

Research article**ANALYSIS OF FLOOR PRICE TREND OF RAW COFFEE IN NEPAL****G. Luitel*¹, and B. Acharya²**¹National Tea and Coffee Development Board, Regional Office, Jhapa, Nepal²Food and Agriculture Organization of United Nations (FAO), Kathmandu, Nepal

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ABSTRACT

Nepalese coffee industry has passed a long way of production, processing and marketing. Coffee as a high value crop with floor price helped farmers to sustain their production. This study reviews the historic approaches of floor price fixation system and its trend using secondary data of National Tea and Coffee Development Board (NTCDB). The floor prices were averaged and converted into Green Bean Equivalent (GBE) units and analysed in different time zones. It was found that the floor price fixation system has been changing over years. The floor price was roughly based on transportation cost in earlier years. Grading-based price fixation of fresh cherry came into practice during 2002/03-2005/06. Eventually, more precise and practicable floor price measures were introduced for different quality grades, which was practiced for almost a decade from 2006/07 to 2014/15. Starting from 2015/16, previous approach was slightly modified based on organic certification which is still in practice. Moreover, it was found that the price of raw coffee has increased notably over years. While the price index of raw coffee in 1994/95 was merely 26.37, it has increased by more than nine times to 243.12 in 2021/22. Since higher priced raw coffee will not make it competitive in the global market, the floor price should be adjusted based on international market trend, considering macroeconomic parameters as well.

Keywords: Coffee, floor price, price trend, price index, green bean equivalence**INTRODUCTION**

Coffee is a high value cash crop with environmental importance and is being popular among Nepalese since last few decades. It has been spreading in over 41 districts of the mid-hills of Nepal including Gulmi, Palpa, Syangja, Arghakhanchi, Kavre, Sindhupalchowk, Lalitpur, Kaski, Tanahu and Lamjung (NTCDB, 2021). All Nepali coffee is of Arabica variety, mix of bourbon and typical, grown between the altitude range 800 to 1600 meters, with organic and eco-friendly practices by small farmers. Selective hand picking of fully ripe cherries is done and pulped right after harvesting with mini pulper which is followed by additional procedures like fermentation, washing and drying based on the principles of wet processing method. However, for domestic and home consumption dry processing method is also adopted where cherries are harvested and dried in sun at the farm level (Acharya & Dhakal, 2014).

Nepali coffee is considered unique among coffee aficionados for its distinct flavour, aroma and body, as it is grown in higher altitude and away from the mainstream coffee growing region of the world - between Tropic of Cancer (23°26'11.2" North) and Tropic of Capricorn (23°26'11.2" South) (CoPP, 2014). Coffee in Nepal is produced adopting the principles of Organic and Fair-trade and is accepted as a specialty coffee in niche markets.

Among various cash crops for commercialization, coffee is emerging as an agricultural enterprise with great potentiality to provide farm employment and income generation opportunities in the mid-hills of Nepal (CoPP, 2007). Additionally, coffee plantation could be an important way for soil conservation; bio-diversity maintenance and watershed balance (Nepal, 2006).

Coffee can be commercially produced in many parts of the country. However, there is great potentiality in mid hilly region for organic coffee production. It has got suitable climate, topography, soil, relative humidity, temperature and rainfall for Arabica coffee (CoPP, 2007). It is grown under shade trees with multiple uses which serves as the additional income source of the farmer. In terms of area and production, Nepal coffee has tiny presence in the world coffee arena. However, organic coffee has been getting premium price in niche markets, which has gradually accelerated the extension of farming in the rural areas of Nepal. Small fraction of production zone is certified as organic (CoPP, 2014).

Farmers are affiliated either to small groups or primary cooperatives and have vertical linkage to district cooperative unions. The farmers group or primary cooperatives act as a collection centre for fresh cherry produced by the farmers. Moreover, they do primary processing at farm level and sell dry parchment to district cooperative unions or other private traders. The cooperatives union or traders bring the coffee to the end market for the café and consumers.

