Original Research Article

Trends and Patterns in Indo-ASEAN Agricultural Trade: Evidence from India (2013-2022)

ABSTRACT

The study investigates the trade dynamics between India and ASEAN, focusing on agricultural trade from 2013-2022. The study examines the growing trade relations with ASEAN in the case of merchandise and agricultural trade. The study's primary objective is to evaluate trends and variations in trade flows, identify growth patterns, and assess trade intensity. Utilizing the Compound Annual Growth Rate (CAGR), Coefficient of Variation (CV), and Trade Intensity Index, the analysis reveals significant findings that India experienced a consistent trade deficit in agricultural commodities with ASEAN, peaking in 2022. The CAGR for imports (2.2%) and exports (-2.11%) highlights a slower growth rate in agricultural exports than imports. CV analysis shows notable variability in trade values, indicating fluctuating export-import patterns. The Trade Intensity Index results illustrate a higher import intensity than export intensity, underscoring ASEAN's strong export position relative to India. These insights provide crucial guidance for policymakers to strengthen India's agricultural trade strategies and address the trade imbalance within the ASEAN region.

Key Words: ASEAN, Export, Import, India, Trade deficit, Trade surplus

1. INTRODUCTION

Global trade has seen rapid transformation since the establishment of the World Trade Organization (WTO), leading to significant shifts in the trade policies and economic landscape of countries worldwide. In India, the economic reforms of the 1990s marked a pivotal shift towards liberalization, with the aim of integrating the country into the global economy (Singh, 2017). Since then, there have been significant shifts in India's trade policies, which have led to considerable changes in its economy. In the last 25 years, Indian exports have increased 17 times and imports 19 times (India Exim Bank, 2022). India has entered into several bilateral and regional trade agreements. These agreements facilitate the exchange of goods and services at lower tariffs and the removal of other barriers. One such agreement is the Association of Southeast Asian Nations (ASEAN), established in 1967, comprising the ten Southeast Asian nations of Indonesia, Thailand, Malaysia, Myanmar, the Philippines, Singapore, Brunei, Vietnam, Lao PDR and Cambodia. The enunciation of the Look East policy in 1991 paved the way for India to become a sectoral dialogue partner of the ASEAN in 1992 and, subsequently, a full dialogue partner at the fifth ASEAN summit held in Bangkok in 1995. A

significant setback to this relationship was seen when both parties signed a pact in August 2008, in which a new trade area in goods would be created covering 11 countries - India and the ten countries of ASEAN to eliminate tariff and non-tariff barriers in trade. The collaborative endeavours of both parties to enhance their strategic and economic ties gathered pace with the introduction of the Act East Policy in 2014, along with the initiation of a Free Trade Agreement focusing on services in the identical year.

Trade relations between India and ASEAN are underpinned by both mutual economic interests and regional geopolitical factors. The concept of **trade integration** is fundamental to understanding the depth and nature of these interactions, referring to the degree to which two regions engage in economic exchange and the extent to which their economies become interdependent. This research conceptualizes Indo-ASEAN agricultural trade integration as the progressive removal of trade barriers, an increase in trade volume, and enhanced complementarities between India and ASEAN's agricultural sectors. This integration also reflects policy efforts to balance trade volumes and address existing trade deficits, particularly in the agricultural domain where the Indian market faces significant import volumes from ASEAN.

A review of prior studies underscores the critical role ASEAN plays in India's trade landscape. Chandran (2010) and Jagdambe (2016) emphasize India's comparative advantages in exporting specific primary commodities, particularly live animals and vegetable products, to ASEAN. Jha (2017) also opined that both India and ASEAN have comparative advantages in similar kinds of products and mostly in primary commodities. The ASEAN-India Free Trade Agreement (AIFTA), by its Trade in Goods Agreement (TIG), has generated an additional scope for India to increase its dairy exports to ASEAN countries (Mondal & Sirohi, 2016). It was found that fish imports from the ASEAN have grown more than imports from other parts of the world. Regarding tea, India's exports were highest in Cambodia, Thailand, Singapore, and the Philippines. India's imports of tea from ASEAN were mainly from Indonesia and Vietnam. India imports a large share of its coffee from ASEAN, Indonesia is the largest supplier of coffee to India, and Vietnam is the third largest supplier of coffee to India (Ratna & Kallummal, 2013). However, the literature also points out significant challenges, such as the trade deficit India faces with ASEAN countries, especially in agricultural products. Research by Das and Guha (2022) highlights the substantial rise in imports from ASEAN during India's Act East Policy phase, with ASEAN nations increasingly positioning themselves as key exporters of agricultural goods

to India. This literature collectively suggests that while the ASEAN-India Free Trade Agreement (AIFTA) opened new opportunities, the persistent trade imbalance highlights the need for strategic policies to strengthen India's export capacity and competitiveness in the agricultural sector.

