



LANDSCAPE STUDY ON SOUTHEAST ASIA'S AVIATION INDUSTRY

COVID-19 IMPACT AND POST-PANDEMIC STRATEGY

MAY 2023

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Preface

This study looks at the Southeast Asian aviation market before the coronavirus disease (COVID-19) pandemic and the impact of the first 2 years of the pandemic. For the pre-pandemic era, data from 2019 is analyzed in detail as well as data from the decade pre-pandemic, highlighting the rapid growth for Southeast Asia in the 2009 to 2019 period. For the first 2 years of the pandemic, data from April 2020 to March 2022 is used when available.

Annual data for 2020 and 2021 is also used in some cases as monthly data is not always available. The 2020 data is somewhat skewed because in the first quarter (Q) of 2020 passenger traffic was down relatively modestly—particularly in the first 2 months—with the World Health Organization only declaring COVID-19 a global pandemic on 11 March 2020.

This study includes an in-depth look at the post-pandemic period, assessing various recovery scenarios and suggesting recovery strategies. As part of the post-pandemic section, there are 20 recommendations.

This study was initially researched and written between February 2022 and May 2022. A pre-publication version of this study was shared with industry stakeholders in September 2022. A webinar was held in October 2022 to discuss the findings and latest market conditions.

The traffic data analyzed in this study generally covers up to March 2022. April 2022 marked the start of the endemic phase for Southeast Asia as most borders reopened and travel restrictions were lifted. There is discussion in the post-pandemic section of the study of the market starting to recover in Q2 2022 and the challenges the industry was starting to confront during the initial ramp-up. However, traffic data for Q2 2022 was not available when this study was written. Some Q2, Q3 and Q4 2022 data is provided in this preface to provide context on the speed of the recovery in the first 9 months after borders reopened and travel restrictions were lifted.

Q2, Q3, and Q4 2022 passenger traffic data are available for 11 of the 14 large airports (over 10 million annual passengers pre-pandemic) in Southeast Asia. Data on the following table shows the domestic and international recovery rate (% of passengers compared to the same period of 2019) for Q2, Q3, and Q4 2022.

Singapore was initially the fastest recovering international market in Southeast Asia, with international passenger traffic reaching 50% of 2019 levels for the first time in June 2022, 60% in September 2022, and 70% in December 2022. Singapore traffic is expected to reach 80% of 2019 in March 2023. International passenger traffic in Singapore was at 77% of 2019 levels in January 2023 and 78% in February 2023 (based on Changi Airport data).

In Thailand, international passenger traffic reached 57% of 2019 levels in January 2023 and 60% in February 2023 (based on Airports of Thailand data). Overall, Southeast Asia had an international recovery rate of nearly 70% in both January and February 2023. Singapore and Thailand are the two largest international markets in Southeast Asia with Singapore recovering faster than the Southeast Asia average and Thailand slower.

Passenger Traffic Recovery Rates for Large Airports in Southeast Asia, Second, Third and Forth Quarter 2022

(%)

Rank	Airport	International Q2 2022	International Q3 2022	International Q4 2022	Domestic Q2 2022	Domestic Q3 2022	Domestic Q4 2022
1.	Singapore Changi (SIN)	44	58	69	N/A	N/A	N/A
2.	Bangkok Suvarnabhumi (BKK)	26	44	57	99	101	99
3.	Kuala Lumpur International (KUL)	24	40	53	62	65	72
4.	Jakarta Soekarno-Hatta (CGK)	45	57	66	101	83	83
5.	Manila Ninoy Aquino (MNL)	39	53	61	96	108	101
6.	Bangkok Don Mueang (DMK)	6	20	32	56	62	75
7.	Ho Chi Minh Tan Son Nhat (SGN)	N/A	N/A	N/A	N/A	N/A	N/A
8.	Hanoi Noi Bai (HAN)	N/A	N/A	N/A	N/A	N/A	N/A
9.	Bali Denpasar Ngurah Rai (DPS)	19	45	58	88	77	79
10.	Phuket International (HKT)	26	31	49	65	69	81
11.	Surabaya Juanda (SUB)	34	49	73	82	68	69
12.	Da Nang International (DAD)	N/A	N/A	N/A	N/A	N/A	N/A
13.	Mactan-Cebu International (CEB)	11	18	28	60	68	75
14.	Chiang Mai International (CNX)	3	8	20	62	70	65

N/A = not applicable.

Notes:

1. Rank is based on total passenger traffic in 2019.
2. Bali, Jakarta, and Surabaya recovery figures are based on departing traffic only.
3. For all other airports, recovery figures are based on departing and arriving traffic combined.
4. Monthly or quarterly traffic is not available for airports in Viet Nam.

Source: Authors based on data from Changi Airport Group (CAG), Airports of Thailand (AOT), Malaysia Airports Holdings Berhad (MAHB), Manila International Airport Authority (MIAA), and Statistics Indonesia (BPS).

International traffic in Asia and the Pacific was at 52% of 2019 levels in January 2023 (based on passenger numbers from the Association of Asia Pacific Airlines incorporating 40 leading Asia and Pacific carriers). Asia overall has recovered much slower than other regions, due primarily to North Asia, where travel restrictions were in place much longer. Globally, international traffic was at 77% of 2019 levels in January 2023 and domestic traffic was at 97% of 2019 levels (based on revenue passenger kilometer data from the International Air Transport Association).

Domestically, Southeast Asia overall has been tracking below the global average. Of the five main domestic markets, Indonesia, Malaysia, and Thailand are below the global average while the Philippines and Viet Nam were above average. Viet Nam was the first domestic market in Southeast Asia to fully recover and is now well above pre-COVID-19 levels.

Traffic levels are expected to continue improving in Q2 and the second half of 2023. Overall domestic traffic in Southeast Asia could reach 100% of 2019 levels by the end of 2023 while international traffic could reach 90%.

In Q1 2023, scheduled domestic seat capacity for Southeast Asia overall was nearly 90% of 2019 levels while international was at 67% or two-thirds recovered. In Q2 2023, international seat capacity is slated to be about 76% or roughly three-quarters recovered, based on forward airline schedules as of late March 2023.

International recovery rates vary significantly by country (see table below). The Southeast Asian countries with the lowest recovery rates generally have a high exposure to the People's Republic of China (PRC) market, which only began recovering in Q1 2023.

This data is as of late March 2023 and for Q2 2023 provide only a rough indication of what traffic could look like because airline schedules remain fluid, particularly between Southeast Asia and the PRC. Airlines have been steadily restoring flights in the Southeast Asia–PRC market since January 2023, when quarantine restrictions in the PRC were lifted, but flights are often added to the schedules with very short notice.

The Southeast Asia–PRC market could be 70% or 80% recovered by the end of Q3 2023 contingent on airlines securing approvals for additional flights. Securing approval from PRC authorities for additional flights has so far been a slow and gradual process.

Demand for air travel between Southeast Asia and the PRC also has increased at a slow rather than sudden pace in the initial few months after the PRC reopened borders. While demand is expected to continue increasing gradually, a potential shift in travel patterns could make it difficult to achieve a full recovery in the Southeast Asia–PRC market over the next year or longer.

Southeast Asia–PRC scheduled seat capacity was 24% recovered in March 2023 compared to March 2019 levels, including a 21% recovery rate for Southeast Asian carriers and a 28% recovery rate for PRC carriers (based on OAG data). Southeast Asia's international market excluding the PRC was 77% recovered in March 2023, including a 77% recovery rate for Southeast Asian carriers and a 78% recovery rate for foreign carriers (based on scheduled capacity data from OAG).

Scheduled Seat Capacity Recovery Rates for Southeast Asian Countries, Fourth Quarter 2022, First and Second Quarter 2023, and Second Quarter 2023 (%)

Country	Q4 2022 International	Q1 2023 International	Q2 2023 International	Q4 2022 Domestic	Q1 2023 Domestic	Q2 2023 Domestic
Thailand	47	58	69	83	79	81
Singapore	68	76	85	N/A	N/A	N/A
Malaysia	54	64	74	70	76	74
Viet Nam	59	78	86	109	125	114
Indonesia	62	73	80	73	79	72
Philippines	59	72	81	95	101	100
Cambodia	37	45	58	12	12	15
Myanmar	30	34	37	38	42	36
Lao PDR	43	57	64	62	58	62
Brunei Darussalam	44	53	54	N/A	N/A	N/A
Timor-Leste	54	73	43	N/A	N/A	N/A
TOTAL	56	67	76	81	87	83

Lao PDR = Lao People's Democratic Republic, N/A = not applicable.

Note: The order of countries is based on the size of the international market pre-pandemic.

Source: OAG (as of March 2023).

Total scheduled seat capacity (including seats to/from the PRC) for the Southeast Asian airline sector was 80% recovered in March 2022 with domestic seat capacity 88% recovered and international seat capacity 68% recovered. Below is the overall recovery rate for the top 10 airline groups in Southeast Asia, which account for 90% of total Southeast Asian airline seat capacity (excluding foreign airlines).

Four of the top 10 airline groups in Southeast Asia are already fully recovered (Cebu Pacific, Lion, VietJet, and Vietnam Airlines). VietJet is well above 2019 levels, boosted by domestic growth in Viet Nam and rapid expansion of its Thailand affiliate on a small base.

The Southeast Asian airline sector has recovered rapidly in the first 12 months of the endemic phase (April 2022 to March 2023) and this trend is expected to continue over the remainder of 2023, boosted by capacity restoration in the Southeast Asia–PRC market. The recovery so far has been faster than generally predicted, and the overall trend is encouraging.

The Southeast Asian airline sector could be 90% recovered by the end of 2023 and the outlook for the sector is generally bright. However, the last leg of the recovery or the final 10% of capacity will likely be the most difficult to achieve due to fleet and manpower constraints. Therefore, it may not be until 2025 that a full recovery to 2019 traffic levels is achieved.

This study is aimed at supporting the Southeast Asian aviation industry during this critical time by offering possible recovery strategies. With this study, the Asian Development Bank aims to start a dialogue with stakeholders and the wider Southeast Asian aviation community. ADB's Southeast Asia Department and the authors welcome feedback on this study as well as suggestions on topics for possible future studies and webinars.

Scheduled Seat Capacity Recovery Rate and Capacity Share for Southeast Asia's Top 10 Airline Groups, March 2023

(%)

Rank	Airline Group	Number of Airlines	Capacity Share	Recovery Rate
1.	Lion	6	21	99
2.	AirAsia/AirAsia X	6	17	70
3.	Singapore Airlines	2	9	81
4.	VietJet	2	9	128
5.	Vietnam Airlines	3	8	106
6.	Garuda Indonesia	2	7	59
7.	Cebu Pacific	2	6	98
8.	Malaysia Airlines	3	5	85
9.	Philippine Airlines	2	5	87
10.	Thai Airways	2	4	56
Top 10 Total		30	90	84
Other Airlines			10	53
OVERALL TOTAL				80

Notes:

1. Ranking and share based on total seat capacity for all Southeast Asian airlines in March 2023.
2. Lion includes Lion Group and Super Air Jet, which is technically not part of Lion Group but is part of the Lion family of companies with similar ownership.
3. AirAsia includes AirAsia and AirAsia X Groups.
4. Singapore Airlines Group includes three airlines in 2019 (SilkAir was absorbed by Singapore Airlines in 2021).

Source: Authors based on scheduled seat capacity data from OAG (March 2023 vs March 2019).



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Abbreviations

ACV	Airports Corporation of Vietnam
ADB	Asian Development Bank
ANS	Air Navigation Services
AOT	Airports of Thailand
API	PT Angkasa Pura I (an Indonesian state-owned enterprise)
APII	PT Angkasa Pura II (an Indonesian state-owned enterprise)
ASEAN	Association of Southeast Asian Nations
ATM	air traffic management
CAG	Changi Airport Group
CAGR	compound annual growth rate
CO ₂	carbon dioxide
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
COVID-19	coronavirus disease
DFI	development financial institution
EU	European Union
eVTOL	electric vertical takeoff and landing
FSC	full-service carrier
GDP	gross domestic product
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ITF	International Transport Forum
Lao PDR	Lao People's Democratic Republic
LCC	low-cost carrier
MAHB	Malaysia Airports Holdings Berhad
MRO	maintenance repair and overhaul
O&D	origin and destination
OECD	Organisation for Economic Co-operation and Development
PPP	public-private partnership
PRC	People's Republic of China
RPK	revenue passenger kilometer
SAF	sustainable aviation fuel

US	United States
VASCO	Vietnam Air Services Company
VFR	visiting friends and relatives
Y-O-Y	year over year



Executive Summary

The Global Aviation Environment and Its Effect on Southeast Asia

Before the coronavirus disease (COVID-19) pandemic, global aviation had been through an extended period of growth in all regions. Following the global financial crisis in 2009, aviation passenger revenues increased from \$445 billion in 2010 to \$607 billion in 2019, representing an increase of 36%, according to International Civil Aviation Organization (ICAO) data. During the same period, scheduled passenger traffic increased by 66% from 2.708 billion in 2010 to 4.486 billion in 2019, and revenue passenger kilometers increased from 4.93 trillion to 8.69 trillion, an increase of 76%. As reported by ICAO, revenue per kilometer dropped from \$0.089 to \$0.069 from 2010 to 2019, a decrease of 22% over the period, as average yield and airfares dropped.

In Southeast Asia, passenger traffic during this period more than doubled, reaching 510 million in 2019 and accounting for 11% of global traffic. While the Southeast Asian market grew much faster than the global average, the average profit margin of Southeast Asian airlines significantly lagged behind the global average due to intense competition and overcapacity. In 2019, the average net profit margin of the top 10 leading airlines by revenue in Southeast Asia was only 1.5% while the global average profit margin was 3.8% (based on ICAO data).

During this period, there were significant changes in commercial aviation. The A380—which first came into service in 2007—had its end of production announcement in 2019. In 2020, Boeing announced the end of 747 production after several years of virtually no new orders, marking the end of the era of superjumbos. The production rates for the A380 and 747 were very slow for several years pre-pandemic due to a lack of demand with most of the 747s delivered as freighters rather than passenger aircraft.

As the A380 and 747s became less popular, the smaller Boeing 787 (entered service in 2011) and the A350 (entered service in 2015) began dominating long-haul operations. Both these types offer composite fuselages, high fuel efficiency, and extremely long range. Most of the major Southeast Asian flag carriers began operating 787s and/or A350s, resulting in improved efficiencies in medium- and long-haul services. However, the introduction of new generation twin-engine widebody aircraft had a bigger impact on airlines from outside the region, enabling foreign competitors to expand in the Southeast Asian market.

Airlines developing very large connecting hubs grew rapidly. Dubai-based Emirates grew from 27.5 million passengers in the fiscal (FY) year ending March 2010 to 58.6 million in FY ending March 2019. Qatar Airways grew from 14 million passengers in FY ending March 2010 to 29.5 million in FY ending March 2019. And Turkish Airlines grew from 29.1 million passengers in 2010 to 74.3 million in 2019. These airlines built up significant connecting services to Southeast Asia, affecting particularly the route networks that Southeast Asian airlines had operated to Europe and, to a lesser extent, the east coast of North America. At the same time, the major carriers from the People's Republic of China (PRC)—Air China, China Eastern, China Southern, and Hainan Airlines—started to develop significant trans-Pacific networks and looked to Southeast Asia to help to provide passengers to fill their aircraft on new trans-Pacific routes. Airlines from other North Asian markets (including Hong Kong, China and Taipei, China) also expanded their network in North America and relied heavily on connecting passengers from Southeast Asia to fill these new or additional flights.

Southeast Asian legacy carriers were therefore faced with aggressive competition on both their European and trans-Pacific routes. At the same time, Southeast Asian legacy carriers faced intensifying competition at home from low-cost carriers (LCCs). Very large, very low-cost LCCs emerged—particularly subsidiaries or affiliates of Indonesia-based Lion Group and Malaysia-based AirAsia Group—but also LCCs outside these two groups from the Philippines, Thailand, and Viet Nam. This forced legacy carriers to reduce average airfares on intra-Southeast Asian and other routes within Asia, putting significant pressure on them, but also stimulating growth.

