

Impact of WHO-FCTC on performance of Indian tobacco sector

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ABSTRACT

Tobacco, a commercial crop plays a vital role in contributing significantly to the national exchequer besides providing livelihood security to the sizeable population in India. The study has assessed the impact of WHO-FCTC (Framework Convention on Tobacco Control) on the performance of the Indian tobacco sector. The growth rate, instability, and competitive indices were estimated with the secondary data by dividing the study period into pre-FCTC (1998-2005), transitional-FCTC (2006 to 2013), and post-FCTC regimes (2013 to 2020). The analysis revealed that tobacco production and exports witnessed a high growth rate, high export instability, and enhanced export competitiveness during pre and trans-FCTC regimes while a low growth rate in production and exports with low instability and declining global competitiveness in the post-FCTC regime. This implies the growing public awareness of tobacco's adverse effects and the practical implementation of tobacco control policies control in India and across the globe. Nevertheless, policy interventions need to be further accelerated and it is inevitable to identify economically viable tobacco alternatives crops and other enterprises to avert possible adverse environmental and socio-economic impacts, which might arise from the multiple cultivators, and other stakeholders in India.

Keywords: Exports, FCTC, Impact, India, Livelihood, Tobacco, Policies

Tobacco is a commercial crop grown in more than 120 countries across the world, the top five tobacco producers are China, India, Brazil, the United States, and Zimbabwe. Currently, India is the second largest producer, with a production of 761 million kg, which accounts for 13% of global production (FAOSTAT, 2022). Out of this, about 201 million kg is FCV (Flue-Cured Virginia) tobacco, mainly destined for the external market (Tobacco Board, 2022). India is recognized as an exporter of high-quality tobacco, with a high global reputation in special features like rich heritage, color, and flavor that are preferred in the international markets. In the post-WTO regime, agricultural exports have gained additional significance, particularly in developing countries like India. Largely, agricultural exports

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have been an important source of earning foreign exchange in the Indian economy. The commercial crops in India have high export potential, their significance in the national economy has considerably grown in recent decades and it is expected to increase in the future. As a balanced strategy, India's foreign trade policy is steered by twin planks viz., ensuring food security to the nation and building export markets for augmenting the farmers' income (Government of India, 2018). As is evident from the competitive indices, a high degree of comparative advantage in exports was witnessed in commercial crops such as tobacco, cotton, and spices over the years as these commodities exhibited strong export competitiveness (Reddy et al., 2022). However, in the recent past, the performance of tobacco production and exports has been drawing the attention of trade, industry, policymakers, and farmers for its significant contribution to the national economy on the one hand and growing awareness about the adverse impacts of tobacco supply chain on public health and environment on the other.

WHO-FCTC is the first global treaty that came into force on 27 February 2005. Presently, there are 168 Signatories and 182 Parties covering more than 90% of the global population. The main provisions of the FCTC contain the instruments to decrease tobacco consumption in the world. The Government of India ratified the convention in 2004, which solicits key strategies for reduction in demand and reduction in the supply of tobacco. Tobacco consumption can be reduced through both demand and supply-side policy instruments. The demand side measures (Articles 6-14) include mainly price and tax measures, regulation of the contents of tobacco products and tobacco product disclosures, education, communication, etc. The supply-side reduction measures include (Articles 15-17) provision of support for economically viable alternative activities and control of illicit trade in tobacco products (WHO-FCTC, 2015). The ASEAN region faces different challenges to regulating tobacco viz., tackling the increased disease burden of tobacco consumption, the intervention of the tobacco industry, and better governance based on stronger government commitment. Overall, the regional differences point towards the gaps in implementation which indicates an opportunity for the robust implementers to share experiences and knowledge with neighboring countries and work towards stronger collective action on tobacco regulation (Amul, G.G.H., and Pang, T., 2017). The FCTC is an agreement between governments and becomes obligatory only for those who have ratified it. The governments, which ratify the FCTC, need to pass national legislation to implement the treaty in their country, subsequently, the treaty becomes national law and countries can enforce it to their people.

In the tobacco sector, there has been an increase in research and public awareness about the negative impact on public health and the environment across the globe. However, a sizeable population (mostly rural women, tribes, and other weaker sections of the society) in the country depend on tobacco crops for their livelihood and have limited means of alternative income opportunities. However, the public perception of the crop is generally negative and growing with time because of health risks and environmental issues associated with its production and consumption. The apprehensions are raised against tobacco consumption during the current Covid-19 pandemic. Accordingly, the demand for tobacco and tobacco products is expected to be reduced because of the restrictions on tobacco usage and consequently affecting the supply side as well.