Until early 2000, coffee producers were not sure of coffee being a source of income generation due to the market-related problems. However, after the year 2002, substantial increase in the export coupled with increase in domestic consumption to a certain extent, motivated coffee producers to consider it as one of the income-generating agricultural enterprises (Acharya & Dhakal, 2014). Small holders can grow coffee in their marginal lands and can earn over NRs 30,000 from one *Ropani* (0.05 ha) of land which can contribute to poverty reduction (Shrestha and Shrestha, 2004). A study conducted in Sindhupalchowk and Kavre found that the net profit of coffee farmers was found to be 20.18% while its cost of production was merely NRs 69.03/kg (Luitel & Bhandari, 2021).

On the contrary, coffee farming in the last five decades has not been able to substantially contribute to the economy of the farmers as they have not increased the scale of production. Moreover, farmers are producing coffee using conventional method and management of the coffee garden is necessary to get the better price and better production. Government and other organizations are implementing programs with an objective of supporting coffee production, but the sustainability of such programs is always under question (PACT, 2012).

According to Department of Customs (2021), Nepal exported 72,388 kg of coffee worth NRs. 96 million in the fiscal year 2020/21 to the countries like Germany, Japan, Switzerland, Netherlands, Australia and so on. At the same time, Nepal imported 198,666 kg of coffee worth NRs. 106.7 million in the same year, chiefly from India and Malaysia. It is worthwhile noting that average selling price of Nepali coffee is found to be NRs 1326.23 per kg, while Nepali traders buy coffee at the average price of NRs 537.19 per kg. Because of the specialty nature of Nepali Coffee, it has been receiving premium price in the international market. Despite the huge demand for coffee globally, Nepalese farmers are facing different challenges in the production, processing and marketing aspects including the pricing of coffee.

National Tea and Coffee Development Board (NTCDB), the governing body of the coffee sub-sector in Nepal, has been fixing the floor price of fresh cherry, dry cherry and dry parchment annually. On 1st Manghsir of Nepalese Calendar, on the occasion of National Coffee Day, NTCDB has been disseminating the information on floor price of various grades of raw coffee (NTCDB, 2021).

It is worthwhile to note that NTCDB fixes the floor price of fresh cherry, dry parchment and dry cherry only. In order to understand the terminology of these coffee intermediaries, we need to understand about the processing methods of coffee which is broadly categorised into wet and dry methods. In wet processing method, the fresh cherry is harvested from the coffee plant and undergoes through pulping, fermentation, washing and drying. The end product of this method is dry parchment which is hulled into green bean by mechanically removing husk. The green bean, a commercially traded intermediary raw product, is roasted, grinded and brewed before it reaches the end customer (Kuit *et al.*, 2004). (Figure 1).

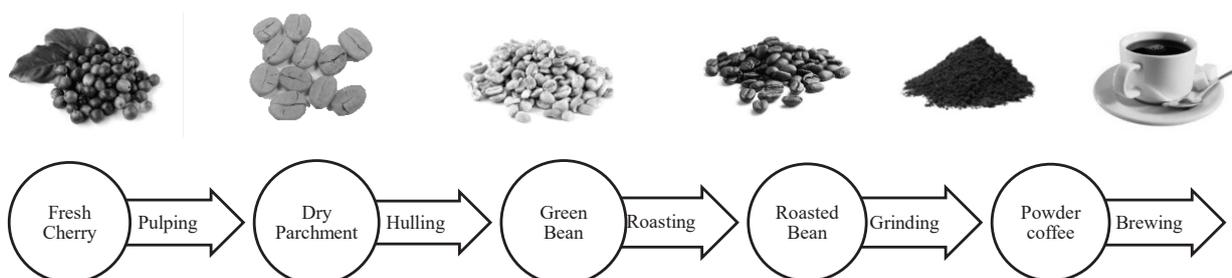


Figure 1. Summary of process involved in making final coffee product

On the other hand, in dry processing method, all the process is similar except the pulping part, as the fresh cherry is directly dried under sun to produce dry cherry, skipping the stages of pulping, fermentation and washing. The dry cherry is hulled to produce green bean (Kuit *et al.*, 2004). Dry processing method is still prevalent at the places where the facilities of pulping stations are not available.