The PRC was the main growth market during this period as outbound tourism from the PRC soared, resulting in massive growth in inbound travel to Southeast Asia. Much of this, however, was captured by PRC airlines rather than Southeast Asian carriers.

In air freight, the story was different. Following the global financial crisis, ICAO reported that global freight tonne-kilometers stagnated and only increased by around 20% from 2010 to 2019. Southeast Asian airlines were generally not major players in this market, and treated it as a side product, primarily to fill spare belly hold capacity on passenger flights.

The Impact of Coronavirus Disease on Southeast Asian Aviation

The impact of COVID-19 on Southeast Asian aviation unfolded rapidly and deeply. During early 2020, passengers were discouraged from flying to the PRC and Hong Kong, China, and some bans were imposed on inbound traffic from those regions. In March 2020, lockdowns were imposed across Southeast Asia, virtually eliminating international passenger traffic and severely restricting domestic traffic. While lockdowns were lifted after a few months, borders remained closed until the second quarter (Q) of 2022, resulting in international traffic remaining more than 90% below pre-COVID-19 levels. Off-and-on restrictions for domestic travel also continued, including new lockdowns in some countries.

In the first 2 years of the pandemic (April 2020 to March 2022), international passenger traffic in Southeast Asia was 95% lower than an equivalent 24-month period before the pandemic. While global international traffic was significantly impacted with a reduction of more than 80% in the first 2 years of the pandemic, Southeast Asia experienced a much larger reduction as international borders remained closed for longer than most other regions.

Southeast Asia had international passenger traffic reductions that were about 8 percentage points higher than the global average in 2020 and about 23 percentage points higher than the global average in 2021. This highlights the damage prolonged border closures had on Southeast Asia's aviation industry.

In 2021, global international passenger traffic was down by 72% compared to 2019 levels while international traffic in Southeast Asia was reduced by 97%. Traffic was down by slightly more than 97% through Q1, Q2, and Q3 before improving modestly in Q4 with a reduction of around 95% as limited quarantine free travel was permitted. In Q1 2022, international traffic in Southeast Asia was still down by around 90% as most borders did not open until April.

Global domestic passenger traffic was reduced by 32% in 2021, while in Southeast Asia the reduction was about 70% as domestic travel was restricted with even interstate borders closing in some countries. Vaccination rates were relatively low for much of 2021, resulting in a much bigger impact from the Delta variant than countries in other regions that had higher vaccination rates. Domestic markets in other regions performed better throughout 2021, partially due to higher vaccination rates which enabled domestic travel to continue following the emergence of the Delta variant.

Over the first 24 months of the pandemic (April 2020 to March 2022), domestic traffic in Southeast Asia was down by over 50%. The domestic market, therefore, was hardly a panacea for Southeast Asia's aviation industry during the pandemic although it certainly performed better than the international market.

The impact on airlines and airports was enormous. Passenger revenues dropped to almost zero, there was a huge amount of administrative effort required to manage unflown bookings, and aviation players sought to rapidly cut their cost bases through furloughing and laying off staff, renegotiating contracts with suppliers and aircraft lessors, delaying capital expenditure, and taking older aircraft out of service.

There were almost no exits from the airline business. While some companies went into administration, no major Southeast Asian airline shut down as a result of COVID-19. Government support was made available in some Southeast Asian countries, and the airlines hoped that they would be able to claw back some of their losses once COVID-19 restrictions were lifted.

Airports responded by slashing costs, but many also took the opportunity to carry out capital improvement programs while terminals were quiet (although some airports temporarily closed terminals to save operating costs).

During the pandemic, domestic routes in Southeast Asia did better than international ones, but as the domestic market is relatively low yielding, this was more a matter of enabling a minimal level of "lights on" industry activity than a major source of revenue for airlines. It did allow crews to remain current and ensure that ground services continued to operate at a reduced level. The cargo business, however, had much higher yields due to high demand and supply chain constraints, resulting in crucial cash flow for Southeast Asian airlines to help offset the huge reduction in passenger traffic during a turbulent time.

Many international airlines cut or canceled services to Southeast Asia. One notable exception was Qatar Airways, which continued to operate routes, even if at reduced frequencies. At times, particularly in April–June 2020, Qatar Airways was the only option for travelers wishing to fly in some markets. Southeast Asian carriers cut back significantly, but most of the main international operators continued to maintain skeleton scheduled networks and/or operate repatriate charter flights during this period.

Opportunities and Challenges during the Post-Coronavirus Disease Period

Emerging from the pandemic, Southeast Asia faces a short-term future that is somewhat different from 2019. PRC airlines are temporarily absent which allows a higher share of traffic to be gained on some routes. Airlines from the Middle East and Türkiye have continued to respond actively to opportunities. For example, Qatar Airways forged a strategic partnership with Malaysia Airlines (building on their common membership in the Oneworld Alliance) and Emirates forged a new partnership with Garuda Indonesia. This study assesses market opportunities with a renewed focus on intra-Southeast Asian traffic and the large and growing India market emerging as areas where the Southeast Asian aviation industry should concentrate.

In 2019, a major challenge was the shortage of airport capacity around Southeast Asian major and some secondary airports. This study addresses infrastructure issues in depth. With 2019 traffic levels not expected to be reached until 2023 or later—and a possible permanent reduction in future growth—the requirement for new infrastructure could be delayed by 5 years or more. At the same time, new technologies are being introduced into Southeast Asian airports which will enable them to operate more efficiently.

Several years before the pandemic, 10 Southeast Asian countries had entered into a multilateral “open skies” air services agreement covering regional services within the Association of Southeast Asian Nations (ASEAN). While there was growth in regional services in the years pre-pandemic, there was no impact from this agreement partly because government regulators were holding back on fully opening up a variety of services. Fully implementing this agreement is a way for the aviation industry in Southeast Asia to recover and replace the large amount of traffic that had previously been coming from the PRC.

Along with route and traffic developments, this report focuses on three major areas to support post-COVID-19 recovery:

- (i) Supporting operational capabilities of airlines and airports.
- (ii) Encouraging infrastructure financing to raise capacity and promote inclusive growth when air travel demand resumes.
- (iii) Promoting a green, digital, and resilient recovery for the aviation industry.

Lessons for Future Global Crisis Events

Southeast Asian aviation has been remarkably resilient in the face of a pandemic, which stretched the industry far more than any conceivable financial modeling scenario would have taken it. Companies and governments have innovated and been flexible in their responses.

As of 2022, airlines and airports still have to be able to fully recover from the reduced levels of service. Other regions—such as Europe—have struggled with queues, cancellations, and poor service once traffic returned to 2019 levels. Having a clear and measured recovery plan is one way to ensure that chaos does not break out as services resume, allowing airlines, airports, and governments time to plan for staff recruitment, training and licensing, and equipment reactivation, and for passengers to relearn the things they have to do when passing through an airport.

The aviation industry worked hard to survive the pandemic and was highly innovative in developing new approaches to operations, financing, and customer relations. Many taboos were broken out of necessity, and it appears that lessons learned during the pandemic will have a long-term effect on shaping the industry. For example, increased airport automation will help reduce dependency on hard-to-find staff.

Summary of Recommendations

1. The Southeast Asia aviation sector should increase investment in recruiting, training, and retaining workers. Southeast Asian governments need to put in place policies and programs to facilitate this, enabling the aviation sector to keep up with the recovering demand and deal with potential volatility.
2. Southeast Asian countries should increase their focus on aviation safety, ensuring that there are sufficient oversight resources and that they comply with all international safety standards.
3. Southeast Asian countries should continue to invest in upgrading their air navigation systems to ensure there is sufficient capacity to keep up with future demand and consider alternative funding options to avoid delays in implementing upgrades due to budget constraints caused by the pandemic. Southeast Asian countries should also continue to work on coordinating their air navigation systems to ensure a higher level of efficiency and improve the overall use of airspace.

4. Southeast Asian governments should consider providing industry generic support packages to help all airlines recover from the financial impact of the pandemic and reduce debt levels. Financial assistance or restructuring support for any specific airline should be examined carefully on a case-by-case basis to ensure that fair industry competition can be maintained.
5. Southeast Asian governments should continue to work on adopting liberal aviation policies and avoid protecting their airlines, facilitating growth and a healthier aviation sector over the long term.
6. Southeast Asian countries should work together under the ASEAN to pursue more multilateral air transport agreements and ensure air travel protocols and policies are harmonized.
7. Southeast Asian airlines should increase their focus on air cargo and invest in freighters to facilitate rapid air cargo growth in the region and improve their share of Southeast Asia's booming air cargo market. Southeast Asian airports should increase their focus on air cargo and invest in air cargo-related infrastructure to facilitate rapid air cargo growth in the region and close the gap with rival hub airports in other regions.
8. Southeast Asian airlines need to adapt to changing travel patterns and preferences by adjusting their networks, pricing and revenue management strategies, and aircraft configurations.
9. Southeast Asian airlines need to adapt to changing passenger and worker expectations by embracing digitalization and new technologies.
10. Southeast Asian countries should accelerate efforts to advance the decarbonization of aviation, with a particular focus on sustainable aviation fuel (SAF) technologies. Southeast Asian countries should consider price floor support for the early stages of SAF production and a regional mandate requiring a minimum amount of SAF with a gradual increase to ensure long-term sustainability targets are met.
11. Southeast Asian countries should promote the development of drones and electric vertical takeoff and landing aircraft and put in place policies that facilitate their use in transporting cargo and passengers.
12. Southeast Asian governments should facilitate the development of adequate aviation infrastructure and incorporate multimodal connectivity in their planning approaches to allow the unfettered development of the industry.
13. The pandemic gives Southeast Asian countries more time to address aviation infrastructure issues, but the overall challenges remain and Southeast Asian governments need to recognize that pre-pandemic infrastructure issues will return—potentially in the next couple of years—and start to plan accordingly.
14. Southeast Asian countries need to find new source markets as the Southeast Asia–People's Republic of China market could take several years to fully recover and is unlikely to experience the same kind of growth that was experienced before the pandemic.
15. Southeast Asian countries should focus on India as the next major growth market and put in place policies to facilitate more capacity and routes in the Southeast Asia–India market.
16. Southeast Asian countries should work on improving intra–Southeast Asia connectivity, particularly at secondary destinations, and consider initiatives to help facilitate growth in intra–Southeast Asia passenger traffic and visitors.

17. Southeast Asian countries should focus on Australia; Japan; the Republic of Korea; and Taipei, China as major source markets to facilitate overall aviation and tourism recovery, recognizing it may take time for the People's Republic of China to recover from the impacts of the pandemic.
18. Southeast Asian countries should explore potential growth opportunities in Africa, Europe, North America, and the Middle East, but most of the future growth will be regionally within Asia and the Pacific.
19. Southeast Asian countries with sizable domestic markets should focus on facilitating point-to-point routes to help drive growth for their domestic aviation and tourism sectors.
20. Southeast Asian airports and their governments should review airport pricing policies to incentivize small jets and new long-range narrowbody aircraft, which can be used to develop routes that would be economically beneficial and help the aviation sector recover.



Background and Objectives of the Engagement

Project Background

Passenger traffic in Southeast Asia was reduced by over 80% in the first 24 months of the pandemic (April 2020 to March 2022), making it one of the most impacted regions globally. International traffic was reduced by around 95% and domestic traffic by nearly 70%. Both reductions are well above global averages.

For example, international passenger traffic at Southeast Asia's main three international airports was reduced—Singapore Changi by 95%, Bangkok Suvarnabhumi by 97%, and Kuala Lumpur International by 97%—in the first 24 months of the pandemic (April 2020 to March 2022). Domestic traffic was reduced during this period by 54% at Bangkok Suvarnabhumi and 80% at Kuala Lumpur International. Domestic traffic was reduced at Jakarta Soekarno-Hatta by 59% and Manila Ninoy Aquino by 78%, two of the largest domestic airports in Southeast Asia.

The slow pace of the recovery had a massive financial impact on airlines. While there were very few airline failures or exits, almost all airlines in Southeast Asia have had to cut back, restructure, and recapitalize. While some airlines were able to return to profitability in the second half of 2022, it could take a few years for the overall Southeast Asian airline sector to achieve profitability. Airline profitability in Southeast Asia was already lagging behind other regions pre-pandemic due to overcapacity and intense competition. Southeast Asia is likely to continue to lag behind other regions as other regions are recovering faster and do not have the same long-term challenges relating to overcapacity and irrational competition.

There are opportunities for airlines and the overall Southeast Asian aviation industry to emerge stronger in the post-pandemic environment. Although it could take a few years for 2019 traffic levels to fully return, the potential for long-term growth remains. Southeast Asia was one of the fastest-growing aviation markets in the decade pre-pandemic, driven by low-cost carrier (LCC) expansion and an expanding middle class. Travel within Southeast Asia and with other parts of Asia and the Pacific was growing rapidly.

Total passenger traffic in Southeast Asia reached about 550 million in 2019, including over 210 million domestic passengers and over 330 million international passengers. There are around 80 airlines based in the region, including 33 with at least 2 million passengers per year pre-pandemic. While it is a highly fragmented market and the competition continues to intensify as new start-ups launch services, the top 10 airline groups accounted for 90% of the market pre-pandemic and are likely to continue to dominate.

Domestic growth within the five largest Southeast Asian countries—Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam, which account for nearly 98% of total domestic traffic in Southeast Asia—could resume in 2023. Rapid international growth could resume during 2025–2029. The overall market has the potential to reach 1 billion passengers by 2035.

Infrastructure investments across a wide range of areas—including airports, air traffic management, and pilot training—will be required to support such growth. Strategic adjustments will also be required to facilitate the recovery. Airlines must adapt and governments will need to reconsider policies and their overall aviation

strategies. This in-depth landscape study provides recommendations for all these critical areas while outlining market conditions and the impact of the pandemic.

The study is intended to raise awareness of the challenges and opportunities facing Southeast Asia's aviation sector and to provide a platform for discussion. The study has been initiated by the Transport and Communications Division of the Southeast Asia Department of the Asian Development Bank (ADB), recognizing that the resurgence of the aviation industry is crucial to the post-COVID-19 economic recovery in the region.

The study will take stock of the status of the aviation industry to support ADB developing member countries and development partners in recovery plans and strategies. The results and recommendations are to help develop a consensus among stakeholders on the way forward for the aviation industry in the region and provide a basis to initiate support by ADB and other development partners. It might also lead to a subsequent study that will look at future aviation sector development opportunities.

Description of the Study Area

In recent decades, Southeast Asian countries have experienced remarkable economic growth. Key facilitators include the expansion of regional production networks, integration with the global economy, foreign direct investment, elimination of trade and investment barriers, commodity boom, and increased demand from a growing middle class. As a result, Southeast Asian countries have been some of the most dynamic in the world, with significant socioeconomic outcomes. In 2021, Southeast Asia recorded an estimated total gross domestic product (GDP) of \$2.92 trillion, representing 2.7% year-over-year (Y-O-Y) growth, with all countries (except Myanmar) having positive (Y-O-Y) growth equal to or larger than 1%.

Southeast Asia was one of the fastest-growing air transport markets before COVID-19. In the decade pre-pandemic, passenger traffic in Southeast Asia grew with a compound annual growth rate (CAGR) of approximately 9.8%, from roughly 200 million passengers in 2009 to 510 million passengers in 2019. The aviation sector—including all aspects of air travel (e.g., airlines and airports) and its supply chain (e.g., tourism)—has been an important driver of economic growth for countries in the region, contributing significantly to the GDP of some countries. For example, in 2018, the air transport sector (including related aspects) accounted for 15.5% of total GDP in Thailand and 11.8% in Singapore, according to the International Air Transport Association (IATA).

