

RESEARCH NOTE

Export Performance of Agriculture Cluster- Evidence from India

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ABSTRACT

This paper investigates how successfully clusters identified in Agricultural Export Policy (AEP), 2018 are making their presence in the international trade landscape and what kind of notable changes seen since its inception. The analyses based on the UN Comtrade, WITS and ITC database helps us to argue that the clustered approach seems to have positive and notable changes in their export performance in select products, which has echoed in their improved comparative advantage. A contradiction in export share v/s export unit value realization across product and market was also observed. The study notes, the growing presence of non-tariff measures in destination is the prime concern behind the unrealised export potential for some of these products, which need immediate policy attention. While doing so, the heterogeneity across products identified in clusters needs due consideration.

Keywords: Agricultural Export Policy (AEP), Cluster-based Approach, Comparative Advantage, Non-tariff Measures, Export Performance

JEL Code: F13, F14, O19, Q17, R11

I

BACKGROUND

India is one of the top ten global exporters of agricultural products, with a dominance of primary products (Roy and Roy, 2022). However, the agri-exports do not commensurate with the total agricultural production of India, who is the second largest agricultural producer in the world (GoI, 2020). Some of the identified challenges which impede agricultural exports are low productivity, high transaction cost, insufficient value addition and export promotion, non-tariff barriers and quality issues (Kumar, 2021). Therefore, the Indian government has been promoting exports of fresh and processed agricultural products. Recently, the government has come up with several policies and schemes to boost agri-exports. Agriculture Export Policy (AEP), a comprehensive agricultural export promotion policy introduced in 2018 is one such, which intends to harness the export potential of the agriculture sector in India. The AEP has various objectives such as agri-export oriented production, promotion of value added agri-exports, diversification of export basket and markets, better realization to the farmer and government welfare schemes and programmes. AEP adopted a farmer-centric approach which enables Farmer Produce Organizations (FPO) and farmers to get larger shares of profit while exporting their produce. AEP has a twin objective of food security and to become global leader of agricultural exports (GoI, 2020). Under the umbrella of AEP, clusters have been identified across the country for

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the products with greater export potential (GoI, 2019). A cluster can be defined as geographical concentration of identified crops with potential competitive advantage and offer scope specialisation in the value chain. The cluster-based approach is expected to address the concerns and common challenges of all stakeholders of a cluster holistically and sustainably (National Horticulture Board, 2021).

Cluster based approach largely intends to deal with both the supply side issues such as productivity, production management, agricultural best practices, etc. and demand side issues like market integration, market access and export diversification (GoI, 2020). Clusters are formed by producers, FPOs, market agents, APEDA, commodity boards, traders, agri- enterprises, local and state governments. These stakeholders come together to reduce transaction costs, provide regulatory compliance, improve quality, processing, logistics and market access, thus benefiting producers and agri-businesses (GoI, 2020). Similarly, entire value chains within a cluster such as pre-production, production, post harvesting, processing, distribution, capacity building for stakeholders are supported. Another major aspect of AEP, 2018 is the direct linkage of farmers in clusters with exporters, to check value chain leakage and raise their income (GoI, 2019). In order to ensure international regulatory compliance, which will in turn increase the global demand for the product, clusters are actively collaborating with R&D institutes like Indian Institute of Packaging. Public private partnership (PPP) is essential in clusters to jointly develop and implement best agricultural practices. Each crop cluster should be anchored appropriately by key private sector players for technological innovation and value addition (GoI, 2020). Therefore, local and state governments have a vital role in the promotion of competitiveness in the agricultural sector and attracting investments from the private sector to boost agri-exports. There have been examples for successful clusters in India such as Mahagrapes in Maharashtra and Chilli in Andhra Pradesh (Sukhpal, 2011) even before AEP, 2018.

A successful implementation of a cluster is driven by factors from both supply and demand sides (Zhang, 2022). More often, these factors are outside the scope of individual producers and require combined efforts from different agents such as producer organizations, private firms, traders, local and state governments. The supply side factors of clusters have objectives to improve the productivity of farmers and maximise their yield through introducing better technology, infrastructure and institutional innovation (Janvry & Sadoulet, 2020). The local governments, private assistance and other market players serve as principal agents in the supply side approach, from formulation to implementation of domestic policies. Such policies promote crop production, credit subsidies, irrigation infrastructure, quality control and crop diversification (Estudillo et al., 2022). On the other hand, demand side factors are driven by raising income and global trade integration. International trade plays a major role in the dissemination of benefits and productivity growth across the borders. The demand side measures of clusters promote diversification of export basket and market, export of value-added agri-products and better market access. Similarly, identification

and promotion of the exports of products with great export potential can improve terms of trade and raise farmers' revenue (Kumari et al., 2022). The existing comparative studies on agriculture and development assert that it's imperative to address the supply-side and demand-side bottlenecks to enhance market opportunities for agricultural produce (Aida, 2022; Zhang, 2022). Thus, we argue that placing emphasis solely on the supply-side approach will turn insufficiently effective. Therefore, it should be complemented with an explicit demand side approach towards cluster development. A closer look at the existing literature on the subject indicates that despite five years of its formalisation, there are hardly any studies available to evaluate the effectiveness of these clusters either through demand or supply side perspective. Given the high accord placed on clusters in AEP, 2018 it is need of the hour to investigate how these products identified as clusters in AEP, 2018 are making their presence in the international trade landscape? Has it changed positively in favour of Indian exporters? If not, what explains the same? In this context, we have attempted to explore the trade potential of product clusters identified in AEP in the pursuit of doubling farmer income. In particular, besides outlining their trade participation and mapping their direction of trade the paper also investigates whether there exists any comparative advantage for these products. If so, whether India is able to meet the global demand for its products and whether the country is exporting to winning or declining markets.

The rest of the paper is organised as follows: section following this outline how demand side factors look like for the future of the clusters identified in AEP, 2018. The last section summarises the findings and suggests policy intervention required to strengthen cluster approach in doubling farmers' income and improving India's trade participation in these products.

II

TRADE PARTICIPATION OF AGRI CLUSTERS - TREND AND EMERGING CHALLENGES

The farmer-centric agro-export policy, 2018 aims to identify and resolve the issues curbing India's agricultural exports. Under two broad categories of strategic and operational recommendations, the policy clearly lays down measures to achieve its objectives. One of the objectives of AEP is 'Doubling of Farmer Income' by 2022-23 for the welfare of farmers and to alleviate agrarian distress. Cluster development is expected to foster the direct linkage of farmers with exporters in the value chain and enable them with higher returns for their produce (GoI, 2020a). Table 1 displays the list of identified clusters under AEP across various states. These clusters have been classified under the categories of fruits, vegetables, beverages, spices, marine products and others. There are apprehensions raised on the rationale of choosing some of these clusters/products in specific districts of a given state (Tantri, 2022) in the AEP, 2018. However, this paper does not dwell into critically evaluating the AEP, 2018 and cluster identification nor the operational part of these clusters; rather our focus is to investigate