NTCDB annually sets floor prices for various intermediary raw products of coffee. Floor pricing is a price control mechanism that is used to limit the minimum price that can be charged on a good or service. The main reason for imposing a price floor is to prevent the price of various goods or services from being too low. Predominantly, price floors are common in the agricultural sector in order to protect the farmers. For a price floor to be effective, it must be above the equilibrium price in the market for the goods whose price is being regulated (Begg, et al., 2014).

This study aims to answer the following research questions related to the floor price of raw coffee in Nepal:

- What are the approaches of floor price fixation of coffee in Nepal?
- What is the trend of floor price of raw coffee over years?

MATERIALS AND METHODS

Methods of data collection and analysis

The study used secondary data for the analysis of floor price trend of raw coffee in Nepal. Data and historic information pertaining to the floor price fixation of raw coffee during various time frame was collected directly from the meeting register of NTCDB. Moreover, other relevant information was obtained through reviewing different articles, reports, journals, books, internet materials and other publication mainly produced by International Coffee Organisation (ICO), Food & Agriculture Organisation (FAO) of United Nations, International Trade Centre (ITC), Federation of Nepalese Chamber of Commerce & Industries / Agro-Enterprise Centre (FNCCI/AEC) and other pertinent organizations. Moreover, data analysis and graphs were made by using relevant tools of MS Excel 2019.

Conversion factors

In order to bring uniformity in analysis of floor prices of various intermediary raw coffee products, their floor prices were averaged and converted into Green Bean Equivalent (GBE) units. Conversion factors used by ITC (2011) and FNCCI/AEC (2006) was adopted in this study (Table 1).

Table 1. Green Bean Equivalent conversion factor

Conversion from	Green Bean Equivalent (GBE)
Fresh cherry**	0.18
Dry cherry*	0.50
Dry parchment*	0.80

Source: **FNCCI/AEC (2006) and *ITC (2011)

Price index

Price index is a useful tool for measuring change in the price level over years. It is the measure of relative price changes with respect to the base year. Price indices were first developed to measure changes in the cost of living in order to determine the wage increases necessary to maintain a constant standard of living (Britannica, 2014). However, it is extensively used to estimate changes in prices over time. Fiscal year 2011/12 was selected as the base year in our study.

The price index of raw coffee for a given year was estimated using the equation:

$$\text{Price Index of raw coffee for a given year} = \frac{\text{Price Index of raw coffee for Given Year}}{\text{Price of raw coffee for Base Year 2011/12}} * 100$$

RESULTS AND DISCUSSION

Findings on historical context of floor price fixation of coffee

The study found that Bhairahawa-based Nepal Coffee Company (NeCCo) was the only monopsony buyer which used to buy dry cherry produced from coffee farmers since its establishment in 1983/84. According to Ghimire (2017), Chairman of NeCCo, in 1990s the company could no longer buy coffee from farmers because of the crunch in world coffee market. As a result, there was huge stock of dry cherry unsold. In 1994 January 23, with an aim of facilitating coffee trade, Government of Nepal formed a committee coordinated by Pradeep Koirala, the then Executive Director of NTCDB, giving one of the mandates to fix the price of raw coffee.

The meeting register of NTCDB for floor price fixation of coffee revealed that the first meeting of the committee was held in 6th April 1994 in Kathmandu where representatives of NeCCo stated that it could not buy coffee until and unless additional financial support from Agriculture Development Bank Ltd (ADBL) was received. In the second meeting, representatives of ADBL couldn't agree to fulfil the demand of NeCCo and then meeting sought for alternative buyers which could be Salt Trading Corporation (STC). The third round of meeting was held on 2nd June 1994 along with the representative of STC. With no previous experience of coffee trade, STC couldn't vow regarding the price of coffee they were ready to deliver and the meeting was unresolved.