Among the 11 countries in the region, Thailand has the largest aviation market with 127 million total passengers (both domestic and international) and nearly 500 nonstop passenger routes in 2019. Indonesia is leading the region in terms of the number of commercial airports with 125 and the number of nonstop passenger routes with slightly over 500, serving 117 million passengers (both domestic and international) in 2019. Key markets outside Southeast Asia—such as Japan, the Republic of Korea, and the People's Republic of China (PRC)—also have a crucial role and impact on Southeast Asia's aviation sector due to the high frequency of direct routes between Northeast Asia and Southeast Asia, and a large number of inbound travelers from these markets.

It is worth noting that the aviation market characteristics vary drastically in terms of size, performance, and growth between the different Southeast Asian countries. There is a significant gap between major aviation markets in Southeast Asia and smaller markets. Some of the smaller countries lack aviation infrastructure and are not well connected (particularly lacking nonstop routes outside Asia). The five smaller countries had less than 7% total share of international passengers in Southeast Asia in 2019, making them particularly vulnerable to the negative economic impact of COVID-19 even as the overall market recovers.

Table 1 provides key aviation market highlights for all 11 Southeast Asian countries which will be analyzed as part of this study.

Table 1 Key Market Highlights by Country

Rank	Country	GDP and Y-O-Y Growth 2021/2019 (\$ billion and %)	Aviation GDP Contribution 2018 (%)	Airports	Domestic / International Passengers 2019 (million)	Domestic / International Passengers CAGR (2009 / 2019) (%)	Share of Domestic / International Passengers in Southeast Asia 2019 (%)	Nonstop Passenger Routes in 2019
1.	Brunei Darussalam	\$12 / \$14 2.0 / (0.3)	<2.0	1	Total: 2.2	N/A / 4.0	0.0 / 0.6 Total: 0.4	31
2.	Cambodia	\$26 / \$27 1.9 / 10.1	17.0	3	0.7 / 10.0 Total: 11.0	17 / 15	0.3 / 3.0 Total: 2.0	160
3.	Indonesia	\$1,093 / \$1,021 3.2 / 7.8	2.6	125	80.0 / 37.0 Total: 117.0	6 / 22	37.0 / 11.0 Total: 21.0	530
4.	Lao PDR	\$19 / \$19 2.1 / 4.1	N/A	9	1.2 / 2.3 Total: 3.5	17 / 21	0.6 / 1.0 Total: 1.0	46
5.	Malaysia	\$349 / \$365	3.5	34	28.0 / 54.0 Total: 82.0	7 / 9	13.0 / 16.0 Total: 15	270
6.	Myanmar	\$58 / \$67 (17.9) / (12.9)	N/A	29	3.0 / 5.5 Total: 8.5	15 / 19	1.0 / 2.0 Total: 2.0	170
7.	Philippines	\$373 / \$377 3.2 / 9.3	3.4	44	60.0 / 31.0 Total: 60.0	7 / 9	14.0 / 9.0 Total: 11.0	220
8.	Singapore	\$360 / \$376 6.0 / 0	11.8	2	0 / 68.0 Total: 68.0	N/A / 7	0 / 20.0 Total: 12.0	150
9.	Thailand	\$507 / \$544 1.0 / 7.4	15.5	32	38 / 89 Total: 127.0	11 / 11	17.0 / 26.0 Total: 23.0	460
10.	Timor-Leste	\$2.5 / \$2.5 1.8 / 3.4	N/A	1	<0.1% / 0.2 ^a Total: 0.3	13 / 8 ^a	<0.1 / <0.1 Total: 0.05	3
11.	Viet Nam	\$282 / \$262 3.8 / 8.6	5.2	22	37 / 42 Total: 79	16 / 17	17.0 / 12.0 Total: 14.0	270

(-) = negative, CAGR = compound annual growth rate, GDP = gross domestic product, Lao PDR = Lao People's Democratic Republic, N/A = not applicable, Y-O-Y = year-over-year.

^a Only airports with scheduled commercial passenger services are counted.

Notes:

1. Aviation contribution to GDP includes the contribution of air transport and related aspects as well as foreign tourists.
2. International Air Transport Association (IATA) does not calculate aviation contribution figures for Myanmar and the Lao PDR.
3. Timor-Leste passenger traffic is based on 2018 as exact figures for 2019 are not available.

Source: Authors using data from IATA, Fitch Solution, World Bank, OAG, aviation authorities, airport authorities, and ASEAN Secretariat.

Assessment of the Landscape Before Coronavirus Disease

Pre-Pandemic Traffic Landscape

Passenger Traffic by Country

Total passenger movements in Southeast Asia exceeded 500 million in 2019, including over 210 million domestic passengers and nearly 300 million international passengers.

Southeast Asia accounted for about 11% of the global air transport market in 2019 (4.486 billion passengers flown on scheduled services based on International Civil Aviation Organization [ICAO] data), including an 8% domestic share (2.636 billion passengers globally) and a 16% international share (1.850 billion passengers globally) (Table 2).

Table 2 2019 Southeast Asia Passenger Movements by Country (million)

Rank	Country	Domestic	International	Total	Source
1.	Thailand	38	89	127	Government (CAAT)
2.	Indonesia	80	37	117	Government (DGCA)
3.	Malaysia	28	54	82	Airports (MAHB/Senai)
4.	Viet Nam	37	42	79	Airports (ACV)
5.	Singapore	0	68	68	Airports (CAG)
6.	Philippines	30	31	60	Government (CAB)
7.	Cambodia	0.7	10.0	11.0	Airports (Cambodia Airports)
8.	Myanmar	3.0	5.5	8.5	Government (DCA)
9.	Lao PDR	1.2	2.3	3.5	Government (ASEAN Secretariat)
10.	Brunei Darussalam	0	2.2	2.2	Government (DCA Brunei Darussalam)
11.	Timor-Leste	0	0.2	0.2	Government (Air Navigation of Timor-Leste, ADB 2019)
	Total	218.0	341.0	559.0	
	Total (ADJUSTED)^a	218.0	292.0	510.0	

ACV = Airports Corporation of Vietnam, ASEAN = Association of Southeast Asian Nations, CAAT = Civil Aviation Authority of Thailand, CAB = Civil Aeronautics Board (Philippines), CAG = Changi Airport Group, DCA = Department of Civil Aviation, DGCA = Directorate General of Civil Aviation, Lao PDR = Lao People's Democratic Republic, MAHB = Malaysia Airports Holdings Berhad.

^a Adjusted total removes the double counting of each passenger flying between Southeast Asian countries; about 49 million passengers flew within Southeast Asia based on marketing information data tapes (MIDT) booking data from OAG.

Notes:

1. Passenger traffic has been rounded to the nearest million except when traffic is less than 10 million passengers in which case it has been rounded to the nearest 100,000.
2. For airport authority figures, domestic has been adjusted to avoid double counting each passenger.

Table 3 Top 20 Domestic Air Transport Markets Globally Ranked by Passengers, 2019
(million)

Rank	Country	Passengers
1.	United States	812
2.	PRC	575
3.	India	144
4.	Japan	107
5.	Brazil	95
6.	Indonesia ^a	80
7.	Russian Federation	73
8.	Australia	61
9.	Mexico	54
10.	Türkiye	50
11.	Canada	49
12.	Spain	43
13.	Thailand ^a	38
14.	Viet Nam ^a	37
15.	Republic of Korea	33
16.	Italy	32
17.	Philippines ^a	30
18.	Malaysia ^a	28
19.	Colombia	28
20.	Saudi Arabia	27
Southeast Asia TOTAL		212
TOTAL		2,395

PRC = People's Republic of China.

^a Southeast Asian countries.

Notes:

1. Passenger traffic has been rounded to the nearest million.
2. For airport authority figures, domestic has been adjusted to avoid double counting each passenger.
3. Charter passengers are generally excluded; a few countries do not separate charters but domestic charters in these countries are limited.

Sources: Airports Corporation of Vietnam, Civil Aviation Authority (Colombia), National Civil Aviation Agency (Brazil), Bureau of Infrastructure and Transport Research Economics (Australia), Civil Aeronautics Board (Philippines), Civil Aviation Administration of China, Civil Aviation Authority of Thailand, Directorate General of Civil Aviation (India), Directorate General of Civil Aviation (Indonesia), General Directorate of State Airports Authority (Türkiye), US Department of Transportation, Civil Aviation Authority (Italy), General Authority of Civil Aviation (Saudi Arabia), Spanish Statistical Office, Malaysia Airports Holdings Berhad, Ministry of Land, Infrastructure, Transport and Tourism (Japan), Ministry of Land, Infrastructure and Transport (Republic of Korea), Russian Federation Association of Travel Industry, Secretariat of Infrastructure, Communications and Transportation (Mexico), Transport Canada.

Cambodia, the Lao People's Democratic Republic (Lao PDR), Myanmar, and Timor-Leste have small domestic air transport markets, while Brunei Darussalam and Singapore do not have any domestic markets. Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam all have sizable domestic markets which pre-pandemic were among the top 10 in Asia and the Pacific and the top 20 globally.

In 2019, Indonesia, Malaysia, the Philippines, Thailand, and Viet Nam combined accounted for 98% of domestic traffic in Southeast Asia, 18% in Asia and the Pacific, and 8% globally. Overall, the world's top 20 domestic markets accounted for about 91% of global domestic traffic. Having a sizable domestic market is an important component of the aviation sector in all these countries and has been particularly critical during the pandemic given the huge reduction in international traffic (Table 3).

Indonesia is by far the largest domestic air transport market in Southeast Asia. In 2019, Indonesia was the sixth-largest domestic market in the world behind the United States (US), the PRC, India, Japan, and Brazil. In 2018, Indonesia was ahead of Brazil, at fifth spot in the global rankings, and it was almost as large as Japan, at just 1 million passengers less than the fourth spot. Indonesia had 102 million scheduled domestic passengers in 2018, but the market contracted by 22% in 2019.

The contraction in Indonesia was driven by a change in commercial strategies at Indonesian airlines, which priced most domestic seats in 2019 near the regulated airfare cap, while in prior years, most seats were priced at or near the airfare floor. Yields improved significantly but at the expense of traffic as demand dropped due to much higher average fares.

The domestic contraction in Indonesia also enabled Thailand to overtake Indonesia as Southeast Asia's largest aviation market overall. Thailand accounted for 23% of the total (domestic and international) passenger traffic in Southeast Asia in 2019 while Indonesia accounted for 21%.

Table 4 Share of Southeast Asia Passenger Traffic by Country, 2019
(%)

Country	Domestic	International	Total
Thailand	17	26	23
Indonesia	37	11	21
Malaysia	13	16	15
Viet Nam	17	12	14
Singapore	N/A	20	12
Philippines	14	9	11
Cambodia	0.3	3	2
Myanmar	1	2	2
Lao PDR	0.6	0.7	0.6
Brunei Darussalam	N/A	0.6	0.4
Timor-Leste	N/A	0.1	0.1

Lao PDR = Lao People's Democratic Republic, N/A = not applicable.

Notes: Shares have been rounded to the nearest 1% except when less than 1% where it has been rounded to the nearest 0.1%.

Singapore and Brunei Darussalam have no domestic services; Timor-Leste has very limited domestic services.

Source: Authors based on data from government aviation authorities and airports/airport groups.

Indonesia accounted for a 37% share of total Southeast Asian domestic passenger traffic in 2019. Thailand accounted for a 26% share of total Southeast Asian international passenger traffic. Indonesia has a relatively small international market that continued to grow in 2019 and its contraction was limited to domestic. Indonesia accounted for 11% of international traffic in Southeast Asia in 2019, putting it behind Thailand, Singapore, Malaysia, and Viet Nam (Table 4).

Southeast Asia does not have any international market in the global top 10, and in 2019 only two were among the top 20 globally: Singapore and Thailand.

Most international traffic in Southeast Asia consists of regional traffic within Asia. Northeast Asia is the largest market for Southeast Asia, accounting for an estimated 115 million (49%) of total international passengers in 2019, based on OAG Traffic Analyzer data.

Traffic within Southeast Asia accounted for 49 million (21%) and traffic within South Asia accounted for 15 million (6%). Markets outside Asia accounted for the remaining 24%, including 10% (22 million) for Europe, 5% (11 million) for the Middle East, 5% (11 million) for the Southwest Pacific (including Australia and New Zealand), and 4% (9 million) for North America.

Latin America and Africa are very small markets for Southeast Asia, each accounting for well under 1% of total international traffic.

Table 5 provides a breakdown of Southeast Asia by country. This data is based on origin and destination (O&D) and includes passengers that are not traveling on nonstop flights. For example, Cambodia does not have any direct flights to Europe, but a passenger booked on a ticket between Cambodia and Europe is counted under Cambodia-Europe regardless of the routing or transit point.

Each intra-Southeast Asia passenger is counted only once in the total column in Table 5. Southeast Asia therefore only accounts for 21% of the total, although for 10 of the 11 countries Southeast Asia accounts for over 21%.

Southeast Asia is the largest market for 6 of the 11 Southeast Asian countries (Brunei Darussalam, Indonesia, Malaysia, Myanmar, Singapore, and Timor-Leste) while Northeast Asia is the largest market for the other 5 countries (Cambodia, the Lao PDR—with the Lao PDR only being marginally larger—the Philippines, Thailand, and Viet Nam). Overall, Northeast Asia—pre-pandemic—accounted for more than twice as much traffic as Southeast Asia.

**Table 5 Southeast Asia International Passenger Share
Based on Region of Origin or Destination, 2019**
(%)

Country	Southeast Asia	Northeast Asia	South Asia	Southwest Pacific	Middle East	Europe	North America	Other
Brunei Darussalam	65	17	3	3	4	4	1	0 ^a
Cambodia	37	53	1	2	0 ^a	4	2	0 ^a
Indonesia	46	22	2	10	8	8	2	1
Thailand	24	49	7	2	3	12	2	1
Lao PDR	46	46	1	1	0 ^a	4	2	0 ^a
Malaysia	47	30	9	4	4	4	1	1
Myanmar	49	39	4	1	1	4	2	1
Philippines	16	49	1	4	10	7	11	1
Singapore	45	30	8	5	1	7	2	1
Timor-Leste	80	1	0 ^a	18	0 ^a	0 ^a	0 ^a	0 ^a
Viet Nam	26	57	1	3	1	7	5	3
TOTAL	21	49	6	5	4	10	4	1

Lao PDR = Lao People's Democratic Republic.

^a 0% is used when the portion is less than 0.5%.

Notes:

1. Northeast Asia includes Hong Kong, China; Japan; Mongolia; the People's Republic of China; the Republic of Korea; and Taipei, China.
2. Shares have been rounded to the nearest 1%.

Source: OAG.

The O&D total for Southeast Asia in 2019 was an estimated 235 million passengers. This is less than the total international traffic of 292 million passengers which includes traffic that flies through Southeast Asian airports but is not originating or heading to any of the 11 Southeast Asian countries.

Malaysia, Singapore, and Thailand have a lot of international connecting traffic. There were over 60 million international connecting passengers in Southeast Asia in 2019, including around 20 million at Singapore Changi Airport, and around 12 million at both Kuala Lumpur International Airport and Bangkok Suvarnabhumi Airport, according to OAG Traffic Analyzer data. The O&D total of 235 million passengers excludes transit passengers flying between other regions via Southeast Asia hubs but includes passengers who connect in a Southeast Asian hub to a flight within Southeast Asia. For example, a passenger flying from Sydney to London with transit in Kuala Lumpur or Singapore would not be included in the O&D total (235 million) but would be counted twice in the overall Southeast Asia total (292 million). A passenger flying from Bali to London with transit in Kuala Lumpur or Singapore would be counted once in the O&D total (235 million) and twice in the overall Southeast Asia total (292 million).

