annual growth rate (CAGR) of 8.63%. Similarly, the global certified organic coffee production has been increased from 1.96 lakh metric tonnes to 4.79 lakh metric tonnes for the same period (Table 2).

Table 1. Area and production under major VSS certification programs during 2017. Source: Authors calculation based on the 'The State of Sustainable Markets 2019-Statistics & Emerging Trends' (Willer *et al.* 2019) and 'World of Organic Agriculture, 2020-Statistics & Emerging Trends 2020' report (Willer *et al.* 2020).

VSS certification program	Estimated area (Lakh hectares)	Estimated production (Lakh MT)
Organic	8.50 Top three countries : Ethiopia , Peru and Tanzania	4.79
4C	16.31 Top three countries : Brazil, Colombia and Indonesia	24.07
Fairtrade	9.38 Top three countries : Colombia, Peru and Ethiopia	6.34
UTZ	5.93 Top three countries : Brazil, Peru and Colombia	8.58
RFA	4.11 Top three countries : Brazil, Colombia and Ethiopia	5.58

Table 2. Trends in area and production of organic certified coffee during 2008-2017. *Production Source: Authors calculation based on the 'The State of Sustainable Markets 2019-Statistics & Emerging Trends' (Willer *et al.* 2019) and 'World of Organic Agriculture, 2020-Statistics & Emerging Trends 2020' report (Willer *et al.* 2020).

Year	Organic		4C		Fairtrade		UTZ		RFA	
	Area (Lakh ha)	Prod * (Lakh MT)	Area (Lakh ha)	Prod * (Lakh MT)	Area (Lakh ha)	Prod * (Lakh MT)	Area (Lakh ha)	Prod* (Lakh MT)	Area (Lakh ha)	Prod * (Lakh MT)
2008	4.21	1.96	2.10	3.67	6.83	2.61	2.00	3.08	0.96	1.24
2009	4.60	2.08	3.80	6.07	7.00	2.93	3.00	3.66	1.16	1.68
2010	5.07	2.36	4.41	6.46	7.18	3.58	2.61	3.94	1.41	2.19
2011	5.50	2.54	5.66	9.06	8.05	3.80	3.48	4.77	1.93	2.61
2012	6.16	2.55	10.33	17.82	8.69	3.86	5.09	7.16	3.24	3.78
2013	6.39	2.65	14.65	23.60	10.11	4.02	4.74	7.27	4.34	4.55
2014	6.20	2.64	16.58	28.72	11.10	4.89	4.76	7.30	3.65	4.57
2015	7.98	3.42	15.94	26.29	12.97	5.49	5.49	8.21	4.05	5.22
2016	8.96	4.47	18.27	27.64	10.47	5.61	5.67	8.70	3.87	5.09
2017	8.50	4.79	16.31	24.07	9.38	6.34	5.93	8.58	4.11	5.58
2018	-	-	13.00	21.36	9.62	7.46	7.70	11.03	4.71	6.65
2019			9.70	16.08	-	-	7.20	10.84	4.71	6.70
CAGR (%)	8.63	9.78	16.77	16.52	4.85	10.17	11.44	12.09	15.64	15.74

Common code for coffee community (4C certified coffee) (The 4C certification and Coffee Assurance Services GmbH & Co. KG (the company operated the 4C verification system) acquired by MEO Carbon Solutions in 2018)

The 4C stands for climate friendly coffee and its certification system aims to minimize the carbon foot print from coffee production by no emissions regarding changes in land use pattern, adopting improved agricultural practices, minimizing fertilizer use, soil conservation practices and efficient energy use. Regarding the production practices, the 4C association does not enforce any specific farm practices like sun or shade grown but on the other hand promotes conservation of the existing flora and fauna of the region, works on improvement of the soil, conserves water and uses cultural and biological methods for control of the pests. The main objective of 4C program was to introduce sustainable management of coffee in addition to efficiency in the coffee value chain. 4C association ensures sustainable practices to its producers and has a higher approach towards the environmental, social and economic efficiency, reduction of poverty and to protect environment as a whole. 4C certification standards also emphasize decent living and working conditions for the producers.