Finally, only in the fourth meeting held on 19th June 1994, the STC stated its stand and for the first time, floor price of dry cherry coffee was fixed as Rs 24/kg at the farm gate and Rs 26/kg at Palpa, Bhairahawa and Kathmandu depot of STC. Since then, floor price of raw coffee beans has been fixed annually. On the occasion of National Coffee Day (1st Mangshir as per Nepali Calendar), the floor price of raw coffee is declared by NTCDB every year.

Analysis of floor price fixation approach over years

There's no unchanging approach being practiced for floor price fixation in coffee since it began in 1994. Because of the lack of sufficient research in the cost of production and price fixation, try outs were made periodically for floor price fixation based on the empirical experiences of the preceding years. In the past, price fixation was purely a bargain game between traders and coffee producers, facilitated by NTCDB. However, in recent years, NTCDB has initiated a practise of fixing floor price based on cost of production.

The floor price fixation in coffee has passed a long way and the method of price fixation in the different fiscal year can be studied in different time zones as discussed below.

Floor price fixation between FY 1994/95 to 1997/98

In earlier years, only the floor price of dry cherry was fixed since currently practiced wet processing method was not in use at that time. The floor price fixation was roughly based on transportation cost. For instance, in FY 1999/94, price of dry cherry collected at the Bhairahawa depot of STC was fixed Rs 30/kg. In order to bring dry cherry to Bhairahawa from Palpa, transportation cost of Rs 1 per kg was deducted; and from Gulmi Rs 2 per kg was deducted making the prices Rs 29/kg and Rs 28/kg at the farm gate of Palpa and Gulmi respectively (Table 2). Same approach was followed for few years.

Table 2. Floor price of dry cherry coffee between FY 1994/95 to 1997/98

Fiscal year	Price (Rs/kg) of dry cherry				
	Bhairahawa	Palpa	Gulmi	Other areas	Average
1994/95	30	29	28	26.5	28.38
1995/96	33	32	31	29.5	31.38
1996/97	38	37	36	34	36.25
1997/98	50	47	45	44	46.50

Source: NTCDB meeting register for floor price fixation of coffee

Floor price fixation between FY 1998/99 to 2001/02

There was shift in processing method from dry processing to wet processing during year 1998 as the pulping machines were available cheaply. Hence, in FY 1998/99 and 2001/02, price of dry parchment (a product of wet processing) was also fixed along with dry cherry (a product of dry processing). The reason is not clear; but it was discontinued later. Price was fixed for broadly two categories based on coffee collecting areas (Table 3). First category of areas included Kavre, Kathmandu, Gulmi, Syangja, Pokhara & Palpa; and second category included areas elsewhere. However, in FY 2001/02, the two categories were redefined as the floor price at the collection centre and at the farm gate.

Table 3. Floor price of dry cherry and dry parchment between FY 1998/99 to 2001/02

Fiscal year	Price (Rs/kg) of dry parchment			Price (Rs/kg) of dry cherry		
	For selected areas	For other areas	Average	For selected areas	For other area	Average
1998/99	110	100	105	65	55	60
1999/2000	150	140	145	80	70	75
2000/01	-	-	-	90	80	85
2001/02	-	-	-	90	80	85

Note: "selected areas" denote Kavre, Kathmandu, Gulmi, Syangja, Pokhara and Palpa

Source: NTCDB meeting register for floor price fixation of coffee

Floor price fixation between FY 2002/03 to 2005/06

Change in the practice of floor price fixation has resulted a positive change in price received by the farmer during this timeline. Eventually, when quality of coffee started being an issue, grading system was introduced based on altitude and quality of harvest. Production above 1050 meters above sea level (masl) and all bright red harvest was labelled "A Grade". Production between 800 to 1050 masl and qualities other than that of "A Grade" was rated "B Grade". Production quality beyond A and B Grades was rated "C Grade". Starting from FY 2003/04, price of fresh cherry was also fixed along with dry cherry based on the same grading scheme (Table 4).