ASEAN holds significant importance for India due to its central position in the Asia-Pacific region, wielding considerable influence over trade, politics, and security. As a pivotal global hub for manufacturing and commerce, it boasts one of the world's fastest-growing consumer markets. Strengthening trade ties with ASEAN offers India a strategic foothold in the region, fostering economic growth and development. Notably, ASEAN ranks India's fourth largest trading partner, with bilateral trade amounting to US$ 110.32 billion, approximately 10.6% of India's total trade volume. India's exports to ASEAN alone constitute around 10.03% of its total exports as of FY22 (UN Comtrade database, 2022). Considering these scenarios, the study aims to investigate Indo-ASEAN trade relations, focusing on the overall trade status and the agricultural sector's dynamics within this framework, with the primary objective being to evaluate trends and variations in trade flows, identify growth patterns, and assess trade intensity.

2. METHODOLOGY

This study examines trade relationships between India, 10 ASEAN countries (Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam), and the North-Eastern region of India.

It employs analytical methods and secondary data from various sources, including reports and government websites such as the UN Comtrade Statistics division, Directorate General of Commercial Intelligence and Statistics (DGCI&S), and Agricultural and Processed Food Products Export Development Authority (APEDA). Analytical tools include the Percentage method, Coefficient of Variation, Compound Growth Rate (CGR), and Trade Intensity Index.

Growth Over the Previous Period was calculated to determine the percentage change in the value of exports and imports over the previous period.

Growth Percentage = [(Final – Initial) / Initial]

The coefficient of Variation was used to calculate the level of dispersion around the mean value of exports and imports of certain agricultural commodities over ten years, 2013-2022.

CV= (Standard deviation/Mean) × 100

Compound Growth Rate (CGR) was used to calculate the mean annual growth rate of exports and imports over 2013-2022.

$Y = abt$

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

$CGR = (\text{Antilog } b - 1) \times 100$

Where,

Y = Value obtained from data set

a = Constant

b = Coefficient of the exponential model

t = time variable in years (1,2,3...n)

The study used the Trade Intensity Index (Tij) to determine whether the value of trade between two countries was greater or smaller than expected based on their importance in world trade. The index revealed whether or not a region exports more to the partner region than the world does on average. The value of Tij ranged between 0 and + ∞. An index of more (less) than one indicated a bilateral trade flow that was larger (smaller) than expected, given the partner country's importance in world trade.

$$Tij=((Xij/Xit))/((Xwj/Xwt))$$

Where,

Xij = values of country i's exports to country j

Xit = country i's total exports

Xwj = the values of world exports to country j

Xwt = Total world exports

3. RESULTS AND DISCUSSION

3.1 India's Merchandise Trade with ASEAN

Trade and Investment ties with ASEAN have grown during the last decade (2013-2022) owing to India's various trade policies (especially the Act East policy), free trade agreements (FTAs) and bilateral relationships with its member nations. Figure 1 shows the graphical representation of the value (in US $ Billion) of exports and imports over the years. It is observed that India registered a trade deficit with ASEAN in terms of total trade. Both exports and imports were highest during 2021-22, with a value of US$ 42.32 billion and US$ 68 billion, respectively. In their 2022 research, Das and Guha found that while imports and exports increased during India's Act East Policy period, this period

experienced negative growth, in contrast to the positive growth observed during the Look East Policy period. Table 1 explains the growth of India's total trade and agricultural trade with ASEAN and across the globe. The Compound Annual Growth Rate (CAGR) is significant (5.45 per cent). However, in the case of agricultural commodities, ASEAN imports are growing at 2.2 per cent, and global imports are growing at 4.36 per cent, which is a 10 per cent level of significance. The percentage share in India's total exports and imports was highest with Singapore, followed by Indonesia and Malaysia (Table 2). Renjini and Kar (2016) found that in 2014, over 10% of India's agricultural exports and 30-40% of imports were directed to ASEAN, with Vietnam as the leading export destination and Indonesia as the primary source of imports.