During 2019, more than 400,000 coffee pro-

ducers were certified in 24 countries around the world. About 82% of certified coffee producers are smallholders (under 4C farmers who are having area less than 5 ha) The 4C certified area under coffee worldwide has been increased steeply from 2.10 lakh hectares in 2008 to 18.27 lakh hectares in 2016 with CAGR of 16.77%, thereafter declined consistently and reached to the level of 9.70 lakh metric tonnes during 2019 which may be attribute to declining coffee prices since November, 2016 onwards. The production of 4C certified coffee production has been increased from 3.67 lakh metric tonnes in 2008 to 27.64 lakh metric tonnes during 2016, thereafter declined to the level of 16.08 lakh metric tonnes during 2019 with some interruptions. The production of 4C certified coffees registered a CAGR of 16.52% during the period 2008 to 2019 (Table 2).

Fairtrade international

Fairtrade standards mainly focus on empowering the small coffee producers through poverty alleviation by fixing guaranteed minimum price (additional premium for fairtrade organic) along with environmental stewardship. Fair-trade is purely a social certification program in which the welfare of small and marginal farmers and the laborers was focused. The producers need to be organized under a group in order to deal

with the fair trade association which further provides marketing facilities to the concerned <https://www.fairtrade.net/>. Fairtrade international sets standards on social, economic and environmental requirements for all the actors across the supply chain including coffee plantations that use hired labor to ensure all the entities along the supply chain must be certified for the end product to carry the Fairtrade label. It was reported that, the Fairtrade fixed Minimum Price of US\$ 1.40 per pound which serves as an important safety net during the price crisis as the global market price for coffee hovering around US\$1 per pound in the recent years (Fair Trade Annual Report 2018-19). Fairtrade mandatory minimum price which distinguishes between Arabica and Robusta coffee, between conventional and organic and between natural and washed, plus a Fairtrade premium. Fairtrade introduced living income concept.

Coffee is the second most Fairtrade certified commodity after cocoa, with more than 9.38 lakh hectares, representing 8.7% of the global coffee area (The State of Sustainable Markets 2019). There has been a near exponential increase in global Fairtrade certified coffee area from 6.83 lakh hectares in 2008 to 12.97 lakh hectares in 2015, since 2016 the coffee area under Fairtrade international fluctuating and reached to 9.62 lakh hectares during 2018. The global Fairtrade certified coffee area has grown at CAGR of about 5% during 2008-2018. However, the Fairtrade certified coffee production has increased substantially from 2.61 lakh metric tonnes in 2008 to 7.46 lakh metric tonnes in 2018 with the CAGR of 10.17% (Table 2).

UTZ certification

Rainforest Alliance and UTZ merged in 2018, forming a new organization that carries forward the Rainforest Alliance name and it was reported that, both the certification programs will continue to operate in parallel until a new certification program is published (The State of Sustainable Markets 2019). However, they are treated separately in the present study as the data available at disaggregate level till 2017. This certification promotes better farming methods, improve working and living conditions, stable income, safeguarding environment and take better care of all

Table 3. Trends in global area and production of certified coffee during 2008-2017. Source : Authors Calculations based on the 'The State of Sustainable Markets 2019-Statistics & Emerging Trends' (Willer *et al.* 2019).

Year	Area (Lakh hectares)	Production (Lakh MT)
2008	16.09	12.57
2009	19.57	16.42
2010	20.68	18.53
2011	24.62	22.78
2012	33.50	35.17
2013	40.23	42.09
2014	42.29	48.12
2015	46.44	48.63
2016	47.24	51.51
2017	44.23	49.35
CAGR(%)	13.66	18.18

children of farmers and workers (<https://utzcertified.org/en/aboututzcertified/whatisutzcertified>).

As per the UTZ and RFA certification data report, 2019, about 10.84 lakh metric tonnes of coffee produced under UTZ coffee certification program with 2.90 lakh coffee growers in 25 producing countries. The UTZ certified coffee area has been increased from just 2 lakh hectares to 7.20 lakh hectares with the CAGR of 11.44% during the period 2008 to 2019. Similarly, UTZ certified coffee production has been increased from 3 lakh metric tonnes to 10.84 lakh metric tonnes with the CAGR of about 12% during the same period.