Table 4. Floor price of dry cherry and fresh cherry between FY 2002/03 to 2005/06

Fiscal year	Price (Rs/kg) of dry cherry				Price of fresh cherry (Rs/kg)			
	A grade	B grade	C grade	Average	A grade	B grade	C grade	Average
2002/03	90	50	30	56.67	-	-	-	-
2003/04	80	60	40	60.00	27	23	18	22.67
2004/05	75	55	45	58.33	30	22	-	26.00
2005/06	75	55	30	53.33	30	24	-	27.00

Source: NTCDB meeting register for floor price fixation of coffee

Floor price fixation between FY 2006/07 to 2014/15

During this timeline, there was rapid shift in processing system from dry processing method to wet processing method because of the development of reasonable number of pulping centres. Hence, from FY 2006/07, floor price fixation of dry parchment had commenced along with fresh cherry and different grades of dry cherry (Table 5). This system of price fixation seems to be more precise and practicable, which was practiced for almost a decade.

Table 5. Floor price of raw coffee between FY 2006/07 to 2014/15

Fiscal year	Price (Rs/kg) of dry cherry for				Price (Rs/kg) of dry parchment	Price (Rs/kg) of fresh cherry
	A grade	B grade	C grade	Average		
2006/07	75	55	30	53.33	130	25
2007/08	75	55	30	53.33	130	25
2008/09	80	55	20	51.67	142	27
2009/10	80	55	20	51.67	142	27
2010/11	80	55	20	51.67	150	30
2011/12	90	60	20	56.67	170	35
2012/13	100	75	20	65.00	200	40
2013/14	125	90	22	79.00	225	50
2014/15	140	100	25	88.33	285	62

Source: NTCDB meeting register for floor price fixation of coffee

Floor price fixation from FY 2015/16 to 2021/22

By 2015, major volume of production was dominated by wet processing method due to the development of pulping centres at almost all coffee growing regions. The dry processing method was obsolete and considered to be producing poor quality coffee though still practiced in few areas which lacks the processing facilities. Even the quality of dry parchment and fresh cherry was also an issue then.

Starting from FY 2015/16, quality-based price fixation for dry parchment and fresh cherry was initiated based on organic certification. For dry parchment and fresh cherry, coffee produced in organic certified farm was labelled “Grade A” and the uncertified was rated “B grade”. For the grade of dry cherry, same definition based on altitude prevailed. Following this system, there was acute increase in floor price of dry parchment and fresh cherry in 2015/16 up to 40% and 29% respectively compared to that of previous approach (Table 6). However, with an aim of discouraging the dry processing method, the price of dry cherry was kept constant.

Table 6. Floor price of raw coffee from FY 2015/16 to 2021/22

Fiscal year	Price (Rs/kg) of dry cherry for				Price (Rs/kg) of dry parchment for			Price (Rs/kg) of fresh cherry for		
	A grade	B grade	C grade	Average	A grade	B grade	Average	A grade	B grade	Average
2015/16	140	100	40	93.33	400	375	387.5	80	75	77.5
2016/17	140	100	40	93.33	415	400	407.5	83	78	80.5
2017/18	140	100	40	93.33	415	400	407.5	83	78	80.5
2018/19	140	100	40	93.33	425	410	417.5	85	80	82.5
2019/20	140	90	-	115.00	425	375	400	85	75	80
2020/21	148	95	-	121.50	450	397	423.5	90	80	85
2021/22	148	95	-	121.50	450	397	423.5	90	80	85

Source: NTCDB meeting register for floor price fixation of coffee

Trend analysis of floor price

Trend analysis was done to observe the price change pattern over years. The floor price of various intermediary raw coffee was averaged and converted into Green Bean Equivalent (GBE) units. Moreover, Price Index of the GBE prices in each fiscal year was estimated considering fiscal year 2011/12 as the base year. The timeseries data of the price trend (Table 7) (Figure 2) show that the floor price has increased notably over years. While the price index of raw coffee in fiscal year 1994/95 was only 26.37, it has increased by more than nine times to 243.12 in fiscal year 2021/22.