TABLE 1. STATE-WISE CLUSTERS IDENTIFIED UNDER AEP, 2018

Product	State	Districts
Fruits		
Banana	Kerala	Thrissur, Wayanad, Thiruvananthapuram
	Andhra Pradesh	Kadapa, Anantapur
	Tamil Nadu	Trichy, Theni, Pollachi
	Maharashtra	Jalgaon, Kolhapur, Solapur
	Gujarat	Bharuch, Narmada, Surat
Pomegranate	Andhra Pradesh	Anantapur, Kurnool
	Karnataka	Belgaum, Mysore
	Maharashtra	Solapur, Ahmednagar, Pune
	Madhya Pradesh	Khargone, Khandwa, Burhanpur
Mango	Maharashtra	Ratnagiri, Sindhudurg
	Gujarat	Junagarh, Valsad, Kutch, Navsari
	Uttar Pradesh	Saharanpur, Meerut, Lucknow
	Telangana	Rangareddy, Mehboobnagar, Warangal
	Andhra Pradesh	Krishna, Chittoor, Kurnool
Grapes	Maharashtra	Pune, Nasik, Sangli
Orange	Maharashtra	Nagpur, Amravati, Wardha
Vegetables		
Rose Onion	Karnataka	Bangalore Rural, Chikkaballapura
	Maharashtra	Nasik
Onion	Madhya Pradesh	Indore, Sagar, Damoh
	Uttar Pradesh	Agra, Farukkabad
Potato	Punjab	Jalandhar, Hoshiarpur, Kapurthala, Navashehar
	Gujarat	Banaskantha, SabarKantha
Tea	Madhya Pradesh	Indore, Gwalior
Beverages		
Tea	Assam	Tinsukia, Sibsagar, Dibrugarh
Coffee	Karnataka	Chikkamagaluru, Kodagu, Hassan
Marine		
Marine products	Andhra Pradesh	Godavari, Vishakapatnam, West Godavari, Nellore
	Odisha	Jagatsinghpur, Bhadrak, Balasore
	Gujarat	Kutch, Veraval, Navasari, Valsad
Spices		
Chilli	Telangana	Khammam, Warangal
	Andhra Pradesh	Guntur
Turmeric	Telangana	Nizamabad, Karimnagar
	Kerala	Wayanad, Alleppy
	Meghalaya	West Jaintia Hills
	Odisha	Kandhamal
Cumin	Gujarat	Banaskantha, Mehsana
	Rajasthan	Jalore, Jodhpur, Barmer, Nagaur, Pali
Pepper	Kerala	Wayanad
Cardamom	Karnataka	Chikmagalur
Cardamom	Kerala	Idukki
Others		
Isabgol	Rajasthan	Jodhpur, Nagaur, Barmer, Jaisalmer
Castor	Gujarat	Banaskantha, Kutch, Patan, Sabarkantha, Mehsana

Source: Government of India (2020)

TABLE 2A. MAJOR AGRICULTURAL EXPORT DESTINATIONS AND THEIR SHARES DURING PRE- AND POST AEP PHASE

Product	Top Destinations	Pre-AEP					Post AEP							
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Beverages Tea (0902)	UAE	9.7	10.9	7.9	6.8	7	7.1	7.8	5.1	5.8	9.1	21.6	16.9	18.6
	Iraq	0	0	0.1	0	0.1	0.5	0.9	1	2.3	2.9	3.5	10.1	10.6
	Russia	17.4	14.8	15	14.8	15.6	15.5	14.6	13	12.7	12.3	12.1	9.9	9.2
	USA	7.1	7.7	8.3	8.1	8	7	6.1	6.1	8.6	9.8	7.4	7.3	8.2
	UK	9.6	7.3	9	9.5	7.5	7.3	6.6	5.2	5.8	6.2	6.1	6	6.7
	Rest of the World	56.2	59.3	59.7	60.8	61.8	62.6	64	69.6	64.8	59.7	49.3	49.8	46.7
	India's share in world exports	9.5	10.4	8.6	9.2	8.9	9.5	9.8	9.9	8.5	8	8.8	8.8	NA
Coffee (090111)	Italy	33.6	34.4	31.7	32.8	30.7	27.1	29.5	28.1	24.5	21.3	18.9	19.7	27.9
	Germany	11.4	13.4	15.7	12.7	13.7	15.4	12.4	16.1	15.9	12.4	15.8	15.2	16.2
	Belgium	10.6	9.1	8.1	7.9	10.1	8.1	9.3	9	11	13.7	11.6	7.8	7.2
	United Arab Emirates	1.2	1	1.2	1.3	1.3	1	1.4	1.1	1.6	2.1	4.5	5.6	5.6
	Libya, State of	1.9	2.5	3	2.8	2.4	3.5	2.8	2.9	3.2	3.4	2.9	4.8	4.8
	Rest of the World	41.3	39.6	40.3	42.5	41.8	44.9	44.6	42.8	43.8	47.1	46.3	46.9	38.3
	India's share in world exports	2.6	3.1	2.6	2.8	2.9	3.1	2.8	2.9	2.6	2.9	2.5	2.9	NA
Spices Turmeric (091040)	United Arab Emirates	11.1	7.8	6.4	5.9	6	6.1	3.8	4.7	4.8	11	9.3	8.7	15.5
	Bangladesh	7.5	1.2	3.5	2.7	3.9	2.4	1.1	7	18.3	12.8	13.1	17.4	15.3
	United States of America	8.7	8.8	9	10.9	12.5	19.1	31.7	21	22.2	20.3	11.3	8.6	7.2
	Malaysia	6.3	7.3	7.5	7.2	5.8	5.4	4.1	4.5	3.9	4.5	4.6	5.3	5.5
	Morocco	1.8	2.3	2.4	2.2	3.1	3.2	4.5	4.9	3.3	3.6	5.5	5	4.5
	Rest of the World	64.6	72.6	71.2	71.1	68.7	63.8	54.8	57.9	47.5	47.8	56.2	55	52
	India's share in world exports	67	68.4	71.1	70.9	70.7	66.4	67.9	63.6	65.4	62.4	62.8	63.2	NA
Cumin (090931)	China	0	0.2	0.1	0.1	0.2	0	0.1	23.6	34.1	26.7	24	28.8	19.7
	Bangladesh	0	1.3	1.7	3.3	6.7	8.4	12.6	12.3	14.2	13.4	14.1	12.2	12.9
	United Arab Emirates	0	8.1	7.7	13.4	6.2	6.8	4.6	3.8	4.5	4.6	5.1	6.8	12.6
	United States of America	0	6.5	6.4	10.6	9.3	6.8	6.6	6.1	5.7	5.8	5.2	6.3	6.3
	Morocco	0	1.1	1.7	1.3	1.1	1.6	2.3	2.9	2.2	1.8	2	2.1	3.7
	Rest of the World	0	82.8	82.4	71.3	76.5	76.4	73.8	51.3	39.3	47.7	49.6	43.8	44.8
	India's share in world exports	0	73.6	75.5	67.7	70.8	71.8	80.5	77.9	77.5	79.3	82	66.1	NA
Pepper (090411)	United States of America	35.1	32	35.3	32.1	25.9	25.2	17.1	17.1	17.9	24.6	14.6	16.5	25.9
	Sweden	0.6	1.7	7.6	3.8	11.1	10.3	11.8	12.9	13.4	11.3	13.7	10.9	13.8
	Germany	7	7.7	9.9	10.6	11.8	13.7	12.7	10.7	10.9	9.3	9.4	14.5	8.7
	United Arab Emirates	1.3	1.7	1.9	1.4	5.7	1.9	2	1.8	3.1	7.5	11	7.5	6.7
	Canada	3.2	4.2	2.7	2.5	2.1	3.1	4	3.5	4.1	4.7	3.4	6.3	6.2
	Rest of the World	52.8	52.7	42.6	49.6	43.4	45.8	52.4	54	50.6	42.6	47.9	44.3	38.7
	India's share in world exports	4.9	6.2	4.6	6.8	3.8	3.4	3.6	3.3	3	3.2	2.7	NA	NA
Cardamom (090831)	United Arab Emirates	0	18.6	19.8	13.3	13.4	15.9	26.3	37.9	31.1	38	38.9	39.4	41.2
	Saudi Arabia	0	37.9	45.6	56.6	56.9	23.8	2.5	11.2	15.3	15.6	21.9	22.1	22.1
	Kuwait	0	2	1.9	1.7	3.7	3.5	8.5	10.9	8.9	5.4	6.4	6.5	5.8
	United States of America	0	2.2	1.2	1.8	2.4	2	2.9	6	3.9	3.8	3.6	5.2	4.8
	Iraq	0	0	0	0	0	0	0.4	0	1.7	1.3	3.1	2	4
	Rest of the World	0	39.3	31.5	26.6	23.6	21.7	38.1	42.7	43.2	36.2	32.4	25	22.1
	India's share in world exports	0	10.1	14.5	15.7	15.8	15.8	10.6	5.8	7.8	18.1	17.1	12.7	NA