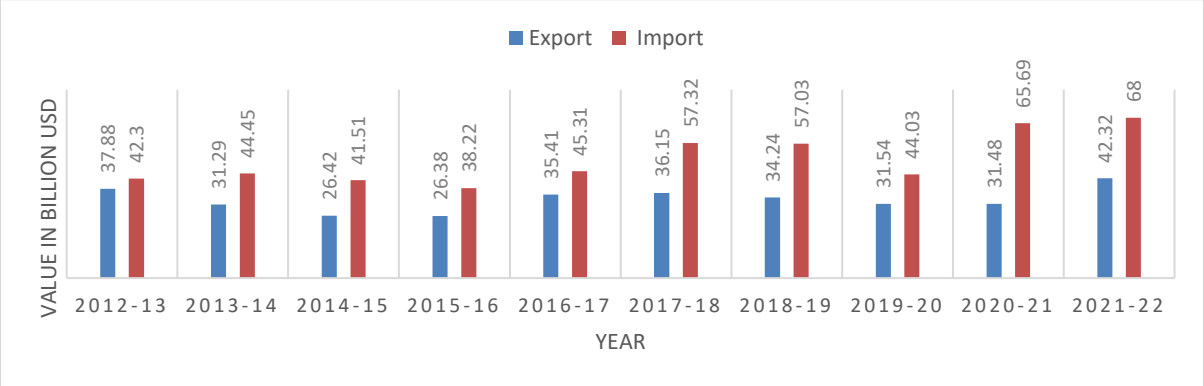

Fig. 1: India's total merchandise trade with ASEAN

Table 1. CAGR of India's Total Trade and Agricultural Trade with ASEAN vis-à-vis with the world (2013-2022)

	Total Trade	Agricultural Trade
India with ASEAN		
Export	1.66	-2.11
Import	5.45**	2.20
India with the World		
Export	2.76	1.01
Import	2.88	4.36*

Source: Author's calculation based on UN comrade database, 2022 and Directorate General of Commercial Intelligence and Statistics (DGCI&S), 2022

**, * are the significance level at 5% and 10% respectively.

Table 2: Country wise share in India's Total Trade with ASEAN during 2022-23

Value in million USD

Country	Exports	Imports	Percent Share (%) in Exports	Percent Share (%) in Imports
Brunei	43.16	394.44	0.10	0.58
Cambodia	198.37	94.88	0.47	0.14
Indonesia	8471.51	17702.70	20.01	26.01
Lao	14.65	0.80	0.03	0.00
Malaysia	6995.04	12424.20	16.53	18.25
Myanmar	893.03	1001.87	2.11	1.47
Philippines	2107.24	729.08	4.98	1.07
Singapore	11150.61	18956.66	26.34	27.85
Thailand	5751.30	9332.54	13.59	13.71
Vietnam	6702.67	7435.85	15.84	10.92
ASEAN Total	42327.58	68073.02	100.00	100.00

Source: Author's calculation based on UN comrade database, 2023

3.2 India-ASEAN Agricultural Trade Pattern

The agricultural trade flow between India and ASEAN increased from US$ 7.13 billion in 2013 to US$ 7.42 billion in 2022 in the case of exports and US$ 8.12 billion in 2013 to US$ 10.7 billion in 2022 in the case of imports. India's trade deficit in agricultural products with ASEAN was found to be highest in the year 2022. Figure 2 shows the graphical representation of India's exports and imports with ASEAN. From 2019 to 2021, the imports exceeded exports, increasing the trade deficit.