Although the world market of coffee is fluctuating during this period (Figure 3), it is interesting to note that the floor price of raw coffee in Nepal has increased considerably. Reason for this could be the lower scale of production coupled with high cost of production. Because of increasing inflation rate in Nepal, NTCDB has been raising the floor price of coffee almost each year in order to encourage the existing farmers to extend their coffee farm and to bring the new farmers into coffee cultivation. However, higher cost of raw coffee will not make Nepali Coffee competitive in the world market. Therefore, NTCDB should also consider other parameters like world market trend, domestic demand, Consumer Price Index, Wage Rate Index and other macroeconomic parameters while fixing the floor price of raw coffee in Nepal.

Table 7. Floor price of raw coffee in GBE and Price Index (Base year 2011/12 = 100)

Fiscal year	Averaged floor price of fresh cherry in GBE (Rs/kg)	Price Index	Fiscal year	Averaged floor price of fresh cherry in GBE (Rs/kg)	Price Index
1994/95	15.00	26.37	2008/09	48.10	84.56
1995/96	16.50	29.01	2009/10	48.10	84.56
1996/97	19.00	33.40	2010/11	50.41	88.63
1997/98	25.00	43.95	2011/12 #	56.88	100.00
1998/99	57.00	100.21	2012/13	66.57	117.03
1999/00	76.75	134.94	2013/14	76.17	133.91
2000/01	42.50	74.72	2014/15	94.44	166.04
2001/02	42.50	74.72	2015/16	123.54	217.20
2002/03	28.33	49.81	2016/17	129.05	226.89
2003/04	34.08	59.92	2017/18	129.05	226.89
2004/05	33.85	59.51	2018/19	131.84	231.79
2005/06	31.53	55.43	2019/20	130.63	229.67
2006/07	45.06	79.21	2020/21	138.28	243.12
2007/08	45.06	79.21	2021/22	138.28	243.12