Note: For instance, the figure for 2016, UAE in the share (percentage) of UAE in India's total exports of that commodity in 2016

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Source: Authors' calculations based on data from ITC Trade map. Note: For instance, the figure for UAE in India's total export of flat corned in 2016

TABLE 2B. MAJOR AGRI EXPORT DESTINATIONS AND THEIR SHARES DURING PRE- AND POST AEP PHASE

Product	Top Destinations	Pre-AEP					Post-AEP								
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	
Fruits															
Banana (080310)	United States of America	0	1	4.1	4.3	3.5	13.3	27.3	27.2	22.4	61.6	59.8	24.5	23.7	
	Germany	0	2.4	3.1	2.5	0.4	3.1	6.1	16.2	29.7	18.2	4.6	22.3	19.8	
	United Arab Emirates	0	10.7	0	2.6	5.3	1.1	3.9	0	1	6	7.6	14.4	18.1	
	Qatar	0	0	0	0.2	0.2	0.7	0	0.2	0	0.4	0	9.4	13.1	
	Poland	0	0	0	0	0	0	0	0	0	0	0	16.4	5.5	
	Rest of the World	0	85.9	92.8	90.4	90.6	81.8	62.7	56.4	46.9	13.8	28	13	19.8	
	India's share in world exports	0	0	0	0.1	0.1	0.1	0	0	0.1	0.2	0.2	0.1	NA	
	United Arab Emirates	36.2	43.9	46	53.1	48.7	38	31.8	25.1	26.8	27.5	29.1	35.7	34.4	
	Bangladesh	20.2	8.7	9.9	2.7	1.3	1.7	1	14.8	20.5	31.4	29.8	16	13.7	
	Netherlands	4.2	5.3	4.2	3.1	5.1	6.4	10.4	9.6	8.3	5.1	5.3	6	6.6	
Pomegranate (081090)	Nepal	1.9	3.7	2.9	5.7	4.8	6.3	6.8	6.7	6.1	7.7	7.5	7	5.2	
	United States of America	2.1	2.5	1.8	1.8	3.2	4.4	2.4	0.4	0.3	0.2	0.3	1.2	3.2	
	Rest of the World	35.4	35.9	35.2	33.6	36.9	43.2	47.6	43.4	38	28.1	28	34.1	36.9	
	India's share in world exports	2.9	3.2	3.2	3	2.6	2.8	2.5	2.6	2.2	2.1	2.2	2.1	NA	
	United Arab Emirates	20.2	19.9	22.6	20.6	20.5	20.5	16.8	16.4	16	15	13.3	17.2	19.2	
	United States of America	4.3	3.4	4	5	5.6	6.6	7.9	7.2	3.8	6.2	9	13.8	17.6	
	Saudi Arabia	18.7	21.9	20.8	20.5	16.1	15.9	15.1	12.5	17.8	12.1	11.6	9.6	12.7	
	United Kingdom	6.4	6	3.6	5.7	9.5	8.8	10.2	9.9	7.5	10.2	8.1	11.9	10.9	
	Germany	1.5	1.7	1.5	2.8	2.6	2.1	2.4	2.9	3.5	3.8	3.7	4.2	4.3	
	Rest of the World	48.9	47.1	47.5	45.4	45.7	46.1	47.6	51.1	51.4	52.7	54.3	43.3	35.3	
Grapes (080610)	India's share in world exports	10.3	10.7	9.2	8.5	8.4	6.2	5.2	4.3	3.8	4.7	6.3	4	NA	
	Netherlands	30	34.3	36.4	34.4	43.3	34.2	33.6	37.4	36.8	35	38.2	39.4	47.5	
	Russian Federation	9.9	15.9	13.5	11.5	10.1	14.5	17.1	12.2	12.3	10.7	6.3	6.5	8.7	
	United Arab Emirates	12.2	8.7	7.4	12.6	6.9	7	5.8	4.9	5.5	5.5	7.1	7.6	8.3	
	United Kingdom	13.3	13.7	16.2	14.2	15.4	8.7	10.8	11	9.3	10.4	7.3	8	7.2	
	Bangladesh	11.8	4.1	4.1	0.5	1.7	2	0.5	1.4	5.7	13.1	16.5	6.6	6.2	
	Rest of the World	22.8	23.1	22.4	26.8	22.6	33.6	32.2	33.1	30.4	25.3	24.6	31.9	22.1	
	India's share in world exports	1.9	2.6	2.9	1.7	2.9	3.4	3.3	3.6	3.1	3.5	3.2	3.5	NA	
	Bangladesh	92	91.5	82.1	89.8	79.5	73.4	45.3	78.9	87.7	90.9	89.5	75.7	73.7	
	Orange (080510)	Nepal	5.7	7.1	15.1	8.6	10.9	19.1	34.3	17.1	10.3	8.6	9.5	20.6	22.4
Bhutan		0	0	0.4	0.2	0.1	0	0.2	0	0	0.2	0.7	2.3	2.5	
United Arab Emirates		0	0.6	0.5	0	2.7	2.9	9.3	2.3	1.1	0.1	0.2	1.1	0.5	
Maldives		0	0	0	0	0	0	0	0	0	0	0	0	0.3	
Rest of the World		2.3	0.8	1.9	1.4	6.8	4.6	10.9	1.7	0.9	0.2	0.1	0.3	0.6	
India's share in world exports		0.3	0.2	0.1	0.2	0.2	0.2	0.1	0.4	0.9	0.9	0.8	0.4	NA	
Marine															
Marine Products (1504)		United States of America	19.5	25.1	26.2	26.8	28	30.8	31.6	34.3	36.2	39.7	29.6	30.2	32.2
		China	5.2	4.3	2.3	3.2	2.5	2.1	9.1	21.9	17.4	15.3	18.7	19.7	18.5
		Japan	10.3	8.9	8.1	8.5	7.3	6.5	6.5	6.7	7.4	6.6	6.5	5.7	5.9
	Viet Nam	14.6	20.1	20.5	20.4	24.3	27.1	18.3	5.1	4.6	4.6	5.4	5.1	4.9	
	Thailand	3.4	3.1	2	2.8	3.7	3.8	5.1	3.5	3.3	3.5	4.8	5.2	4.6	
	Rest of the World	47.1	38.5	40.9	38.2	34.2	29.6	29.4	28.7	31.2	30.4	35	34.2	33.9	
	India's share in world exports	3.4	4.8	4.8	4.5	4.7	5.6	5.1	5.1	4.6	5	4.6	4.5	4.5	
	Note: Authors calculations based on data from ITC Trade test.														