There are three segments of international traffic: inbound, outbound, and transit. Inbound is by far the largest segment, accounting for 60% of total international traffic in Southeast Asia in 2019. This highlights how important tourism is to the Southeast Asian aviation industry and the overall economy.

Table 6 Total Visitors and Visitors by Air to Southeast Asia, 2019

Country	Total Visitors (million)	Visitors by Air (million)	Estimated Share of International Traffic (%)
Thailand	39.9	33.5	75
Malaysia	26.1	9.6	36
Singapore	19.1 ^a	14.9	44
Viet Nam	18.0	14.4	69
Indonesia	16.1	9.8	53
Philippines	8.3	8.1	52
Cambodia	6.6	4.4	88
Lao PDR	4.8	0.8	70
Myanmar	4.4	1.8	66
Brunei Darussalam	0.3 ^b	0.3	27
Timor-Leste	0.1 ^b	0.1	31
TOTAL	143.7	97.7	57

Lao PDR = Lao People's Democratic Republic.

^a Singapore excludes Malaysian citizens that cross by land (other visitors to Singapore that cross by land are included).

^b Brunei Darussalam and Timor-Leste exclude visitors entering via land crossings in their total visitor figures.

Note: Share of international passenger traffic estimated based on total traffic.

Source: Authors using visitor data from tourism ministries.

million in 2019, second among all Southeast Asian countries) but relatively low visitor numbers by air (9.6 million in 2019, fourth among all Southeast Asian countries). Singapore citizens accounted for 10.2 million (39%) of total visitors to Malaysia in 2019.

Most countries do not provide a breakdown by source market for visitor numbers by air. While there is significant air traffic between Malaysia and Singapore (Kuala Lumpur-Singapore was the second-busiest international air route in the world in 2019), a majority of the 10.2 million Singaporean visitors to Malaysia in 2019 entered by land rather than air. Malaysia also includes in their visitor numbers Brunei Darussalam citizens that cross by land and Indonesia includes Timor-Leste citizens that cross by land. In 2019, Malaysia had 1.2 million visitors from Brunei Darussalam and Indonesia had 1.2 million visitors from Timor-Leste; while some flew, most crossed by land.

Intra-Southeast Asia travel accounted for 53 million (37%) of the 144 million total visitors to Southeast Asia in 2019. While data are not available on how many of these visitors traveled by air, it is well under 50% when factoring in that most of the 46 million visitors to Southeast Asia who entered via land or sea would be from other Southeast Asian countries.

Pre-pandemic, the PRC was a much bigger inbound market for Southeast Asia's aviation industry than intra-Southeast Asia. There were 32.3 million PRC visitors to all 11 Southeast Asian countries combined in 2019, accounting for 23% of the total. While some of these visitors entered by land, a large majority entered by air.

Tourism and the Inbound Segment

Southeast Asia attracted 144 million visitors in 2019 (based on tourism ministry data for the 11 countries combined). This includes 98 million visitors who arrived by air, generating passenger traffic of roughly 196 million (factoring in the number of international flights each visitor takes). Visitors include both business and leisure travelers but exclude workers or expatriates as they typically enter with work permits and are part of the outbound segment as they are considered residents of the countries they work in.

Thailand, a popular tourist destination, has by far the largest inbound market in Southeast Asia. Thailand recorded 33.5 million visitors by air in 2019, translating into roughly 67 million international passengers or 75% of total international traffic. Only Cambodia has a higher reliance on inbound traffic, with visitors accounting for about 88% of total passenger traffic in 2019 (Table 6).

In Table 6, total visitor numbers include visitors that enter by land or sea except for Brunei Darussalam and Timor-Leste, which only report visitors that enter by air. In terms of total visitor numbers, Singapore excludes Malaysian citizens that enter Singapore by land but includes other citizens that cross by land or sea. Malaysia includes Singapore citizens that cross over by land, which explains Malaysia's relatively high total visitor numbers (26.1

Table 7 Visitors from the People’s Republic of China and Other Southeast Asian Countries, 2019

Country	Southeast Asia (million)	PRC (million)	Southeast Asia Share (%)	PRC Share (%)
Brunei Darussalam	0.2	0.1	67	33
Cambodia	2.2	2.4	33	36
Indonesia	7.4	2.1	39	13
Lao PDR	3.2	1.0	67	21
Malaysia	17.9	3.1	69	12
Myanmar	2.1	1.5	48	34
Philippines	0.5	1.7	6	21
Singapore	6.6	3.6	35	19
Thailand	10.8	11	27	28
Timor-Leste	0 ^a	0 ^a	N/A	N/A
Viet Nam	2.0	5.8	11	32
TOTAL	52.9	32.3	37	23

Lao PDR = Lao People’s Democratic Republic, N/A = not applicable, PRC = People’s Republic of China.

^a Most visitors from Timor-Leste—which had less than 100,000 total visitors in 2019—are Australian citizens.

Notes:

1. Based on the country of citizenship or passport used to enter Southeast Asia.
2. Includes visitors entering by all modes (air, land, and sea) except Brunei Darussalam and Timor-Leste, which only report visitors by air.

Source: Authors based on data from tourism ministries.

The PRC has land borders with three Southeast Asian countries—Lao People’s Democratic Republic (Lao PDR), Myanmar, and Viet Nam—but these land crossings do not have very large volumes; most PRC citizens visiting these countries are from cities far from the border and therefore fly. Most of the visitors to these three countries entering by land are from other Southeast Asian countries, with the Lao PDR–Thailand, Myanmar–Thailand, and Viet Nam–Cambodia border crossings particularly busy. There are also some PRC citizens combining two Southeast Asian countries in a single holiday—such as Singapore and Malaysia with travel between the two by bus—but this accounts for a small portion of the 32.3 million total PRC visitors to Southeast Asia (Table 7).

The tourism industries of all Southeast Asian countries—except Timor-Leste—relied heavily on the PRC pre-pandemic. For four countries, PRC citizens accounted for more than 30% of total visitors in 2019. For two of these countries—Cambodia and Myanmar—the reliance on the PRC was higher than 50% in terms of visitors by air. Both these countries provide a source market breakdown for visitors by air figures.

There is also a heavy reliance on two other Northeast Asian countries: Japan and the Republic of Korea. These are the two largest source markets for Southeast Asian tourism after the PRC. While the Republic of Korea accounted for only 7% and Japan for only 4% of total visitors, they accounted for a higher proportion of visitors by air given that almost all visitors from these countries enter by air. Other leading source markets for Southeast Asia include Australia; India; Taipei, China, and the US, and three

European countries (France, Germany, and the United Kingdom). Almost all visitors from these source markets arrive by air, making them significant contributors to the Southeast Asian aviation industry (Table 8).

The 10 markets in Table 8 account for 51.3% of total visitors. Their combined share of visitors by air is not available, but it is much higher.

Intra-Southeast Asia visitors account for 37%, but the share by air is much lower. Other countries account for the remaining 12%, including about 5% for other European countries, 4% for other Asia and Pacific countries, 1% for other countries in the Americas, and 1% for countries in Africa or the Middle East.

Singapore is the largest source market for intra-Southeast Asia visitor numbers followed by Malaysia and Indonesia. From an aviation perspective, this ranking is somewhat skewed as it includes Singapore citizens that cross by land to Malaysia and by ferry to Indonesia (Table 9).

Table 8 Top 10 Source Markets for Southeast Asia (Excluding Southeast Asian Markets), 2019

Rank	Origin	Visitors (million)	Share of Total Visitors to Southeast Asia (%)
1.	PRC	32.3	22.5
2.	Republic of Korea	10.5	7.3
3.	Japan	5.7	4.0
4.	India	5.3	3.7
5.	United States	4.8	3.3
6.	Australia	4.6	3.2
7.	Taipei, China ^a	3.3	2.3
8.	United Kingdom	3.1	2.2
9.	Germany	2.1	1.5
10.	France	2.0	1.4
TOTAL (Top 10)		73.7	51.3

PRC = People's Republic of China.

^a Based on citizenship or passport used to enter Southeast Asia.

Notes:

1. Includes visitors entering by all modes (air, land, and sea).
2. Share is calculated using total visitors, including visitors from other Southeast Asian countries.

Source: Authors based on data from tourism ministries.

Table 9 Intra-Southeast Asia Visitor Numbers Based on Country of Origin, 2019

Rank	Country of Origin	Visitors (million)	Share (%)
1.	Singapore	13.8	26
2.	Malaysia	9.6	18
3.	Indonesia	8.4	16
4.	Thailand	7.7	15
5.	Viet Nam	4.1	8
6.	Philippines	2.4	5
7.	Lao PDR	2.4	5
8.	Brunei Darussalam	1.3	2
9.	Cambodia	1.3	2
10.	Timor-Leste	1.2	2
11.	Myanmar	0.7	1
TOTAL		52.9	

Lao PDR = Lao People's Democratic Republic.

Notes:

1. Based on the country of citizenship or passport used to enter other Southeast Asian countries.
2. Includes visitors entering by all modes (air, land, and sea) except Brunei Darussalam and Timor-Leste, which only report visitors by air, and Malaysian citizens entering Singapore by land.

Source: Authors based on data from tourism ministries.

Passenger Traffic by Airport

There are more than 300 airports in Southeast Asia with scheduled commercial services, including about 80 with scheduled international services pre-pandemic. Total airport traffic in Southeast Asia totaled about 777 million passengers in 2019. This is higher than the 510 million passengers from the background and objectives section of this study as total airport traffic counts each domestic and intra-Southeast Asia international passenger twice (these passengers both depart and arrive at an airport in Southeast Asia, while a passenger traveling to or from outside Southeast Asia only departs or arrives at a Southeast Asian airport).

Pre-pandemic, there were 14 airports in Southeast Asia with over 10 million annual passengers. These airports accounted for 505 million passengers in 2019, which represented about 65% of the total airport traffic for Southeast Asia.

Singapore Changi was the largest airport in Southeast Asia in 2019. Changi was slightly ahead of Bangkok Suvarnabhumi and Kuala Lumpur International based on total traffic. However, based on international traffic, Changi was significantly larger.

While Thailand is Southeast Asia's largest international market it has several international airports, including three with over 10 million international passengers. Singapore has only two airports; Seletar, the second airport, handled only about 100,000 commercial passengers in 2019.

Thailand has four airports with over 10 million total passengers pre-pandemic. Indonesia and Viet Nam each have three airports with over 10 million passengers while the Philippines has two. Malaysia and Singapore each have

just one. The other five countries in Southeast Asia (Brunei Darussalam, Cambodia, the Lao PDR, Myanmar, and Timor-Leste) do not have any airports in this category.

In 2018, Indonesia had five airports with over 10 million passengers and there were 16 Southeast Asian airports in this category. However, Makassar and Medan (Kualanamu International Airport) dropped below 10 million passengers in 2019 due to the contraction of Indonesia's domestic market. Jakarta Soekarno-Hatta also dropped from third to fourth in the Southeast Asian airport rankings as its total passenger traffic contracted by 16%. In 2018, Jakarta Soekarno-Hatta was ahead of Kuala Lumpur International and was almost as large as Bangkok Suvarnabhumi and Singapore Changi.

Jakarta Soekarno-Hatta was still in the top 50 airports globally in 2019. Southeast Asia's fifth-largest airport, Manila Ninoy Aquino, also was among the top 50 airports globally in 2019. Singapore Changi and Bangkok Suvarnabhumi were in the top 20, although just barely as they ranked 18th and 19th based on total traffic, according to Airports Council International data. Based on international traffic, Singapore Changi was the seventh largest, Bangkok Suvarnabhumi was the ninth largest, and Kuala Lumpur International was the 12th largest.

Singapore does not have a domestic market, while Bangkok Suvarnabhumi and Kuala Lumpur International rely mainly on international traffic. In 2019, domestic only accounted for 18% of total passengers at Bangkok Suvarnabhumi and 28% at Kuala Lumpur International. All the other large airports in Southeast Asia relied on domestic for at least 40% of total traffic pre-pandemic (Table 10).

Pre-pandemic, there were another 10 airports in Southeast Asia with 5 million–10 million annual passengers. These medium-sized airports accounted for another 10% of Southeast Asia airport passenger traffic in 2019.

Airports in this category included the largest airports in two Southeast Asian countries that are not included in Table 10: Yangon in Myanmar and Phnom Penh in Cambodia. In this category are also the second-, third-, and fourth-largest airports in Malaysia (Kota Kinabalu, Penang, and Kuching). In addition, there are another four

Table 10 Large Airports (Over 10 Million Passengers) in Southeast Asia Ranked by Traffic, 2019

Rank	Airport	Code	Country	Passengers (million)
1.	Singapore Changi	SIN	Singapore	68.3
2.	Bangkok Suvarnabhumi	BKK	Thailand	65.4
3.	Kuala Lumpur International	KUL	Malaysia	62.3
4.	Jakarta Soekarno-Hatta	CGK	Indonesia	52.6
5.	Manila Ninoy Aquino	MNL	Philippines	47.9
6.	Bangkok Don Mueang	DMK	Thailand	41.3
7.	Ho Chi Minh Tan Son Nhat	SGN	Viet Nam	41.2
8.	Hanoi Noi Bai	HAN	Viet Nam	29.3
9.	Bali Denpasar Ngurah Rai	DPS	Indonesia	23.7
10.	Phuket International	HKT	Thailand	18.1
11.	Surabaya Juanda	SUB	Indonesia	15.8
12.	Da Nang International	DAD	Viet Nam	15.5
13.	Mactan-Cebu International	CEB	Philippines	12.7
14.	Chiang Mai International	CNX	Thailand	11.3
TOTAL				505.4

Source: Authors based on data from airports, airport authorities, and aviation authorities.

Indonesian airports (Makassar, Medan, Yogyakarta, and Jakarta Halim). While two of these handled just over 10 million passengers in 2018, putting them in the larger category, there were another three Indonesian airports that had just over 5 million passengers in 2018 but did not make this category in 2019 (Batam, Semarang, and Palembang) (Table 11).

All the airports listed in Table 11 have both domestic and international services except Jakarta Halim, which only has domestic services as commercial international services are only permitted at Jakarta's main airport, Soekarno-Hatta. Halim does have an international designation as it is open to international flights for general aviation, business aviation, military use, and government use.

While the 24 medium-sized and large airports dominate the overall market, there are another 32 airports with at least 2 million passengers. These 32 airports, which are spread across 10 of the 11 Southeast Asian countries, account for another 13% of total Southeast Asian airport passenger traffic.

The largest airports in another two Southeast Asian countries—Brunei Darussalam and the Lao PDR—are in this category along with 10 airports from Indonesia, 6 from the Philippines, 5 from Thailand, 4 from Malaysia, 4 from Viet Nam, and 1 from Cambodia (Table 12).

All the airports in Table 12 have international designations. However, Banjarmasin, Laguindingan, and Vinh did not have any scheduled international services pre-pandemic. Vinh had some international charters in 2019 and briefly had limited scheduled international services in 2015.

Small airports with less than 2 million passengers account for only about 12% of the total market. However, they are critical for providing connectivity to remote regions of Southeast Asia.

Most of the approximately 250 airports with less than 2 million annual passengers only have domestic services. However, about 30 airports in this category had scheduled international services in 2019. Most of these airports only have limited international services. Exceptions are Mandalay, Sihanoukville, and Dili.

Table 11 Medium-Sized Airports (5 Million–10 Million Passengers) in Southeast Asia Ranked by Traffic, 2019

Rank	Airport	Code	Country	Passengers (million)
15.	Nha Trang Cam Ranh	CXR	Viet Nam	9.8
16.	Kota Kinabalu International	BKI	Malaysia	9.4
17.	Makassar Sultan Hasanuddin	UPG	Indonesia	8.6
18.	Penang International	PEN	Malaysia	8.3
19.	Medan Kualanamu	KNO	Indonesia	7.8
20.	Yogyakarta Adisucipto ^a	JOG	Indonesia	6.9
21.	Yangon International	RGN	Myanmar	6.5
22.	Phnom Penh International	PNH	Cambodia	6.0
23.	Jakarta Halim	HLP	Indonesia	6.0
24.	Kuching International	KCH	Malaysia	6.0
TOTAL				75.3

^a A new airport outside Yogyakarta, Yogyakarta International (YIA), opened in 2020 with all jet flights relocating from Adisucipto.

