Asian Import Demand to 2025

Great Opportunities and Great Challenges for Exporters of

Fresh Apples, Pears, Sweet Cherries and Kiwifruit

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FOREWORD

There is widespread agreement in the world fruit industry that the best prospects for increased demand for many fresh fruit products lies with major Asian economies.

Our previous report, "Asian Import Demand for Apples, Pears, Sweet Cherries and Kiwifruit," published in January 2013, for the first time attempted to use economic models to quantify demand potential for these fresh fruits through the year 2020.

There are now up to an additional six years of annual data that can be used to make longer-term projections through the year 2025 for many Asian countries. The quantitative forecasts presented here are not intended to be precise or definitive, but to be used as a reality check against other forecasts based on intuition or subjective assessments. Economic models cannot capture all the factors that affect future demand. However, they can identify significant differences in opportunities in different countries.

This report is geared to helping export managers for fresh apples, pears, sweet cherries and kiwifruit assess potential import market growth in sixteen major Asian economies. This information should help them develop strategies for allocating scarce marketing resources most effectively.

The focus is on sixteen Asian countries, five in South Asia, six in Southeast Asia, and five in Northeast Asia. Key characteristics of these countries are shown in Table 1. Adequate databases for analysis of apple and pear import demand were available for all 16 countries. Among south Asian countries, forecasts for sweet cherries and kiwifruit were feasible only for India. Forecasts for imports of sweet cherries was not possible for Vietnam, again due to lack of historical data.

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1. Asia Great Opportunities, Diverse Challenges

There are many reasons to be optimistic about market opportunities in Asia. However, the sixteen Asian countries discussed in this report vary widely in their past history of importing major fresh fruits, and in the structure of their societies, that can affect future demand.

Table 1. Key Characteristics of Selected Asian Countries

Region and Country	Population, 2016	Population Growth, 2006-2016	GDP per Capita, 2016	Growth of GDP per capita, 2006-2016
	(1,000)	(percent)	(US$)	(percent)
South Asia				
Bangladesh	160,800	+ 14.4	1,381	+ 175.9
India	1,324,170	+ 15.8	1,719	+ 98.7
Nepal	28,300	+ 9.3	738	+ 112.4
Pakistan	195,400	+ 22.5	1,435	+ 63.6
Sri Lanka	21,200	+ 5.7	3,835	+ 169.7
Subtotal	1,729,870	+ 17.8	1,727	n.a.
Southeast Asia				
Indonesia	261,115	+ 13.6	3,604	+ 120.3
Malaysia	31,660	+ 19.2	9,357	+ 52.8
Philippines	103,200	+ 18.5	2,953	+ 110.2
Singapore	5,622	+ 27.5	52,943	+ 54.3
Thailand	67,460	+ 4.7	5,942	+ 64.3
Vietnam	92,700	+ 11.9	2,214	+ 176.4
	561,757	+ 13.4	13,497	n.a.
Northeast Asia				
China, mainland	1,382,700	+ 5.2	8,125	+ 287.1
Hong Kong	7,337	+ 7.0	43,709	+ 54.9
Japan	127,000	+ 0.4	38,860	+ 9.7
Korea, Republic of	51,200	+ 5.8	27,538	+ 31.8
Taiwan (Taipei)	23,500	+ 2.7	22,542	+ 32.3
Subtotal	1,591,737	+ 4.8	16,342	n.a.
Total 16 countries	3,883,364	+ 11.5	16,118	n.a.
World	7,466,960	+ 12.7	n.a.	n.a.
Asia-16 share	52.0	- 0.6	n.a.	n.a.

Table 1 summarizes the size and rate of growth of the populations of the sixteen countries, the average per capita GNP in 2016, and the rate of growth in per capita GNP between 2006 and 2015. Countries vary widely just in these basic characteristics.

The demographic data alone indicate the large market opportunities in the region. Together, the sixteen countries include over half of the total world population. The group includes the world's two most populous countries, China and India, and five other countries with populations of over 100 million. At the other extreme, it includes the small city-states of Hong Kong and Singapore.

Countries are also at widely different stages of economic development. The average per capita GDP in 2016 was less than $2,000 in current dollars in South Asia. In Southeast Asia, the average was almost $13,500, largely due to the upward influence of Singapore. Per capita GDP in Indonesia, the Philippines and Vietnam was between $2,000 and $5,000, while that of Malaysia and Thailand was between $5,000 and $10,000. In Northeast Asia, the average was just over $16,000, but that average was lowered by the influence of China, which had a per capita GDP of slightly over $8,000. All the other countries in the region had per capita GDP above $20,000, while that of Hong Kong topped $43,000.

Population growth is another good indicator of future market potential. It tended to run inversely to per capita GDP. Between 2006 and 2016, population growth averaged almost 18 percent in South Asia, over 13 percent in Southeast Asia, and less than 5 percent in Northeast Asia. In South Asia, population growth was slowest in Sri Lanka and Nepal. Thailand was the outlier for slow population growth in Southeast Asia. China was the major anomaly in Northeast Asia. Its population has grown relatively slowly despite its low per capita GDP, the result of its long-established one-child population control strategy.

Trends in per capita GDP have also been highly favorable. The rate of growth between 2006 and 2016 exceeded 100 percent in seven of these Asian countries, while China's per capita GNP grew almost fourfold. Six other countries achieved growth of over 50 percent in the decade, while two of the more developed countries, South Korea and Taiwan, had growth of over 30 percent. The only laggard in economic growth was Japan, for long the world's second largest economy. It has been hit by a series of recessions in the last two decades.

The countries also differ in many other characteristics that affect their attitudes towards consumption and imports. Many of the larger countries, and some smaller ones, include numerous ethnic groups with different traditional customs, languages and religions. Some of the world's largest religions, including Christian, Muslim, Buddhist and Hindu, strongly influence beliefs and behavior in the region.

The political systems also differ widely. For example, India is the world's largest democracy. Government in China is under the centralized control of the communist party. Vietnam has been ruled by a triumvirate of senior communist party officials. Thailand is currently ruled by a military junta, while Pakistan has alternated between military governments and democratic governments. Several other countries in the region, like Malaysia and Singapore, that have democratic processes, have been ruled for decades by a single political party.

The attitude towards trade also varies widely, both between countries, and over time. Most countries in the region are members of the World Trade Organization. Many are also members of international bodies that favor enhancement of regional trade and development, such as the Association of Southeast Asian Nations (ASEAN). Many also have bilateral trade agreements both with Asian nations, and with nations outside Asia. However, most countries have a protectionist attitude towards their agriculture, and have responded without warning to any threats that imports might pose to domestic production, particularly of fruits that might compete with indigenous fruits. Protectionist responses have included tariffs, quotas, restrictions on ports of entry, onerous phytosanitary requirements and the addition of bureaucratic obstacles to imports, such as preclearance at point of export, or permits for individual transactions at point of import.

Another set of characteristics have favored the expansion of imports. These include the relative shortage of arable land, increasing urbanization, an expanding middle class, and the development of modern retailing systems, such as supermarkets, that require imports to meet the needs of their customers twelve months a year. While companies from Europe and North America have been in the lead in establishing modern retailing systems, indigenous companies have learned very rapidly how to compete using similar retail formats.

Each country has its own unique combination of factors favoring or impeding imports.

Table 2 shows peak imports of fresh apples, pears, sweet cherries and kiwifruit for the 2012-2016 period for the 16 countries. Peak imports are likely to be more representative of a country's current potential for imports, since imports for a specific year can be affected by temporary protectionist measures.

Table 2. Recent Peak Imports of Fresh Apples, Pears, Sweet Cherries and Kiwifruit in Selected Asian Countries, 2012-2016
(metric tons)

Region and Country	Fresh apples	Fresh pears	Fresh sweet cherries	Fresh kiwifruit
	(metric tons)	(metric tons)	(metric tons)	(metric tons)
South Asia				
Bangladesh	177,081	3,369	25	0
India	246,808	33,589	135	24,481
Nepal	48,807	661	6	2
Pakistan	78,139	2,834	0	302
Sri Lanka	25,729	298	5	54
Subtotal	576,564	40,751	171	24,839
Southeast Asia				
Indonesia	139,926	131,134	32	4,904
Malaysia	115,240	49,261	618	9,799
Philippines	153,050	14,977	259	1,076
Singapore	42,289	18,825	221	5,972
Thailand	189,345	48,263	1,865	3,235
Vietnam	148,365	78,769	1,468	3,441
Subtotal	788,215	341,229	4,463	28,427
Northeast Asia				
China, mainland	87,563	8,224	109,153	125,987
Hong Kong (net)	131,495	83,800	99,496	27,038
Japan	2,563	85	10,471	93,192
Korea, Republic of	81	78	13,805	30,735
Taiwan (Taipei)	168,741	10,953	14,984	35,763
Subtotal	390,443	103,140	247,909	312,715
Total 16 countries	1,755,222	485,120	252,543	365,981

Combined, these 16 Asian countries had current potential for imports of over 1.75 million metric tons of fresh apples. Pears were a distant second, at less than one-half million metric tons, less than 30 percent of the apple volume. Kiwifruit imports amounted to only 21 percent of the apple volume and sweet cherry imports to less than 15 percent. These countries currently account for about 20 percent of world imports of fresh apples and fresh pears, close to 30 percent of fresh kiwifruit imports, and a staggering two-thirds of fresh sweet cherry imports.

Nine countries had peak imports of fresh apples of over 100,000 metric tons. Fresh apple imports were high relative to population for most countries except Pakistan in South Asia and for China, Japan and South Korea in Northeast Asia. Mercantilist policies in the last three countries have favored domestic production over imports.

The preference for fresh pear imports also varied widely among countries. In only three countries, Indonesia, Vietnam and Hong Kong, did imports of fresh pears exceed more than 50 percent of fresh apple imports. Pear imports by Japan and South Korea were low because of persistent protectionist policies in those countries.

Over 98 percent of peak imports of fresh sweet cherries were accounted for by the five countries in Northeast Asia, with China and Hong Kong together accounting for over 82 percent. Japan, South Korea and Taiwan all had peak sweet cherry imports of over 10,000 metric tons. Only two other countries, Thailand and Vietnam, had peak sweet cherry imports of over 1,000 metric tons.

Peak kiwifruit imports were also dominated by Northeast Asian countries, with China and Japan by far the most important. India was a standout among South Asian countries with kiwifruit imports of over 24,000 metric tons. Countries in Southeast Asia showed a consistently higher preference for imports of kiwifruit than of sweet cherries. The standouts were Malaysia, with almost 10,000 metric tons and Singapore with almost 6,000 metric tons of kiwifruit imported.

While volume of imports is one indicator of market potential, the average price of imports is significant for potential exporters. After accounting for transportation and other transit costs, exporters need to be able to generate adequate returns at origin to cover production, packing and marketing costs.

Table 3 shows the average import prices paid by each country for each of the four fruits in the most recent five-year period. For most countries, that included the years between 2012 and 2016. For fresh pears, sweet cherries and kiwifruit, the latest world average figure for 2013 is shown for comparison.

For fresh apples, all but one of the countries in Southeast Asia, and all the countries in Northeast Asia, paid above the world average price for 2012-2016. The exception was Malaysia. For South Asia, only India paid above the world average price.

Table 3. Average Import Prices of Fresh Apples, Pears, Sweet Cherries and Kiwifruit in Selected Asian Countries
(US$ per metric ton, latest five years)

Region and Country	Fresh apples	Fresh pears	Fresh sweet cherries	Fresh kiwifruit
	(US$/mt)	(US$/mt)	(US$/mt)	(US$/mt)
South Asia				
Bangladesh	689.59	684.82	666.39	n.a.
India	1,066.81	871.76	4,725.45	1,692.62
Nepal	399.62	329.12	698.09	310.68
Pakistan	312.37	269.42	n.a.	783.42
Sri Lanka	931.19	523.34	1,213.33	826.51
Southeast Asia				
Indonesia	1,449.47	922.93	3,354.68	2,454.00
Malaysia	857.06	767.08	3,337.25	2,279.41
Philippines	1,106.22	559.02	1,744.51	1,814.62
Singapore	1,458.18	1,282.16	9,613.92	2,837.91
Thailand	1,305.60	1,057.01	4,773.73	2,327.52
Vietnam	1,223.24	1,160.61	4,732.91	1,522.22
Northeast Asia				
China, mainland	1,677.40	1,596.47	7,604.90	2,794.08
Hong Kong	1,103.87	578.17	5,628.56	2,287.49
Japan	2,201.22	2,991.17	9,468.37	3,405.76
Korea, Republic of	1,377.13	3,629.66	9,408.52	2,311.33
Taiwan (Taipei)	1,450.16	1,670.07	6,717.71	1,816.94
World *	906.23	1,186.76 *	4,442.65 *	1,668.51 *

* World price for pears, sweet cherries and kiwifruit was reported by FAOSTAT for 2013.

Four of the five countries in South Asia paid far below the average world apple import price, with Pakistan and Nepal by far the lowest. The average prices paid by Bangladesh and Sri Lanka would have made sales of fresh apples by most western suppliers uneconomical. Japan paid more than double the world average price for the small volume of fresh apples that it imported. Japanese import protocols add considerably to the delivered cost of any imports.

The situation in fresh pears was even more diverse. Nine countries paid less than the world average price for imported pears in 2013. This included all the countries of South Asia, three Southeast Asian countries, Indonesia, Malaysia and the Philippines, and Hong Kong In Northeast Asia. A common factor in all these countries is the influence of relatively cheap Asian pears from China.

The case of fresh sweet cherries was quite similar to that of fresh pears, with import prices for all the countries in Northeast Asia being above the 2013 world average, and the same three countries in Southeast Asia, Singapore, Thailand and Vietnam, paying above the world average. India was the only country in South Asia paying above the world average for its very modest level of fresh sweet cherry imports.

The average world price of fresh kiwifruit imports was less than 40 percent that for fresh sweet cherries, but only three countries in South Asia, Nepal, Pakistan and Sri Lanka, paid below the world average price. Bangladesh did not record any commercial imports of fresh kiwifruit. Most countries in Asia paid more than 20 percent above the world average price, probably reflecting the influence of the higher-priced New Zealand kiwifruit in the Asian trade.

2. Forecasting Future Asian Imports

A common statistical model was used to forecast imports of fresh apples, pears, sweet cherries and kiwifruit in each of the 16 Asian countries studied. It was assumed that the main factors affecting per capita imports would be changes in real GDP per capita, and in import prices in the local currency. These statistics were obtained from currently available data series.

Historical data on the population of each country were obtained from the UN,FAO FAOSTAT database. Data on the volume and average price of imports (in US dollars) of each fruit were obtained from the same sources through 2013, and from the United Nations Comtrade database for later years. Data on per capita GDP, inflation and exchange rates were obtained from the Asian Development Bank online database for each country.

Quantitative models were completed for all 16 countries for fresh apples and fresh pears, but for only 12 countries for fresh sweet cherries and fresh kiwifruit. Due to lack of import data, models for the latter fruits could not be run for four South Asian countries, Bangladesh, Nepal, Pakistan and Sri Lanka.