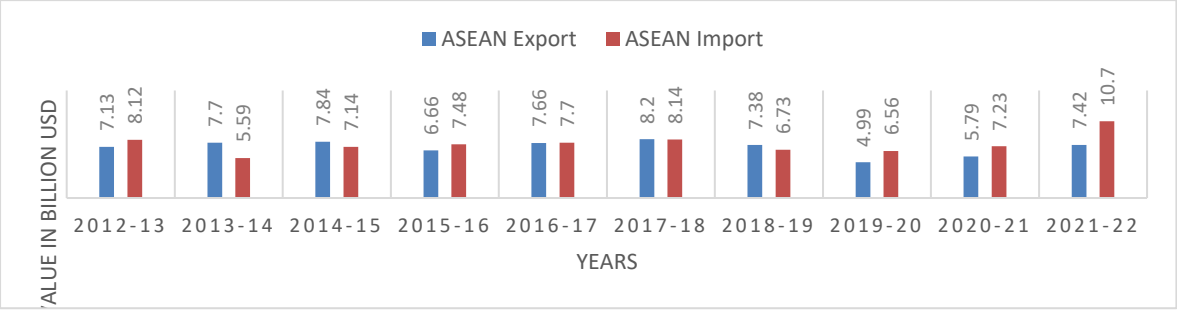

Fig. 2: India's Trade with ASEAN in Agricultural Commodities

3.3 Trade Intensity Index

Trade Intensity Indices were used to check India's Trade intensity with ASEAN. Similar methodology was also used by Shanmugam (2022) to look at the India's Trade Intensity with UAE for the period from 2012 to 2021. India's Agricultural Export Intensity Index (EII) and Import Intensity Index (III) declined during the study period. India's Import Intensity Index with ASEAN was higher than the Export Intensity Index, which reveals that imports of agricultural goods from ASEAN were more intense than exports of agricultural goods to ASEAN (Table 3). This imbalance highlights ASEAN's strong export presence in the Indian agricultural market, contributing to India's trade deficit in this sector. Addressing this gap requires strategic efforts to enhance India's agricultural export competitiveness within ASEAN markets.

Figure 3 represents the percentage share in exports and imports of ASEAN countries in India's total agricultural trade in 2021-2022. Among the ASEAN nations, total trade in agriculture was found to be the highest in the case of Indonesia, followed by Malaysia and Vietnam. Malaysia, Indonesia, Myanmar, and Thailand are the leading importers, and India's highest exports go to Indonesia, followed by Vietnam, Malaysia, and Thailand, in that order. Chandran (2010) used the Trade Intensity Index to assess trade complementarity between India and ASEAN from 1990 to 2007. However, from this study, it is essential to observe that ASEAN nations have consistently maintained a trade surplus, signifying that their exports to India surpass their imports. Conversely, India has encountered a growing trade deficit with ASEAN, underscoring that its imports from ASEAN nations have exceeded its exports to them. This circumstance emphasises India's need to contemplate potential adjustments to its economic policies concerning its trade association with ASEAN.

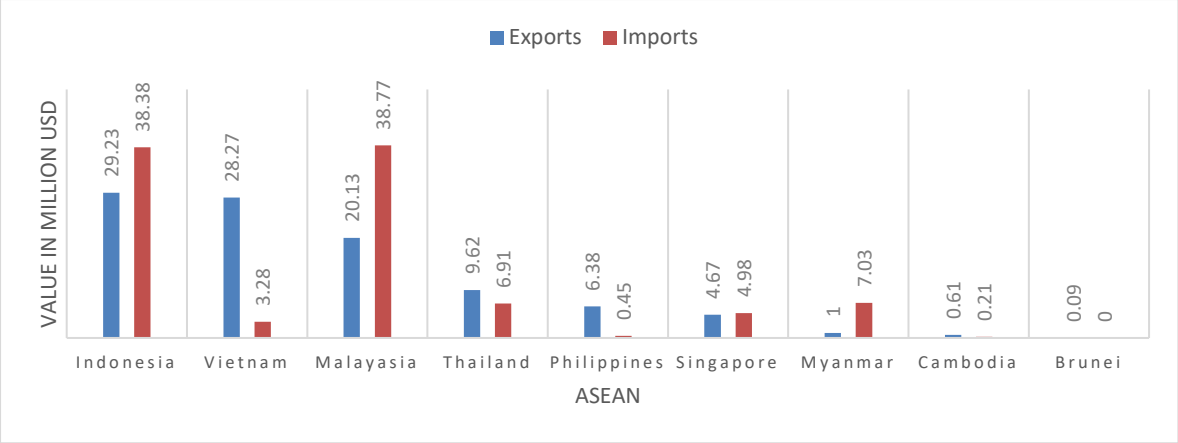

Fig. 3: Percentage share of different nations in India's total agricultural trade with ASEAN, 2022

Table 3: Trade Intensity Index Between India-ASEAN in Agricultural Trade.