For instance, in India, the policy-led approach implemented to regulate the crop size in FCV tobacco in Andhra Pradesh was materialized as one of the potential instruments to foster the transition from tobacco to other sustainable crops, which was witnessed in tobacco-growing regions of Andhra Pradesh in the recent past (Reddy et al., 2017). One of the studies has analyzed the industry data, which is available in the public domain on tobacco industrial pollution, and found the considerable environmental impact of tobacco, which advises that the industry should be built-in in environmental analyses. Nevertheless, the Nations which are targeting to accomplish the Sustainable Development Goals (SDGs) must take action to lessen environmental evils caused by the tobacco industry (Hendlin, and Bialous, 2020). With this background, a study was undertaken to assess the impact of WHO-FCTC on the performance of the Indian tobacco sector in the milieu of changing global and national policy regimes on the tobacco sector.

Empirical Framework

The study aims at assessing Indian tobacco performance with a focus on dynamics of tobacco production and exports, market stability, and global competitiveness by using secondary time-series data accessed from FAOSTAT. For comparative analysis, the study period was divided into three periods, viz., pre-FCTC regime (1998-2005), transitional-FCTC regime (2006 to 2013), and post-FCTC regime (2013 to 2020). The division was based on the assumption that growing public awareness about the effects of tobacco consumption and tobacco-related policy regimes (global and national) in FCTC-ratified countries have made a significant dent in tobacco production and exports.

Compound Annual Growth Rate (CAGR)

To compare the performance of production and export of Indian tobacco during the pre-FCTC, transitional-FCTC, and post-FCTC regimes, the compound annual growth rates were estimated as follows.

$$Y_t = ab^t u^t$$

Where, Y_t - production or export of tobacco in year t , t - Year, which takes value 1, 2 ..., n , u^t - error term, 'a' and 'b' are regression parameters to be estimated.

The compound growth rate (g) was estimated by the identity given in the equation
 $g = (\text{anti log of } b - 1) * 100$

Where, g - estimated compound growth rate in percent per year and b - anti log of b

Instability Analysis

The study attempts to compute the instability by using the “coefficient of variation” to examine the magnitude of instability in tobacco exports over the years.

The coefficient of variation was calculated by using the formula:

$$CV = \sigma / (\bar{x})$$

Where σ - Standard deviation and \bar{x} - Mean of the variable

Revealed Comparative Advantage Index

The widely used concept of competitiveness is the RCA (Revealed Comparative Advantage) (Balassa, 1965). The estimate of RCA was computed using the following formula:

$$B = (X_{ij} / X_{ik}) / (X_{nj} / X_{nk})$$

Where, X_{ij} - exports of country 'i' of commodity 'j'

X_{ik} - exports of country 'i' of a set of commodities 'k'

X_{nj} - exports of a set of countries 'n' of commodity 'j', and

X_{nk} - exports of a set of countries 'n' of a set of commodities 'k'

In this study, country 'i' refers to India, commodity 'j' refers to any of the selected agricultural commodities, set of commodities 'k' refers to the total agricultural commodities, and set of countries 'n' refers to Asia. The index is made symmetric by following the methodology suggested by Dalum et al., (1998) and the new index is called RSCA (Revealed Symmetric Comparative Advantage). Mathematically, it can be expressed in the below equation.

$$RSCA = (RCA - 1) / (RCA + 1)$$

This measure ranges between -1 and +1.