These quantitative models were then used to forecast per capita imports of each fruit for the years 2020 and 2025. It was assumed that real per capita GDP in each country will grow at the same rate as had been achieved in the 2006-2016 period, and that average import prices would remain at the 2012-2016 average in 2020 and be 10 percent higher in 2025. UN,FAO population forecasts for 2020 and 2025 were then multiplied by the per capita import forecasts for those years to estimate the actual volume of each fruit that would be imported.

While the forecasts are based on reasonable assumptions about future trends in per capita GDP, population and prices, they should be treated as directional indicators, rather than as precise levels of imports. For example, some of the assumptions about future GDP or prices may not come true. In addition, non-economic factors, such as new phytosanitary barriers, trade disputes or regional wars, could disrupt the normal evolution of trade.

In all, 17 forecasting equations were developed for fresh apple imports, 17 for fresh pears and 12 each for fresh sweet cherries and fresh kiwifruit.

Estimated coefficients, and information on statistical fit for the 58 equations modeled are detailed in Appendix I. Estimated price and income elasticities are reported in Appendix II.

Seventeen equations were run for both fresh apples and fresh pears, one for each country except China, and two for China. The first Chinese equation analyzed only direct imports by China, while the second equation analyzed direct imports plus reported re-exports from Hong Kong.

In the case of fresh apples, half the equations had a goodness of fit measure (R^2) greater than 0.7. Twelve of the 17 equations had the expected negative coefficient on price and 15 had the expected positive coefficient on per capita GNP (the proxy for per capita income). In the case of fresh pears, the goodness of fit tended to be lower. Only 5 equations had an R^2 above 0.7. However, 15 equations had the expected negative coefficient on price and 13 had the expected positive coefficient on income.

In the case of fresh sweet cherries, six of the 12 equations had an R^2 above 0.7. Ten of the 12 equations had the expected negative coefficient on price and nine had the expected positive coefficient on income. In the equations for imports of fresh kiwifruit, 8 of the 12 had R^2 above 0.7, and all but one of the equations had a positive coefficient on income. However, 8 of the 12 equations had a positive coefficient on price, although none were significant at the 5 percent level of significance. These results indicate that, for whatever reason, price played a limited role in influencing per capita imports of fresh kiwifruit.

In summary, the statistical results for the 16 countries, and for the four fruits, were relatively robust. In particular, over 80 percent of the equations confirmed the positive influence of rising per capita GDP on fruit imports. Thus, the equations should provide a sound basis for quantitative forecasts to 2025.

3. Summaries of Forecasts to 2025

Table 4. Fresh Apple Imports. Latest Year versus Forecasts for 2020 and 2025 (metric tons)

Country	Latest annual imports	Latest Year	Forecast 2020	Forecast 2025
Bangladesh	177,081	2015	273,516	397,997
India	246,808	2016	360,092	508,728
Nepal	48,807	2015	76,984	103,350
Pakistan	78,139	2016	24,288	35,962
Sri Lanka	25,729	2016	23,954	24,940
South Asia	576,564	n.a.	758,834	1,070,977
Indonesia	139,926	2016	202,097	219,845
Malaysia	115,240	2016	123,080	140,625
Philippines	153,050	2016	121,976	149,786
Singapore	41,581	2016	42,506	39,968
Thailand	189,345	2016	192,221	224,548
Vietnam	141,491	2016	190,047	242,815
Southeast Asia	676,027	n.a.	871,927	1,017,587
China, direct	67,109	2016	83,764	104,487
Hong Kong, Net	131,495	2016	97,333	104,487
Japan	1,923	2016	784	709
Korea, Republic of	31	2016	115	121
Taiwan (Taipei)	168,741	2016	150,917	157,019
Northeast Asia	369,299	n.a.	332,913	366,823
Total 16 Countries	1,621,890	n.a.	1,963,674	2,455,387
China, total	94,388	2016	139,238	160,526

Imports of fresh apples in all 16 countries combined are expected to grow by 21.1% between 2016 and 2020, and by a further 25% between 2020 and 2025, for a total increase in the decade of over 50% (table 4). Imports of fresh apples for Bangladesh, India, Nepal, Indonesia, Vietnam, China direct, and China including re-exports from Hong Kong, are expected to grow even faster than average.

Results for Hong Kong and Vietnam may be affected to an unknown extent by re-routing of product into China to avoid Chinese import tariffs and value added taxes. Routing of products through Pakistan may have been influenced by India's restrictions on imports of fresh apples from China.

The laggards in growth of fresh apple imports include higher-income countries like Singapore, Hong Kong (net), Japan, South Korea and Taiwan.

Table 5. Fresh Pear Imports. Latest Year versus Forecasts for 2020 and 2025 (metric tons)

Country	Latest annual imports	Latest Year	Forecast 2020	Forecast 2025
Bangladesh	3,369	2015	4,489	5,334
India	33,589	2016	40,772	56,892
Nepal	252	2015	642	883
Pakistan	1,440	2016	2,170	1,751
Sri Lanka	165	2016	141	10
South Asia	38,815	n.a.	48,214	64,870
Indonesia	99,654	2016	159,304	170,104
Malaysia	49,261	2016	35,633	33,643
Philippines	13,293	2013	3,796	5,306
Singapore	17,888	2016	17,674	14,046
Thailand	48,263	2016	49,649	55,348
Vietnam	8,091	2015	82,171	104,810
Southeast Asia	236,430	n.a.	348,227	383,257
China, direct	8,224	2016	7,699	10,203
Hong Kong, Net	68,252	2016	56,944	57,142
Japan	45	2016	0	0
Korea, Republic of	21	2016	56	57
Taiwan (Taipei)	10,953	2013	13,834	15,847
Northeast Asia	80,095	n.a.	78,533	83,249
Total 16 Countries	355,340	n.a.	474,974	531,376
China, total	15,250	2016	11,505	15,732

Imports of fresh pears in all 16 countries combined are expected to grow by 33.7% between 2016 and 2020, and by a further 12% between 2020 and 2025, for a total increase in the decade of almost 50% (table 5). Imports of fresh pears by Bangladesh and Nepal (both from a very low base), and from India, Indonesia and Vietnam, are expected to grow even faster. In most other countries in Asia, demand for fresh pear imports will continue to be weak.

Table 6. Fresh Sweet Cherry Imports.
Latest Year versus Forecasts for 2020 and 2025
(metric tons)

Country	Latest annual imports	Latest Year	Forecast 2020	Forecast 2025
Bangladesh	25	2013	No data	No data
India	105	2016	85	159
Nepal	1	2013	No data	No data
Pakistan	0	2013	No data	No data
Sri Lanka	4	2013	No data	No data
South Asia	135	n.a.	85	159
Indonesia	32	2016	0	0
Malaysia	378	2016	768	981
Philippines	71	2016	186	235
Singapore	221	2016	585	524
Thailand	1,865	2015	179	201
Vietnam	1,468	2015	No data	No data
Southeast Asia	4,035	n.a.	1,893	2,202
China, direct	109,153	2016	125,929	182,091
Hong Kong, Net	99,496	2016	84,300	98,847
Japan	4,619	2016	6,639	4,263
Korea, Republic of	13,805	2016	13,037	15,595
Taiwan (Taipei)	8,616	2013	23,936	32,722
Northeast Asia	235,689	n.a.	253,841	333,518
Total 16 Countries	239,859	n.a.	255,819	335,879

Growth in import demand for fresh sweet cherries in the next decade is likely to be highly concentrated in Northeast Asia, with most of the growth coming after 2020 (table 6). That region is expected to account for over 99% of Asia's fresh sweet cherry imports in both 2020 and 2025. Seven countries are forecast to have higher imports in 2025 than in 2016.

Growth is expected to be strongest in mainland China and in Taiwan. China alone is forecast to account for over 54% of all Asian fresh sweet cherry imports by 2025.

Table 7. Fresh Kiwifruit Imports. Latest Year versus Forecasts for 2020 and 2025 (metric tons)

Country	Latest annual imports	Latest Year	Forecast 2020	Forecast 2025
Bangladesh	0	2013	No data	No data
India	24,481	2016	22,174	33,158
Nepal	2	2015	No data	No data
Pakistan	302	2016	No data	No data
Sri Lanka	24	2016	No data	No data
South Asia	24,809	n.a.	22,174	33,158
Indonesia	4,904	2016	5,815	6,925
Malaysia	9,799	2016	9,590	11,910
Philippines	1,076	2016	550	0
Singapore	5,972	2016	5,180	6,134
Thailand	3,235	2015	3,283	4,067
Vietnam	3,441	2015	4,321	7,037
Southeast Asia	28,427	n.a.	28,739	36,073
China, direct	125,987	2016	113,973	157,171
Hong Kong, Net	27,038	2016	23,155	27,513
Japan	93,192	2016	82,458	92,148
Korea, Republic of	30,735	2016	36,469	40,276
Taiwan (Taipei)	30,250	2013	43,607	56,200
Northeast Asia	307,202	n.a.	299,662	373,308
Total 16 Countries	360,438	n.a.	350,575	442,539

Imports of fresh kiwifruit are forecast to decrease between 2016 and 2020, but then to increase by 26.2% between 2020 and 2025, for an increase in the decade of 22.8% (table 7). The demand for fresh kiwifruit is forecast to be distributed more widely among Asian countries than that for fresh sweet cherries. Imports in 2025 are forecast to be higher than in 2016 for ten countries, India, Indonesia, Malaysia, Singapore, Thailand, Vietnam, China, Hong Kong, the Republic of Korea and Taiwan.

A number of additional comments can be made on the forecasts. While the volume of trade in fresh apples will continue to surpass that for the other three fruits, little growth in fresh apple imports can be expected in the richer countries of Northeast Asia.

Trade in fresh pears in these Asian countries will continue to be dominated by cheaper Asian pears supplied by the world's largest pear producer, China.

Imports of more expensive fruits like fresh kiwifruit and fresh sweet cherries likely require that a country has passed a minimum income threshold before most citizens can afford these fruits. Since import prices of fresh sweet cherries are generally two to three times higher than import prices of fresh kiwifruit, demand for fresh kiwifruit is likely to expand among these Asian countries more rapidly than for fresh sweet cherries.

The next section shows graphically the pattern of imports for the four fruits between 2004 and 2016, and forecasts for 2020 and 2025. This graphical analysis provides a further check on the validity of the forecasts.

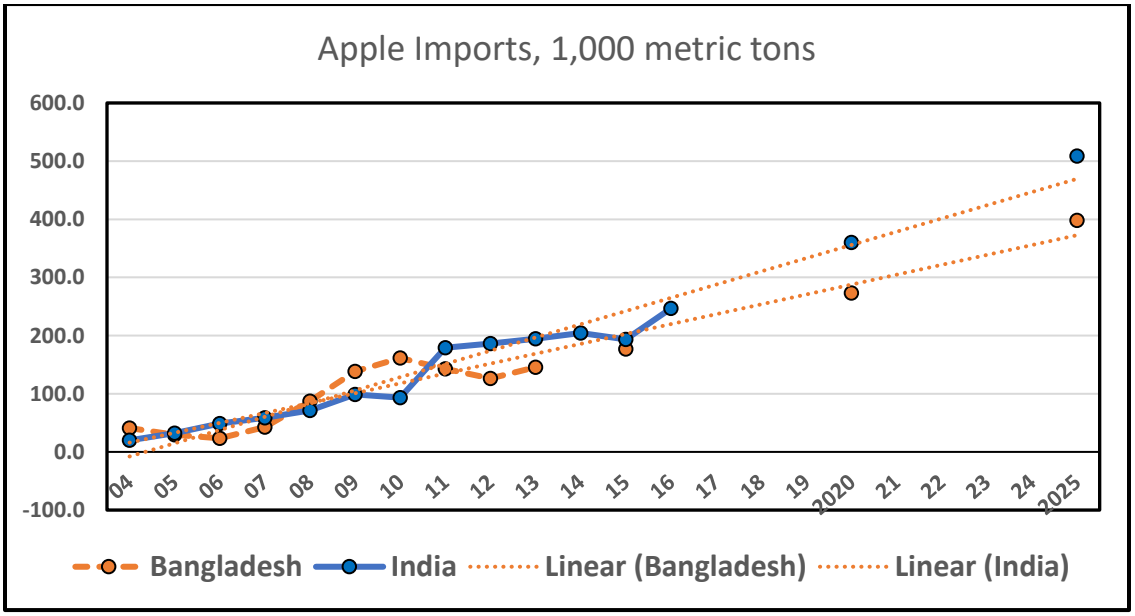
4. Fresh Apple Charts: Historical and Forecast

Bangladesh and India

Bangladesh and India have historically been the largest importers of fresh apples in South Asia. Our forecasts suggest that their leadership will continue through 2025. By 2025, India is forecast to surpass China in total population growth. Its small domestic apple industry has not been able to supply all of India's fresh apple needs. Accordingly, it is reasonable to expect very substantial future increases in India's fresh apple imports.

The main criticism of Bangladesh as an importer of fresh apples is that the average price it has paid would tend to make the Bangladesh market an uneconomic target for many major exporters. However, as per capita incomes continue to rise in Bangladesh, more consumers will be able and willing to pay for higher-priced imports, so exporters should continue to explore opportunities in Bangladesh.

Bangladesh and India: Imports of Fresh Apples, 2004-2016 Actual, and Forecast 2020 and 2025 (1,000 metric tons)



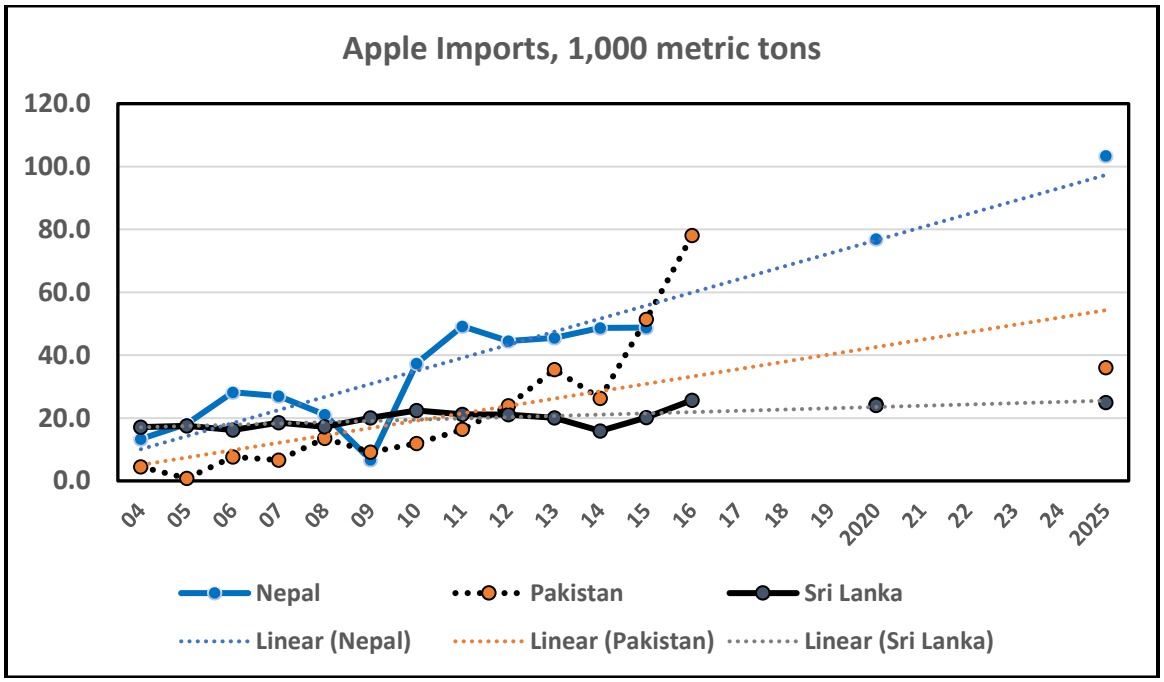
Nepal, Pakistan and Sri Lanka

Nepal, Pakistan and Sri Lanka have paid the lowest average prices for their fresh apple imports in the past, making them difficult targets for many western exporters.