Year	EII (Export Intensity Index)	III (Import Intensity Index)
2012-13	3.36	10.00
2013-14	3.44	7.90
2014-15	3.69	7.06
2015-16	3.52	6.62
2016-17	3.91	5.90
2017-18	3.47	6.01
2018-19	3.01	5.93
2019-20	2.31	5.33
2020-21	2.20	5.81
2021-22	2.28	6.09

Source: Author's *Calculations based on Agricultural and Processed Food Products Export Development Authority (APEDA) database, 2022*

3.4 Commodity-wise trade in the agricultural sector of India with ASEAN

The agriculture sector in India has been rising rapidly in the past years as it has proved to be a very reliable sector even during the COVID-19 pandemic. The Indian agriculture sector, with over half its population employed directly or indirectly, is the world's second-largest producer of agricultural land (Himani, 2014).

Table 4 shows that buffalo meat was the most exported to ASEAN countries over the last ten years, but at the same time, exports of this commodity decreased. Some commodities like Basmati rice, processed vegetables, cereal preparations, fresh fruits, cocoa products and other miscellaneous products like bread, biscuits, etc., have significantly increased exports. The rate of change in exports of commodities like wheat, other cereals (maise, barley, millet, etc), and processed vegetables were found to be highly volatile.

Similarly, the import of Fresh fruits from ASEAN was found to be the highest, and there was a significant increase in the import of this commodity. There was a significant rise in imports of commodities like alcoholic beverages, miscellaneous processed items, cocoa products, cereal preparations, fruits and vegetable seeds, Processed Fruits and juices, and other cereals (maize, barley, millet, etc). The rate of change in imports of commodities like wheat and fresh vegetables was highly volatile (Table 5). Mizik (2021) found that several ASEAN countries, including Thailand, Indonesia, Vietnam, and Malaysia, had more significant comparative advantages in agri-food production than the other ASEAN members. To balance trade with ASEAN, India should focus on enhancing the competitiveness of agricultural commodities in which it has an inherent or potential comparative advantage, such as dairy products, spices, and processed food items. Incentives for quality improvement, better storage facilities, and streamlined certification processes can help Indian agricultural exports meet ASEAN standards more effectively.

Product Name	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	CAGR	CV
Buffalo Meat	1697	2623	3126	2648	2778	2902	2663	1945	1256	1410	-5.38	28.93
Groundnut	649.4	429.3	590.1	463.8	588.4	388.2	340.1	519.6	536.8	528.1	-1.37	19.31
Non-Basmati Rice	187.7	126.4	143.4	99.82	92.34	75.2	226.9	88.91	358.4	507.8	10.26	73.75
Other Cereals	1048	706.3	432.8	27.6	15.37	33.3	56.93	13.51	162.6	403.1	-18.26	122.65
Wheat	299.4	204.1	163.3	5.47	0.38	0.35	0.59	0.42	18.6	260.6	-28.17	128.68
Misc Processed Items	34	50.52	61.3	62.12	38.77	43.47	113.5	70.85	145.5	231.5	18**	73.12
Fresh Vegetables	135	186.1	100.6	144.7	143.7	160.9	141.9	107.6	116.7	126.4	-2.06	18.63
Dairy Products	28.26	66.94	28.69	18.58	22.06	25.08	45.33	20.46	32.75	76.26	3.1	55.23
Basmati Rice	17.48	21.6	30.33	28.43	28.51	50.05	45.92	51.73	58.06	68.78	15.6***	42.67

Processed Vegetables	4.79	2.84	4.25	3.79	5.55	8.35	13.13	30.89	47.91	67.54	41.81**	119.25
Cashew	33.53	33.55	53.28	28.29	39.03	33.41	41.27	45.2	44.93	45.00	2.98	19.10
Cereal Preparation	25.88	18.57	17.23	16.47	23.95	25.03	32.08	34.85	43.23	41.09	9.94**	34.58
Fresh Fruits	18.99	30.02	19.92	18.09	29.37	34.22	34.63	41.67	38.76	33.66	8.02*	27.96
Milled Products	23.31	40.32	35.57	24.24	14.05	16.09	18.79	21.11	23.65	30.75	-2.6	33.95
Alcoholic Beverages	29.26	46.72	41.4	41.64	38.23	56.72	51.89	41.26	37.21	30.61	-0.09	20.71
Cocoa Products	4.89	6.6	15.61	38.91	30.23	32.91	42.54	39.52	27.37	30.51	20.98*	50.05
Poultry Products	11.79	15.72	15.64	13.39	13.85	15.38	15.75	14.72	14.34	16.65	1.68	9.69
Processed Fruits & Juices	9.23	12.06	12.35	16.4	22.63	21.78	17.31	16.23	14.31	14.32	4.1	26.80

Table 4: India's Export of Principal Commodities to ASEAN (Value in Million US$)

Note: ***, **, and * are the significance levels at 1%, 5%, and 10%, respectively.