RESULTS AND DISCUSSION

Performance of Indian tobacco Exports

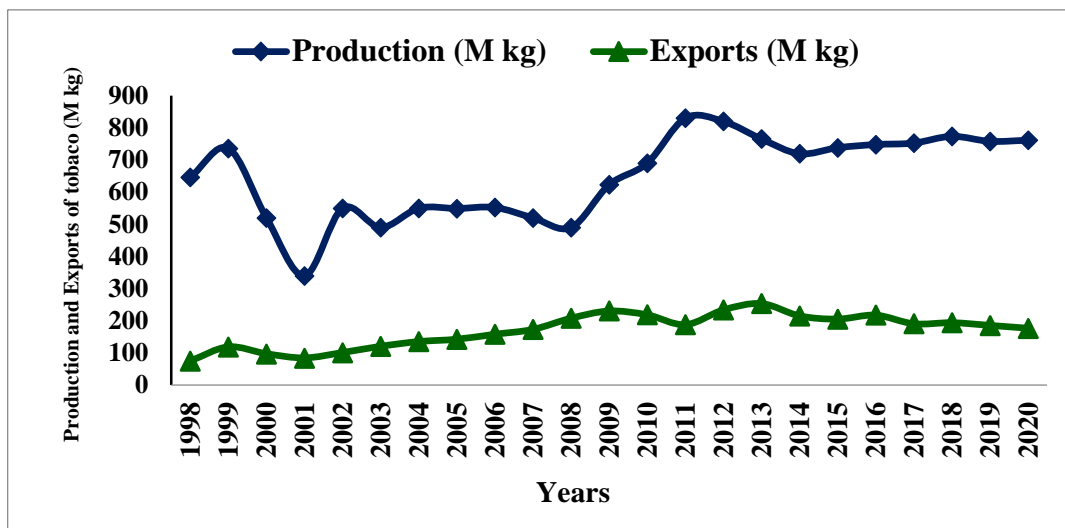
The dynamics of tobacco production and exports during the pre, transitional, and post-FCTC regimes has presented (Table 1). In the pre-FCTC regime, tobacco production recorded a negative growth rate, which might be due to the crop holiday in 2001 in Andhra Pradesh and the occurrence of drought in tobacco-growing regions. However, the export volume and value recorded an increase in the growth rate of 7.4% per year and 5.8% per year in the corresponding period. During the transitional FCTC regime, the production, export volume, and value registered a high growth rate of 7.7%, and export volume and value witnessed growth rates of 5.5% year and 13.9%, respectively. The export performance of tobacco in terms of value was high mainly because of high unit value realization in the transitional FCTC regime. Nevertheless, during the post-FCTC regime, the production registered a marginal growth rate of 0.4%, and export volume and value witnessed negative growth rates of -4.16% and -5.7%, respectively. This implies that tobacco production and exports showed clearly visible declining trends during the post-FCTC regime in India.

Table 1. Dynamics of production and export of tobacco during pre, transitional and post-FCTC regimes

Period	Variables	Mean	CAGR
Pre-FCTC regime (1998-2005)	Production (M kg)	548	-2.7
	Export Volume (M kg)	109	7.4
	Export Value (M US\$)	171	5.8
Transitional-FCTC regime (2006-2013)	Production (M kg)	649	7.7
	Export Volume (M kg)	201	5.5
	Export Value (M US\$)	564	13.9
Post-FCTC regime (2014-2020)	Production (M kg)	752	0.4
	Export Volume (M kg)	205	-4.16
	Export Value (M US\$)	639	-5.7

Source: estimated from FAOSTAT data, 2022, Note: CAGR-Compound Annual Growth Rate.

The trends in Indian tobacco production and exports were analyzed over the years from 1998 to 2020 (Figure-1). The production fluctuated over the years, but increased from 648 million kg to a peak level of 830 million kg in 2011 and gradually declined to 761 million kg in 2020.



Source: FAOSTAT, 2022

Figure 1. Tobacco production and exports from India, 1998-2020

The climatic factors, small-scale subsistence farms, and tobacco-related policies such as crop size reduction in FCV tobacco in India may be the factors attributed to this fluctuation in production. On the export front, the volume of export increased from 75 million kg in 1998 and steadily increased over the years, and reached the higher level of 254 million kg in the year 2013 and further, drastically declined to 177 million kg in 2020.

Destination of Indian tobacco exports

The difference in comparative advantage, natural resource endowments of a country, geographical proximity, and trade barriers are the major determinants of export markets for any agricultural commodity. Indian tobacco was exported to more than 100 export destinations across the world. The major export destinations viz., Belgium, Germany, Egypt, Nepal, Netherlands, Philippines, Russia, UAE, and the USA. Belgium has grown over the years, the volume and value of tobacco exports have increased by 12.7 million kg and 24.0 million US\$ during the pre-FCTC regime, which has increased to 36.6 million kg and 127.6 million US\$ in the transitional-FCTC regime and touched 45.3 million kg and 166.3 million US\$ during the post-FCTC regime. In another major export destination, Egypt, the volume and value of tobacco exports increased by 4.2 million kg and 6.8 million US\$ during the pre-FCTC regime, which has increased to 9.2 million kg and 21.7 million US\$ in the transitional-FCTC regime and touched 17.5 million kg and 37.3 million US\$ during the post-FCTC regime. However, Russia has shrunk in the corresponding period. Though the overall exports declined during the post-FCTC regime, some of the export markets that have witnessed an increased share in the export volume are Belgium, Egypt, Nepal, Philippines, Netherlands, UAE, and the USA, though there were year-to-year variations.