Note: Rank is based on all airports in Southeast Asia for 2019.

Source: Authors based on data from airports, airport authorities, and aviation authorities.

Table 12 Larger Small-Sized Airports (2 Million–5 Million Passengers) in Southeast Asia Ranked by Traffic, 2019

Rank	Airport	Code	Country	Passengers (million)
25.	Balikipapan Sultan Aji	BPN	Indonesia	4.8
26.	Davao Francisco Bangoy	DVO	Philippines	4.5
27.	Johor Bahru Senai	JHB	Malaysia	4.3
28.	Batam Hang Nadim	BTH	Indonesia	4.2
29.	Clark International	CRK	Philippines	4.0
30.	Palembang Mahmud Badaruddin	PLM	Indonesia	4.0
31.	Siem Reap International	REP	Cambodia	3.9
32.	Hat Yai International	HDY	Thailand	3.9
33.	Semarang General Ahmad Yani	SRG	Indonesia	3.9
34.	Phu Quoc International	PQC	Viet Nam	3.7
35.	Krabi International	KBV	Thailand	3.6
36.	Banjarmasin Syamsudin Noor	BDJ	Indonesia	3.2
37.	Pontianak Supadio	PNK	Indonesia	3.2
38.	Padang Minangkabau	PKU	Indonesia	3.1
39.	Langkawi International	LGK	Malaysia	3.0
40.	Chiang Rai International	CEI	Thailand	3.0
41.	Lombok Zainuddin Abdul Madjid	LOP	Indonesia	2.9
42.	Miri International	MYY	Malaysia	2.8
43.	Iloilo Mandurriao	ILO	Philippines	2.7
44.	Kalibo International	KLO	Philippines	2.7
45.	Hai Phong Cat Bi	HPH	Viet Nam	2.6
46.	Wattay International Airport ^a	VTE	Lao PDR	2.5
47.	Udan Thani International	UTH	Thailand	2.5
48.	Samui International	USM	Thailand	2.4
49.	Kuala Lumpur Subang	SZB	Malaysia	2.4
50.	Laguindingan International	CGY	Philippines	2.3
51.	Manado Sam Ratulangi	MDC	Indonesia	2.3
52.	Bandung Husein Sastranegara	BDO	Indonesia	2.2
53.	Puerto Princesa International	PPS	Philippines	2.2
54.	Bandar Seri Begawan	BWN	Brunei Darussalam	2.2
55.	Da Lat Lien Khuong	DLI	Viet Nam	2.0
56.	Vinh International	VII	Viet Nam	2.0
TOTAL				99.0

Lao PDR = Lao People's Democratic Republic.

^a Wattay traffic estimated based on traffic for the Lao PDR overall along with visitor arrivals by air and outbound travelers at Wattay.

Note: Rank is based on all airports in Southeast Asia for 2019.

Source: Authors based on data from airports, airport authorities, and aviation authorities.

Mandalay International is the second-largest airport in Myanmar and handled 1.9 million passengers in 2019, including 1 million international passengers. Sihanoukville International is the third-largest airport in Cambodia and handled 1.7 million passengers in 2019, mostly international. Dili Presidente Nicolau Lobato is the main airport for Timor-Leste; it is much smaller and handled only 200,000 passengers in 2019 but almost all its traffic was international.

Passenger Traffic and Fleet by Airlines

Pre-pandemic, there were about 60 airlines based in Southeast Asia operating scheduled passenger services (based on OAG schedules data for December 2019). This includes about 45 airlines operating scheduled domestic services and a similar number operating scheduled international services with about 30 airlines serving both the domestic and international markets.

There were also about 120 foreign airlines from outside the region operating scheduled passenger services to and from Southeast Asia. Emirates was the largest foreign airline in Southeast Asia in 2019, accounting for about 6% of total foreign airline seat capacity. China Southern, Cathay Pacific, Qatar Airways, Korean Air, China Eastern, EVA Air, China Airlines, All Nippon Airways, and Asiana Airlines were also in the top 10, each accounting for at least 3% of total foreign airline seat capacity in Southeast Asia. The top 10 combined accounted for around 45% of total foreign airline seat capacity.

Pre-pandemic, foreign airlines accounted for slightly over half of the total seat capacity between Southeast Asia and other regions. However, Southeast Asian carriers accounted for about 60% of the overall international market once factoring in the intra-Southeast Asia market, which accounts for about one-quarter of total international seats.

While many airlines are competing in Southeast Asia, the market is very concentrated with a relatively small number of airline groups accounting for most of the traffic. There are 10 main airline groups in Southeast Asia, which accounted for 90% of total traffic carried by Southeast Asian airlines in 2019. These 10 airline groups have 33 airlines—when including both subsidiaries and affiliates—that carried about 360 million passengers in 2019. The total market was approximately 400 million passengers (with the nearly 30 airlines not associated with the 10 main groups carrying roughly 40 million passengers).

The 400 million figure is different from the 510 million passenger figure used in the calculations of Table 13 and Table 17 in this section as that included foreign airlines. The 400 million also includes a small number of passengers that were carried by Southeast Asian airlines that were not traveling to or from Southeast Asia. (Some Southeast Asian airlines carry passengers between or within other regions using fifth freedom traffic rights. There is also a small amount of intra-Southeast Asia traffic carried by foreign airlines using fifth freedom traffic rights).

Southeast Asia's largest airline group is AirAsia. The seven AirAsia-branded airlines that were based in Southeast Asia in 2019 carried a combined 84 million passengers, accounting for a 21% share of traffic carried by Southeast Asian airlines. This figure excludes AirAsia affiliates based outside Southeast Asia. When also including foreign airlines, AirAsia accounted for a 16% share of total passenger traffic to, from, and within Southeast Asia in 2019.

Lion is the second-largest airline group in Southeast Asia, accounting for 15% of passengers carried by Southeast Asian airlines or a 12% share of the total market when including foreign airlines. Lion Group includes five airlines based in three Southeast Asian countries: Indonesia, Malaysia, and Thailand. AirAsia has airlines in the same three countries as well as the Philippines.

The other main airline groups in Southeast Asia include Singapore Airlines, Garuda Indonesia, Thai Airways, Vietnam Airlines, VietJet, Cebu Pacific, and Malaysia Airlines. All these groups have more than one airline, but only Singapore Airlines and VietJet have (or had) airlines in more than one country. VietJet has an affiliate in

Table 13 Share of Passenger Traffic for Southeast Asian Airline Sector and Total Market (by Group), 2019

Rank	Airline Group	Number of Airlines	Southeast Asian Airline Sector Share (%)	Southeast Asia Total Market Share (%)
1.	AirAsia / AirAsia X	7	21	16
2.	Lion	5	15	12
3.	Singapore Airlines	4	10	8
4.	Thai Airways	2	9	7
5.	Garuda Indonesia	2	8	6
6.	Vietnam Airlines	3	7	6
7.	VietJet	2	7	5
8.	Cebu Pacific	2	5	4
9.	Philippine Airlines	2	4	3
10.	Malaysia Airlines	3	4	3
	TOTAL	33	90	70

Notes:

- Total market share is smaller as the total market includes foreign airlines.
- AirAsia Group includes all AirAsia and AirAsia X affiliates in Southeast Asia but excludes affiliates outside the region.
- Indonesia AirAsia X suspended operations in 2020, reducing the number of AirAsia-branded airlines in Southeast Asia to six.
- NokScoot suspended operations in 2020 and SilkAir merged with Singapore Airlines in 2021, reducing the number of Singapore Airlines Group airlines in Southeast Asia to two.
- Thai Airways Group includes Nok Air; in 2021, Thai Airways announced plans to divest its stake in Nok Air.
- Share calculated based on the total of 400 million for all Southeast Asian airlines and 510 million for the total market including foreign airlines.

Source: Authors based on data from airlines and governments.

There were 40 airlines in Southeast Asia with at least 1 million passengers in 2019, including 30 of the 33 that were part of the 10 main groups. The other three airlines are Indonesia AirAsia X, MASwings, and Vietnam Air Services Company (VASCO). Indonesia AirAsia X—which operated only two aircraft—suspended scheduled flights in 2019 and ceased all operations in 2020. MASwings and VASCO are small regional airlines only operating turboprop aircraft.

The largest airlines that are not part of the 10 main groups are Sriwijaya Air and Bangkok Airways. Sriwijaya and Bangkok Airways both carried 5.9 million passengers in 2019, making them the 23rd- and 24th-largest Southeast Asian airlines. The Sriwijaya Group is larger than Bangkok Airways when including its regional airline subsidiary Nam Air, which carried another 2.1 million passengers (Table 15).

Thailand. The Singapore Airlines Group had an affiliate in Thailand, NokScoot, but this airline ceased operations in 2020. The Singapore Airlines Group still has an affiliate in India, Vistara, which is excluded from this data as it is not based in Southeast Asia (Table 13).

The 10 main airline groups operated more than 1,500 aircraft pre-pandemic, accounting for about 80% of the total in-service passenger aircraft fleet operated by Southeast Asian airlines at the end of 2019. The average size of the approximately 400 aircraft operated by other airlines is smaller than the average size of the aircraft operated by the 10 main groups, which explains why the other airlines account for an even smaller portion of annual passenger traffic.

Pre-pandemic, Lion Group was Southeast Asia's largest airline group by fleet size. Lion operated more aircraft than AirAsia, but its fleet includes around 80 turboprops while AirAsia has an all-jet fleet and a much larger widebody fleet than Lion (Table 14).

Pre-pandemic, Garuda was the largest individual airline in Southeast Asia based on fleet size followed by Singapore Airlines and Lion Air. These were the only airlines with over 100 in-service passenger aircraft in 2019. There were another 12 airlines with at least 50 in-service passenger aircraft.

Malaysia AirAsia was the largest individual airline in Southeast Asia based on passenger traffic in 2019. Lion Air was the second largest followed by Vietnam Airlines, Singapore Airlines, and Thai AirAsia. These were the only five airlines that carried at least 20 million passengers in 2019. There were another seven airlines that carried at least 10 million passengers.

Table 14 Passenger Aircraft Fleet Size for Southeast Asia's Top 10 Airline Groups, End of 2019

Rank	Airline Group	Number of Airlines	Number of In-Service Aircraft	Share of In-Service Aircraft (%)
1.	Lion	5	306	16
2.	AirAsia / AirAsia X	7	250	13
3.	Singapore Airlines	4	203	11
4.	Garuda Indonesia	2	193	10
5.	Thai Airways	3	120	6
6.	Vietnam Airlines	3	117	6
7.	Malaysia Airlines	3	108	6
8.	Philippine Airlines	2	89	5
9.	VietJet	2	81	4
10.	Cebu Pacific	2	68	4
	TOTAL	33	1535	80

Notes:

1. Based on the number of in-service passenger aircraft as of the end of 2019; freighters are excluded.
2. AirAsia Group includes all AirAsia and AirAsia X affiliates in Southeast Asia but excludes affiliates outside the region.
3. Indonesia AirAsia X suspended operations in 2020, reducing the number of AirAsia branded airlines in Southeast Asia to six.
4. NokScoot suspended operations in 2020 and SilkAir merged with Singapore Airlines in 2021, reducing the number of Singapore Airlines Group airlines in Southeast Asia to two.
5. Thai Airways Group includes Nok Air; in 2021, Thai Airways announced plans to divest its stake in Nok Air.

Source: Centre for Aviation (CAPA).

Table 15 Southeast Asia's Top 40 Airlines Ranked by Passenger Traffic with Fleet Size, 2019

Rank	Airline	Country	Traffic (million)	Widebody Aircraft	Narrowbody Aircraft	Regional Aircraft	Total Aircraft
1.	AirAsia	Malaysia	35.0	0	99	0	99
2.	Lion Air	Indonesia	25.5	5	101	0	106
3.	VietJet	Viet Nam	24.9	0	70	0	70
4.	Vietnam Airlines	Viet Nam	22.9	28	68	1	97
5.	Singapore Airlines	Singapore	22.3	123	0	0	123
6.	Thai AirAsia	Thailand	22.2	0	61	0	61
7.	Garuda Indonesia	Indonesia	19.7	37	73	25	135
8.	Thai Airways	Thailand	19.4	76	0	0	76
9.	Cebu Pacific	Philippines	19.0	8	46	0	54
10.	Malaysia Airlines	Malaysia	14.0	36	48	0	84
11.	Citilink	Indonesia	12.2	1	51	6	58
12.	Batik Air	Indonesia	11.1	1	55	0	56
13.	Scoot	Singapore	11.1	18	29	0	47
14.	Thai Lion Air	Thailand	10.8	4	31	0	35
15.	Philippine Airlines	Philippines	9.3	31	30	0	61
16.	Philippines AirAsia	Philippines	8.6	0	24	0	24
17.	Nok Air	Thailand	8.3	0	16	8	24
18.	Indonesia AirAsia	Indonesia	8.0	0	28	0	28

continued on next page

Table 15 continued

Rank	Airline	Country	Traffic (million)	Widebody Aircraft	Narrowbody Aircraft	Regional Aircraft	Total Aircraft
19.	Malindo Air	Malaysia	7.0	0	31	14	45
20.	PAL Express	Philippines	7.0	0	16	12	28
21.	Jetstar Pacific ^a	Viet Nam	6.1	0	15	0	15
22.	AirAsia X	Malaysia	6.1	24	0	0	24
23.	Sriwijaya Air	Indonesia	5.9	0	17	0	17
24.	Bangkok Airways	Thailand	5.9	0	25	13	38
25.	Wings Air	Indonesia	5.7	0	0	64	64
26.	Thai Smile	Thailand	5.1	0	20	0	20
27.	SilkAir	Singapore	4.9	0	26	0	26
28.	Jetstar Asia	Singapore	4.5	0	18	0	18
29.	Thai VietJet	Thailand	2.7	0	11	0	11
30.	Thai AirAsia X	Thailand	2.6	12	0	0	12
31.	Nam Air	Indonesia	2.2	0	9	5	14
32.	Bamboo Airways ^b	Viet Nam	2.0	1	19	0	20
33.	Myanmar National ^b	Myanmar	2.0	0	4	13	17
34.	Cebgo	Philippines	1.9	0	0	15	15
35.	NokScoot	Thailand	1.6	7	0	0	7
36.	Royal Brunei	Brunei Darussalam	1.4	4	9	0	13
37.	Lanmei	Cambodia	1.2	0	6	0	6
38.	Lao Airlines ^b	Lao PDR	1.1	0	4	5	9
39.	Firefly	Malaysia	1.1	0	0	12	12
40.	Cambodia Angkor ^b	Cambodia	1.0	0	4	3	7
TOTAL			383.3	416	1,064	196	1,676

Lao PDR = Lao People's Democratic Republic.

^a Jetstar Pacific rebranded in 2020, becoming Pacific Airlines with Vietnam Airlines increasing its stake to 100%.

^b Traffic figures are estimated.

Notes:

1. Fleet is based on the number of in-service passenger aircraft as of the end of 2019; freighters are excluded.
2. SilkAir merged with Singapore Airlines in 2021.
3. NokScoot suspended operations in 2020.

Source: Authors based on data from airline reports, aviation authorities, and Centre for Aviation (CAPA).

The 40 airlines in Table 15 accounted for about 96% of total passengers carried by Southeast Asian airlines in 2019 and operated 87% of the total active passenger aircraft fleet.