Source: Calculations based on Agricultural and Processed Food Products Export Development Authority (APEDA) database, 2022

Table 5: India's Import of Principal Commodities from ASEAN (Value in Million US$)

Product Name	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	CAGR	CV
Fresh Fruits	1138	1273	1561	1694	1675	1942	1987	1993	2131	2260	7.3***	20.69
Pulses	2450	1828	2786	3902	4244	2908	1140	1440	1611	2088	-5.7	42.34
Cashew	990	773	1087	1339	1346	1418	1607	1277	1006	1169	2.9	20.34
Alcoholic Beverages	260.1	341	407	447	534	601.1	667.6	656.0	543.7	587.4	9**	27.01
Misc. Processed Items	233.1	244.4	286.0	277.2	315.67	347.1	366.2	372.2	304.4	412.4	5.6***	18.42
Cocoa Products	192.8	176.9	253.4	212.9	229.38	228.4	263.1	259.0	273.0	314.7	5***	16.95
Cereal Preparations	66.16	69.15	92.65	87.81	86.78	101.3	137.8	142.1	163.3	183.3	12***	36.03
Fruits / Vegetable Seeds	86.41	74.36	100.4	107.5	97.87	118.6	119.2	120.3	142.7	128.6	5.9***	18.63
Processed Fruits & Juices	79.5	68.28	81.01	80.31	81.73	124.7	129.6	108.8	89.63	119.9	5.6*	23.08
Dairy Products	33.89	38.47	61.49	56.64	38.01	48.51	36.43	52.17	48.91	43.64	1.3	20.19

Other Cereals	20.2	16.08	10.04	51.84	73.3	67.27	67.92	170.5	44.28	39.88	18.6*	82.04
Processed Vegetables	27.42	28.8	17.03	18.4	17.29	20.77	23.16	35.86	22.07	25.51	1.3	25.08
Fresh Vegetables	2.06	6.66	1.82	59.78	1.66	3.98	3.28	83.46	30.5	17.79	28.5	136.05
Wheat	1.11	4.42	9.95	135.4	1268.6	364.5	0.77	0.65	0	0.02	-37.3	224.1

Note: ***, **, * are the significance level at 1%, 5% and 10% respectively

Source: Calculations based on Agricultural and Processed Food Products Export Development Authority (APEDA) database, 2022

4. CONCLUSION

The Indo-ASEAN trade relationship, particularly in the agricultural sector, has grown significantly over the past decade. However, the persistent trade deficit India faces with ASEAN in agriculture, alongside fluctuating trade patterns, underscores the need for a more robust and targeted policy approach. This study's findings, derived from CAGR, Coefficient of Variation, and Trade Intensity Index analyses, reveal that India's agricultural exports to ASEAN are less intensive and more variable than its imports, indicating potential areas for strategic improvement. To address this, India needs to expand its market presence in ASEAN by attracting more capital investments and trade opportunities.

To balance trade with ASEAN, India should focus on boosting exports of high-demand commodities like dairy, spices, and processed foods by improving quality and certifications. The ASEAN-India Free Trade Agreement (AIFTA) is critical to this trade dynamic. Reducing non-tariff barriers through aligned standards, streamlined licensing, and enhanced customs cooperation would ease trade flows. Investment in agricultural infrastructure, mainly through joint ventures in logistics, cold storage, and supply chains, could increase export reliability. Promoting market diversification by targeting high value processed and organic goods and organizing trade fairs can help India access niche ASEAN markets. Supporting value-added processing to shift from raw material exports to higher-return processed goods would further benefit India's trade balance. Additionally, investing in real-time trade analytics to monitor ASEAN market trends and adjust strategies as needed will ensure a more dynamic and effective trade policy. These policies could help balance trade, boost export value, and foster a sustainable, mutually beneficial partnership with ASEAN.

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