Both Nepal and Pakistan have small domestic apple industries. Thus, variations in the domestic crop may have contributed to the volatility of fresh apple imports in the past. However, Nepal is forecast to import about 100,000 metric tons of fresh apples by 2025. Pakistan's imports are forecast to grow very slowly through 2025.

In contrast to Nepal and Pakistan, Sri Lanka has no domestic apple industry, so its fresh apple supplies have traditionally come from imports. Population growth in Sri Lanka has been by far the slowest in South Asia. Forecasts suggest that Sri Lankan imports of fresh apples will grow quite slowly over the next decade.

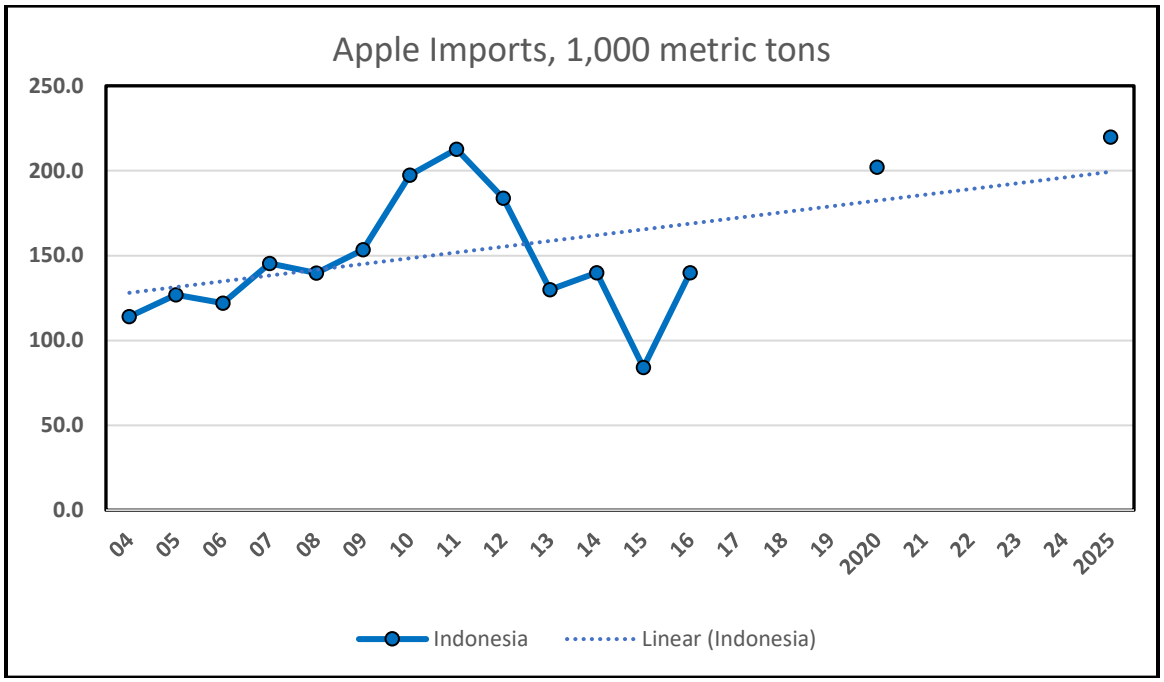
Nepal, Pakistan and Sri Lanka: Imports of Fresh Apples, 2004-2016 Actual, and Forecast 2020 and 2025
(1,000 metric tons)



Indonesia and Malaysia

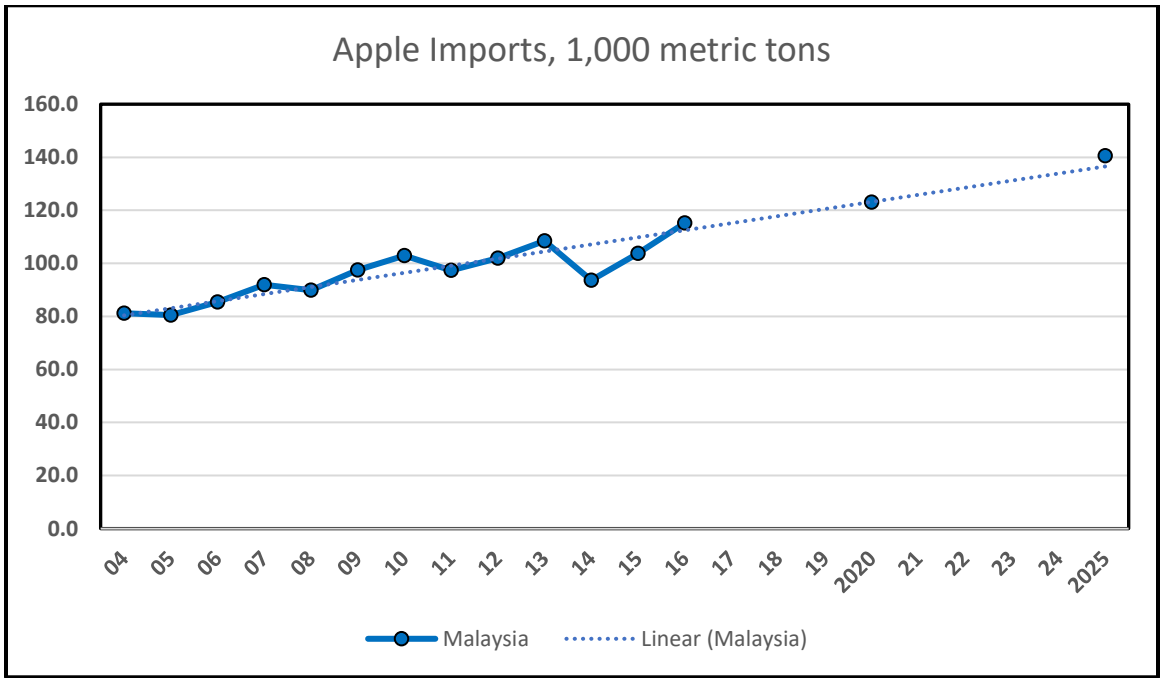
Both Indonesia and Malaysia have been major importers of fresh apples, although, on a per capita basis, Malaysia's imports have been more than six times those of Indonesia. Indonesian fresh apple imports were on a very strong upward trend between 2004 and 2011, but fell dramatically between 2011 and 2015 before rebounding somewhat in 2016. Contributing to the decline in imports has been increasingly protectionist policies by the Indonesian government. Some of these measures have been ruled illegal by the WTO. If protectionist sentiment can be curbed, Indonesian imports of fresh apples could reach past record levels by 2025.

Indonesia: Imports of Fresh Apples, 2004-2016 Actual, and Forecast 2020 and 2025 (1,000 metric tons)



In contrast, imports of fresh apples by Malaysia have been on a slow, but steady, upward trend. That trend is expected to continue through 2025. Malaysia's per capita income has been about 2.6 times that of Indonesia, so Malaysian consumers are increasingly able to pay for higher-priced fruit imports.

Malaysia: Imports of Fresh Apples, 2004-2016 Actual, and Forecast 2020 and 2025 (1,000 metric tons)

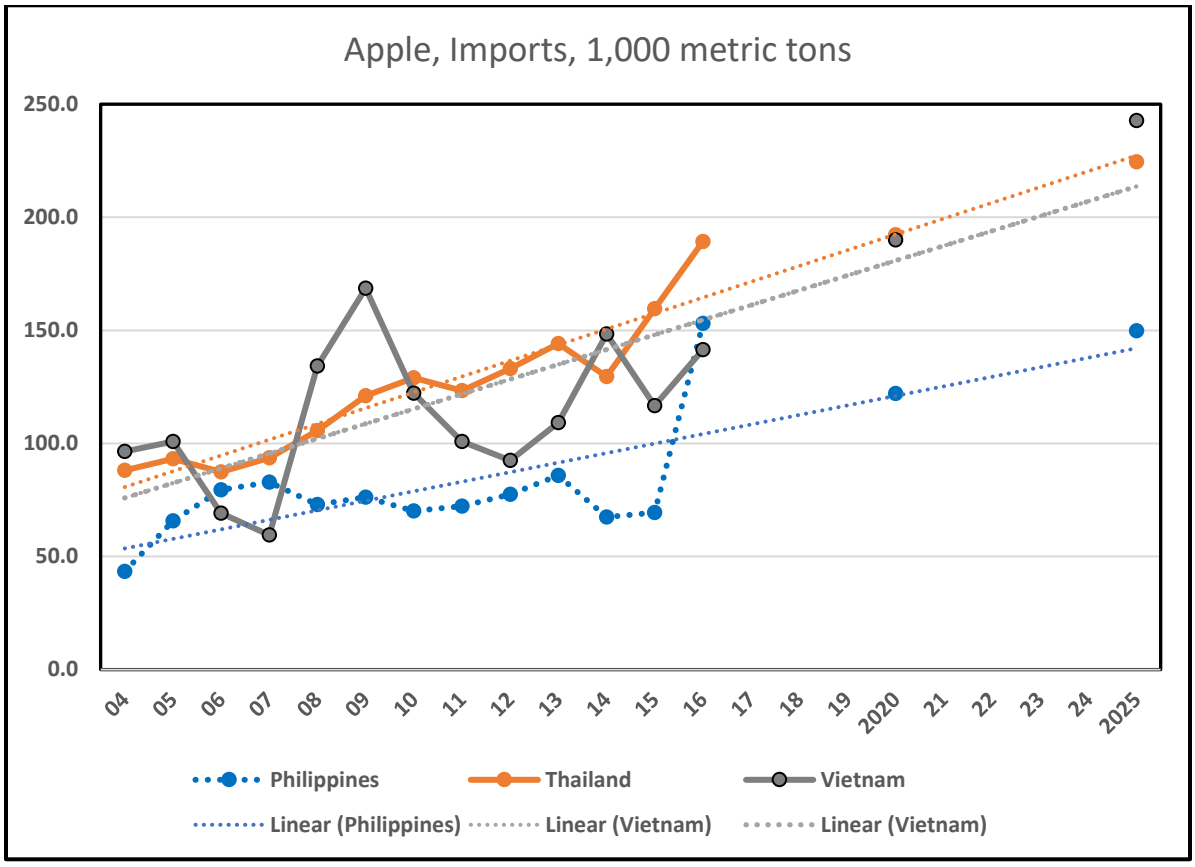


Philippines, Thailand and Vietnam

The Philippines, Thailand and Vietnam all have large populations and have had a strong propensity to import fresh apples. The trend in fresh apple imports for both Thailand and Vietnam has been upwards, although that for Vietnam has been much more volatile. In contrast, fresh apple imports by the Philippines were relatively flat between 2005 and 2015, before breaking upwards in 2016.

Both Vietnam and Thailand are expected to follow a similar upward trend through 2025, and to reach 200,000 metric tons by 2025. The forecast of fresh apple imports by the Philippines is much lower. That country's imports should approach 150,000 metric tons by 2025. Interestingly, the 2025 forecast of Philippine imports is little different from the actual imports in 2016. This suggests that the 2016 level of imports was a temporary aberration.

Philippines, Thailand and Vietnam: Imports of Fresh Apples, 2004-2016 Actual, and Forecast 2020 and 2025
(1,000 metric tons)

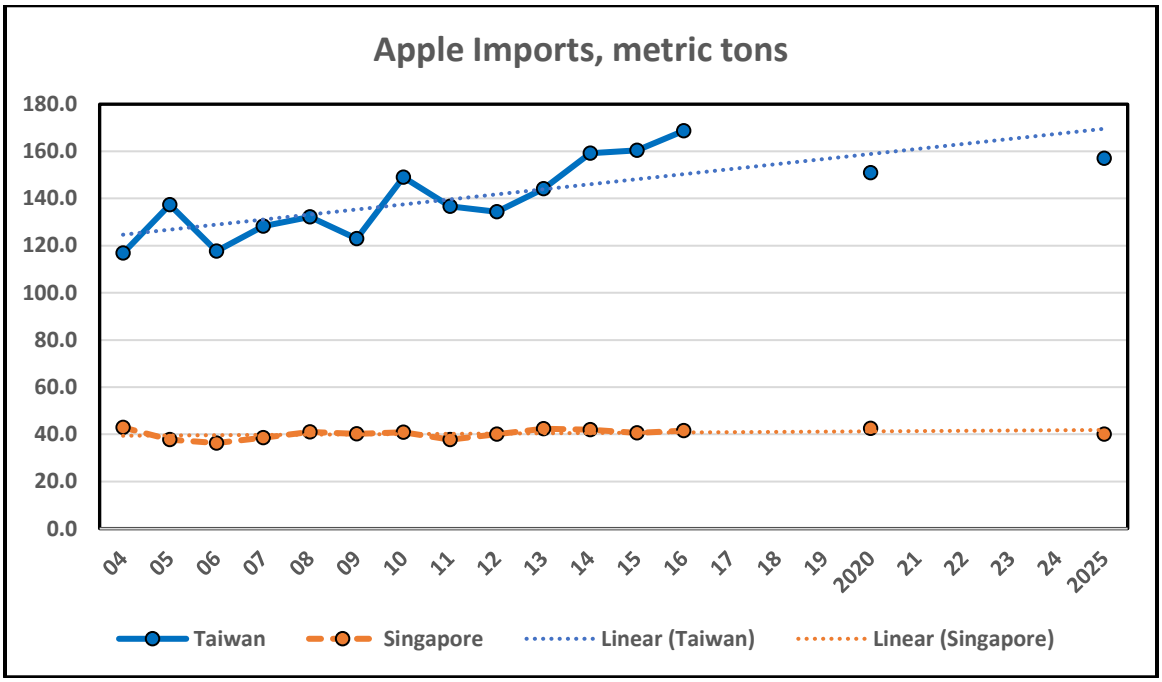


Taiwan and Singapore

Singapore is an exception in Southeast Asia with its small population and high per capita income. In that sense, its economic profile is more similar to that of Hong Kong or Taiwan in Northeast Asia. The chart below shows historical data and forecasts to 2025 for fresh apple imports by Taiwan and Singapore.