Rainforest Alliance (RFA)

The RFA designed a rigorous standard with detailed environmental, social and economic criteria to protect biodiversity, improving the incomes, improve the living and working conditions of the workers, gender equity and access to education for children in farm communities (<https://www.rainforest-alliance.org/articles/rainforest-alliance-certified-coffee#:~:text=The%20Rainforest%20Alliance%20works%20with,well%2Dbeing%20of%20their%20communities.&text=These%20criteria%20are%20designed%20to,for%20workers%20and%20local%20communities>) During 2019, around 6.70 lakh metric tonnes of coffee was certified by RFA involving around 1.94 lakh coffee growers with an area of

about 4.71 lakh hectares. In India, RFA certified coffee production has been increased from 31,566 metric tonnes in 2017 to 31,995 metric tonnes in 2019 with some interruptions (Rain Forest Alliance 2019). Under the single standard (after the merger with UTZ), the premium is negotiated between the certificate holder and the first buyer. Rainforest Alliance claims that having a fixed premium amount is not possible due to the diversity of countries and contexts following certification programs. The organization also acknowledges that a premium is necessary to create an incentive for producers and companies to start investing in sustainable farming, and that the premium should at least repay costs for such sustainable practices. Additionally, there is full transparency on premium expenditure, with data about this recorded in the traceability system. RFA global coffee certified area has been increased from just 0.96 lakh hectares in 2008 to 4.71 lakh hectares during 2019 with the CAGR of 15.64%. The global RFA certified coffee production has been increased from 1.24 lakh metric tonnes to 6.70 lakh metric tonnes (major chunk is Arabica about 92% and rest is Robusta) with the CAGR of 15.74% during the same period (Table 2). RFA works with the consumers to buy the certified products at higher prices through free market approach.

Global certified area and production under major VSS certified programs

During 2017, the total certified area under five of the standards viz., Organic, 4C, Fairtrade, UTZ and

RFA was about 44.23 lakh hectares with a combined production of about 49.35 lakh metric tonnes.

In terms of the certified share of the global coffee area was about 42%. 4C had the largest certified coffee area with the share of about 37% in the total certified coffee area and showed the greatest growth (17%) during 2008–2017. Similarly, the certified share in global coffee production is about 49% and 4C constitutes major chunk in the total certified coffee production with the highest growth (16.5%). The overall, global certified coffee area has been increased from 16.09 lakh hectares in 2008 to 44.23 lakh hectares in 2017 with CAGR of about 14%. Consequently, the global certified coffee production experienced a CAGR of about 18% for the same period, accounting for about 48% of global coffee production, indicates some promising signs of success on the supply side particularly in recent years.

The majority of VSS-compliant production, approximately 68%, comes from Latin America with an area about 31.16 lakh hectares, followed by Asia (10.24 lakh hectares), Africa (4.03 lakh hectares) and Oceania (0.21 lakh hectares). The reason for domination of Latin America is attributed to high degree of organization and advanced production methods.

Apart from these, there are private programs such as CAFÉ certification of Starbucks and AAA Nespresso (Interestingly, Nespresso is supporting expansion of RFA certification (which is getting in good terms with Nestle and 4C) by committing to procure 80% of

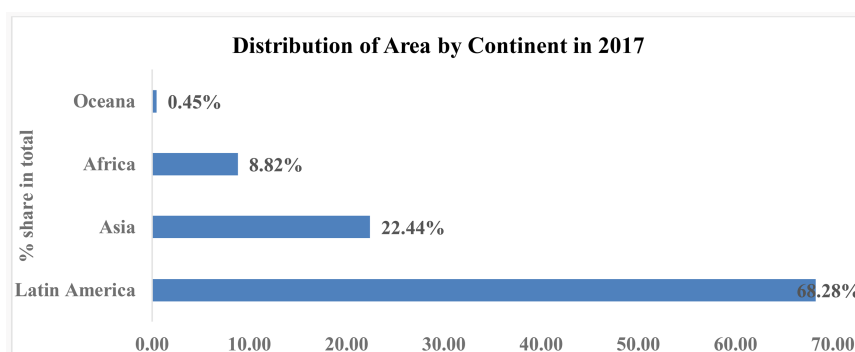


Fig. 1. Distribution of sustainable coffee area by continent during 2017 (% to total). Source: Authors Calculations based on the 'The State of Sustainable Markets 2019-Statistics & Emerging Trends' (Willer *et al.* 2019).