Table 2. Changes in value and volume of tobacco exports to major destinations during pre-FCTC and transitional-FCTC and post-FCTC regimes

Export Destination	Variable	Pre-FCTC regime (1998-2005)	Trans-FCTC regime (2006-2013)	Post-FCTC regime (2013-2020)
Belgium	Export volume (M kg)	12.7	36.6	45.3
	Export value (M US\$)	24.0	127.6	166.3
Egypt	Export volume (M kg)	4.2	9.2	17.5
	Export value (M US\$)	6.8	21.7	37.3
Germany	Export volume (M kg)	7.4	10.6	5.5
	Export value (M US\$)	16.2	34.4	16.0
Nepal	Export volume (M kg)	3.9	6.8	8.1
	Export value (M US\$)	5.3	16.0	24.4
Netherlands	Export volume (M kg)	4.1	9.0	5.7
	Export value (M US\$)	7.9	32.5	24.5
Philippines	Export volume (M kg)	0.9	7.3	8.6
	Export value (M US\$)	2.2	21.8	21.2
Russia	Export volume (M kg)	24.0	15.0	7.3
	Export value (M US\$)	29.8	39.5	27.7
UAE	Export volume (M kg)	1.2	4.9	9.7
	Export value (M US\$)	1.9	11.9	23.1
USA	Export volume (M kg)	2.6	7.6	6.5
	Export value (M US\$)	2.5	14.2	11.2

Export Market Instability of Indian tobacco

The primary exports commonly fluctuate in developing countries like India because the export basket comprises of agricultural commodities, which are subjected to a supply-demand mismatch. Yet, export promotion and management of price risk in agricultural commodities and stabilizing foreign exchange earnings are important policy issues in developing countries, where India is no exception. Hence, managing and stabilizing export instability is important to maximize foreign exchange earnings from agricultural exports in countries that are highly dependent on agricultural exports.

Table 3. Instability index of major export markets for Indian tobacco

Export Destination	Variable	Pre-FCTC regime (1998-2005)	Trans-FCTC regime (2006-2013)	Post-FCTC regime (2013-2020)
Belgium	Export volume (M kg)	22.0	28.5	9.5
	Export value (M US\$)	28.7	40.9	9.5
Egypt	Export volume (M kg)	63.0	37.8	14.3
	Export value (M US\$)	71.3	49.0	28.8
Germany	Export volume (M kg)	37.0	15.4	12.9
	Export value (M US\$)	30.7	27.9	18.1
Nepal	Export volume (M kg)	12.1	24.8	11.7
	Export value (M US\$)	17.3	36.1	14.8
Netherlands	Export volume (M kg)	36.6	18.4	43.0
	Export value (M US\$)	38.4	37.5	42.9
Philippines	Export volume (M kg)	114	43.6	43.8
	Export value (M US\$)	118	33.8	44.7
Russia	Export volume (M kg)	26.2	19.0	21.6
	Export value (M US\$)	28.5	20.5	24.5
UAE	Export volume (M kg)	54.9	64.9	18.3

USA	Export value (M US\$)	50.6	75.9	17.1
	Export volume (M kg)	31.4	41.4	25.8
	Export value (M US\$)	31.6	44.1	25.0
Overall	Export volume (M kg)	20.5	14.7	11.0
	Export value (M US\$)	19.7	30.7	14.9

The degree of instability in tobacco exports (volume and value) was analyzed during the pre-FCTC, transitional-FCTC, and post-FCTC regimes (Table 3). In the volume of tobacco exports, the degree of instability has decreased from 20.5% in the pre-FCTC regime to 14.7% in the transitional-FCTC and further declined to 11.0% during the post-FCTC regime. However, the overall degree of instability in the value of tobacco exports has increased from 19.7% in the pre-FCTC regime to 30.7% during the transitional-FCTC regime and again declined to 14.9% during the post-FCTC regime. In the most important export destination, Belgium, the degree of instability in export volume has decreased from 22.0% in the pre-FCTC regime to 9.5% during the post-FCTC regime. The decline in instability implies that tobacco exports were relatively more stable than earlier. It was observed that the instability in some of the individual export markets was much higher than the total export market during the entire period. The alarmingly high degree of instability in export volume was observed in the markets of the Philippines (114.1%), Egypt (63.0%), UAE (54.9%), and Netherlands (36.6%) during the pre-FCTC regime. The degree of instability declined in the Philippines (54.9%), Egypt (14.0%), and UAE (18.7%) during the post-FCTC regime, which implies these markets moving towards attaining stability. However, the highly stable export destinations were Belgium, Germany, and Nepal, where the degree of instability significantly low and further declined in the post-FCTC regime.