In both cases, the past historical trends have been flat, and the forecasts for 2025 indicate that fresh apple imports will remain flat through 2025. The marginal increases in demand for imported fresh apples are expected to be negligible in the future as higher income populations switch their preferences to other fruits.

Taiwan and Singapore: Imports of Fresh Apples, 2004-2013 Actual, and Forecast 2020 and 2025
(metric tons)



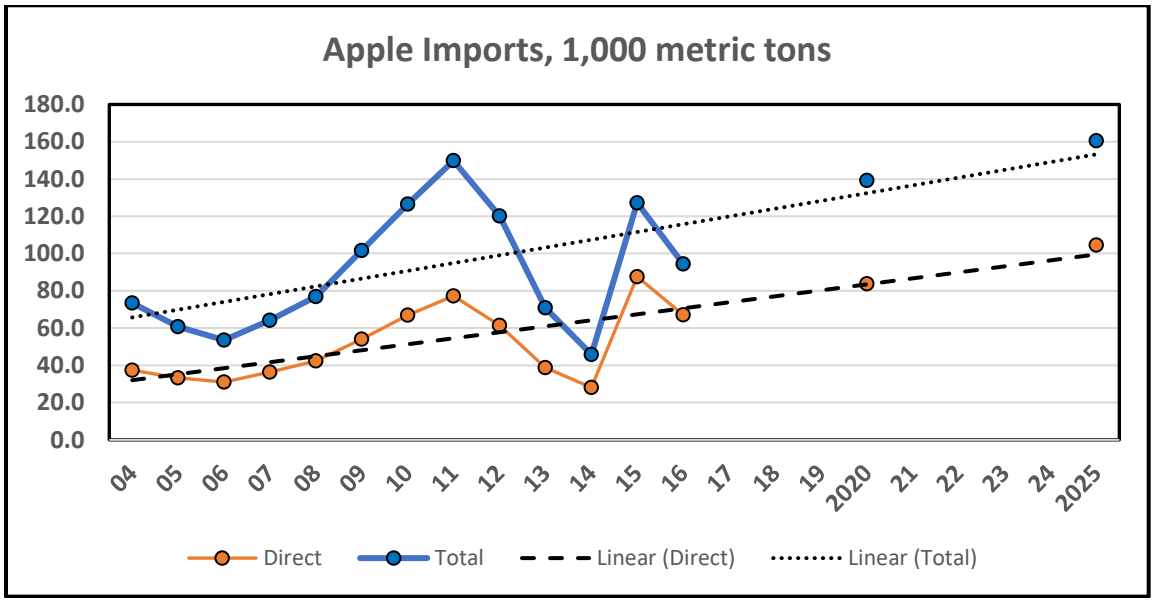
China and Hong Kong

To some extent, China and Hong Kong still need to be considered together. While China now permits direct imports of fresh apples, an unknown share of its imports continue to be channeled through Hong Kong to avoid costly tariffs and taxes.

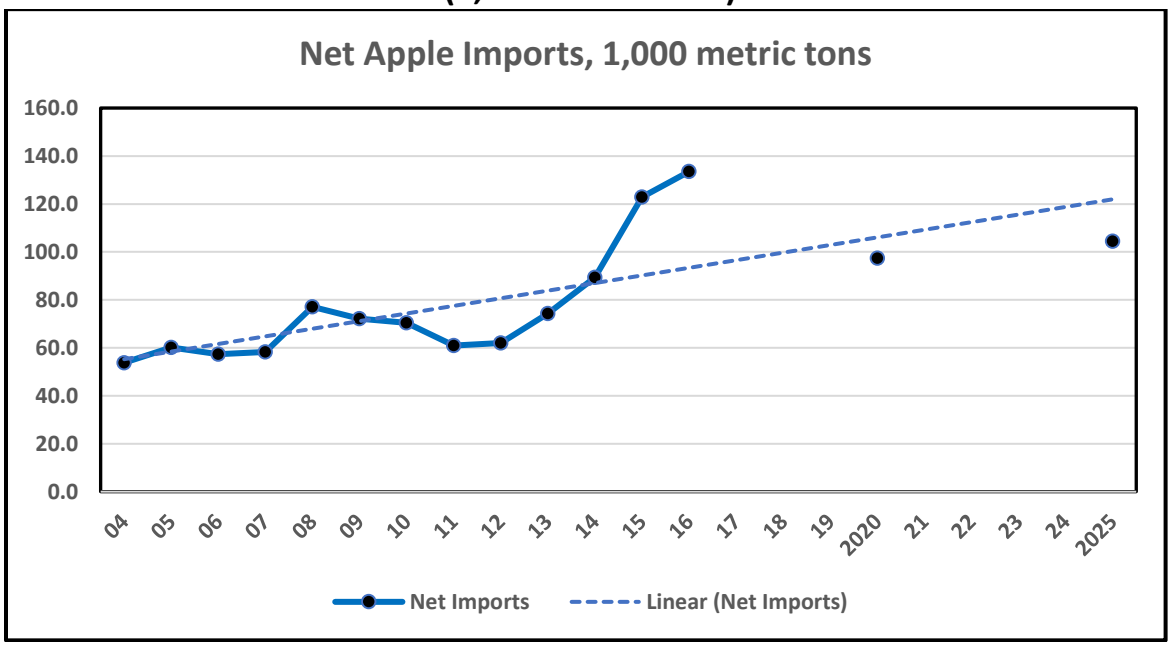
The first chart below shows both China's direct imports of fresh apples, and direct imports plus re-exports from Hong Kong. As one might expect, the ups and downs of the two series parallel each other. Despite China's huge population and rapidly rising per capita income, the 2025 forecast is for imports of fresh apples of less than 100,000 metric tons direct and about 160,000 metric tons total, making China only the fifth largest importer of fresh apples in Asia.

Net imports by Hong Kong were on a steady upward trend between 2004 and 2014, but took an uncharacteristic jump in 2015 and 2016. The forecast to 2025 assumes that those jumps were a temporary aberration, and that Hong Kong's net imports will come close to 100,000 metric tons in 2025.

China: Imports of Fresh Apples, 2004-2016 Actual, and Forecast 2020 and 2025
Direct Imports and Total Imports, including Hong Kong Re-exports
(1,000 metric tons)



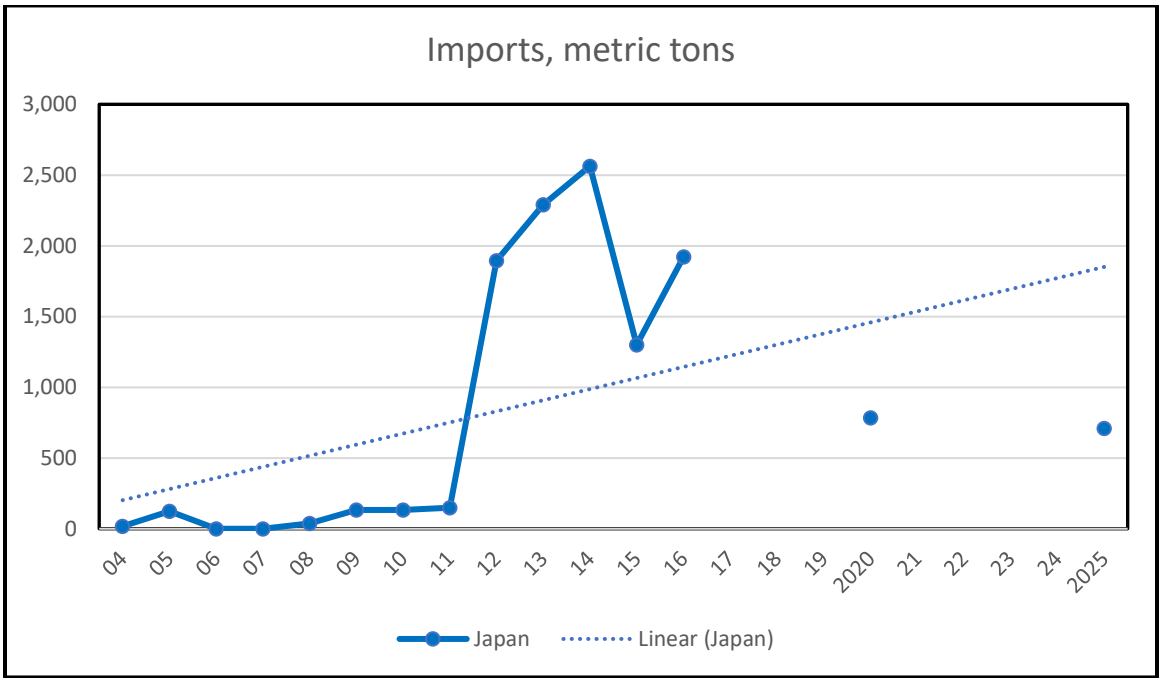
Hong Kong: Net Imports (Imports minus Re-exports) of Fresh Apples,
2004-2016 Actual, and Forecast 2020 and 2025
(1,000 metric tons)



Japan and South Korea Remain Outliers

Imports of fresh apples by Japan and South Korea have remained negligible due to the protectionist measures used by these countries. Readers should note that the chart below for Japan is in metric tons, not 1,000 metric tons as in the previous charts. Imports by Japan averaged less than 2,000 metric tons between 2012 and 2016, and are not expected to exceed that level by 2025 unless major policy changes occur. Imports by South Korea are forecast to be about 100 metric tons in both 2020 and 2025, again unless there are unforeseen policy changes.

Japan: Imports of Fresh Apples, 2004-2016 Actual, and Forecast 2020 and 2025 (metric tons)



5. Fresh Pear Charts: Historical and Forecast

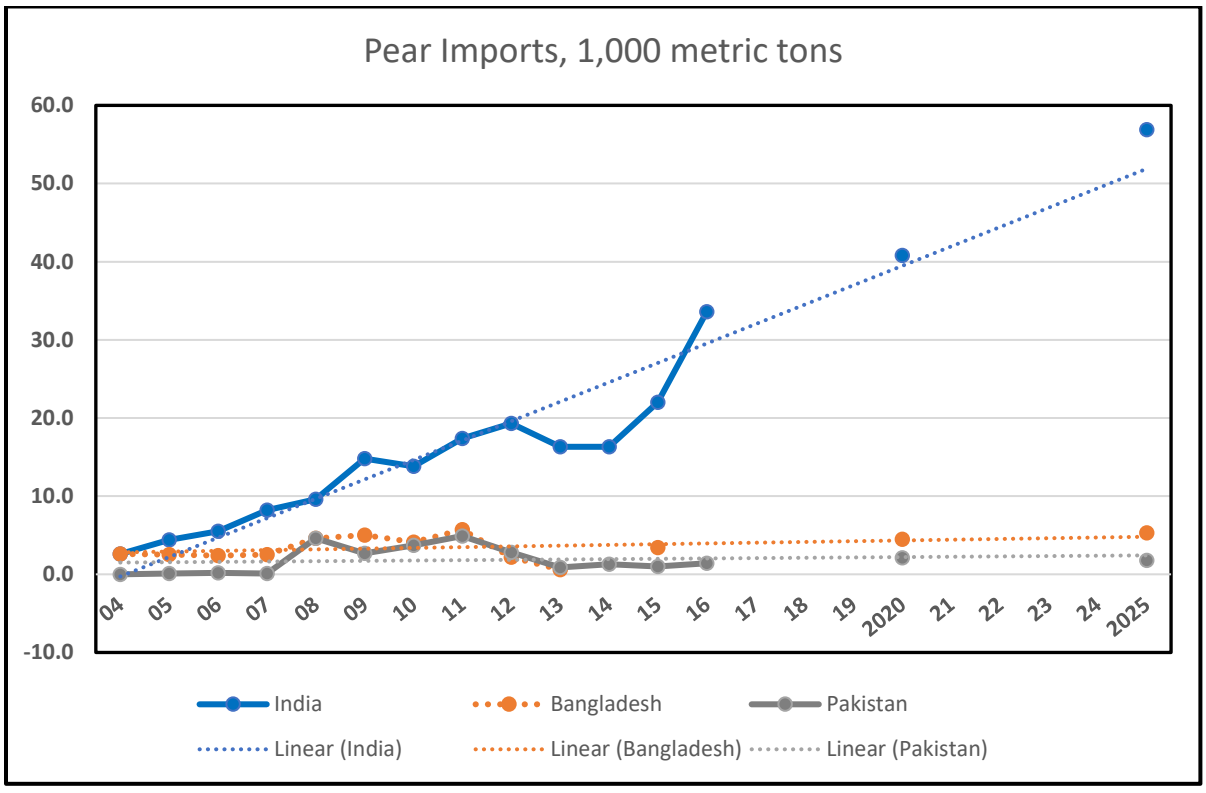
South Asian Countries

Import demand for fresh pears in South Asia has been much weaker than demand for fresh apples. India has been the only major importer of fresh pears in the region. Indian imports are forecast to exceed 50,000 metric tons by 2025.

Both Bangladesh and Pakistan are forecast to experience modest growth in fresh pear imports from a low base over the next decade.

In contrast, there has been little demand for imported fresh pears by Nepal and Sri Lanka. Imports have been minimal in the past, and no growth is forecast in the next decade. This is unlikely to change unless the preferences of consumers in Nepal and Sri Lanka change.