Most of the airlines that were not in the top 40 (in 2019) are regional or domestic operators. For example, MASwings operated 15 turboprop aircraft and carried 900,000 passengers in 2019. Air KBZ was another relatively large regional player, operating a fleet of nine turboprop aircraft and carrying 700,000 passengers in 2019. Air KBZ was the largest of several privately owned domestic airlines in Myanmar that compete with government-owned flag carrier Myanmar National Airlines. Air KBZ also had an associated airline competing in the international market, Myanmar Airways International, which carried 400,000 passengers in 2019, giving the group 1.1 million passengers.

There are also several small regional airlines in Indonesia, led by Trigana Air and TransNusa Air Services. Trigana carried 700,000 passengers in 2019 while TransNusa carried 600,000 passengers.

Cambodia and the Philippines also have a few small airlines operating scheduled services but carrying well under 1 million passengers. For example, in the Philippines, AirSwift carried 300,000 passengers and Skyjet carried 200,000 passengers in 2019, operating small regional aircraft fleets in the domestic market.

Most of the other Southeast Asian countries do not have other airlines operating scheduled services. However, there are several charter operators in Southeast Asia, particularly in Thailand. While the charter operators are not counted among the 60 airlines with scheduled services, they are included in the total fleet.

The total in-service fleet pre-pandemic consisted of over 1,100 narrowbody jets, over 400 widebody jets, and around 400 regional aircraft (around 380 turboprops and 20 regional jets). The top 40 airlines accounted for virtually all the widebody aircraft and 96% of the narrowbody aircraft but only about 50% of the regional aircraft.

Southeast Asia accounted for 7% of the global in-service passenger aircraft fleet pre-pandemic. This includes 7% of narrowbody jets and 10% of widebody jets but only 5% of regional aircraft. Southeast Asia has a particularly small fleet of regional jets, accounting for less than 1% of the global total. However, Southeast Asia accounted for around 9% of commercial turboprop aircraft, including 12% of medium-sized/large turboprops (at least 30 seats) and 6% of small turboprops (less than 30 seats).

Regional jets are much more common in Europe and North America. They are also more common in other parts of Asia and the Pacific, particularly Australia and Japan. Airlines in Southeast Asia have traditionally been wary of acquiring regional jets as they have historically had higher unit costs than larger jets or turboprops, making it hard to be profitable in Southeast Asia's low-yield environment. Slot constraints at major airports also have made it difficult to justify acquiring regional jets.

Slot constraints similarly pose challenges to some airlines with turboprop fleets, although turboprops are successfully used in many secondary or tertiary airports and play a critical role in maintaining domestic connectivity. Turboprops are particularly important in countries where flying is the only viable option on short hops due to challenging geographies such as islands or mountains. Most of Southeast Asia's turboprop fleet is in Indonesia, which had 128 in-service turboprop aircraft as of the end of 2019. There are also sizable fleets in the Philippines (41 aircraft at the end of 2019), Malaysia (35), Myanmar (26), and Thailand (22). The other countries in Southeast Asia have few or no commercial turboprop aircraft.

Low-Cost Carriers

Southeast Asia has a high concentration of low-cost carriers (LCCs), which pre-pandemic accounted for a much bigger portion of the region's total fleet and traffic than the global average.

There were 21 Southeast Asia-based LCCs operating a combined fleet of nearly 800 aircraft in 2019, equivalent to 41% of the total commercial passenger fleet. Globally, LCCs accounted for 22% of all passenger aircraft.

In Southeast Asia, LCCs accounted for 55% of the narrowbody fleet, 19% of the widebody fleet, and 22% of the regional aircraft fleet. All these figures are significantly higher than average; globally, LCCs accounted for 35% of narrowbody jets, 4% of widebody jets, and 6% of regional aircraft. All these figures are based on in-service commercial passenger aircraft (excluding freighters) as of the end of 2019.

While Southeast Asia's regional and widebody LCC fleet is relatively small, it is unusual for LCCs to have a significant share of aircraft in these categories. Historically, LCCs have predominantly operated all-narrowbody

Table 16 Southeast Asia Low-Cost Carrier Passenger Traffic Share Ranked by Group or Brand, 2019

Rank	Airline Group/Brand	Number of Airlines	Low-Cost Carrier Share
1.	AirAsia / AirAsia X	7	38
2.	Lion	3	19
3.	VietJet	2	13
4.	Cebu Pacific	2	10
5.	Citilink	1	6
6.	Scoot	1	5
7.	Jetstar	2	5
8.	Nok	2	5
9.	Lanmei	1	1

Notes:

1. NokScoot, which suspended operations in 2020, is included under Nok rather than Scoot.
2. Jetstar Pacific, which rebranded as Pacific Airlines in 2020 and is no longer partially owned by Jetstar, is included under Jetstar Group.
3. Share is based on total passengers carried by Southeast Asian low-cost carriers.

Source: Authors based on data from airline reports and aviation authorities.

fleets, sticking to one aircraft type to keep operations simple and costs at a minimum. However, in the decade pre-pandemic, Southeast Asia was a pioneer in the emerging long-haul, low-cost sector, resulting in several LCCs adding widebody aircraft or launching as widebody operators. At the end of 2019, 9 of the 21 LCCs based in Southeast Asia were operating widebody aircraft.

Only 3 of the 21 LCCs were operating regional aircraft, but one of these airlines—Lion Group subsidiary Wings Air—was the world’s largest LCC turboprop operator. Of the around 270 medium-sized/large passenger turboprops (over 30 seats) operating in Southeast Asia pre-pandemic, nearly 100 (37%) were operated by LCCs. Globally, only 14% of medium-sized/large turboprops are operated by LCCs and outside Southeast Asia, the approximately 220 aircraft in this category operated by LCCs account for only 11% of the total.

Southeast Asia’s 21 LCCs carried about 220 million passengers in 2019, accounting for about 55% of total passengers carried by Southeast Asian carriers. AirAsia is by far the largest LCC group or brand in Southeast Asia, accounting for 38% of total traffic carried by Southeast Asian LCCs. Lion is the second largest, but the gap with AirAsia is significant as two of Lion Group’s five airlines are full-service carriers (FSCs) and therefore only part of its total traffic counts toward the 220 million total (Table 16).

There are LCCs based in 7 of the 11 Southeast Asian countries. In 2019, Thailand had the most LCCs with six followed by Indonesia with five. In 2019 pre-pandemic, the Philippines had three LCCs while Malaysia, Singapore, and Viet Nam had two each, and Cambodia had one. While 2 of the 21 LCCs that were operating in 2019 have suspended operations, new LCCs have started, resulting in an even larger number in the post-pandemic era.

About 25 foreign LCCs were operating scheduled services to Southeast Asia in 2019. However, local LCCs dominate this segment of the market given that most LCC traffic in Southeast Asia is regional or domestic. In 2019, approximately 25% of Southeast Asia’s total LCC capacity (seats) was on flights outside the region. Foreign LCCs accounted for only around 30% of this capacity and less than 10% of the total LCC capacity in Southeast Asia.

India and Northeast Asia account for nearly all the foreign LCC capacity in Southeast Asia (Northeast Asia includes services from Southeast Asia to Hong Kong, China; Japan; Mongolia; the PRC; the Republic of Korea; and Taipei,China).

The PRC’s Spring Airlines is the largest foreign LCC in the Southeast Asian market, accounting for around 14% of total foreign LCC capacity pre-pandemic. The other leading LCCs in Southeast Asia include three from the Republic of Korea—Jeju Air, Jin Air, and T’way Air—India’s IndiGo, and Australia’s Jetstar Airways.

Southeast Asia's aviation market grew rapidly in the 2 decades pre-pandemic, driven primarily by LCCs. There were virtually no LCCs operating in Southeast Asia at the turn of the century. In 2019, LCCs accounted for around 46% of the total Southeast Asian seat capacity, based on OAG schedules data.

Southeast Asian LCCs accounted for around 53% of all seats flown by Southeast Asian airlines in 2019, while foreign LCCs accounted for about 17% share of all seats flown to or from Southeast Asia by foreign airlines. LCCs accounted for 55% share of total passengers carried by Southeast Asian airlines in 2019; this slightly higher figure is an indication of the higher load factor that LCCs typically achieve compared to FSCs.

LCCs accounted for around 57% of total seat capacity within Southeast Asia (domestic and intra-Southeast Asia) in 2019, while the LCC share to and from Southeast Asia was around 29%. Achieving nearly 60% regional market share is noteworthy given that most other parts of the world have not yet reached this level of LCC penetration despite generally experiencing the launch of LCCs earlier. For example, in 2019, LCCs accounted for around 42% of seat capacity within Europe, 40% within Latin America, 30% within North America, 20% within the Middle East, and 14% within Africa (based on OAG data). For the other regions in Asia and the Pacific, LCCs accounted for a higher share within South Asia at 69% but much lower shares within Northeast Asia at 14% and within Southwest Pacific at 21%.

Passenger Traffic Growth

In the decade pre-pandemic, total passenger traffic in Southeast Asia increased by over 150% from 200 million passengers in 2009 to 510 million passengers in 2019. Domestic traffic increased by about 125% from a base of slightly less than 100 million passengers in 2009, while international traffic increased by nearly 180% from a base of slightly more than 100 million passengers.

Southeast Asia grew significantly faster than the global average. Total global scheduled passenger traffic increased by 80% from slightly less than 2.5 billion passengers in 2009 to almost 4.5 billion in 2019 (based on ICAO data). This included a 98% increase in international traffic and a 70% increase in domestic traffic.

Table 17 Southeast Asia Share of Global Passenger Traffic, 2009–2019
(% of scheduled passengers)

Rank	Domestic	International	Total
2009	6	11	8
2010	7	12	9
2011	7	12	10
2012	8	13	10
2013	8	14	11
2014	8	14	11
2015	8	14	11
2016	9	14	11
2017	9	15	12
2018	9	15	12
2019	8	16	11

Source: Authors based on data from aviation authorities, airport authorities, ASEAN Secretariat, and the International Civil Aviation Organization.

Southeast Asia accounted for only 8% of global passenger traffic in 2009, including an 11% share of international and a 6% share of domestic. In 2019, Southeast Asia accounted for an 11% share of global passenger traffic, including a 16% share of international and an 8% share of domestic. In 2017 and 2018, the global share reached 12% while the domestic share reached 9% before the global share slipped to 11% and the domestic to 8% in 2019 due to the domestic contraction in Indonesia. The reduction was unusual as Southeast Asia's total share had increased every year from 2009 to 2018 with the annual increases ranging from 0.1 to 0.7 percentage points (Table 17).

There was growth of at least 5% every year except in 2019 when the market grew by only 1%. The modest increase in 2019 was due to the 22% reduction in Indonesia's domestic passenger traffic. Domestic passenger traffic in Thailand was also reduced

slightly (by 4%) in 2019. All the other domestic markets in Southeast Asia grew in 2019 and international traffic in all Southeast Asian countries also grew.

Indonesia has a massive domestic market, accounting for 20% of total Southeast Asian passenger traffic in 2018. Passenger traffic in Southeast Asia increased by 6% in 2019 (excluding Indonesia's domestic market).

The contraction in Indonesia also drove a 6% reduction in total Southeast Asia domestic traffic in 2019 while international traffic was up by 7%. This resulted in a lower 10-year growth figure for domestic than international. During the 10 years ending in 2018, domestic growth (about 170%) was stronger than international (about 160%).

Cambodia, the Lao PDR, and Viet Nam have had the fastest-growing domestic markets in the decade pre-pandemic with each more than quadrupling in size from 2009 to 2019. Viet Nam stands out given the small size of the domestic markets in Cambodia and the Lao PDR. Indonesia had the slowest domestic growth over the 10 years pre-pandemic (81%) and was the only market that did not double in size. This was also due to the contraction of Indonesia's domestic market in 2019. In the 10 years to 2018, Indonesia's domestic market grew by 173%, which is close to the average domestic growth for Southeast Asia during this period.

Indonesia had the fastest international growth in the 10 years pre-pandemic followed by Myanmar, the Lao PDR, and Viet Nam. The only international markets that did not at least double in size in this period were Brunei Darussalam and Singapore. This is unsurprising given these countries—unlike the rest of Southeast Asia—are developed countries without fast-growing middle-class populations (Table 18).

The rapid expansion of the middle class had been the main driver of air transport growth in Southeast Asia during 2002–2019, resulting in significantly more people having sufficient discretionary income to fly. Lower average fares driven by rapid LCC expansion further facilitated the growth, enabling more people to fly for the first time and for the new middle-class population to fly more often.

Table 18 Southeast Asia Domestic and International Passenger Growth by Country, 2019 vs 2009 (%)

Country	Domestic Growth	Domestic CAGR	International Growth	International CAGR
Brunei Darussalam	N/A	N/A	43	4
Cambodia	389	17	309	15
Indonesia	81	6	645	22
Lao PDR	376	17	586	21
Malaysia	90	7	135	9
Myanmar	286	15	472	19
Philippines	103	7	130	9
Singapore	N/A	N/A	87	7
Thailand	186	11	182	11
Timor-Leste	222	13	113	8
Viet Nam	336	16	369	17
SOUTHEAST ASIA TOTAL	126	9	177	11
GLOBAL TOTAL	98	7	70	5

CAGR = compound annual growth rate, Lao PDR = Lao People's Democratic Republic, N/A = not applicable.

Note: Timor-Leste growth was calculated based on 2018 vs 2009 as exact figures for 2019 are not available.

Source: Authors based on data from aviation authorities, airport authorities, and ASEAN Secretariat.

LCCs grew much faster than FSCs in the decade pre-pandemic. The top 15 LCCs in Southeast Asia combined more than tripled in size in the 10 years pre-pandemic, from 63 million passengers in 2009 to 208 million in 2019. These 15 LCCs accounted for 95% of total Southeast Asian LCC passenger traffic in 2019 and were the only Southeast Asian LCCs with at least 3 million annual passengers pre-pandemic (Table 19).

Two of the LCCs in Table 19 did not carry any passengers in 2009 as they did not commence operations until 2011 (VietJet) and 2013 (Thai Lion). Scoot launched in 2012 but 2009 traffic for Tigerair—which merged with Scoot in 2017—is included. Philippines AirAsia also commenced operations in 2012 but 2009 traffic of Zest Air—which merged with Philippines AirAsia in 2016—is included.

LCCs first emerged in Southeast Asia in the early 2000s. AirAsia Group, Lion Group, and Cebu Pacific drove most of the rapid growth during 2000–2009. Rapid growth continued during 2010–2014, and the share of seat capacity within Southeast Asia exceeded 50% for the first time in 2013.

In the immediate years pre-pandemic, LCCs continued to expand rapidly, but the market share gains within Southeast Asia became modest. This is partly due to LCCs having already achieved a very high market share, particularly in the domestic markets of Indonesia, Malaysia, the Philippines, and Thailand. Several FSCs also accelerated regional growth in the immediate years pre-pandemic, helping to drive overall growth in capacity within Southeast Asia.

The launch of two new FSCs in 2013—Batik and Malindo—contributed to faster FSC growth in the immediate years pre-pandemic. Both airlines—which are part of the Lion Group—quickly became among the 10 largest

Table 19 Southeast Asia Low-Cost Carrier Passenger Growth, 2019 vs 2009

Rank	Airline	Country	2019 (million)	2009 (million)	Growth (%)	CAGR (%)
1.	AirAsia	Malaysia	35.0	14.2	147	9
2.	Lion Air	Indonesia	25.5	13.8	85	6
3.	VietJet	Viet Nam	24.9	0	N/A	N/A
4.	Thai AirAsia	Thailand	22.2	5.0	344	16
5.	Cebu Pacific	Philippines	19.0	8.9	114	8
6.	Citilink	Indonesia	12.2	0.6	1,933	35
7.	Scoot/Tigerair ^a	Singapore	11.1	4.4	152	10
8.	Thai Lion Air	Thailand	10.8	0	N/A	N/A
9.	Philippines AirAsia ^b	Philippines	8.6	0.9	856	25
10.	Nok Air	Thailand	8.3	2.2	277	14
11.	Indonesia AirAsia	Indonesia	8.0	3.5	129	9
12.	Jetstar Pacific ^d	Viet Nam	6.1	3.5	74	6
13.	AirAsia X ^c	Malaysia	6.1	1.9	221	14
14.	Wings Air	Indonesia	5.7	1.3	339	16
15.	Jetstar Asia	Singapore	4.5	2.3	96	7
TOTAL			208	62.5	233	13

CAGR = compound annual growth rate, N/A = not applicable.