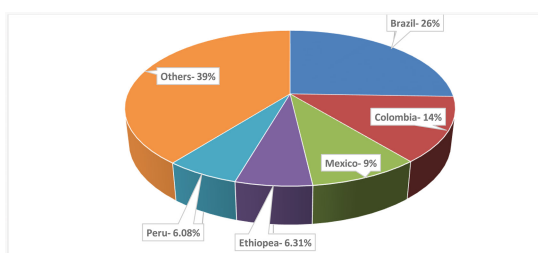


Figure 2. Distribution of certified area under coffee by country during 2017 (% to total). Source: Authors Calculations based on the 'The State of Sustainable Markets 2019-Statistics & Emerging Trends' (Willer *et al.* 2019).

its total, by 2013 (Pierrot, Giovannucci and Kasterine, 2011). quality standards of Nestle.

Multicertification

Multiple certifications are common in the coffee sector. All the VSS certification programs are not mutually exclusive, hence often we found coffee farms with more than one VSS certification programs. Fairtrade International, RFA, UTZ and 4C are the member of ISEAL (ISEAL is the global organization of credible sustainability standards). About 17% of the VSS certified farms in the coffee sector were certified by more than one of these VSS schemes (https://www.isealalliance.org/sites/default/files/resource/2019-02/DIPI_Multiple_Certification_Analysis_Final_Oct%202018.pdf). However, the most

of the multiple certifications were a combination of RFA and UTZ. About 37% of the UTZ certified coffee farms were certified for at least one other VSS standards certification program, around 19% of them were also certified by RFA. Similarly, about 41% of Rainforest alliance certified coffee farms also certified for at least one other VSS certification program. About 31% of the Rainforest Alliance certified coffee farms certified by UTZ (<https://www.rainforest-alliance.org/business/responsible-sourcing/rainforest-alliance-certification-data-reports-2019/>). Coffee producers certify their farms under more than one VSS certification programs for better market access, to derive benefit from complementarities of different VSS certification programs and to prove the commitment of the producer to meet quality, social and environmental standards set by VSS certification programs (<https://www.isealalliance.org/get-involved/resources/briefing-paper-multiple-certification-patterns-iseal-member-schemes-coffee>).

Demand for VSS certified coffees

Pierrot, Giovannucci and Kasterine (2011) state that on demand side, consumers have strong preference for certified goods, the retailers have also responded to such cause-related marketing, considering it as a differentiation tool and a part of their CSR. The certified market composition includes the mature markets of European Union (>50%), Japan and USA. The certified coffee market is reported to be experiencing

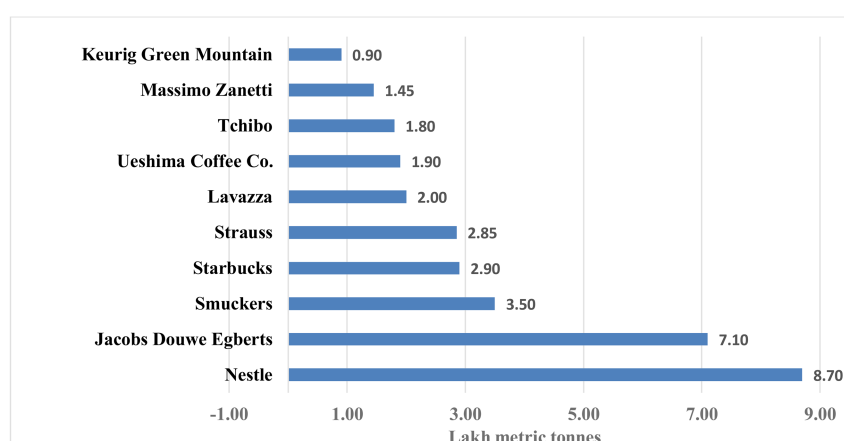


Figure 3. Certified coffee sourcing commitments by top 10 coffee roasters in the world. Source: Authors Calculations based on the 'Sustainable Commodities Market Place Series 2019- Global Market Report: Coffee' (Voora *et al.* 2019).

Table 4. History and development of different certification/verification programs. Source : Kline, 2010.