Source: Authors' calculations based on data from ITC Trade Map

TABLE 2C. MAJOR AGRICULTURAL EXPORT DESTINATIONS AND THEIR SHARES DURING PRE- AND POST AEP PHASE

Product	Top Destinations	Pre-AEP					Post AEP							
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Fruits														
Vegetables														
Potato (0701)	Nepal	62.2	40.9	29.6	38.7	63.4	41.4	51.6	52.2	50.3	48.1	43.7	33	29
	Oman	0.1	3	2.1	5.6	6.8	8.7	11.2	9.9	9.1	8.2	11.8	11.5	14.6
	Bangladesh	0	0	0	0.2	0.8	0	0	0	0	0	0	10	14.1
	Indonesia	0	0	0	0	0	4.5	3.6	9.1	4	8.3	7.3	9.5	10.9
	Saudi Arabia	0.1	0	0	0	0	0	0.1	4.5	6.7	5.6	9	9.8	4.7
	Rest of the World	37.6	56.1	68.3	55.5	29	45.4	33.5	24.3	29.9	29.8	28.2	26.2	26.7
Onion (070310)	India's share in world exports	0.5	0.7	2.5	1.4	1.5	1.4	1.3	1.5	1.6	1.6	1.8	1.6	NA
	Bangladesh	20.2	20.9	30	18.1	15.1	13.1	13.5	17.8	26.8	31.6	26.7	32.5	44.3
	Malaysia	27.1	24	17.9	25.6	20.8	20.3	20	18.7	16.6	15.1	19.3	13.9	14.6
	Sri Lanka	9.2	14.6	11.1	18.8	12.8	18.2	16.9	12.2	12.2	13.3	11.1	10.7	14
	United Arab Emirates	12.1	11.3	11.3	11.9	15.3	15.4	12.8	14	11.9	9.4	13.1	12.7	10.8
	Kuwait	2.1	1.9	2.6	2.2	3.6	2.9	3.4	3.6	3.1	1.9	1.9	2	2.3
	Rest of the World	29.3	27.3	27.1	23.4	32.4	30.1	33.4	33.7	29.4	28.7	27.9	28.2	14
	India's share in world exports	11	16.5	10.2	12.6	11.3	13	11.7	8.5	8.6	11.1	12	12.1	NA

Source: Authors' calculations based on data from ITC Trade map

post formation of clusters and what kind of changes are noticed in their trade participation and are there any roadblock in their aspiration. Thus, in this section we outline the trade presence of these products in the international market through investigating major trends between 2012-2024 (representing pre and post AEP Policy) and its direction. In addition to this, we also investigate whether there exists any comparative advantage for these products. If so, whether India is able to meet the global demand for its products and whether the country is exporting to winning or declining markets.

For this purpose, we have concentrated on 14 products identified as clusters out of a total of 18 products listed in AEP (See Table 2a, 2b and 2c). The choice of products was based on the availability of unique Harmonized System (HS) Codes. That is, four products, viz., Rose Onion, Chilli, Isabgol and Castor are not listed at the disaggregate level under HS Classification in trade databases (We have used UN Comtrade International Trade Centre and WITS datasets), and are, therefore, excluded from the analysis. The selected product clusters have been further classified into the categories of Beverages, Fruits, Vegetables, Marine Products and Spices for simplification purposes. Since APEDA or GoI do not maintain separate data sets on cluster-wise exports nor APY data, thus for the sake of analysis the study makes the assumption that any changes in export performance available at respective product wise in ITC represent the corresponding changes happened due to AEP, 2018. The period of the study span pre AEP (2012-18) and current AEP phase (2018-2024) The secondary data have been collected from the International Trade Centre (ITC) database.

The analysis of India's export shares in the global market for the selected products shows that to begin with most of them had weak presence in the international market. For instance, within fruits and vegetables bananas and potato; within spices cardamom and cumin had less than 1% of the global share and their shares increased over the period. Similarly, the share of a few (tea and coffee in beverages; pomegranate and grape in fruits and pepper in spices) declined and that of rest improved. Cumin and turmeric had very strong market presence in the global market in 2018 with market shares of 80% and 70%, respectively, which has experienced a decline in the recent years.

To probe pre and post ante scenarios we have calculated the growth rate of selected products for the period before introduction of AEP (2012-18) and post AEP phase (2018-2024). The results (figure one) reveal that within beverages, coffee; in fruits, banana, pomegranate and orange and marine products show higher growth rate in the AEP when compared to the Pre-AEP Phase. None of the products had a negative growth rate though some products experienced a lesser growth rate compared to the pre-AEP phase. The trends in the export shares of major agricultural products from India over the last five years are illustrated in Figure 2a to 2e. It shows that marine followed by coffee export has shown the highest trend throughout the observed period. However, among the beverages, the overall coffee exports from India experienced

spectacular growth and surpassed total tea exports in 2024. Similarly, the least exports were registered for mostly fruits like banana, pomegranate and oranges among the selected products for the latest available year. On an average, all select agricultural

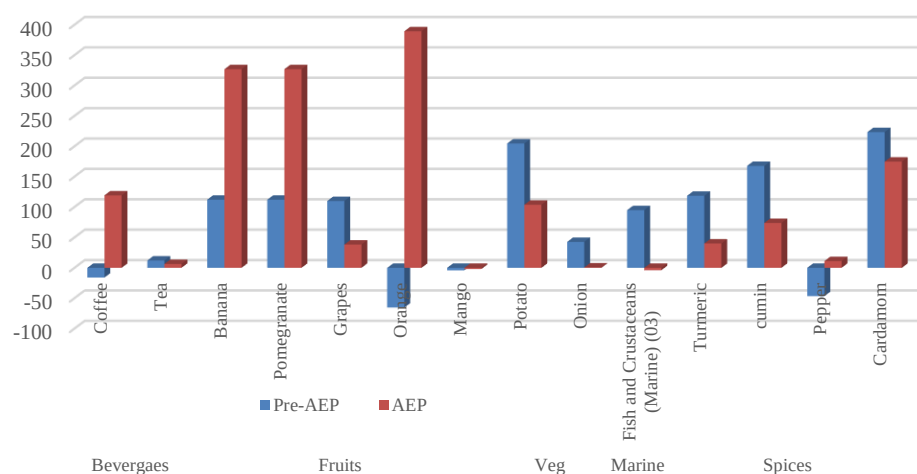


FIGURE 1. EXPORT GROWTH RATE OF SELECTED PRODUCTS DURING PRE-AEP AND AEP PHASE
Source: Illustrated based on ITC Trade Map

products have improved in terms of their total export value. Meanwhile, to see whether the corresponding change in their share in world trade has also resulted in a notable shift in the direction of trade, we mapped the direction of trade for these products to the top five destinations (for recent years) and compared that to the top 5 destinations in the base period (Table 2a and 2b). The exercise reveals that on an average, whenever there is a positive shift in the direction of trade, it is more Asia centric (Bangladesh, UAE, China); whereas decline is more pronounced from the developed OECD countries (Italy, The Netherlands, USA). For instance, in the case of Bangladesh, they had a relatively better share in 2012. But it had declined significantly by 2018 and then increased substantially thereafter. In particular, the share for the reference period has increased from one to 29.8 per cent (2022) and 13.7 for 2024 in the case of Pomegranate; one to 15.3 (2024) per cent in the case of Turmeric; share of cardamom increased from two to 7.2 per cent; 0.5 (2018) to 6.2 in the case of Grapes; 45.3 per cent (2018) to 73.7 per cent (2024) in the case of Orange. Similar trends are noticed with respect to Saudi Arabia and China. *Prima facie*, it implies the argument of existing set of studies that it is very difficult for agri products to break the barriers of developed countries, especially those based on product standards and regulations.