India, Bangladesh and Pakistan: Imports of Fresh Pears, 2004-2016 Actual, and Forecast 2020 and 2025
(metric tons)

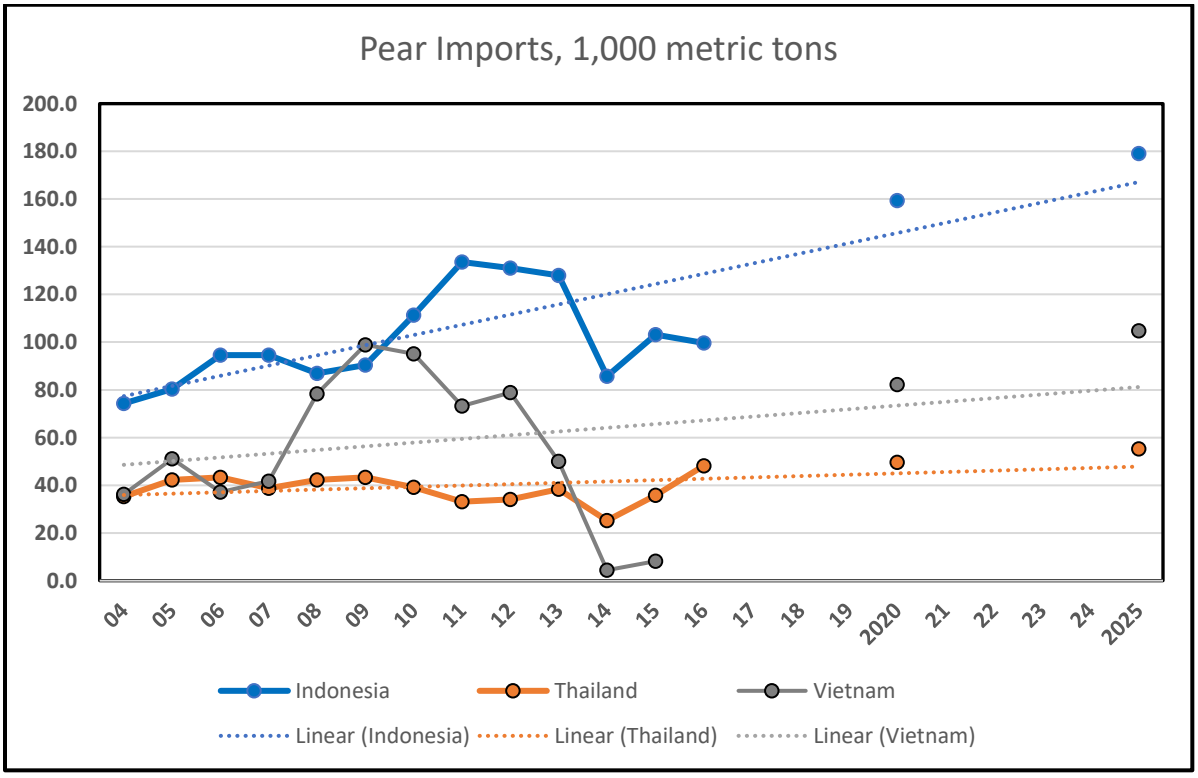


Indonesia, Thailand and Vietnam

Indonesia, Thailand and Vietnam have been the three biggest importers of fresh pears in Southeast Asia. Despite temporary slowdowns in imports in Indonesia and Vietnam in recent years, both are forecast to enjoy import growth in the long term. Indonesian imports are forecast to reach 180,000 metric tons by 2025, and those of Vietnam to exceed 100,000 metric tons by that year. For Indonesia to reach the forecast level, recent protectionist policies will have to be modified.

In contrast to the experience of Indonesia and Vietnam, imports of fresh pears by Thailand have been relatively flat in the past, and only small increases in imports are forecast by 2025.

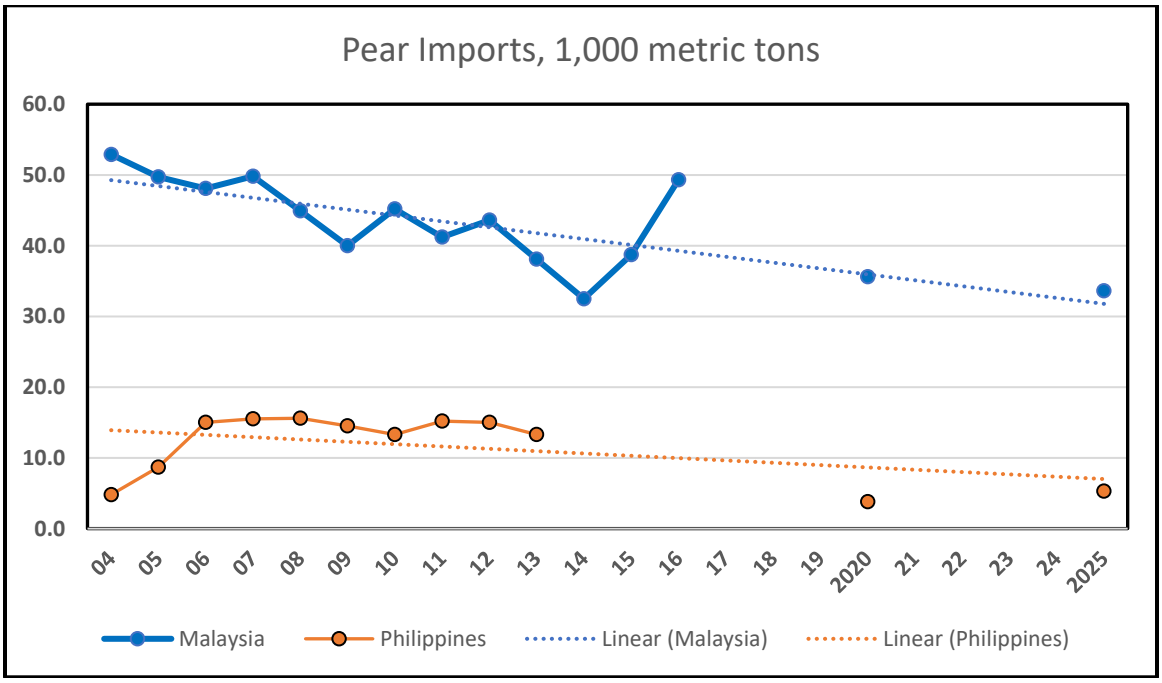
Indonesia, Thailand and Vietnam: Imports of Fresh Pears, 2004-2016 Actual, and Forecast 2020 and 2025
(1,000 metric tons)



Malaysia and the Philippines

The long-term trend in fresh pear imports by both Malaysia and the Philippines is downward. The brief upward surge in Malaysian imports in 2016 is seen as an aberration. Demand for imports of fresh pears has been weak in the Philippines, and that trend is not expected to reverse.

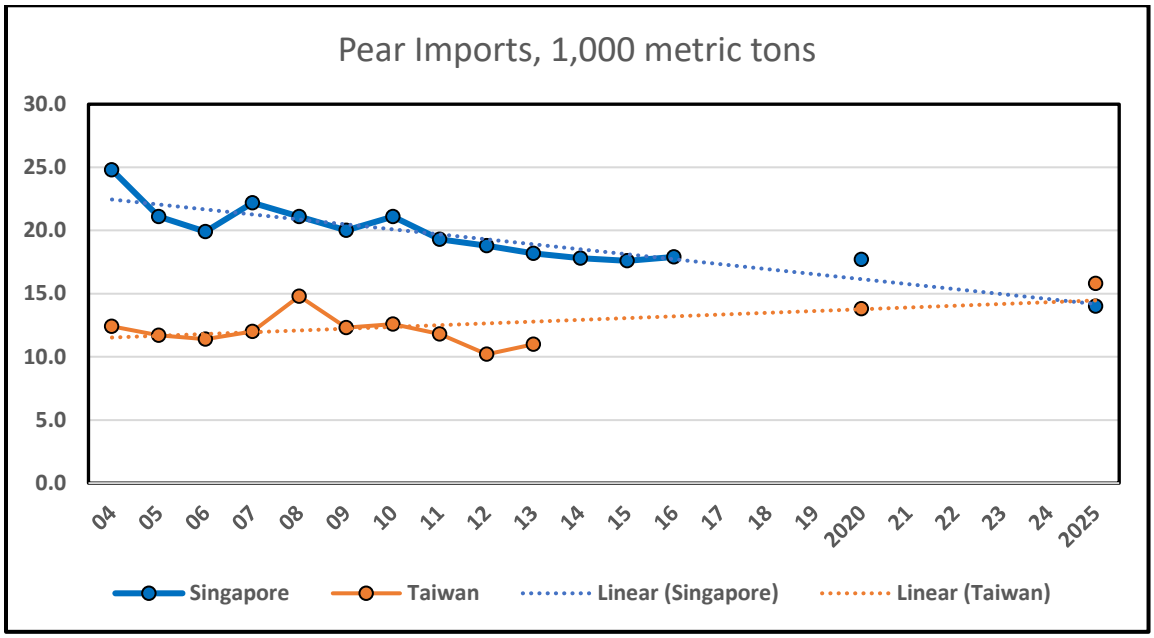
Malaysia and the Philippines: Imports of Fresh Pears, 2004-2016 Actual, and Forecast 2020 and 2025
(1,000 metric tons)



Singapore and Taiwan

Both Singapore and Taiwan are at income levels where consumers can afford a wide choice of imported fruits. Not surprisingly, the demand for imported fresh pears has been flat historically, just as in fresh apples, and little growth is forecast through 2025. Indeed, the demand in Singapore is forecast to fall through 2025 and that in Taiwan to rise, so that by 2025, both will be importing between 14,000 and 16,000 metric tons of fresh pears.

Singapore and Taiwan: Imports of Fresh Pears, 2004-2016 Actual, and Forecast 2020 and 2025
(1,000 metric tons)



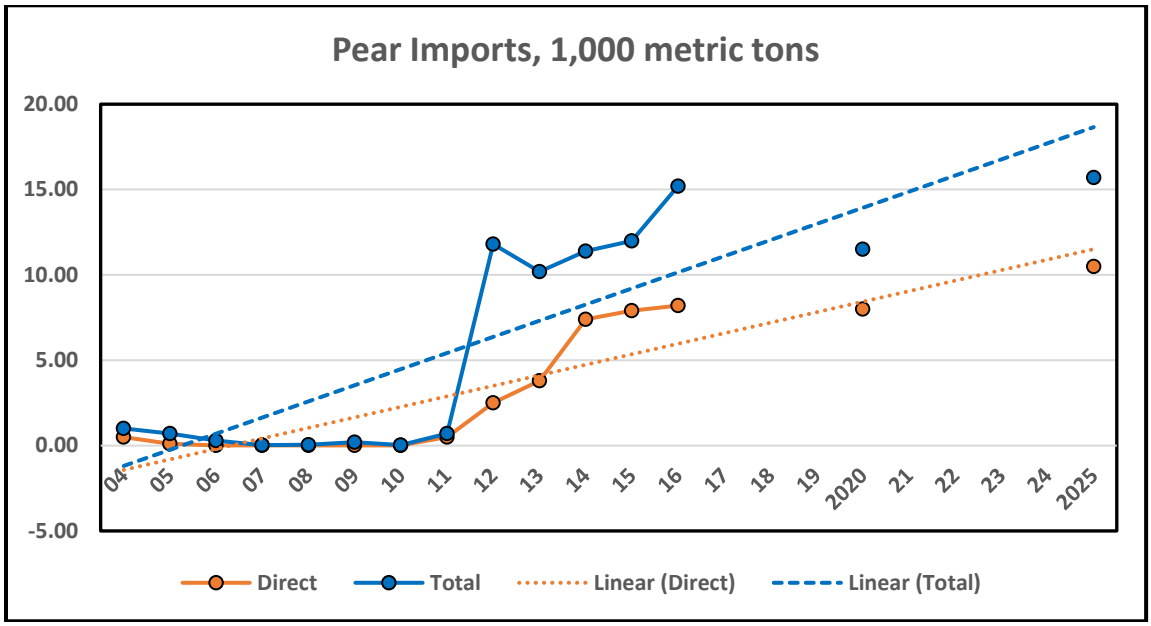
China, Hong Kong and Other Northeast Asia

Just as with fresh apples, imports of fresh pears by China and Hong Kong need to be considered together. Although China now permits direct imports of fresh pears, up to half of its fresh pear imports have been channeled through Hong Kong. Prior to 2011, direct imports by China and re-exports from Hong Kong to China were close to zero, while net imports by Hong Kong were flat, and generally below 30,000 metric tons. In 2012, there was a sudden explosion of imports in all three categories. Thereafter, imports settled at a much higher range.

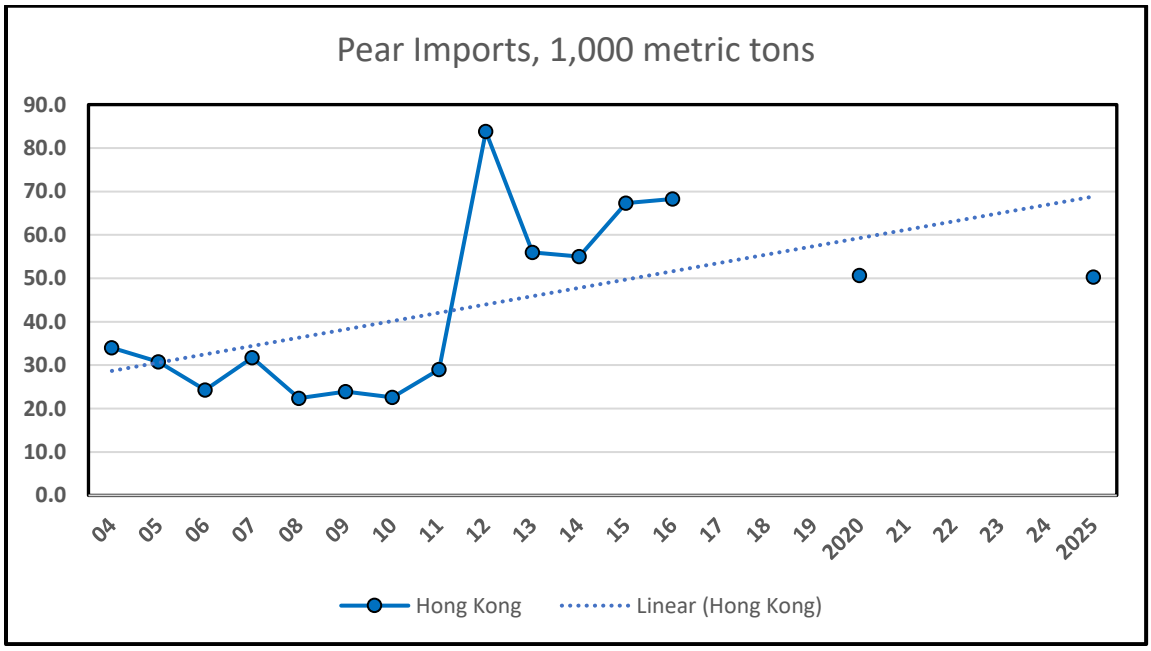
However, forecasts through 2025 indicate that direct imports and total imports of fresh pears by China will grow little from 2016 levels. Net imports by Hong Kong are also forecast to move sideways through 2025. Thus, greater China (China plus Hong Kong) is unlikely to contribute much additional to global imports of fresh pears in the next decade.

Imports by Japan and South Korea are also expected to remain negligible under current import protocols.