Global Competitiveness of Indian tobacco exports

The comparative advantage of any commodity is influenced by the country's national and foreign trade policies like government interventions, supply and demand conditions, export price, import restrictions, subsidies, quotas, tariffs, etc. The international competitiveness of some agricultural commodities of India has already been established (Kumar *et al.* 2008; Adhikari *et al.* 2016). The declining trend in the RCA index and consequently the export competitiveness of horticultural products such as tomatoes during the post-WTO regime

(1994-1997) has been witnessed (Jha, 2000). In the post-liberalization period, the countries having export competitiveness in a commodity shall only survive in the long-term and harness the dividends of trade. To ascertain India's competitiveness in tobacco exports during changing policy regimes on the tobacco sector, the indices of RCA and RSCA were estimated (Table 4). The results indicate that India has demonstrated a varied degree of competitiveness in tobacco exports over the years. The index value for RCA is more than unity and positive for RSCA during the entire period. Indeed, the mean value of the RCA index (3.01) and RSCA index (0.48) were higher in the transitional-FCTC regime compared to the pre-FCTC regime (RCA index-2.37 and RSCA index-0.40) and again started gradually declining trend during post-FCTC regime (RCA index-2.58 and RSCA index-0.44). This implies a slightly lessening competitive advantage for Indian tobacco exports in the international markets. This is might due to the factors such as the decline in global consumption and demand for Indian tobacco, and the effective implementation of tobacco-related policies in importing countries.

Table-4. Competitive indices of Indian tobacco exports during pre, transitional, and post-FCTC regime

Pre-FCTC regime (1998-05)			Transitional -FCTC regime (2006-13)			Post-FCTC regime (2013-20)		
Year	RCA	RSCA	Year	RCA	RSCA	Year	RCA	RSCA
1998	1.87	0.30	2006	2.52	0.43	2013	2.43	0.42
1999	2.86	0.48	2007	2.23	0.38	2014	2.27	0.39
2000	2.28	0.39	2008	4.15	0.61	2015	2.59	0.44
2001	1.85	0.30	2009	4.37	0.63	2016	2.87	0.48
2002	2.38	0.41	2010	3.80	0.58	2017	2.53	0.43
2003	2.46	0.42	2011	2.41	0.41	2018	2.56	0.44
2004	2.72	0.46	2012	2.16	0.37	2019	2.63	0.45
2005	2.53	0.43	2013	2.43	0.42	2020	2.58	0.44
Mean	2.37	0.40		3.01	0.48		2.58	0.44

Conclusion and Policy Implications

The present study analyzed the impact of WHO-FCTC on the performance of the Indian tobacco sector to assess the level of impact of the global health treaty. It was clearly evident that tobacco production and exports witnessed a high growth rate in pre and transitional-FCTC regimes. However, the growth in tobacco production and exports showed a significant decline though with relatively more stability in export markets and global competitiveness also witnessed a declining trend during the post-FCTC régime. Though,

India has made tremendous progress in tobacco export; the apprehensions are elevated against tobacco cultivation as it is in the whirlpool of conflicting concerns due to public health and environmental impact. However, with the growing public awareness of the adverse impact of tobacco consumption, and changing environment of global and national policies on the tobacco sector, tobacco consumption, demand, and accordingly supply were showing a diminishing trend in the recent past. Moreover, India, being ratified FCTC has started making a dent in tobacco production and exports in recent years. Hence, demand for tobacco is anticipated to plunge, subsequently affecting the supply and production side as well. Thus, it is inevitable to accelerate the policy interventions and to recognize the need to promote economically viable alternatives crops and other enterprises to the tobacco supply chain to avert possible adverse environmental, economic, and social impacts, which may emerge from the livelihood concerns of a multitude of cultivators, and other stakeholders in the tobacco sector in India.

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