^a Scoot includes Tigerair, which completed a merger with Scoot in 2017.

^b Philippines AirAsia includes Zest, which completed a merger with Philippines AirAsia in 2016.

^c For AirAsia X, passenger traffic for 2010 is used as 2009 data is not available; its CAGR is based on 9 years rather than 10 years.

^d Jetstar Pacific rebranded in 2020, becoming Pacific Airlines with Vietnam Airlines upping its stake to 100% and Jetstar Group exiting.

Note: Passenger traffic for 2009 and 2019 is displayed in millions and rounded to the nearest 0.1 million.

Source: Authors based on data from airline reports and aviation authorities.

FSCs in Southeast Asia. Thai Smile—part of the Thai Airways Group—also launched services in 2012 and was among Southeast Asia’s 13 largest FSCs in 2019.

In the 10 years pre-pandemic, the top 13 FSCs in Southeast Asia grew by 80% from 86 million passengers in 2009 to almost 155 million passengers in 2019. These 13 airlines were the only FSCs from Southeast Asia with at least 3 million annual passengers pre-pandemic. They accounted for around 86% of total Southeast Asian FSC passenger traffic in 2019 (Table 20).

Vietnam Airlines was the fastest growing of the six main flag carriers, more than doubling in size from 2009 to 2019. This is not surprising given that Viet Nam was the fastest-growing aviation market in Southeast Asia in the decade pre-pandemic. Garuda was the second fastest growing and nearly doubled in size.

Malaysia Airlines, Philippine Airlines, Singapore Airlines, and Thai Airways all had modest or no growth. However, Philippine Airlines, Singapore Airlines, and Thai Airways all have or had full-service regional subsidiaries (PAL Express, SilkAir, and Thai Smile) that grew rapidly during this period. Malaysia Airlines also has two regional subsidiaries (Firefly and MASwings), but they are much smaller (2 million passengers combined in 2019) and did not grow in the several years before the pandemic.

Firefly and MASwings have different operating models as they only operated turboprops pre-pandemic, limiting their potential size. Vietnam Airlines also has a regional subsidiary only operating turboprops, VASCO, which is very small while the parent airline was used to expand rapidly pre-pandemic in the domestic and regional international markets. SilkAir and Thai Smile only operated narrowbody jets while PAL Express operated a mix of narrowbody jets and turboprops. SilkAir ceased operations in 2021 and its narrowbody full-service operation is now part of Singapore Airlines, which pre-pandemic only operated widebody aircraft.

Table 20 Southeast Asia Full-Service Carrier Passenger Growth, 2019 vs 2009

Rank	Airline	Country	2019 (million)	2009 (million)	Growth (%)	CAGR (%)
1.	Vietnam Airlines	Viet Nam	22.9	9.4	144	9
2.	Singapore Airlines	Singapore	22.3	16.3	37	3
3.	Garuda Indonesia	Indonesia	19.7	10.3	91	7
4.	Thai Airways	Thailand	19.4	18.5	5	1
5.	Malaysia Airlines	Malaysia	14.0	12.0	17	2
6.	Batik Air	Indonesia	11.1	0	N/A	N/A
7.	Philippine Airlines	Philippines	9.3	9.4	(1)	0
8.	Malindo Air	Malaysia	7.0	0	N/A	N/A
9.	PAL Express	Philippines	7.0	0.4	1,650	33
10.	Sriwijaya Air	Indonesia	5.9	5.0	18	2
11.	Bangkok Airways	Thailand	5.9	2.5	136	9
12.	Thai Smile	Thailand	5.1	0	N/A	N/A
13.	SilkAir	Singapore	4.9	2.2	123	8
	TOTAL		154.5	86	80	6

(-) = negative, CAGR = compound annual growth rate, N/A = not applicable.

Notes:

1. Passenger traffic for 2009 and 2019 is displayed in millions and rounded to the nearest 0.1 million.
2. SilkAir merged with Singapore Airlines in 2021.

Source: Airline reports, aviation authorities.

While Southeast Asia is more well known for rapid LCC expansion, the expansion of regional full-service subsidiaries—and to some extent, the flag carriers (particularly Garuda and Vietnam Airlines)—led to rapid FSC growth within Southeast Asia pre-pandemic. Total seat capacity within Southeast Asia increased by 50% from 2013 to 2018, according to OAG data. LCCs during this period grew seat capacity by 53% while FSCs grew by 47%. Therefore, the LCC share increased by only 1 percentage point from 54% in 2013 to 55% in 2018. In the period from 2003 to 2013, LCCs drove most of the growth in this segment of the market although from a low base as their market share was less than 10% in 2003.

There was also relatively rapid FSC growth to and from Southeast Asia pre-pandemic. But this growth—which was 38% from 2013 to 2018—was less than the 47% growth within Southeast Asia. Foreign airlines also partially drove this growth, particularly PRC carriers. PRC carrier capacity to Southeast Asia more than doubled from 2013 to 2018. All Nippon Airways (from Japan) and EVA Air (from Taipei, China) also grew rapidly during this period, nearly doubling their Southeast Asian seat capacity. Middle Eastern carrier capacity grew, led by Qatar Airways, but on a more modest scale.

Total seat capacity to and from Southeast Asia increased by 59% from 2013 to 2018 with LCC capacity nearly tripling but on a small base. The LCC share of capacity in this segment of the market grew from 15% in 2013 to 26% in 2018. While there were a few new long-haul routes launched by LCCs during this period, most of this growth was on medium-haul routes to South Asia, Northeast Asia, and Australia.

Growth figures for the 5 years until 2018 are provided rather than until 2019 due to the contraction in the Southeast Asian market in 2019. Seat capacity within Southeast Asia was reduced by 2% in 2019 with LCC capacity roughly flat and FSC capacity dropping around 5%. However, seat capacity to and from Southeast Asia increased by 8% in 2019 with FSC capacity increasing by 5% and LCC capacity increasing by 19%.

The LCC share of capacity to and from Southeast Asia reached 29% in 2019. This is a relatively high LCC penetration rate for a nonregional segment. For example, among the other regions of Asia and the Pacific, the LCC share of capacity in 2019 to and from South Asia was 24%, to and from North Asia was 20%, and to and from Southwest Pacific was 16%. The LCC share of capacity to and from the Middle East was 15%.

LCCs had a major role in driving airport growth in Southeast Asia in the decade pre-pandemic. Bangkok Don Mueang became the largest LCC airport in the world in 2014 and was the fastest-growing major airport in Southeast Asia in the decade pre-pandemic, growing from only 2.5 million passengers in 2009 to 41.3 million in 2019.

Don Mueang was the original airport for Bangkok and initially closed in 2006 when Suvarnabhumi opened, forcing all airlines to move to the new airport. Don Mueang reopened in 2007 but had limited traffic—primarily from Nok Air—until 2012 when Thai AirAsia and other AirAsia Group carriers moved back to Don Mueang. Rapid expansion from AirAsia Group and Thai Lion Air—which has been based at Don Mueang since commencing operations in late 2013—drove further rapid growth at Don Mueang. In the 5 years pre-pandemic, Don Mueang traffic more than tripled from 13.4 million in 2014 to 41.3 million in 2019.

LCCs accounted for 99% of passenger traffic at Don Mueang in 2019, according to Airports of Thailand data. In comparison, LCCs accounted for only 14% of total passenger traffic at Bangkok Suvarnabhumi, which caters mainly to FSCs although it is the base for Thai VietJet and is served by several foreign LCCs. Suvarnabhumi was the slowest growing of the major Southeast Asian airports in the decade pre-pandemic due to the popularity of Don Mueang among LCCs and AirAsia's 2012 move from Suvarnabhumi to Don Mueang. (Thai AirAsia—which was Thailand's largest airline pre-pandemic—reopened a base at Suvarnabhumi during the pandemic but continues to mainly operate from Don Mueang. Thai AirAsia X also moved its base from Suvarnabhumi to Don Mueang during the pandemic.)

Among the other major airports in Southeast Asia with rapid growth in the decade pre-pandemic, several Vietnamese airports are featured. Passenger traffic at both Ha Noi and Ho Chi Minh City more than tripled from 2009 to 2019, while traffic at Da Nang increased more than sevenfold. These three airports along with three airports in Thailand—Bangkok Don Mueang, Chiang Mai, and Phuket—had the fastest growth among large size airports (at least 10 million passengers) in the decade pre-pandemic. Traffic in Chiang Mai and Phuket more than tripled from 2009 to 2019.

Among medium-sized airports (5 million–10 million passengers in 2019), Nha Trang in Viet Nam grew the fastest, growing from less than 1 million passengers in 2009 to nearly 10 million in 2019. Yangon in Myanmar and Phnom Penh in Cambodia were the other two fastest-growing airports in the medium size category with Yangon traffic quadrupling from 2009 to 2019 and Phnom Penh traffic nearly quadrupling (Table 21).

Table 21 Southeast Asia Airport Growth for Medium-Sized and Large Airports, 2019 vs 2009

Rank	Airport	Country	2019 (million)	2009 (million)	Growth (%)	CAGR (%)
1.	Singapore Changi	Singapore	68.3	37.2	84	6
2.	Bangkok Suvarnabhumi	Thailand	65.4	44.3	48	4
3.	Kuala Lumpur International	Malaysia	62.3	29.7	110	8
4.	Jakarta Soekarno-Hatta	Indonesia	52.6	35.1	50	4
5.	Manila Ninoy Aquino	Philippines	47.9	23.9	100	7
6.	Bangkok Don Mueang	Thailand	41.3	2.5	1,552	32
7.	Ho Chi Minh Tan Son Nhat	Viet Nam	41.2	12.8	222	12
8.	Hanoi Noi Bai	Viet Nam	29.3	7.8	276	14
9.	Bali Denpasar Ngurah Rai	Indonesia	23.7	9.5	150	10
10.	Phuket International	Thailand	18.1	5.4	235	13
11.	Surabaya Juanda	Indonesia	15.8	9.5	66	5
12.	Da Nang International	Viet Nam	15.5	2.1	638	22
13.	Mactan-Cebu International	Philippines	12.7	4.7	170	11
14.	Chiang Mai International	Thailand	11.3	3.1	265	14
15.	Nha Trang Cam Ranh	Viet Nam	9.8	0.7	1,300	13
16.	Kota Kinabalu International	Malaysia	9.4	4.9	92	7
17.	Makassar Sultan Hasanuddin	Indonesia	8.6	4.8	79	6
18.	Penang International	Malaysia	8.3	3.3	152	10
19.	Medan Kualanamu ^a	Indonesia	7.8	4.7	66	5
20.	Yogyakarta Adisucipto	Indonesia	6.9	3.4	103	7
21.	Yangon International	Myanmar	6.5	1.6	306	15
22.	Phnom Penh International	Cambodia	6.0	1.6	275	14
23.	Jakarta Halim ^a	Indonesia	6.0	0	N/A	N/A
24.	Kuching International	Malaysia	6.0	3.6	67	5
TOTAL			580.7	256.2	127	9

CAGR = compound annual growth rate, N/A = not applicable.

^a Jakarta Halim opened to scheduled commercial traffic in 2014; previously it only served general/corporate and military aviation. Medan Kualanamu Airport opened in 2013; the 2009 figure is for Polonia Airport, which was closed when Kualanamu opened.

Note: Passenger traffic for 2009 and 2019 is displayed in millions and rounded to the nearest 0.1 million.

Source: Authors based on data from airports, airport authorities, and aviation authorities.

Indonesia has several medium-sized and large airports which—except for Bali—all recorded slower-than-average growth in the decade pre-pandemic. This is due to the large contraction in Indonesia's domestic market in 2019. Bali is an exception as it relies more on the international market, which continued to grow in 2019.

When considering data for the 10 years to 2018, Indonesia's airport growth was much stronger. For example, Jakarta Soekarno-Hatta passenger traffic grew by 104% (CAGR 7%) from 2008 to 2018 while Surabaya Juanda passenger traffic grew by 118% (CAGR 8%) over the same 10-year period.

Pre-pandemic, infrastructure constraints impacted growth at Jakarta Soekarno-Hatta and other major hub airports. Available slots particularly became a limitation in the 5 or so years before the pandemic at Jakarta Soekarno-Hatta, Manila Ninoy Aquino, Singapore Changi, and Ho Chi Minh Tan Son Nhat. There was still growth at these airports—driven partially by up-gauging as airlines were able to squeeze more out of existing slots by using large aircraft—but they would likely have experienced faster growth (until 2018 for Jakarta and until 2019 for the other airports) if it were not for slot constraints. Infrastructure limitations at some of the smaller major airports in Southeast Asia such as Chiang Mai and Phuket also impacted growth in the few years pre-pandemic.

Cargo

Cargo has always been an important component of the Southeast Asia aviation industry. However, cargo traffic was not performing as strongly as passenger traffic pre-pandemic and was somewhat underappreciated.

Around 8 million to 9 million tonnes of air cargo was flown to, from, and within Southeast Asia in 2019. This includes around 2 million domestic tonnes and over 6 million international tonnes. These figures are approximate and are based on data from aviation authorities, airport authorities, and the Association of Southeast Asian Nations (ASEAN) Secretariat. They are not as exact as cargo traffic in Southeast Asia is not provided as regularly or as reliably as passenger traffic.

Indonesia and the Philippines are by far the largest domestic air cargo markets in Southeast Asia, each accounting for about one-third of total domestic cargo traffic. Malaysia and Viet Nam have smaller domestic markets and Thailand is even smaller. The other six Southeast Asian countries have very limited or no domestic air cargo services.

Singapore had by far the largest international air cargo market in Southeast Asia in 2019, accounting for about 30% of all international air cargo in Southeast Asia, and Thailand around 20%. Malaysia, the Philippines, and Viet Nam also have sizable international markets. Indonesia is slightly smaller, while the other five Southeast Asian countries have much smaller international air cargo markets.

Singapore Changi is the largest cargo airport in Southeast Asia, handling 2 million tonnes in 2019. Bangkok Suvarnabhumi is the second largest, handling 1.4 million tonnes, mostly international. These are the only airports in Southeast Asia handling over 1 million tonnes of air cargo per year pre-pandemic. Only five airports were handling at least 500,000 tonnes in 2019, including Manila Ninoy Aquino, Kuala Lumpur International, and Jakarta Soekarno-Hatta (Table 22).

The five airports accounted for over 60% of total air cargo traffic in Southeast Asia. But combined they only handled as much international air cargo as Hong Kong International Airport, which was the world's largest international air cargo airport in 2019 with 4.7 million tonnes handled.

Pre-pandemic Southeast Asian hub airports had much smaller cargo operations than similarly sized passenger hub airports in Northeast Asia. Singapore Changi was Asia's third-largest airport in 2019 in terms of international passenger traffic but was fifth largest in terms of international cargo traffic. Globally, Singapore Changi, Bangkok Suvarnabhumi, and Kuala Lumpur International were among the top 12 in terms of international passenger traffic, but only Singapore Changi was in the top 12 in terms of international cargo traffic.

Table 22 Top Five Airports in Southeast Asia for Air Cargo Traffic, 2019
(million tonnes)

Rank	Airport	Country	Domestic	International	Total
1.	Singapore Changi	Singapore	N/A	2.01	2.01
2.	Bangkok Suvarnabhumi	Thailand	0.03	1.33	1.36
3.	Manila Ninoy Aquino	Philippines	0.28	0.45	0.72
4.	Kuala Lumpur International	Malaysia	0.09	0.60	0.69
5.	Jakarta Soekarno-Hatta	Indonesia	0.23	0.35	0.57
TOTAL			0.63	4.74	5.35

N/A = not applicable.