Note: # indicates base year

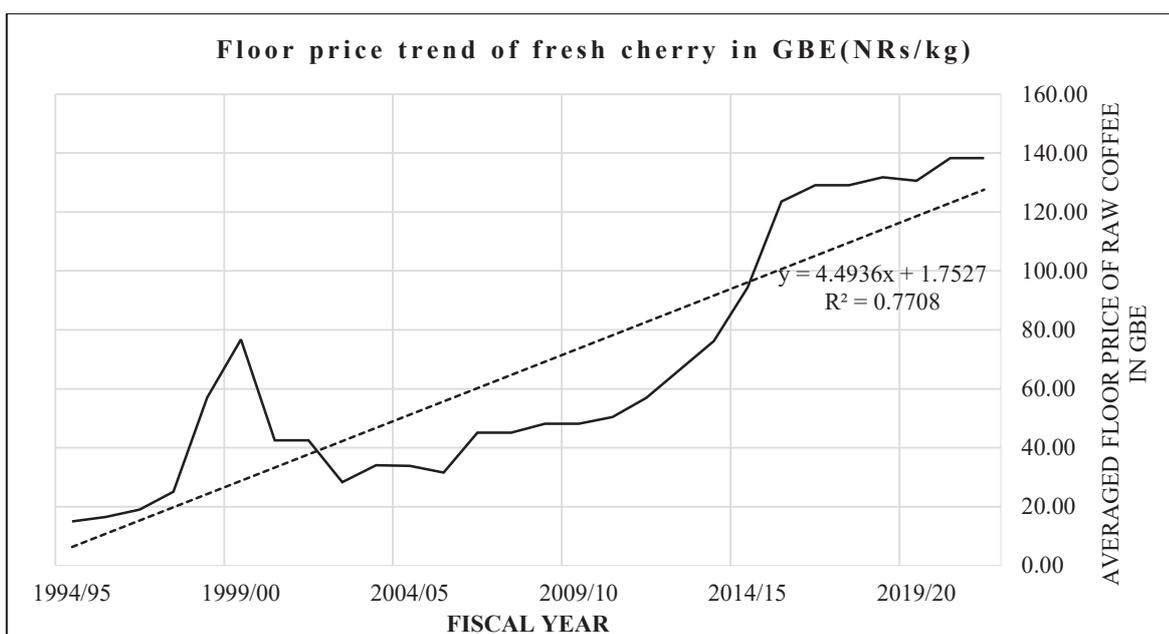


Figure 2. Trend of floor price of raw coffee in GBE

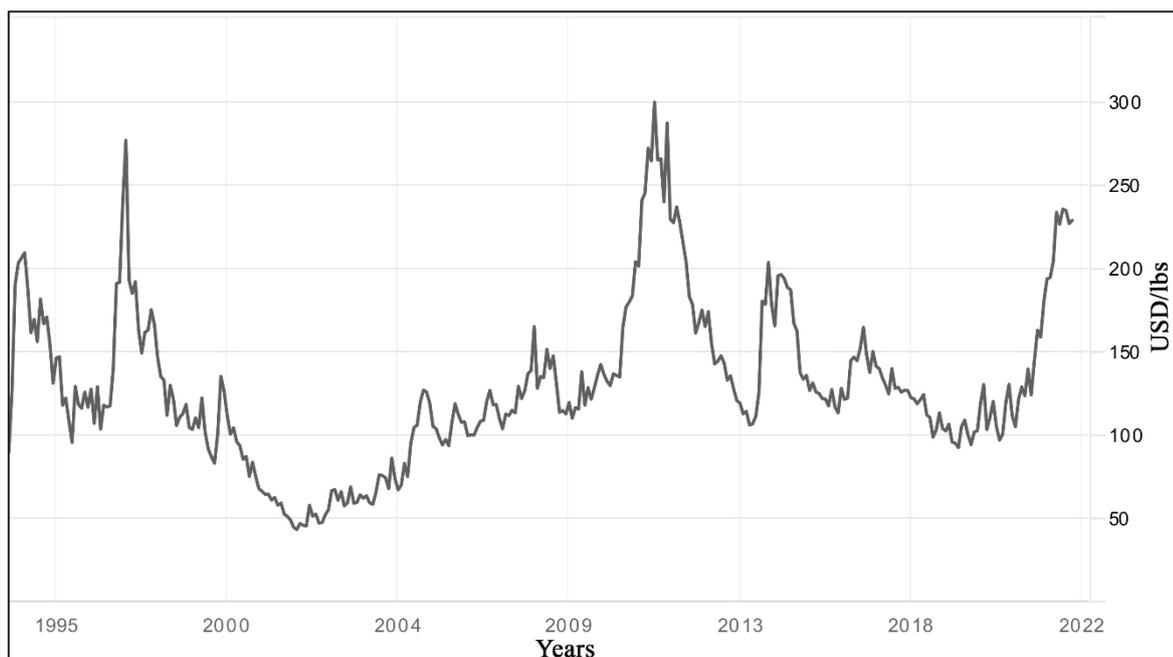


Figure 3. Global trend of coffee price

Source: ICO, 2021

CONCLUSION

Nepal has been practicing different approaches for floor price fixation in the coffee sector. While the world coffee price is fluctuating, the floor price of raw coffee in Nepal has been increasing over years. Because of the lower scale of production and raising inflation rate, NTCDB has been increasing the floor price of raw coffee to encourage the coffee producers. Since higher priced raw coffee won't make Nepalese coffee price competitive, the floor price should be adjusted based on international market trend and other macroeconomic parameters.

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