China: Imports of Fresh Pears, 2004-2016 Actual, and Forecast 2020 and 2025
Direct Imports and Total Imports, including Hong Kong Re-exports
(1,000 metric tons)



Hong Kong: Net Imports (Imports minus Re-exports) of Fresh Apples,
2004-2016 Actual, and Forecast 2020 and 2025
(1,000 metric tons)

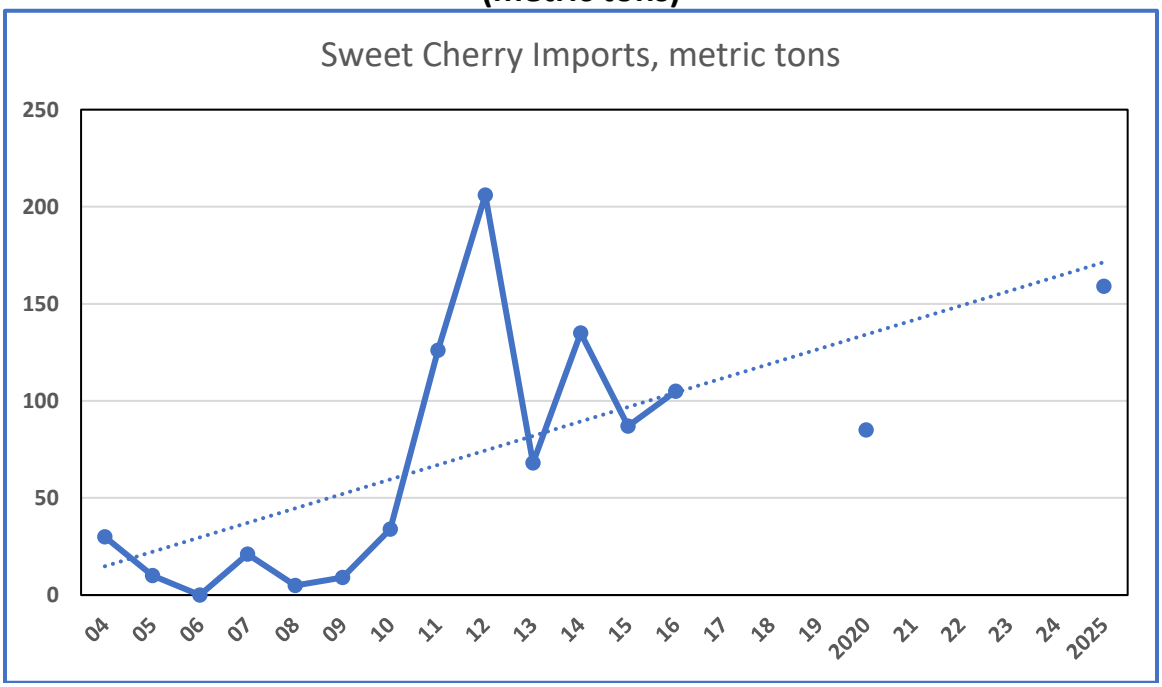


6. Fresh Sweet Cherry Charts: Historical and Forecast

India

India is the only country in South Asia that has imported sweet cherries in the past. The forecast is for imports to remain negligible through 2025.

India: Imports of Fresh Sweet Cherries, 2004-2016 Actual, and Forecast 2020 and 2025 (metric tons)

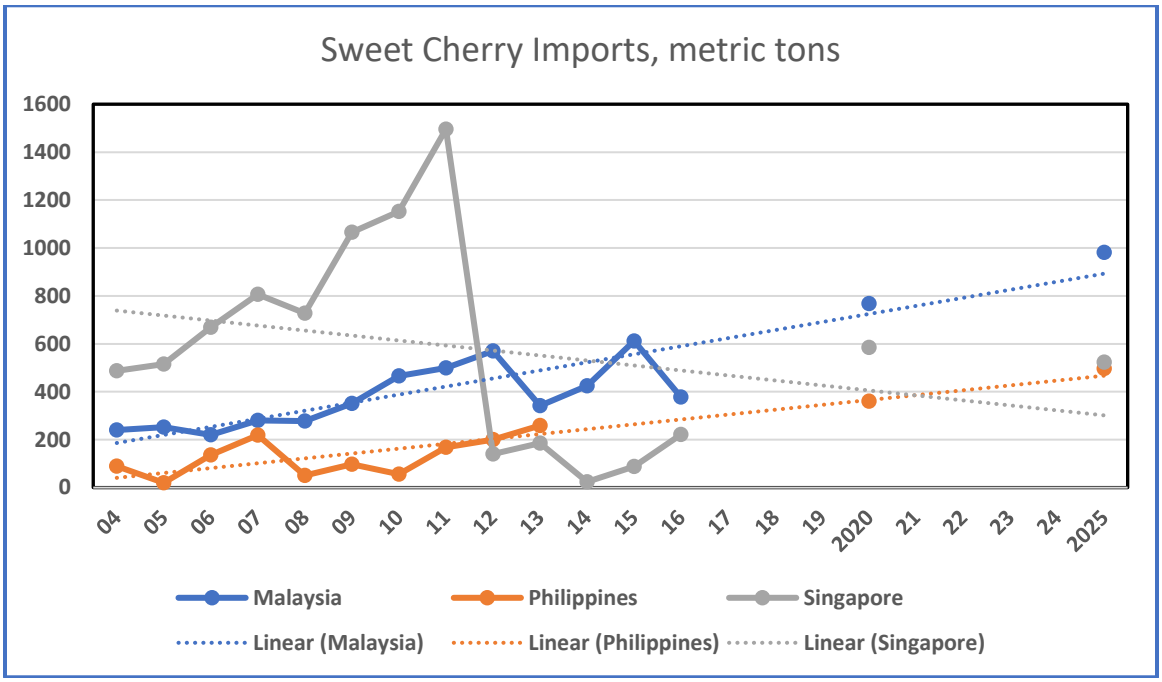


Malaysia, the Philippines and Singapore

Imports of fresh sweet cherries for all three countries have been low historically. However, both Malaysia and the Philippines have enjoyed positive trends. Imports are forecast to rise through 2025, although absolute volumes will still be low.

In contrast, imports by Singapore rose rapidly between 2004 and 2011 before dropping to a much lower level after 2011. The forecast is for Singapore imports of fresh sweet cherries to remain below historic levels through 2025.

Malaysia, the Philippines and Singapore: Imports of Fresh Sweet Cherries, 2004-2016 Actual, and Forecast 2020 and 2025 (metric tons)



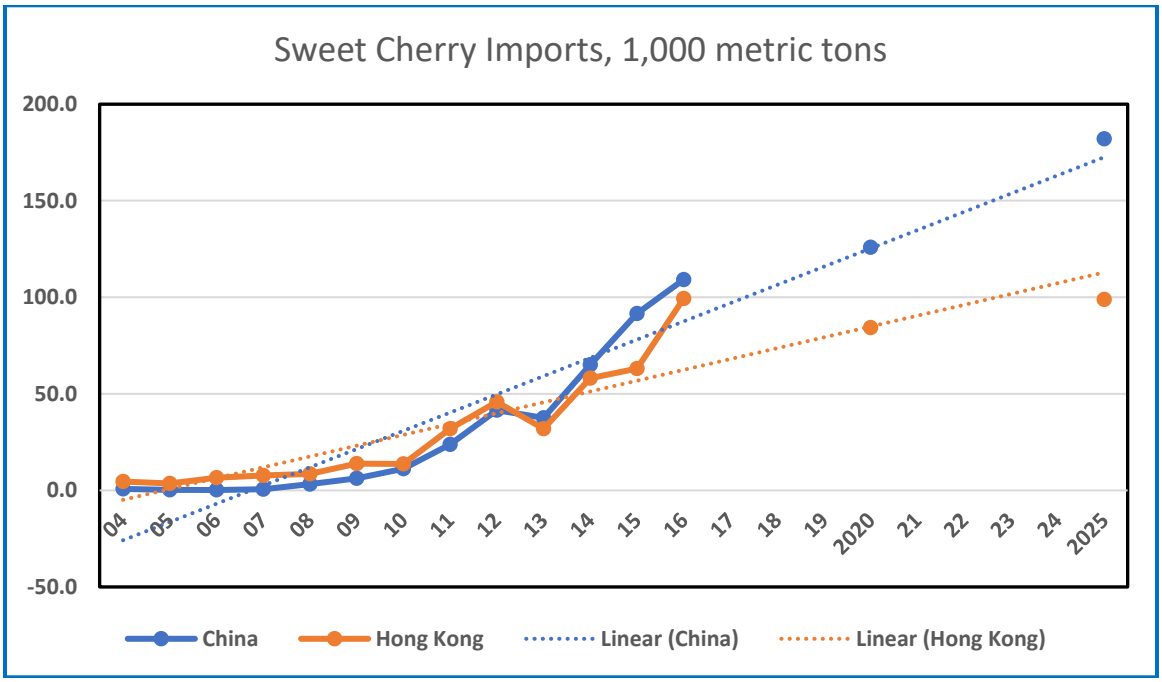
China and Hong Kong

China liberalized imports of fresh sweet cherries in 2010. Since then, imports have climbed rapidly, and exceeded 100,000 metric tons for the first time in 2016. China's imports of fresh sweet cherries are forecast to continue to increase rapidly in the next decade, and to exceed 180,000 metric tons in 2025.

As noted for fresh apples and fresh pears, the pattern of fresh sweet cherry imports by Hong Kong has closely mirrored the pattern of China's imports. Since data on re-exports of fresh sweet cherries from Hong Kong to China are not available, one can only guess about how much of Hong Kong's imports end up in China. However, forecasts based on historical data for Hong Kong indicate that Hong Kong imports of fresh sweet cherries could continue to grow, and could reach 100,000 metric tons by 2025.

The combined imports of fresh sweet cherries by China and Hong Kong are forecast to continue to set new records in the next decade.

China and Hong Kong: Imports of Fresh Sweet Cherries, 2004-2016 Actual, and Forecast 2020 and 2025 (1,000 metric tons)



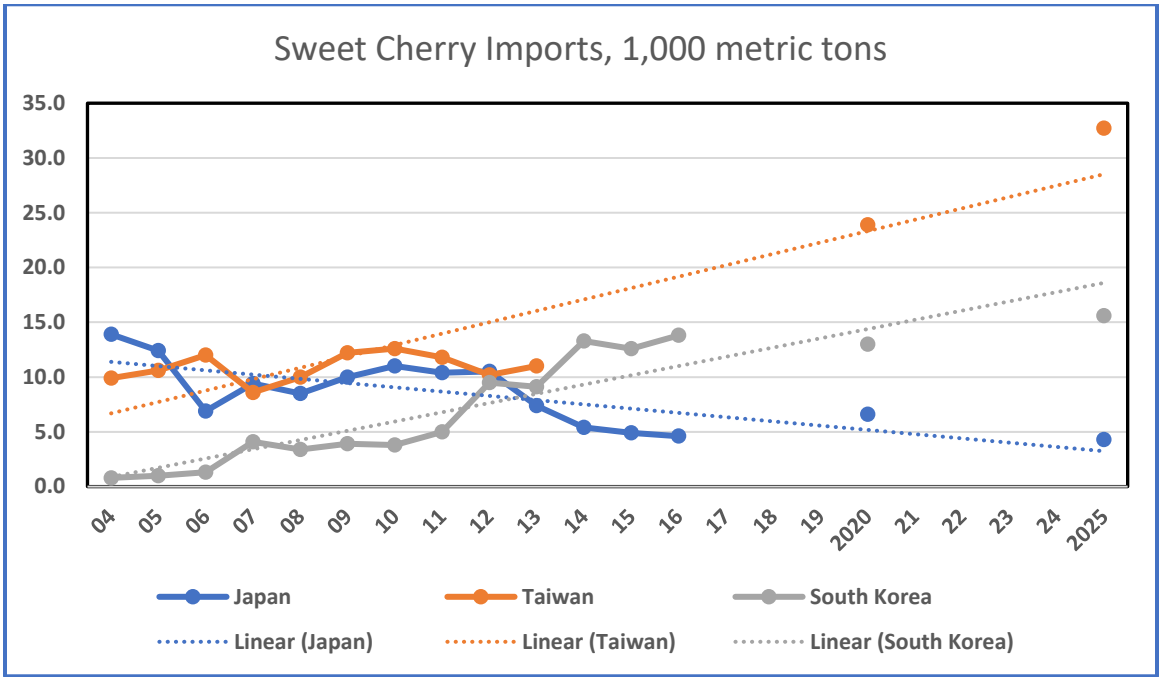
Japan, Taiwan and South Korea

The markets in both Japan and Taiwan have been relatively open to imports of fresh sweet cherries for many years. However, imports by Japan have been on a downward trend in recent years, while those by Taiwan have been relatively flat. Demand for sweet cherry imports by Japan has been affected by increasing domestic production, the aging and decline of its total population, and the increasing preference for alternative fruits like fresh kiwifruit. Imports of fresh sweet cherries by Japan are forecast to slip below 5,000 metric tons by 2025.

In contrast, imports of fresh sweet cherries by Taiwan are expected to continue to climb, and to exceed 30,000 metric tons by 2025.

South Korea was much later in opening up its market to imported fresh sweet cherries. Imports are expected to continue to grow modestly in the next decade, and to exceed 15,000 metric tons by 2025.

Japan, Taiwan and South Korea: Imports of Fresh Sweet Cherries, 2004-2016 Actual, and Forecast 2020 and 2025 (1,000 metric tons)

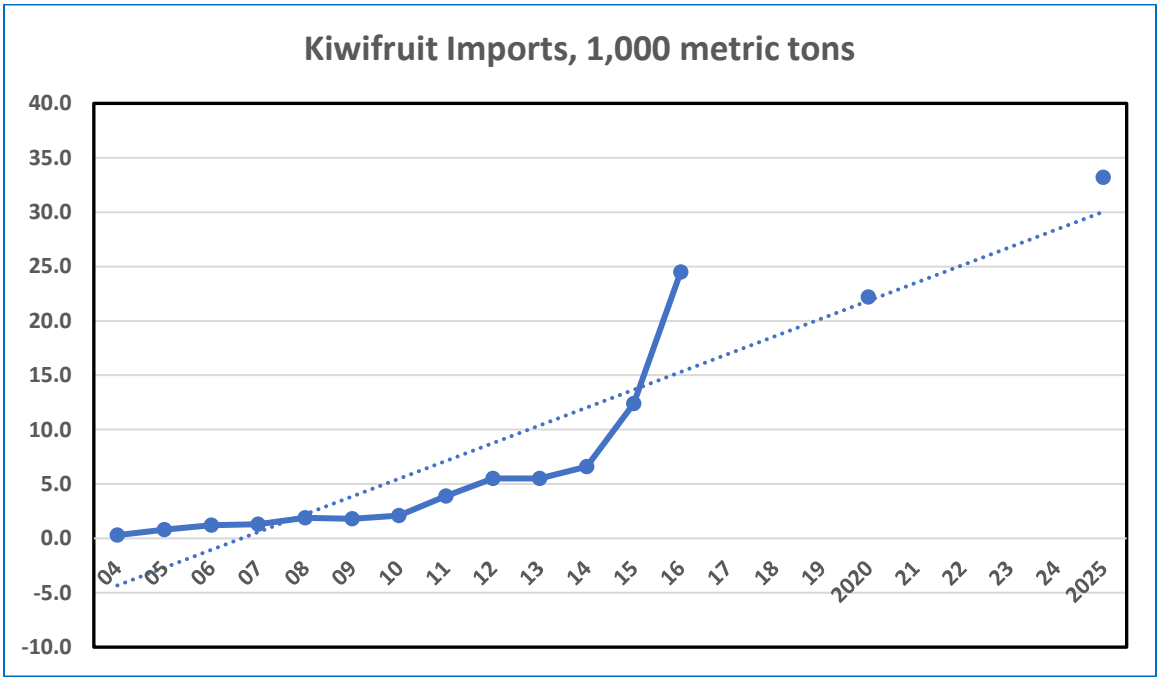


7. Fresh Kiwifruit Charts: Historical and Forecast

India

As was the case for sweet cherries, India was the only country in South Asia with significant imports of fresh kiwifruit prior to 2016. The chart below shows a rapid surge in imports of fresh kiwifruit in 2015 and 2016. India is forecast to import over 30,000 metric tons of fresh kiwifruit by 2020.