Meanwhile, it is equally important to investigate whether systematic shifts in the direction of trade with respect to these products were guided by the export unit value realization from some of the key markets. The policy aspiration based on



FIGURE 2A. BEVERAGES

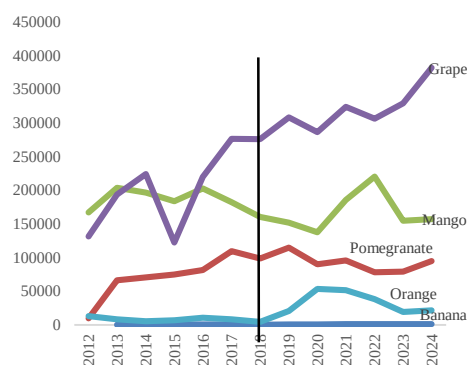


FIGURE 2B. FRUITS

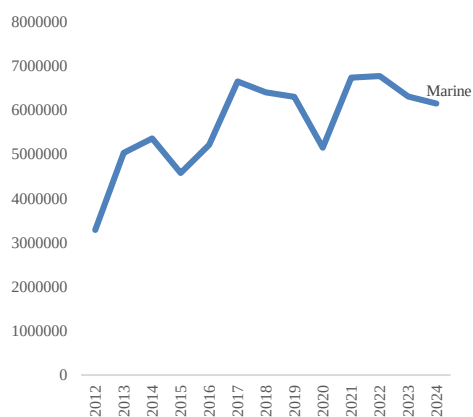


FIGURE 2C. MARINE

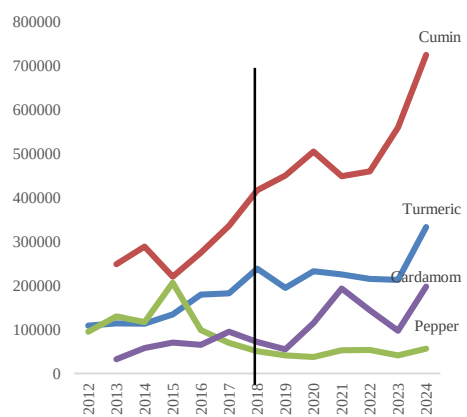


FIGURE 2D. SPICES

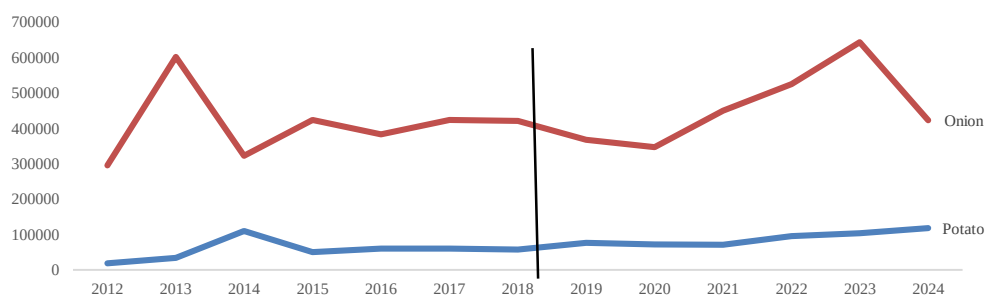


FIGURE 2E. VEGETABLES

FIGURE 2. TRENDS IN MAJOR AGRI-EXPORTS FROM INDIA DURING PRE AND POST AEP

Source: ITC Statistics
 (AS PERCENTAGE SHARE OF TOTAL EXPORT VALUES OF COMMODITIES CONSIDERED WITHIN A CATEGORY EG. BEVERAGES, VEGETABLES, ETC. IN '000 US\$)

theoretical underpinnings help us to argue and hope that countries should be exporting to the country where unit value realization is high and decrease trade with countries where unit value realization is low. The results are mapped in the quadratic table (Table 3) based on ITC Statistics. The table has four quadrants with each one representing a specific category of exports (Premium, Price competitive, Marginal positions and Niche) based on the combinations of the realized unit values (US\$/tonne) and export shares (the percentage share to that country in a product out of India's total exports of that product). We classified the products across these four quadrants based on their average of both values and shares during the AEP Phase.

TABLE 3. EXPORT UNIT VALUE V/S EXPORT SHARES OF MAJOR AGRICULTURAL EXPORT

	Low Unit Value (Price competitive)	High Unit Value (Premium)
High Share	Turmeric to Bangladesh Pepper to USA Coffee to Italy Coffee to Germany Cardamom to Saudi Grapes to UK Orange to UAE	Tea to UAE Cardamom to UAE Grapes to the Netherlands
Low Share	(Marginal positions) Tea to Iran Banana to Nepal Pomegranate to Bangladesh Cumin to Bangladesh Cumin to USA Orange to Nepal	(Niche) Banana to USA Pomegranate to the Netherlands Orange to UAE Turmeric to USA Pepper to Germany

Source: Authors' calculations based on ITC Statistics

The premium quadrant seen in the case of Tea and Cardamom to UAE and Grapes to Netherlands is India's anchor market, where India commands a premium price. Further branding and leveraging Geographic Indicators (GI) would be helpful and quality dilutions are to be prevented. The price competitive quadrant is seen mostly with developed countries with respect to Pepper to USA; Coffee to Italy and Coffee to Germany along with Turmeric to Bangladesh represent India's volume driven hubs. Moving forward approach should be more towards value added products, which eventually might help to move up these products towards the premium market.

The niche markets (Banana to USA; Pomegranate to the Netherlands; Orange to UAE; Turmeric to USA and Pepper to Germany) represent more promising outlets for agri export as it realise high unit value but has low market share. However, moving forward there should be a demand assessment, appropriate marketing efforts and more robust supply chain efforts are need of the hour. Finally, for products under the marginal position category represent very vulnerable group, which need more product

focused market diversification as both price realization and share in that market is weak. In addition to these - there also needs to investigate market and product specific NTM affecting these products.

2.1 Revealed Comparative Advantage Index (RCA)

In order to explain whether or not we have comparative advantage in these select products under AEP and if there are any positive changes over the reference period we have computed the Revealed Comparative Advantage index as proposed by Balassa (1965). The RCA is based on the export performance and observed trade patterns. BRCA is the RCA measurement for countries conducting bilateral trade. We make use of BRCA rather than RCA in our analysis as BRCA is superior to RCA such that we can easily understand the product that leads the trade, and also identify those products that lag in trade in the case of those countries that engage in bilateral trade. It measures a country's export of a commodity relative to its total export. The Balassa index for bilateral trade between any two countries is calculated as follows:

$$BRCA_{ij}^k = (X_{ij}^k / X_{ij}) / (X_{wj}^k / X_{wj})$$

Where X_{ij}^k , X_{ij} are the country i 's export of goods k and its total export to country j respectively. X_{wj}^k , X_{wj} are the world's export of goods k and the world's total export to country j . The Balassa index ranges between zero and infinity and a value less than unity indicates that the country has a revealed comparative disadvantage in the product. Similarly, if the index exceeds unity, the country is said to have a revealed comparative advantage in the product.

The BRCA estimation indicates some products consistently have high RCA values reflecting strong competitive advantage while others have low or declining RCA. Within the Spices category, Products like turmeric and cumin show very high RCA values from the Pre-AEP to the Post-AEP period. Cumin's RCA in China rose from 123.16 in 2012 to 178.26 in 2024, and turmeric to Malaysia (27.77 to 33.48) and Morocco (100.41 to 65.34) despite some decline. Cardamom also shows growth, with Canada's RCA rising from 24.32 in 2012 to 91.61 in 2024, and the US from 4.10 to 19.06 (see Table 4). This category, therefore, represents India's strongest export areas where it maintains or grows further to its advantage. On the other hand, some products had high RCA initially before the AEP but declined sharply in the post-AEP period. Among the beverages, Russia's RCA of tea dropped from 26.98 in 2012 to 8.96 in 2024, the UK fell from 12.86 to 8.36, and the US from 7.04 to 4.83. Similarly, among the fruits, pomegranate exports to Bangladesh decreased from an extremely high 160.66 in 2012 down to 5.38 in 2024. Among the vegetables, Onion RCA also fell significantly in Bangladesh (31.70 to 5.34) and Malaysia (30.00 to 6.99). Therefore, across all the product categories, these declines suggest weakening competitive positions in certain markets in the Post-AEP period when compared to the Pre-AEP period.