Organic	Rainforest Alliance	TZcertified	4C common code	Fair trade certified certified
Trace back to 19 th century practices formulated in England, India and the US. First certification 1967. Developed into internationally recognized system with production throughout the world. The organic coffee sector represented nearly 3 percent of the total U.S. green coffee imports in 2007	Begun in 1992 by Rainforest Alliance and a coalition of Latin American NGO, the Sustainable Agriculture Network (SAN). First coffee farm certified in 1996. The Rainforest Alliance Certified program requires that farms meet comprehensive standards covering all aspects of production, the protection of the environment, and the rights and welfare of farm families and their local communities.	Begun in 1997 as an initiative from industry and producers in Guatemala; UtzKapeh became an independent NGO in 2000. First certified farms in 2001. In 2008, UtzKapeh changed its name to Utz Certified – Good Inside to better communicate and encompass more diverse agricultural commodities including cocoa, tea, soy, and palm oil.	Begun in 2003 as a public-private partnership project by the coffee industry and the German Development cooperation to initiate a multi-stakeholder dialogue for defining a mainstream code of conduct for sustainability: The 4C Association was founded as an international membership association in December 2006. Operational in market since coffee year 2007/08	Began as Max Havelaar in the Netherlands in the 1970s. Now the German-based Fairtrade Labelling Organizations International (FLO). Collaborates with 19 labeling initiatives, including Trans Fair USA, and three producer networks representing Latin America, Asia and Africa. TransFair USA has been administering the Fair Trade Certified label since 1998.

a 20-25% of average annual growth in consumption. About 2.08 lakh metric tonnes of Fairtrade certified coffees sold during 2018 and Peru is the leading seller of Fairtrade certified coffees in the world with the volume of about 54,464 metric tonnes followed by Honduras (35,411 metric tonnes) and Colombia (30,876 metric tonnes) (<https://www.fairtrade.net/impact/key-data-fairtrade-coffee>). Europe accounts for about 80% of Fairtrade products sales. In Germany, the total Fairtrade products sales (not only coffee) was about € 1.3 billion in 2017. The fastest growing markets for Fairtrade coffee includes Ireland, Finland and Denmark, with growth rates of 36%, 35% and 25% respectively (Fair Trade Annual Report, 2017-18). While, United Kingdom, Germany and Switzerland are the major markets for Fairtrade coffee, where the demand continues to grow. In the last decade, the sales of Fairtrade products have grown nearly tenfold in the United Kingdom. The total Fairtrade coffee sales reached a record-breaking € 76.61 million in 2018.

European Union and the USA were the major market destinations for UTZ certified coffees UTZ

certified global coffee sales were about 5.90 lakh metric tonnes of which Arabica constitutes about 85% and rest is Robusta. UTZ certified coffee sales have increased by 147% since 2015 which was largely driven by Europe and North America. Majority of the global UTZ certified coffees sales came from Brazil, Viet Nam and Honduras. Brazil is top seller of UTZ certified Arabica with the share of about 50% of total Arabica sales followed by Honduras (15%) and Colombia (11%). Similarly, the top seller of Robusta is Viet Nam (79% of total Robusta sales) followed by Brazil (9%) and India (8%) (<https://www.rainforest-alliance.org/business/wp-content/uploads/2020/05/Coffee-Certification-Data-Report-2019.pdf>). Private labels in Western Europe and brands in Northern Europe are the major markets for the UTZ certified coffee. UTZ certified coffee is most popular in Netherlands, Germany, Belgium, Switzerland and Nordic markets. Most of the retailers cum roasters viz., Aldi, Edeka, Ahold, Migros, Lidl and Jumbo and brands such as Paulig or Tchibo, Jacobs Douwe Egberts, Lavazza in these countries offer UTZ certified coffees. (<https://www.cbi.eu/market-infor->

Table 5. Trends in certification area in India during 2008 - 2017. Note : Certified coffee area data pertaining to India includes only three certification programs viz., UTZ, RFA and 4C and International Trade Center. Source: Authors Calculations based on the 'The State of Sustainable Markets 2019-Statistics & Emerging Trends' (Willer *et al.* 2019).

Year	Coffee area (in hectares)
2008	2000
2009	2000
2010	2000
2011	33915
2012	47429
2013	65837
2014	73084
2015	66265
2016	67957
2017	80824
CAGR (%)	60.54

mation/coffee/sustainable-coffee).

Global sales of RFA certified coffees were about 3.94 lakh metric tonnes of which Arabica accounts for about 3.71 lakh metric tonnes (94% of RFA certified global coffee sales) and rest is Robusta (22,330 metric tonnes and 6% of RFA certified global coffee sales). The global RFA certified coffee sales have increased by 36% since 2017. Highest sales of RFA certified coffees were reported in Brazil with the sales of about 1.64 lakh metric tonnes followed by Colombia (70,110 metric tonnes) and Guatemala (30,847 metric tonnes). (<https://www.rainforest-alliance.org/business/responsible-sourcing/rainforest-alliance-certification-data-reports-2019/>). Europe is important

Table 6. Total number of producers and certified coffees harvested area by VSS certification program in India during 2017. Note: Certified coffee area data pertaining to India includes only three certification programs viz., UTZ, RFA and 4C. Source: Authors calculations based on the 'The State of Sustainable Markets 2019-Statistics & Emerging Trends' (Willer *et al.* 2019).