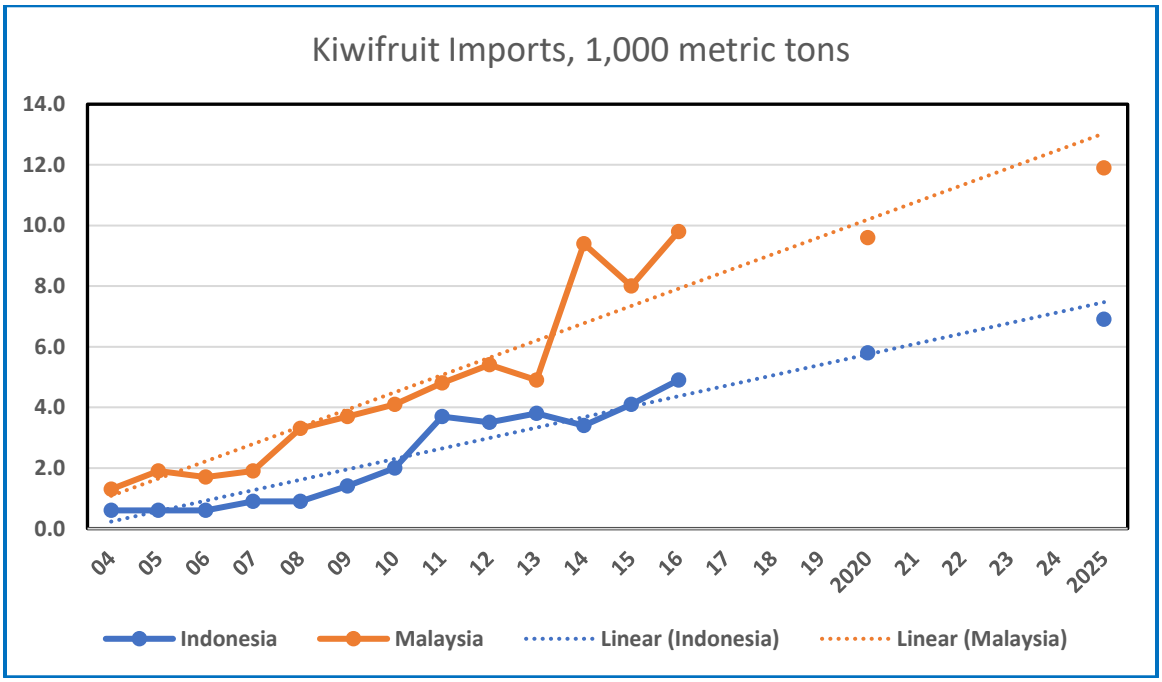
India: Imports of Fresh Kiwifruit,
2004-2016 Actual, and Forecast 2020 and 2025
(1,000 metric tons)



Indonesia and Malaysia

Indonesia and Malaysia have both shown steady growth in imports of fresh kiwifruit at a relatively low level. That growth is expected to continue, with Malaysian imports reaching 12,000 metric tons by 2025 and Indonesian imports about 7,000 metric tons.

Indonesia and Malaysia: Imports of Fresh Kiwifruit, 2004-2016 Actual, and Forecast 2020 and 2025 (1,000 metric tons)



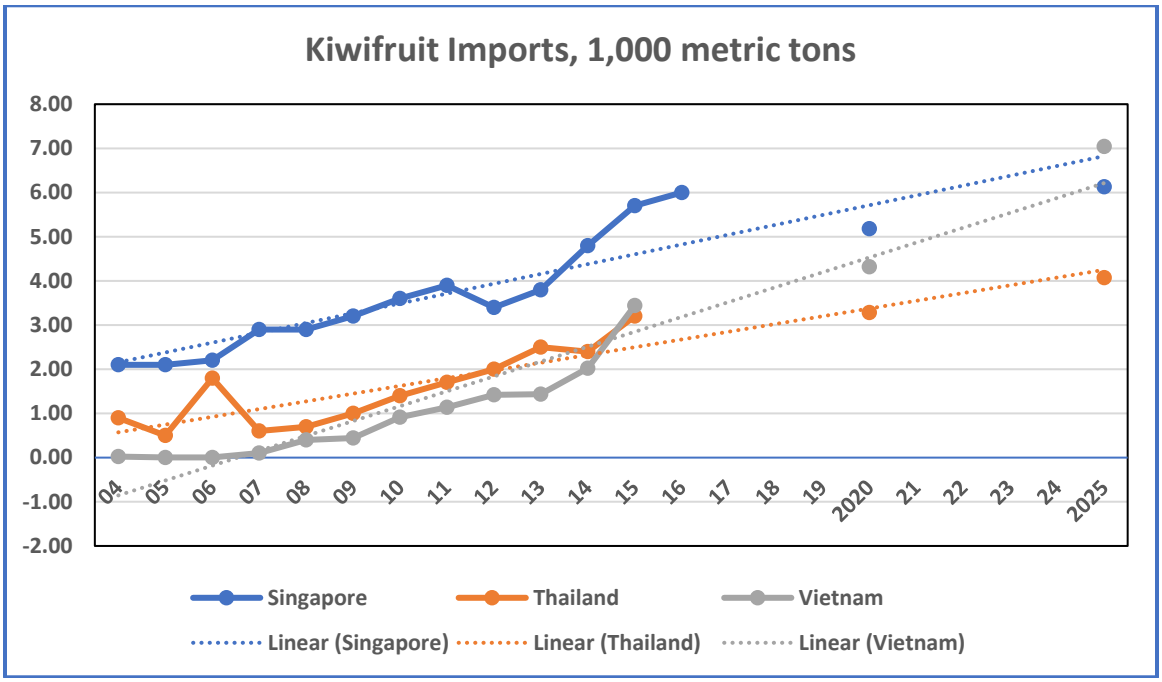
Singapore, Thailand and Vietnam

These three countries in Southeast Asia, Singapore, Thailand and Vietnam, have had similar past experiences with imports of fresh kiwifruit. Imports have been relatively low, but have been rising over time.

Forecasts suggest that imports will be moderately higher in 2025. Imports by Thailand should top 4,000 metric tons in 2025, and those by Singapore and Vietnam should be between 6,000 and 7,000 metric tons.

The one Southeast Asian country not included in these forecasts is the Philippines. On present trends, Philippine imports of fresh kiwifruit will continue to be close to zero by 2025.

Singapore, Thailand and Vietnam: Imports of Fresh Kiwifruit, 2004-2016 Actual, and Forecast 2020 and 2025 (1,000 metric tons)



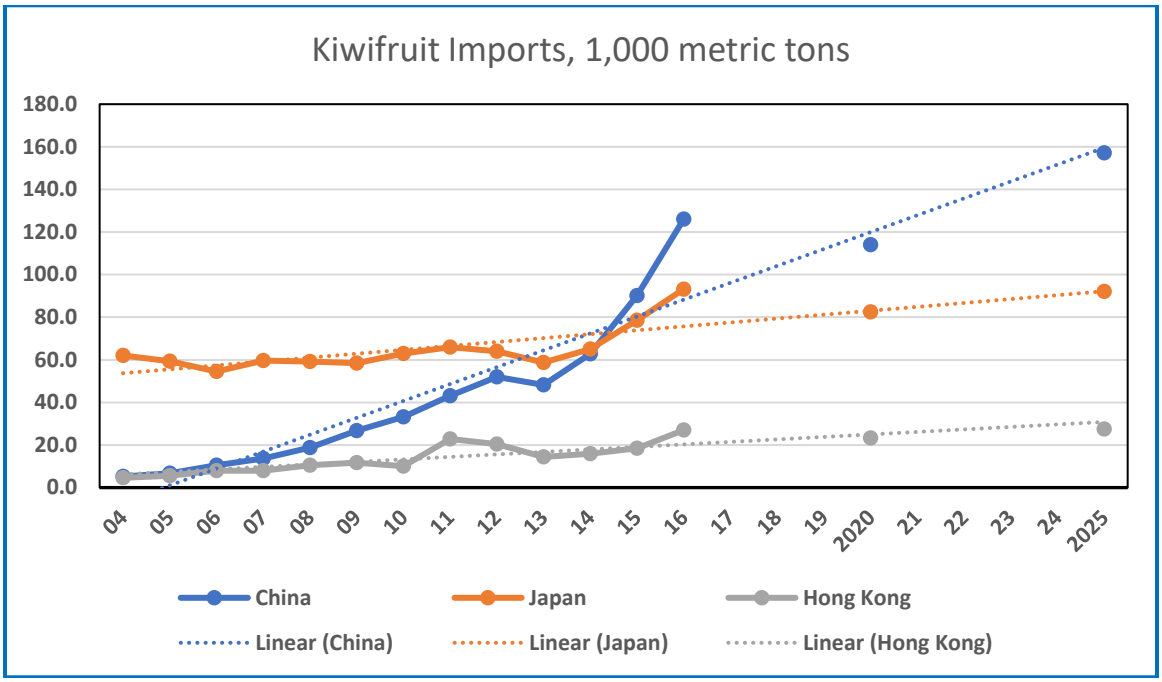
China, Japan and Hong Kong

China and Japan have traditionally been the largest importers of fresh kiwifruit in Northeast Asia. Data from Hong Kong is included in the same chart because of Hong Kong's close relationship with Chinese imports of all fresh produce.

The trend of fresh kiwifruit imports by both Japan and Hong Kong was relatively flat until 2014, after which imports spiked upwards, probably due to the introduction of the new Sungold variety from New Zealand. The long-term trend is expected to show only modest growth. By 2025, Japan is forecast to import over 92,000 metric tons, and Hong Kong about 27,500 metric tons.

In contrast, imports of fresh kiwifruit by China have increased rapidly from a low base in 2004. The trend rate of growth spiked upwards in 2015 and 2016, allowing China to surpass Japan as the leading kiwifruit importer in Asia. The rapid growth of Chinese imports of fresh kiwifruit is forecast to continue in the next decade. By 2025, Chinese imports are forecast to approach 160,000 metric tons.

China, Japan and Hong Kong: Imports of Fresh Kiwifruit, 2004-2016 Actual, and Forecast 2020 and 2025 (1,000 metric tons)

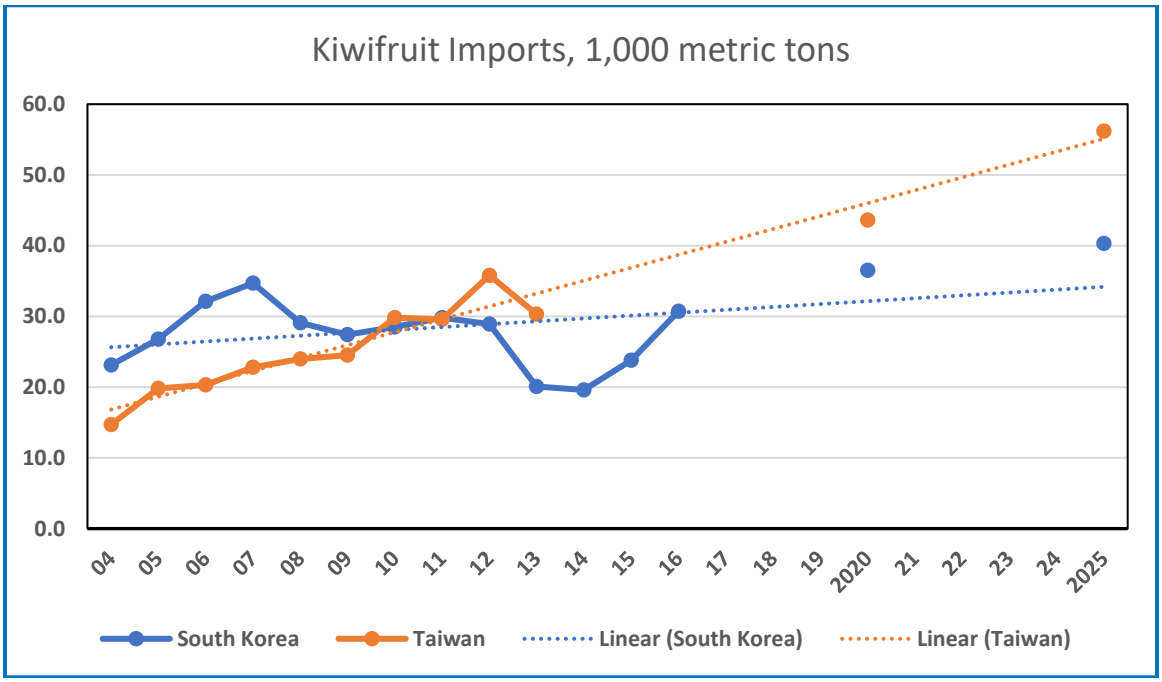


South Korea and Taiwan

In 2016, Taiwan and South Korea were the third and fourth largest importers of fresh kiwifruit in Asia, and that ranking is likely to continue through 2025. The rate of growth in fresh kiwifruit imports in the next decade is expected to be slower in South Korea than in Taiwan.

For that reason, imports by South Korea are expected to top 40,000 metric tons by 2025, and those by Taiwan to exceed 56,000 metric tons.

South Korea and Taiwan: Imports of Fresh Kiwifruit, 2004-2016 Actual, and Forecast 2020 and 2025 (1,000 metric tons)



8. Competition Likely to Intensify

Although the opportunities for these four fruits are likely to increase in many Asian markets, competition is likely to intensify because so many exporting countries are now targeting Asia. Many players are already involved in Asian markets, with varying levels of success. For example, table 8 shows the share of the import market for fresh apples held by the leading exporters in the different Asian regions in 2015, the last year for which complete data are available.

Table 8. Share of Fresh Apple Imports from Major Suppliers, by Asian Region, 2015

Supplier	South Asia	Southeast Asia	Northeast Asia	16 Asian Countries
	(%)	(%)	(%)	(%)
Argentina	0.2	0.0	0.0	0.1
Brazil	3.4	0.1	0.0	1.2
Chile	4.1	0.2	16.9	6.5
New Zealand	5.1	11.0	15.7	10.4
South Africa	4.7	13.6	0.9	6.7
China	38.9	52.0	18.8	37.6
India	5.8	0.1	0.0	2.0
United States	22.6	17.3	32.9	23.8
All Other	15.2	5.7	14.8	11.7
TOTAL	100.0	100.0	100.0	100.0
S. Hemisphere	17.5	24.9	33.5	24.9

China was the most important single supplier overall, and in South Asia and Southeast Asia, but was second to the United States in Northeast Asia. Chile and New Zealand were strongest in Northeast Asia, while South Africa and New Zealand were in third and fourth place in Southeast Asia.