TABLE 4. RCA FOR SELECTED PRODUCTS DURING 2012-24

Products	Top Destinations	2012 (Pre-AEP)	2018(AEP)	2024 (Post-AEP)
Beverages				
Tea (0902)	United Arab Emirates	0.8	1.66	3.52
	Iraq	NA	2.93	5.73
	Russian Federation	26.98	23.85	8.96
	USA	7.04	4.81	4.83
	United Kingdom	12.86	8.8	8.36
Coffee (090111)	Italy	14.02	9.19	8.29
	Germany	2.92	3.27	4.81
	Belgium	4.48	4.35	4.86
	United Arab Emirates	1.93	1.68	2.53
	Libya, State of	NA	62.39	18.18
Fruits				
Banana (080310) (2013 Data Is Taken)	USA	0.00*	0.01	0.02
	Germany	0.24*	0.37	1.43
	United Arab Emirates	0.01*	0.01	0.26
	Iran	0.00*	0	18.23
	Saudi Arabia	0.00*	0	0
Pomegranate (081090)	United Arab Emirates	2.78	3.93	4.3
	Bangladesh	160.66	1.92	5.38
	Netherlands	1.04	2.48	0.66
	Nepal	3.18	0.78	1.22
	USA	0.61	0.53	0.34
Mango (080450)	United Arab Emirates	3.1	2.77	2.44
	USA	1.06	1	1.14
	Saudi Arabia	10.06	14.29	5.85
	United Kingdom	9.36	6.24	3.4
	Germany	3.74	2.41	3.47
Grape (080610)	Netherlands	2.66	6.74	6.01
	Russian Federation	3.63	14.98	0.45
	United Arab Emirates	1.69	2.01	3.77
	United Kingdom	2.36	2.97	2.04
	Bangladesh	31.78	0.3	2.06
Orange (080510)	Bangladesh	3.45	0.17	0.94
	Nepal	1.28	0.39	1.27
	United Arab Emirates	0	0.03	0.01
	USA	0	0	0
	Singapore	0.01	0.03	0.01
Marine				
Marine Products (1504)	Chile	1.38	2.47	1.96
	USA	0	0	1.26
	Australia	0.36	1.93	2.6
	Saudi Arabia	10.03	33.16	10.52
	Turkiye	5.46	0.12	0.49
Spices				
Turmeric (091030)	United Arab Emirates	8.45	9.12	8.57
	Bangladesh	117.32	4.43	5.31
	USA	51.76	100.18	17.7
	Malaysia	53.96	27.77	33.48

Contd...

Cumin (090931) 2013 Data is Taken	Morocco	100.41	89.54	65.34
	China	123.16*	151.99	178.26
	Bangladesh	2.30*	5.73	5.46
	United Arab Emirates	8.20*	9.34	8.5
	USA	30.86*	43.44	39.27
Pepper (090411)	Morocco	NA	69.9	51.12
	United States of America	5.73	1.98	1.69
	Sweden	13.41	126.32	102.44
	Germany	6.1	8.47	4.77
	United Arab Emirates	0.13	0.26	0.58
Cardamom (090831)	Canada	28.96	15.92	16.34
	United Arab Emirates	0.98*	2.05	3.18
	Saudi Arabia	1.27*	4.94	3.35
	Kuwait	1.79*	7.64	7.25
	USA	4.10*	7.5	19.06
	Canada	24.32*	37.1	91.61
Vegetables				
Potato (0701)	Nepal	1.15	1	1.43
	Oman	0.01	2.49	3.05
	Saudi Arabia	0.01	0.05	1.52
	Malaysia	0.34	1.18	1.82
	United Arab Emirates	0	0.16	0.7
Onion (070310)	Bangladesh	31.7	6.63	5.34
	Malaysia	30	15.38	6.99
	Sri Lanka	3.9	NA	1.55
	United Arab Emirates	4.23	5.34	2.53
	Kuwait	6.56	10.14	2.83

* denote 2013 data is taken

Then, there are products and markets with low but slowly improving RCA values in the Post-AEP period. Among the fruits category, banana exports started almost negligible in most countries but showed a rise in Iran with an RCA of 18.23 by 2024 from nearly 0 before. Grape RCA fluctuated with a big drop in Russia (3.63 to 0.45) but rose in the UAE (1.69 to 3.77). Orange exports remained very low RCA throughout, indicating weak competitive advantage globally.

Marine products comparative advantage improved in countries like Australia (from 0.36 to 2.60) and the US (1.26). Potato exports grew steadily in Oman (0.01 to 3.05) and Malaysia (0.34 to 1.82), showing gradual gains. Some products show volatile or mixed trends. Pepper RCA dramatically spiked in Sweden from 13.41 in 2012 to 126.32 in 2018 but dropped to 102.44 in 2024. Coffee showed slight decreases in traditional markets like Italy (14.02 to 8.29) but stability in UAE (1.93 to 2.53). India has strong and growing export advantages in spices like cumin, turmeric, and cardamom in the post AEP period. At the same time some traditional strengths, such as tea in Russia and pomegranate in Bangladesh, have weakened for the latest available year. Meanwhile, products like banana, marine products, and potato show slow but

steady improvement, while others have fluctuating or low RCA values. This pattern reflects shifting global market positions for India's exports over the years.

2.2 *The Competitive Edge and Market Diversification*

The market diversification analysis helps in understanding the export growth of a country with respect to its partner's import growth from the rest of the world. While export market diversification is generally seen as a potential strategy to ensure competitiveness as well as to mitigate risk, it is again crucial to identify whether the exporting country is winning or losing market shares in its existing partner countries (Appendix figure 1)⁴. An attempt is made to analyse this by taking the growth rates in exports and the partners' growth rates in imports of the same product during the post – AEP phase. A shorter time period (2018-2022) is considered in this case for early trend detection and reduced lag.

In the case of beverages, tea exports from India declined slightly by 2% during 2018-2022. India has been losing market share in its two major import partners of tea, i.e. Russia and Iran⁵, but has gained market share and export unit value in its other top import partners such as UAE, UK and USA. Over the last five years, tea exports to Russia and Iran declined by 6% and 13% respectively. The tea exports to Iran also declined in terms of unit value realization. Recently, the global share of India's coffee export has reduced slightly, from 2.8% to 2.5% during 2018-22. And India is losing its market share for coffee in all of its top export destinations i.e., Italy, Germany, Belgium and UAE, except Jordan.

In the case of the fruits category, Bangladesh and the Netherlands are India's top export destinations for pomegranates, with diverging export unit values and share of India's exports. Though India's total exports of pomegranates declined slightly after 2018, there was a remarkable surge in pomegranate exports to Bangladesh. In 2018, Bangladesh ranked 17th and became the largest pomegranate import partner of India in 2024. Additionally, Banana exports from India are gaining market share broadly in all of its major trade partners. However, India seems to be losing market share slightly to other top importers like UAE, the Netherlands and Qatar but export unit values of these destinations are rather consistent. Similarly, India is losing market share in their top two destinations of mango, i.e., the UAE and Saudi Arabia, but has gained market share for mango in the USA and the Netherlands. Otherwise, the export unit values and market shares have been consistent with most of the export destinations. India is gaining market share in the top two destinations of grapes, i.e. Netherlands and Bangladesh. But in other major export markets like the UK, UAE and Russia, India is losing its export share of grapes. It's interesting to note the growth of grape exports to

⁴Based on the growth of national supply and international demand for a product exported by India, there could be four types of possibilities; 1. India is enhancing market share in a growing world market for the product, 2. India is enhancing market share in a declining world market, 3. India is losing market share in a growing world market for the product and India is losing market share in a declining world market for the product.

⁵As a result, Iran was dropped from top five import partners of India's Tea between 2022 and 2024

Bangladesh from India, in 2012 Bangladesh constituted 11.8% of India's total grape exports and it increased to 16.5% in 2022 but declined in the last few years. While, that of Russia declined from 17.1% to 6.3 % during the same period. Overall, India experienced fluctuations in unit values and export shares in the markets of Russia and the UK.