VSS standards	Number of producers	Area in hectares
RFA	3046 (60%)	29719 (37%)
UTZ	1076 (21%)	39306 (49%)
4C	972 (19%)	11799 (15%)
Total	5094 (100%)	80824 (100%)

market for RFA certified coffees with the share of about 54% of the RFA total sales followed by United Kingdom 11%) (<https://www.cbi.eu/market-information/coffee/sustainable-coffee>).

Europe is the major market for organic products which accounts for about 40% of the global total retail sales of organic products at € 33.5 billion. The demand for organic certified coffee follows the general market demand trends for organic products in Europe. The leading markets for organic products in Europe are Germany (28% of the European organic market), France (20%) and Italy (8%).

It was reported that, around 34% of the total coffee sourced by 10 largest coffee roasters in the world (accounts for about 35% of global coffee trade) were VSS compliant and it was also reported that, there will be an additional demand for about 3 lakh metric tonnes of sustainable coffee by 2025 considering their sourcing commitments. (<https://www.jmsmucker.com/our-impact/responsible-sourcing>)

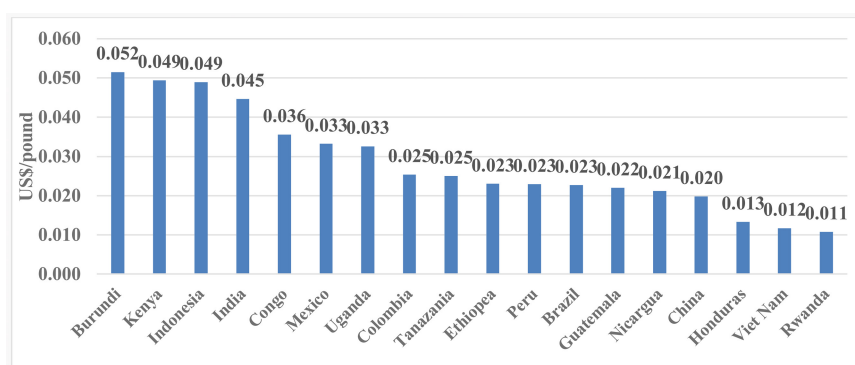


Fig. 4. Country wise UTZ average premium for coffee during 2019. Source: Authors calculations based on coffee certification data report 2019, Rainforest Alliance and UTZ programs.

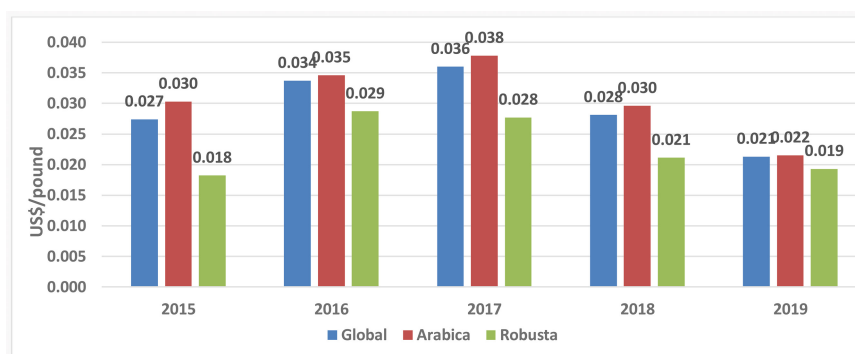


Figure 5. Global average UTZ premium during 2015 to 2019. Source : Authors calculations based on coffee certification data report 2019, Rainforest Alliance and UTZ programs.

(https://www.nestle.com/sites/default/files/assetlibrary/documents/library/documents/corporate_social_responsibility/nestle-csv-full-report-2017-en.pdf#page=56)

(<https://www.jmsmucker.com/our-impact/responsible-sourcing>).

It was reported that, supply of VSS compliant coffees has historically been far above the actual demand, due to this, VSS certified coffee producers generally selling only a part of their VSS certified production as certified (SSI Review 2014).

Price premiums paid under different certification programs

The premium is an additional cash amount above the market price paid to producers, that must be paid by the buyer to reward them for implementing sustainable farming practices according to the voluntary sustainable standards designed by different certification programs.