All other suppliers accounted for more than 10 percent of total overall imports of fresh apples, and for about 15 percent in South Asia and Northeast Asia. Iran was an important supplier in South Asia, while Japan was the leading other supplier in Northeast Asia.

Table 9 shows the average import prices paid in each Asian region for fresh apples from different major suppliers. Overall, the highest prices paid were for fresh apples from New Zealand. That country has been expanding sales of premium apples in Southeast Asia and Northeast Asia. The lowest priced apples were from Argentina, Brazil and India, although Argentina and Brazil sold small quantities at much higher prices in Southeast Asia.

Table 9. Average Prices of Fresh Apple Imports from Major Suppliers, by Asian Region, 2015

Supplier	South Asia	Southeast Asia	Northeast Asia	16 Asian Countries
	(%)	(%)	(%)	(%)
Argentina	633.28	2,261.86	699.26	696.11
Brazil	488.10	1,238.50	n.a.	501.09
Chile	1,108.46	1,102.08	1,134.80	1,128.81
New Zealand	999.62	1,560.79	1,454.69	1,416.34
South Africa	511.61	1,026.92	1,081.90	904.94
China	575.31	1,456.86	695.18	1,026.54
India	553.12	840.00	912.99	553.69
United States	1,075.16	1,183.31	1,179.42	1,146.15
All Other	576.85	1,195.94	2,117.18	1,262.84
TOTAL	724.83	1,346.47	1,260.75	1,105.57

The data in tables 8 and 9 illustrate that these 16 Asian countries are already being supplied from a large number of exporters with fresh apples, that are of different qualities, and sell at different price points. While the mass market remains large, there appear to be growing opportunities for premium apple varieties. As more and more suppliers crowd into the Asian markets, it will require improved market insights, and greater marketing expertise to gain and maintain market share at breakeven prices.

Similar developments could take place, although at a slower pace, for imports of fresh pears, fresh sweet cherries, and fresh kiwifruit.

With greater opportunities, will come greater challenges.

Appendix I, Table 1. Forecast Equations for Fresh Apples
(t-values in [parentheses)

Country	Constant Term	Price Coefficient	Per capita GDP Coefficient	R^2
Bangladesh	-723.710	+0.00384	+0.0330	0.858
	(5.108)	(0.868)	(9.980)	
India	-184.033	+0.00174	+0.00673	0.931
	(5.285)	(1.409)	(13.645)	
Nepal	-1,461.26	-0.0198	+0.128	0.796
	(1.723)	(1.760)	(4.183)	
Pakistan	-290.128	+0.00561	+0.00517	0.373
	(2.442)	(1.276)	(3.383)	
Sri Lanka	851.602	-0.0141	+0.00427	0.759
	(4.809)	(4.893)	(5.058)	
Indonesia	445.085	-0.000310	+0.165	0.832
	(4.250)	(6.596)	(6.559)	
Malaysia	1,790.218	-0.278	+0.0830	0.714
	(7.859)	(3.124)	(7.235)	
Philippines	407.799	-0.00712	+0.00946	0.168
	(2.089)	(0.883)	(1.866)	
Singapore	15,074.43	-0.618	-0.104	0.840
	(17.403)	(1.158)	(9.944)	
Thailand	-1,596.54	+0.0114	+0.0252	0.860
	(3.431)	(1.886)	(9.012)	
Vietnam	577.959	-0.00017	+0.152	0.449
	(1.805)	(2.459)	(3.495)	
China Direct	23.829	-0.00225	+ 0.00105	0.423
	(2.477)	(1.173)	(2.981)	
Hong Kong Net	+0.262	-0.00012	+0.0000314	0.262
	(1.389)	(0.274)	(2.670)	
Japan	24.518	- 0.0000425	- 0.00178	0.023
	(0.465)	(0.533)	(0.122)	
Korea, Republic of	1.476	-0.00000043	+0.0000237	0.088
	(0.646)	(0.761)	(0.233)	
Taiwan (Taipei)	5,153.566	+0.0126	+0.681	0.149
	(10.708)	(0.334)	(0.268)	
China (Direct plus	100.545	-0.00997	+0.00135	0.409
via Hong Kong)	(3.472)	(2.269)	(3.221)	

Appendix I, Table 2. Forecast Equations for Fresh Pears
(t-values in [parentheses)

Country	Constant Term	Price Coefficient	Per capita GDP Coefficient	R^2
Bangladesh	15.645	-0.000083	+0.000204	0.021
	(0.277)	(0.698)	(0.823)	
India	-13.670	-0.00014	+0.000795	0.923
	(6.764)	(1.196)	(11.109)	
Nepal	-14.003	-0.00057	+0.00127	0.332
	(0.653)	(0.975)	(1.616)	
Pakistan	36.882	-0.00134	-0.00017	0.427
	(0.836)	(2.724)	(0.215)	
Sri Lanka	67.524	-0.00072	-0.00019	0.288
	(4.150)	(2.418)	(2.159)	
Indonesia	146.817	-0.000157	+0.124	0.833
	(1.365)	(3.791	(5.098)	
Malaysia	2,394.047	-0.582	+0.00432	0.502
	(7.304)	(4.411)	(0.272)	
Philippines	-15.509	-0.00029	+0.000572	0.717
	(3.593)	(1.468)	(6.725)	
Singapore	11,572.99	+0.448	-0.140	0.904
	(13.479)	(0.906)	(14.007)	
Thailand	-37.741	-0.00564	+0.00561	0.784
	(0.153)	(2.519)	(3.241)	
Vietnam	285.957	-0.00017	+0.124	0.645
	(1.659)	(4.152)	(4.950)	
China Direct	0.200	-0.00014	+0.000119	0.401
	(0.182)	(2.326)	(2.918)	
Hong Kong Net	7.283	-0.00076	+0.0000106	0.255
	(2.153)	(1.923)	(1.080)	
Japan	7.486	-0.0000059	- 0.00189	0.229
	(1.300)	(1.703)	(0.796)	
Korea, Republic of	0.982	-0.00000023	+0.00000316	0.307
	(1.506)	(2.613)	(1.216)	
Taiwan (Taipei)	133.279	+0.00332	+0.301	0.478
	(1.195)	(1.762)	(0.954)	
China (Direct plus	0.380	-0.00036	+0.000213	0.407
via Hong Kong)	(0.222)	2.204)	(2.940)	

Appendix I, Table 3. Forecast Equations for Fresh Sweet Cherries
(t-values in [parentheses)

Country	Constant Term	Price Coefficient	Per capita GDP Coefficient	R^2
Bangladesh	0.387	+0.0000027	-0.000007	0.092
	(1.772)	(0.472)	(0.753)	
India	-0.875	+0.000000246	+0.00000329	0.573
	(2.936)	(1.730)	(3.596)	
Nepal	No Data	No Data	No Data	No Data
Pakistan	No Data	No Data	No Data	No Data
Sri Lanka	No Data	No Data	No Data	No Data
Indonesia	+0.510	-0.0000000260	-0.000101	0.245
	3.623	(1.465)	(2.282)	
Malaysia	-12.605	-0.00028	+0.00111	0.795
	(5.121)	(2.506)	(8.943)	
Philippines	+0.362	-0.0000066	+0.0000167	0.218
	(0.458)	(1.566)	(1.350)	
Singapore	243.396	-0.00812	-0.0008	0.044
	(1.764)	(o.773)	(0.537)	
Thailand	-0.220	-0.000012	+0.000026	0.801
	(0.264)	(2.534)	(6.859)	
Vietnam	No Data	No Data	No Data	No Data
China Direct	-26.439	-0.00087	+0.00272	0.887
	(4.326)	(3.931)	(9.603)	
Hong Kong Net	-8.104	-0.00037	+0.000109	0.838
	(5.341)	(5.515)	(9.715)	
Japan	224.046	-0.000189	+0.00554	0.816
	(4.779)	(6.308)	(0.347)	
Korea, Republic of	-184.290	-0.0000037	+0.0138	0.718
	(2.155)	(0.402)	(7.140)	
Taiwan (Taipei)	-293.463	-0.00238	+2.037	0.681
	(2.520)	(3.123)	(4.951)	

Appendix I, Table 4. Forecast Equations for Fresh Kiwifruit
(t-values in [parentheses)

Country	Constant Term	Price Coefficient	Per capita GDP Coefficient	R^2
Bangladesh	No Data	No Data	No Data	No Data
India	-16.757	+0.0000509	+0.00052	0.674
	(2.581)	(1.102)	(4.268)	
Nepal	No Data	No Data	No Data	No Data
Pakistan	No Data	No Data	No Data	No Data
Sri Lanka	No Data	No Data	No Data	No Data
Indonesia	-8.233	-0.00000157	+0.00698	0.895
	(2.700)	(2.115)	(11.449)	
Malaysia	-105.826	+0.014	+0.00919	0.661
	(1.434)	(1.764)	(2.287)	
Philippines	51.896	-0.00037	-0.00031	0.439
	(1.692)	(2.369)	(0.626)	
Singapore	-525.672	+0.137	+0.0142	0.766
	(3.579)	(1.862)	(3.259)	
Thailand	-59.0712	+0.000014	+0.000663	0.837
	(6.209)	(0.083)	(7.445)	
Vietnam	-85.970	+0.00000303	+0.011	0.898
	(4.630)	(2.471)	(7.104)	
China Direct	-34.269	+0.000864	+0.00182	0.851
	(3.339)	(0.459)	(3.444)	
Hong Kong Net	-2.705	+0.0000112	+0.0000182	0.744
	(4.618)	(0.119)	(3.132)	
Japan	-877.982	- 0.000183	+0.343	0.689
	(2.397)	(0.362)	(2.750)	
Korea, Republic of	115.793	-0.00016	+0.0309	0.713
	(0.402)	(1.604)	(6.493)	
Taiwan (Taipei)	-525.070	+0.00307	+2.441	0.922
	(5.540)	(1.591)	(10.005)	

Appendix II, Table 1. Estimated Elasticities for Fresh Apples

Country	Price Elasticity	Significance Level	Per capita GDP Elasticity	Significance Level
Bangladesh	+0.278	Non-significant	+2.552	Significant
India	+0.620	Significant at 20% level	+2.776	Significant
Nepal	-0.361	Significant at 10% level	+2.722	Significant
Pakistan	+0.882	Non-significant	+3.001	Significant
Sri Lanka	-0.834	Significant	+0.618	Significant
Indonesia	-1.013	Significant	+1.002	Significant
Malaysia	-0.142	Significant	+0.560	Significant
Philippines	-0.144	Non-significant	+0.636	Significant at 10% level
Singapore	-0.109	Non-significant	-0.560	Significant
Thailand	+0.278	Significant at 10% level	+1.828	Significant
Vietnam	-0.720	Significant	+0.918	Significant
China Direct	-0.485	Non-significant	+0.781	Significant
Hong Kong Net	-0.076	Non-significant	+0.671	Significant
Japan	-0.956	Non-significant	-0.793	Non-significant
Korea, Republic of	-0.785	Non-significant	+0.482	Non-significant
Taiwan (Taipei)	+0.067	Non-significant	+0.060	Non-significant
China (Direct plus via Hong Kong)	-1.183	Significant	+0.550	Significant

Appendix II, Table 2. Estimated Elasticities for Fresh Pears

Country	Price Elasticity	Significance Level	Per capita GDP Elasticity	Significance Level
Bangladesh	-0.099	Non-significant	+0.359	Non-significant
India	-0.312	Non-significant	+2.869	Significant
Nepal	-1.566	Non-significant	+1.898	Significant at 20% level
Pakistan	-1.652	Significant	-0.901	Non-significant
Sri Lanka	-1.337	Significant	-1.455	Significant at 10% level
Indonesia	-0.713	Significant	+1.199	Significant
Malaysia	-0.507	Significant	+0.054	Non-significant
Philippines	-0.344	Significant at 20% level	+2.878	Significant
Singapore	+0.116	Non-significant	-1.290	Significant
Thailand	-0.562	Significant	+1.670	Significant
Vietnam	-1.373	Significant	+1.629	Significant
China Direct	-0.834	Significant	+1.719	Significant
Hong Kong Net	-0.673	Significant at 10% level	+0.396	Non-significant
Japan	-0.921	Significant at 20% level	-3.416	Non-significant
Korea, Republic of	-0.796	Significant	+0.728	Non-significant
Taiwan (Taipei)	+0.317	Significant at 10% level	+0.360	Non-significant
China (Direct plus via Hong Kong)	-1.240	Significant	+2.078	Significant

Appendix II, Table 3. Estimated Elasticities for Fresh Sweet Cherries

Country	Price Elasticity	Significance Level	Per capita GDP Elasticity	Significance Level
Bangladesh	+0.422	Non-significant	-1.298	Non-significant
India	+0.567	Significant at 20% level	+2.670	Significant
Nepal	No Data	No Data	No Data	No Data
Pakistan	No Data	No Data	No Data	No Data
Sri Lanka	No Data	No Data	No Data	No Data
Indonesia	-0.563	Significant at 20% level	-1.748	Significant
Malaysia	-0.145	Significant	+2.540	Significant
Philippines	-0.461	Significant at 20% level	2.787	Significant at 20% level
Singapore	-0.806	Non-significant	-0.353	Non-significant
Thailand	-1.652	Significant	+1.043	Significant
Vietnam	No Data	No Data	No Data	No Data
China Direct	-1.754	Significant	+4.319	Significant
Hong Kong Net	-5.005	Significant	+9.203	Significant
Japan	-1.807	Significant	+0.252	Non-significant
Korea, Republic of	-0.503	Non-significant	+4.166	Significant
Taiwan (Taipei)	-0.829	Significant	+2.582	Significant

Appendix II, Table 4. Estimated Elasticities for Fresh Kiwifruit

Country	Price Elasticity	Significance Level	Per capita GDP Elasticity	Significance Level
Bangladesh	No data	No data	No data	No data
India	+1.087	Non-significant	+5.471	Significant
Nepal	No Data	No Data	No Data	No Data
Pakistan	No Data	No Data	No Data	No Data
Sri Lanka	No Data	No Data	No Data	No Data
Indonesia	-0.670	Significant	+2.886	Significant
Malaysia	+0.276	Significant at 10% level	+1.542	Significant
Philippines	-0.690	Significant	-1.019	Non-significant
Singapore	+0.663	Significant at 10% level	+1.239	Significant
Thailand	+0.040	Non-significant	+4.561	Significant
Vietnam	+2.382	Significant	+7.334	Significant
China Direct	+0.396	Non-significant	+2.039	Significant
Hong Kong Net	+0.096	Non-significant	+2.767	Significant
Japan	-0.119	Non-significant	+3.126	Significant
Korea, Republic of	-1.100	Significant at 20% level	+1.779	Significant
Taiwan (Taipei)	+0.167	Significant at 20% level	+1.475	Significant

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