The export of oranges from India to Bangladesh experienced an experienced dip in the pre-AEP and a surge in the post AEP, where the export share increased from 45.3% to 73.7% and India is gaining significant market share in Bangladesh. In spite of the decline in the exports of oranges to Nepal, India is still improving market share in Nepal. This is due to the fact that Nepal's import growth from the rest of the world is less than import growth from India. However, India seems to be losing its market share in other top export markets like Singapore, the UAE and Bhutan. With the exception of Nepal and Bhutan, there have been wider divergences between export unit values and export share to all other key destinations over the post EAP phase (2018-24).

Among the spices category, major destinations for India's turmeric exports are Bangladesh, USA, UAE, Morocco and Malaysia, with wide fluctuations in export unit values and export share in the markets of Bangladesh, UAE and USA. At the same time, India is losing market share for its exports in all these countries except Bangladesh. Similarly, India has been the largest exporter of cumin since 2013 and the global export share increased from 80.5% to 87.5% during the last five years. India is losing market share for cumin exports in its top trade partners like China, USA, UAE and Afghanistan, except Bangladesh. It is worth mentioning that China emerged as a top importer of India's cumin. In 2012, China procured merely zero per cent of India's total cumin exports and the export share increased to 19.7 % in 2024. India is losing market share for pepper exports to the largest pepper importer from India i.e., USA and Germany, and winning market share in Sweden and UAE. There has been a declining trend in both unit value realizations and export share of pepper in the markets of the Rest of the World as well.

Among the vegetable category, India is losing market share for its exports of potato in Nepal, the largest import partner procuring almost half of the potato exports from India. But India is winning market shares in other top importers of potato like Oman, Saudi Arabia, Malaysia and Indonesia. India's global exports of Onion improved lately and currently it holds a global export share of 12.3%. India seems to be improving market share for onions in its top import partners i.e., Bangladesh, Sri Lanka and Nepal, but losing market share in Malaysia and UAE. In other words, Malaysia and UAE are importing onions from the world at a higher rate than they are importing from India. It indicates that India has prospects to diversify its onion market in these two declining markets.

2.3 Non-Tariff Measures

To understand the reasons behind the unrealized export potential of the identified products, we have explored the non-tariff measures applied on them by major trade partners with the help of ITC Market Access Map (See Table 5). It was observed that the number of product requirements is one of the factors determining the trade direction i.e., for some products, the winning markets imposed the least number of non-tariff measures. For instance, in the case of Mango, USA is one of the winning markets for India and it imposed the least number of NTMs (62) on the exports compared to other top importers. Similarly, for coffee exports, India seems to be winning market shares in Jordan who imposed the least number of NTMs i.e., 5 NTMs. Moreover, the export share of UAE in India's total coffee export is the least as it is imposing the highest number of NTMs i.e., 111 NTMs on India. The least number of NTMs on orange exports from India are imposed by Nepal (10) and Bangladesh (20), which are the two winning markets for Indian oranges. Bangladesh imposed the least number of NTMs on eight products viz., pomegranate (20), turmeric (20), cumin (28), pepper (20), cardamom (20) and grapes (20). Interestingly, India is winning market shares in Bangladesh for all these products. The results thereby validate the general consensus in the literature (Hillman, 1978; Mehta and George, 2003; Santeramo, 2019) that non-tariff measures are evidently posing a threat to developing countries in general and India in particular in its pursuit of improving its presence in the international trade map, which need closer scrutiny.

TABLE 5. NON-TARIFF ISSUES AFFECTING SELECTED PRODUCTS EXPORTED BY INDIA

Product	Top Destinations	Product specific requirements	Requirements on all products
Beverages			
Coffee (090111)	Italy	29	
	Germany	29	
	Belgium	29	
	Jordan	3	2
	United Arab Emirates	101	10
Fruits			
Banana (080310)	United States of America	50	7
	Nepal	NA	NA
	United Arab Emirates	106	10
	Germany	39	
	Iran, Islamic Republic of	NA	NA
Pomegranate (081090)	Bangladesh	20	
	United Arab Emirates	105	10
	Nepal	NA	NA
	Netherlands	33	
	Qatar	69	12
Mango (080450)	United Arab Emirates	105	10
	Saudi Arabia	91	17
	Netherlands	NA	NA
	United States of America	62	6
			Contd...

Grapes (080610)	United Kingdom	NA	NA
	Netherlands	41	
	Bangladesh	20	
	United Kingdom	NA	
	United Arab Emirates	105	10
Orange (080510)	Russian Federation	28	
	Bangladesh	20	
	Nepal	1	9
	Bhutan	NA	
	United Arab Emirates	105	10
Singapore		25	
Spices			
Turmeric (091030)	Bangladesh	20	
	United States of America	53	7
	United Arab Emirates	100	10
	Morocco	27	1
	Iran, Islamic Republic of	NA	
Cumin (090931)	China	90	16
	Bangladesh	28	
	United States of America	49	13
	United Arab Emirates	122	10
	Afghanistan	NA	
Pepper (090411)	United States of America	50	7
	Sweden	29	
	United Arab Emirates	101	10
	Germany	29	
	Bangladesh	20	
Cardamom (090831)	United Arab Emirates	100	10
	Saudi Arabia	87	17
	Bangladesh	20	
	Kuwait	81	11
	Afghanistan	NA	
Vegetables			
Onion (070310)	Bangladesh	20	
	Malaysia	NA	
	United Arab Emirates	104	10
	Sri Lanka	30	
	Nepal	1	9

Source: ITC Market Access Map

Note: the information pertaining to tea, marine products, and potatoes are not available. Thus, we could not undertake a similar exercise for them.

III

SUMMARY

Even after eight years of policy in place there isn't any academic literature to explore the effectiveness of the policy in export promotion. Keeping this empirical gap in perspective this study through the lenses of demand side factors investigates the effectiveness of AEP, 2018 in fuelling the export performance of these products. The results based on broader product category reveal that India's export shares in the global

market for the selected products (like banana, potatoes, cumin and orange) had weak presence in the international market during the implementation of AEP (2018) and their global shares increased during the last five years. Similarly, the global export shares of some products (banana, mango, marine products, potato, cumin, onion, cardamom and orange) improved and that of a few others (tea, pomegranate, coffee, pepper and grape) declined from 2018 to 2024. Also there seen contradiction in export share v/s export unit value realization across product and market. Moving forward a specific product and market centric approach is required to understand the evolving dynamics. Further, the comparative advantage analysis reveals that across the entire period, products like turmeric, cumin, pepper, and cardamom stood out for consistently high RCAs some exceeding 100 in select markets, while fruits and vegetable shows moderate and variable RCA level but generally above unity in receptive markets, Other products like marine items, potato, and mango, witnessed upward RCA trends from 2012 to 2024, indicating India's ability to expand into new competitive territories. Conversely, products like bananas, oranges, and pepper consistently underperformed in the post AEP phase, reflecting the absence of comparative advantage in these areas. The presence of non-tariff measures imposed by trading partners could also be one of the reasons behind the unrealized export potential of India's cluster exports. It was found that for some products, the countries who imposed the highest number of NTMs were declining markets for Indian exports and vice versa.

It can be concluded that India has a huge export potential in many of the selected products, particularly in products having comparative advantage i.e., $RCA > 1$. Cluster based approach provides better prospects for the producers and exporters to foster the trade and double their incomes. However, efforts should be put into diversification of exports and markets to fully exploit the existing trade potential of such products. The findings of this study emphasize the importance of acknowledging the heterogeneity across products instead of considering eighteen products identified for cluster promotion as a homogenous basket. Ultimately, the need of the hour is a product-centric plan in understanding the major constraints and opportunities associated with these products in the international market. The international markets for agricultural products vary significantly from one product to another and one destination to another. A product-centric plan helps in gaining market-specific information and insights, which helps to identify challenges faced by a particular product in a specific market. Additionally, product-centric strategy allows us to understand the trade policy implications. In addition to this future research on this area might as well consider investigating supply side factors shaping cluster participation in international trade.