Fair trade is the only certification system that specifies minimum premium provision of US\$1.35/pound for Arabica Cherry, US\$1.40/pound for Arabica Parchment, US\$1.01/pound for Robusta Cherry and US\$1.05/pound for Robusta Parchment. (<https://www.fairtrade.net/standard/minimum-price-info>). UTZ provides variable premium on top of the market price. ([https://utz.org/better-business-hub/strengthening-your-reputation/utz-certified-farm-](https://utz.org/better-business-hub/strengthening-your-reputation/utz-certified-farm-ers-get-paid-premium/)

[ers-get-paid-premium/](https://utz.org/better-business-hub/strengthening-your-reputation/utz-certified-farm-ers-get-paid-premium/)). Unlike in Fairtrade, the premium amount is not fixed by UTZ, which is agreed upon between the producer and buyer as part of the market process.

However, UTZ specifies the payment of cash premium to the producer is mandatory. The UTZ global average premiums is ranging between US\$0.0193/pound to US\$ 0.0215/pound of green coffee, of which highest premium was paid for Arabica (<https://www.rainforest-alliance.org/business/wp-content/uploads/2020/05/Coffee-Certification-Data-Report-2019.pdf>). Premiums paid for UTZ certified coffees was highest in India during 2018, which was about US\$ 0.12 /pound. UTZ is actively involved in reporting relevant statistics facilitating its producers for better price negotiation.

The 4C verification does not talk of any direct premiums but indicates higher prices to be indicative of higher quality and sustainability. While organic also does not specify any fixed premiums, however premiums for organic coffee are tough to indicate as it varies with the quality, the market scenario and availability at a given point of time. It was reported that, premium paid for organic coffee have ranged from US\$ 0.10 /pound to as high as US\$ 0.25 /pound. The potential premium at the producer level (Free on Board) for the particular type of organic coffee compared to the corresponding type of conventional quality ranges between 10%–15%. Further, the consumers are willing to pay additional 20% premium over retail prices for organic coffee compared to

corresponding quality of the conventional coffee. However, some exceptional speciality organic coffees may realize still higher premiums. (The 4C verification does not talk of any direct premiums but indicates higher prices to be indicative of higher quality and sustainability. While organic also does not specify any fixed premiums, however premiums for organic coffee are tough to indicate as it varies with the quality, the market scenario and availability at a given point of time. It was reported that, premium paid for organic coffee have ranged from US\$ 0.10 /pound to as high as US\$ 0.25 /pound. The potential premium at the producer level (Free on Board) for the particular type of organic coffee compared to the corresponding type of conventional quality ranges between 10%–15%. Further, the consumers are willing to pay additional 20% premium over retail prices for organic coffee compared to corresponding quality of the conventional coffee. However, some exceptional specialty organic coffees may realize still higher premiums (<http://www.thecoffeeguide.org/3213-niche-markets-environment-and-social-aspects-organic-certification-costs-and-viability-of-production-and-export/#:~:text=Meanwhile%2C%20premiums%20for%20organic%20coffee,depending%20on%20quality%20and%20availability>). Overall, premiums for sustainable coffees ranges from US\$ 0.0193/pound to 0.25/pound.

The potential for sustainable coffee production in India or relevance of VSS certification programs in Indian coffee industry

Indian coffee has been highlighted to be cultivated in region with rich bio and tree diversity. Perhaps, India is the only country in the world to produce whole of its coffee under shade, resulting in low acidic and fine aroma brew. Thus, it is seen as a 'mild coffee' in the international market. The shade helps in soil and water conservation by avoiding run-off apart from protecting coffee plants from excessive temperature. It has foregone yield (falls to about half to one-third) for having dense cover of two layers tree shade (Chethana *et al.* 2010). The numerous benefits of shade coffee are species richness, providing ecological and agricultural (pollination, decomposition in soil through microbial activity, building/improving soil structure) services, prevent soil erosion, promoting food chain,

natural check on pest activity, protect biodiversity, protect the plantations from the damage caused by unexpected excessive rainfall and heavy winds. Further, for centuries, producers in traditional coffee growing areas were depended on agroforestry method of production to keep their farms economically profitable, protect their environment and conserve natural resources. The coffee based agroforestry systems in the Western Ghats (one of the biodiversity hotspots in the world) is one of the most effective system that contribute enormously for carbon sequestration and thus in turn helps in mitigating adverse impacts of climate change (Munishamappa *et al.* 2012). Contrastingly, this fact is not recognized at the global level. Therefore, Indian producers have ample scope to reach standard compliant certified and labelled coffee market segment by participating in sustainable standard compliance initiatives.

On the other hand, protection of environment in the ecologically sensitive zones of Western Ghats is crucial for sustainable coffee production in India. In this context, the global experiences indicate that, all the VSS certification programs considered in the present study focusses on transforming the agricultural practices towards sustainable production and all these VSS programs are committed towards tackling unsustainable production and market practices. Although, these VSS certification programs differ in emphasis and procedures of their missions, but encompasses all three pillars of sustainability viz., social, economic and environmental. However, all these VSS certification programs consider economic viability is the basis for social and environmental sustainability. Further, there are evidence for a range of environmental, economic and social benefits of VSS certification programs. Hence, these conservation-oriented VSS certification programs have the potential to create value for small coffee producers, as certified coffees earn premium in the international market. In order to earn market premium, small coffee producers has to adapt good agricultural practices to qualify for VSS certification programs.

Certified coffee area in India has grown at the CAGR of about 61% from just 2000 hectares in 2008 to 80,824 hectares during 2017 (Table 4). Among the three VSS certification programs, RFA certified

highest number of producers (60%) and covered 37 % of the certified coffee harvested area in 2017, while UTZ covered largest certified harvested coffee area (49%) with less number of producers (21%) (Table 5) which may be due to the fact that, producers with larger holdings certified through 'exporter led – group certification model' where the cost of UTZ certification is borne by the exporter who holds the certificate. (<https://utz.org/better-business-hub/sourcing-sustainable-products/how-one-indian-coffee-farmer-group-protects-nature-empowers-farmers-and-sets-an-example-across-a-region/>).

With the above information about various certification programs and its coverage, market size and trends, it would be interesting to understand whether premiums or guaranteed minimum price under these certification programs is the best way to empower small coffee growers by adopting sustainable production practices. There are ample number of research works on the VSS certifications programs in coffee, but a critical review of previous studies have yielded divergent conclusions on the role of these certification programs in empowering the small coffee growers. There are evidences that, VSS certification programs helped the coffee growers in earning better price for their produce and improving the productivity of their farms (Méndez *et al.* 2010, Arnould *et al.* 2009, Ruben and Verkaart 2011, Rijsbergen *et al.* 2015, Ruben and Fort's 2012, Takahashi and Todo 2013, Jena and Grote 2016, Blackmore and Keeley 2012), but there are some studies indicated premium paid by the consumers are not going directly to the coffee growers and which are not sufficient considering the additional costs associated with the certification process (Philpott *et al.* 2007, Utting-Chamorro 2005, Van der Vossen 2005, Jena *et al.* 2012, Raynolds *et al.* 2004, Wahyudi and Jati 2012, Ibnu *et al.* 2015, Kolk 2013, Vellema *et al.* 2015, Minten *et al.* 2003). While some studies emphasized its beneficial role across socio-economic and ecological systems (Jaffee 2008, Martinez-Torres 2008, Bray *et al.* 2002, Blackman and Naranjo 2012). Thus, the various earlier studies conducted in major coffee growing countries of the world provide diverse understandings on the role of different certification programs in improving the livelihood of small coffee growers. Therefore, a general consensus on impacts of certification programs is

inconclusive at this juncture.

CONCLUSION

The area and production of all five VSS certified coffees were showing increasing trend with the positive compound annual growth rates during the review period. Supply of VSS certified coffees is concentrated in select regions with more developed production capacity like Latin American countries. Similarly, demand for VSS certified coffees appears to be growing only in matured coffee markets of USA, European Union and Japan. However, major coffee roasters are becoming increasingly interested in VSS certified coffees and so it is likely that the demand for VSS certified coffees will continue to grow. Small coffee producers in India have to protect themselves against efficient/ low cost giant producers in Brazil and Vietnam by premiumizing their coffees in the international market. Production of VSS compliant coffees can be considered as one of the market driven method to earn premium for their coffees in the overseas market. Considering the importance of VSS certification programs in coffee, the Coffee Board of India has implemented support scheme for eco-certification, with an objective to encourage the coffee growers to access high value speciality markets through production of eco-certified coffees. This support component also encourages small growers to form groups / collectives for taking up eco-certification.

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