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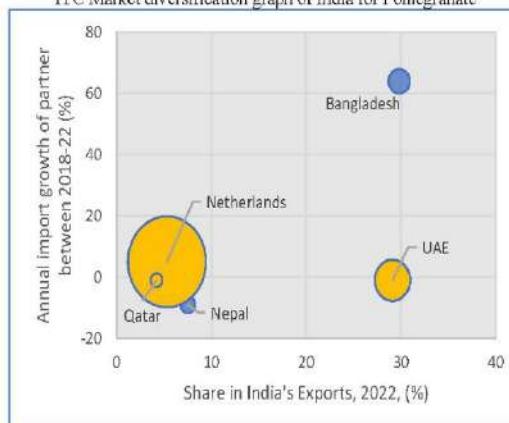
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APPENDICES

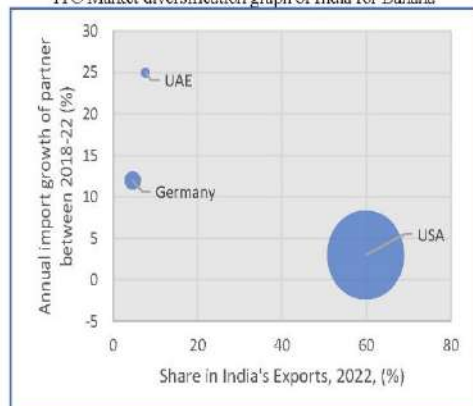
ITC Market diversification graph of India for Tea



ITC Market diversification graph of India for Pomegranate



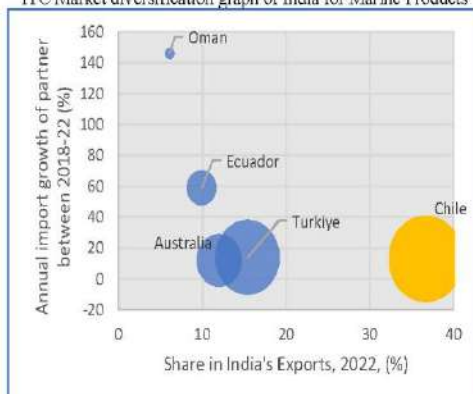
ITC Market diversification graph of India for Banana



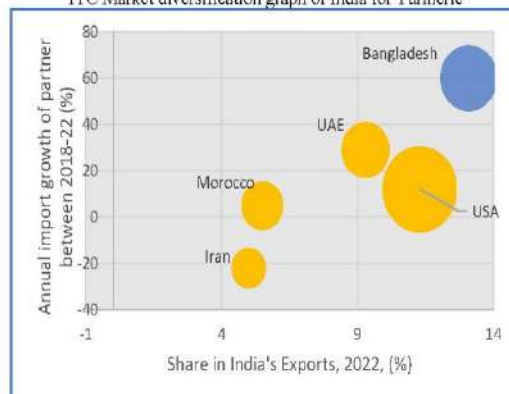
ITC Market diversification graph of India for Mango



ITC Market diversification graph of India for Marine Products



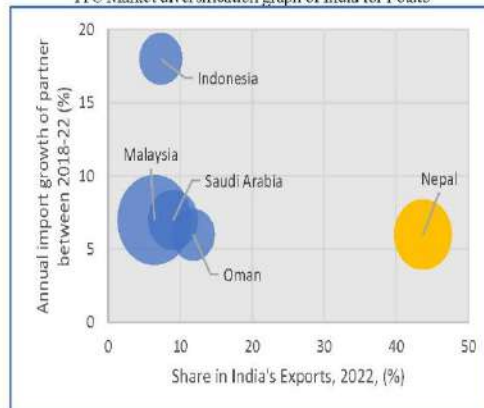
ITC Market diversification graph of India for Turmeric



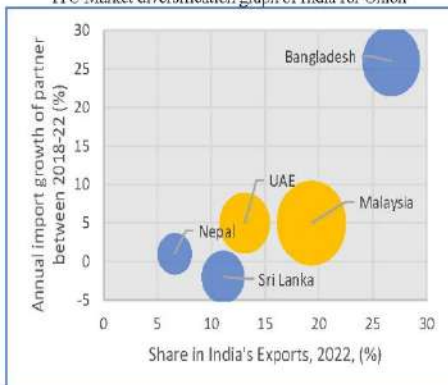
ITC Market diversification graph of India for Cumin



ITC Market diversification graph of India for Potato



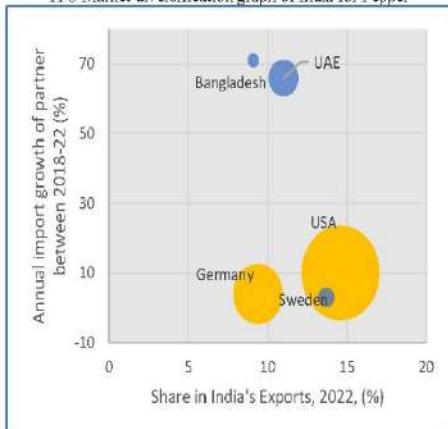
ITC Market diversification graph of India for Onion



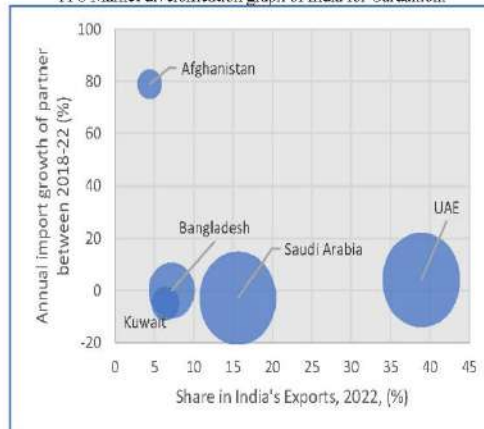
ITC Market diversification graph of India for Coffee

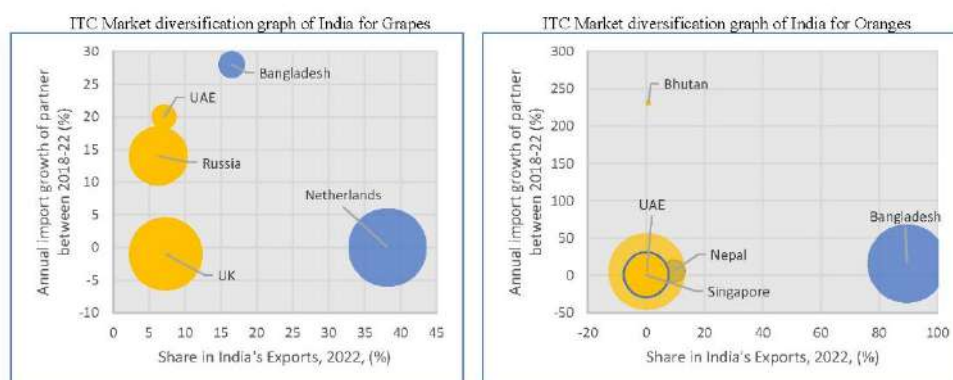


ITC Market diversification graph of India for Pepper



ITC Market diversification graph of India for Cardamom





Source: ITC Trade Map

Note:

● Exporter's export growth to partner < Partner import growth from the world

● Exporter's export growth to partner > Partner import growth from the world

The bubble size is proportional to the share in world import of partner countries for the selected product.