Source: Authors based on data from airports and airport authorities.

International cargo traffic in Southeast Asia also grew less rapidly than the global average in the decade pre-pandemic. International cargo traffic in Southeast Asia grew by about 50% in the 10 years pre-pandemic (CAGR 4%), while global international cargo traffic grew by about 60% (CAGR 5%). Domestic cargo traffic in Southeast Asia grew faster than the global average but on a very small base (there were only around 1 million tonnes of domestic air cargo in Southeast Asia in 2009).

Southeast Asia accounted for approximately 17% of global international air cargo traffic in 2019, which was slightly larger than its 16% share of global international passenger traffic. However, the cargo trend was concerning as Southeast Asia had accounted for a higher 19% share of global international air cargo traffic in 2009 while its share of international passenger traffic that year was 11%.

Asia and the Pacific have always had stronger cargo traffic than other parts of the world with North Asia being the strongest region in Asia and the Pacific. While North Asia has a geographic advantage, Southeast Asia is also well positioned for international cargo traffic given its location and proximity to fast-growing emerging economies. The sluggish cargo growth rate for Southeast Asia over the decade pre-pandemic is therefore somewhat surprising.

The Southeast Asia-based freighter fleet is very small. There were only about 40 in-service freighters at Southeast Asian operators at the end of 2019, which represents only slightly more than 1% of the global freighter fleet. In comparison, there were around 270 in-service freighters at North Asian airlines at the end of 2019.

Pre-pandemic, Southeast Asian airlines relied heavily on belly cargo compared to major Northeast Asian airlines, which generally have much larger freighter fleets. While bellies were able to accommodate most of the cargo flown to, from, and within Southeast Asia, the lack of dedicated freighters based in Southeast Asia has been a major weakness.

There was a significant volume of freighter flights operated by foreign airlines pre-pandemic. Southeast Asian airlines had weak shares of Southeast Asia's international cargo market compared to the international passenger market. Pre-pandemic, Singapore Airlines was the only Southeast Asian airline with at least a 10% cargo market share in Southeast Asia. Singapore Airlines was the only Southeast Asian airline carrying more than 1 million tonnes of air freight in 2019. There was only one other Southeast Asian airline—Thai Airways—which carried more than 500 million tonnes.

Southeast Asian airlines started to focus more on cargo during the pandemic, and there are opportunities to continue to increase this focus in the post-pandemic era.

Overview of Pre-Pandemic Financial Performance of Airlines and Airports

Assessment of Airline Financial Performance

Southeast Asia's aviation sector experienced fierce competition between airlines before the pandemic which was primarily triggered by a rapid expansion of LCCs. Average fares decreased significantly as more LCC seats flooded the market and as FSCs responded to the LCC competition by also offering more low fare options. LCCs particularly became popular among the region's enthusiastic middle-class travelers, leading to more frequent trips as airfares became more affordable and discretionary incomes increased.

A few airlines in the region established leadership positions by establishing a wide network and/or by capturing the low-cost segment within a single market or turning themselves into groups as they expanded both in terms of geographic markets and consumer segments. Pioneering models also emerged in Southeast Asia with full-service airline groups responding to the LCC competition by adopting multi-brand strategies. For example, Garuda Indonesia, Singapore Airlines, Thai Airways, and Vietnam Airlines adopted multi-brand strategies to capture the growth from the bottom end of the market and had LCC affiliates or subsidiaries in their home markets pre-pandemic. Some airline groups—such as AirAsia (includes AirAsia and AirAsia X), Lion, and Singapore Airlines—emerged in the decade pre-pandemic as the dominant carriers across the region.

Top publicly traded airline groups in Southeast Asia based on pre-pandemic revenues are Singapore Airlines, Thai Airways, AirAsia, Garuda Indonesia, Vietnam Airlines, PAL Holdings, VietJet, and Cebu Pacific. These eight airline groups were the only publicly traded airline groups generating over \$1 billion in revenues pre-pandemic. Lion Group is privately owned, and Malaysia Airlines was delisted several years before the pandemic. More airline group de-listings are likely in Southeast Asia as a result of bankruptcy court restructurings.

- (i) **Singapore Airlines** is the largest airline group in Southeast Asia in terms of market cap as well as revenues. The group generated revenues of \$12.4 billion in 2019 and revenue passenger kilometers (RPKs) of 141 billion. Due to intensive competition in the Southeast Asian airline market—especially with LCCs—the group focused on expanding its LCC subsidiary, Scoot, which completed a merger with LCC affiliate Tigerair in 2017. In 2021, SilkAir was absorbed by Singapore Airlines, completing a merger that was initially announced in 2018.
- (ii) **Thai Airways** is the flag carrier of Thailand. The group—which includes Thai Smile—generated revenues of \$5.5 billion in 2019.
- (iii) **AirAsia** is the largest LCC group in Southeast Asia by the number of passengers. When including associated long-haul, low-cost airline group AirAsia X—which has a separate listing—the seven AirAsia-branded airlines in Southeast Asia had total revenues of about \$5 billion in 2019.
- (iv) **Garuda Indonesia** is the flag carrier of Indonesia. The Garuda Indonesia Group includes the full-service airline Garuda Indonesia and a low-cost airline Citilink. In 2019, the group recorded a total revenue of \$4.6 billion, making it the third-largest publicly traded airline group in terms of revenue in Southeast Asia.
- (v) **Vietnam Airlines** is a full-service flag carrier and is majority owned by the government. The airline recognized full-year revenue of \$3.1 billion in 2019, excluding its regional subsidiary VASCO and LCC subsidiary Jetstar Pacific (now known as Pacific Airlines).
- (vi) **PAL Holdings** is one of the two main airline groups in the Philippines. The group includes Philippine Airlines—which serves as the flag carrier but is not government owned—and regional subsidiary PAL Express. The group generated revenues of \$3 billion in 2019.
- (vii) **VietJet Air** is an LCC that began operations in December 2011. It was the first privately owned LCC in Viet Nam and has been listed on the Ho Chi Minh City Stock Exchange since 2017. In 3 years from 2016 to 2019, the airline reported a massive increase in traffic and revenues, increasing by around 40% CAGR to \$2.1 billion and 33 billion RPKs in 2019.

(viii) **Cebu Pacific** is the largest airline group in the Philippines by passenger traffic. Cebu Pacific Group (the corporate name is Cebu Air and includes Cebu Pacific Air and regional subsidiary Cebgo) generated revenues of \$1.6 billion, flying 25 billion RPKs in 2019.

Pre-pandemic, LCCs were the leading carriers in terms of revenue growth. However, FSCs continued to account for a majority of total revenues generated by the Southeast Asian airline sector. The top five airlines by revenue in 2019 were all FSCs.

Although the Southeast Asian airline sector had seen rapid growth in the years before COVID-19, the sector overall was unprofitable due to intense competition and overcapacity. A majority of both publicly traded and privately owned airlines were unprofitable in 2019. Only 6 out of 19 Southeast Asian airlines that disclosed financial figures in 2019 (including subsidiaries and affiliates) were profitable in 2019 as fierce competition and overcapacity impacted market conditions (Table 23).

Table 23 Pre-Pandemic Performance of Publicly Traded Airlines in Southeast Asia

Airline	Airline Group	Country	Revenue 2019 (\$ million)	Net Profit Margin 2019 (%)
Singapore Airlines	Singapore Airlines Group	Singapore	10,072	(0.2)
SilkAir			701	(11.5)
Scoot			1,301	(15.0)
VietJet Air	VietJet Aviation	Viet Nam	2,179	8.1
Vietnam Airlines	Vietnam Airlines Group	Viet Nam	3,129	2.4
Philippine Airlines PAL Express	PAL Holdings	Philippines	2,985	(5.0)
Bangkok Airways	Bangkok Airways	Thailand	772	8.6
Malaysia AirAsia	Capital A	Malaysia	1,814	8.1
Philippines AirAsia		Philippines	528	6.8
Indonesia AirAsia		Indonesia	484	(2.8)
Thai AirAsia		Thailand	1,339	(2.1)
Cebu Pacific Cebgo	Cebu Air	Philippines	1,638	11.0
Malaysia AirAsia X	AirAsia X Group	Malaysia	734	(8.2)
Thai AirAsia X		Thailand	310	(13.0)
Indonesia AirAsia X		Indonesia	16	(8.4)
Nok Air	Nok Airlines	Thailand	409	(15.5)
NokScoot			232	(18.8)
Thai Airways Thai Simile	Thai Airways International	Thailand	5,533	(2.0)

continued on next page

Table 23 continued

Airline	Airline Group	Country	Revenue 2019 (\$ million)	Net Profit Margin 2019 (%)
Garuda Indonesia	Garuda Group	Indonesia	3,801	(15.6)
Citilink			876	

(-) = negative.

Notes:

1. Revenues for all airlines are for the calendar year 2019.
2. PAL Holdings, Cebu Pacific, and Thai Airways do not provide revenue breakdown by airline subsidiary.
3. Garuda Group does not provide a profit breakdown by subsidiary.
4. Some airlines listed in this table were delisted during the pandemic.
5. Vietnam Airlines has two airline subsidiaries, VASCO and Jetstar Pacific, which are not included in their financial figures. VietJet does not report financial figures for partially owned airline affiliate Thai VietJet.
6. Capital A is the new name of the AirAsia Group as of 2022; the group was named AirAsia Berhad.
7. NokScoot was a joint venture between Thailand's Nok Air and Singapore Airlines wholly owned subsidiary Scoot that ceased operations in 2020.
8. Indonesia AirAsia X ceased operations in 2020.
9. SilkAir was absorbed by Singapore Airlines in 2021.
10. Revenue figures have been converted from local currencies to United States dollars using the average exchange rate for 2019.

Source: Authors based on airline reports.

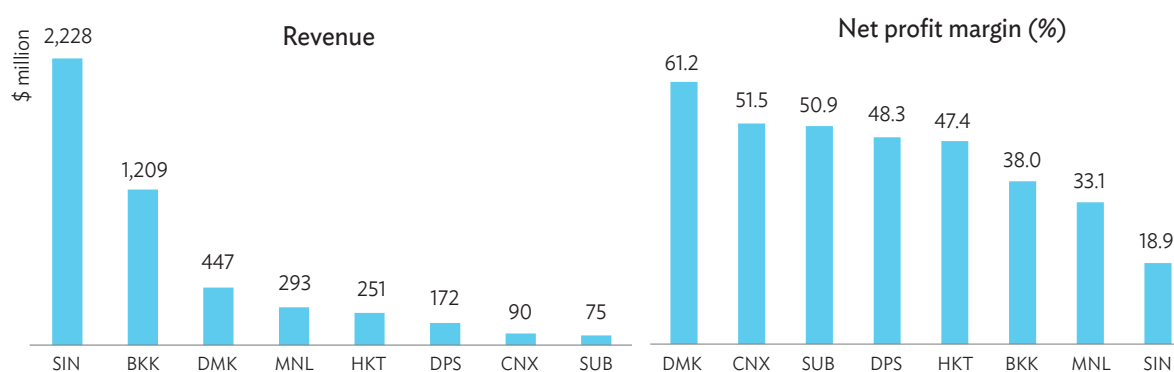
Assessment of Airport Financial Performance

The Southeast Asian airports were generally profitable pre-pandemic and were not impacted by the intense competition that dragged down airline financial performance. Airports play a critical role as regional and national transportation hubs, which makes them important economic drivers. This section on the assessment of airport financial performance analyzes the pre-pandemic performance of select airports and airport groups where financial data is available (Figure 1).

The eight airports in Figure 1 are among the top 11 airports in Southeast Asia based on pre-pandemic passenger traffic.

The leading Southeast Asian airport groups based on pre-pandemic revenues are Changi Airport Group (CAG), Airports of Thailand (AOT), Malaysia Airports Holdings Berhad (MAHB), Airport Corporation of Vietnam (ACV), PT Angkasa Pura II (APII), and PT Angkasa Pura I (API).

Figure 1 Pre-Pandemic Revenue and Net Profit Margin of Select Southeast Asian Airports



BKK = Bangkok Suvarnabhumi Airport, CNX = Chiang Mai International Airport, DMK = Don Mueang Airport, DPS = Bali Ngurah Rai International Airport, HKT = Phuket International Airport, MNL = Manila Ninoy Aquino Airport, SIN = Singapore Changi Airport, SUB = Surabaya Juanda International Airport.

Notes:

1. Changi Airport figures are for the fiscal year ending March 2020.
2. All other figures are at the group level for the calendar year 2019.
3. Revenue figures have been converted from local currencies to United States dollars using the average exchange rate for 2019.

Source: Authors based on airport reports.

- (i) **Singapore Changi Airport**, part of CAG, is fully government owned but reports some figures publicly. It is the leading airport in Southeast Asia based on revenues (\$2.2 billion in fiscal year ending March 2020). While the revenue contribution of most airport groups in the region comes from aeronautical activities, Changi Airport's revenues are mostly driven by non-aeronautical and other operating activities. The airport performance in FY ending March 2020 indicates that more than 60% of revenue was from duty free, retail, food and beverage, and other non-aeronautical services. CAG includes Singapore's Seletar Airport and it also owns and/or manages several overseas airports, but only Changi Airport is included in its financial figures.
- (ii) **Airports of Thailand (AOT)** is a publicly traded company that manages six airports in Thailand. AOT generated \$2.1 billion in revenues in 2019, of which 56% was from aeronautical activities. Bangkok Suvarnabhumi is AOT's largest airport, generating \$1.2 billion in revenues in 2019.
- (iii) **Malaysia Airports Holdings Berhad (MAHB)** is a publicly traded company that manages 39 airports in Malaysia as well as an international airport in Türkiye. MAHB generated \$1.3 billion in revenues in 2019 with aeronautical activities accounting for 53% of total revenue. Unlike AOT, it does not provide financial figures for individual airports.
- (iv) **Airports Corporation of Vietnam (ACV)** is a publicly traded company with 95.4% of shares owned by the government and is responsible for the operation of 22 airports across Viet Nam. The company generated total revenues of \$800 million in 2019. Before the pandemic, ACV's revenues were mostly driven by aeronautical activities, which contributed 80% of total revenues in 2019. ACV aims to raise the non-aviation revenue proportion to 40%. It does not provide financial figures for individual airports.
- (v) **PT Angkasa Pura I (API)** is a state-owned enterprise managing 15 airports in central and eastern Indonesia, while **PT Angkasa Pura II (APII)** is a separate state-owned enterprise managing 19 airports in western Indonesia. API generated \$600 million in revenues in 2019 with aeronautical revenues accounting for 58%. Bali Ngurah Rai International Airport is the largest airport under API, generating \$172 million in revenues in 2019. APII generated \$800 million in revenues in 2019 with aeronautical revenues accounting for 52%. Indonesia's largest airport, Jakarta Soekarno-Hatta, is under APII, but airport specific financial figures are not available.

These six groups had net profit margins ranging from 9% to 46% in 2019 (Table 24). Such high margins are not unusual as globally airports have traditionally been much more profitable than airlines and—being highly capital intensive—need significant profits to cover their cost of capital. Southeast Asian airports have particularly benefited from rapid traffic growth, while this same growth did not translate into similar profitability for airlines pre-pandemic due to the low yield and highly competitive environment.

Table 24 Revenue and Net Profit Margin of Leading Southeast Asian Airport Groups, 2019

Rank	Airport Group	Country	Revenue (\$ million)	Aeronautical (%)	Net Profit Margin (%)
1.	Changi Airport Group ^a	Singapore	2,228	40	19
2.	Airports of Thailand	Thailand	2,123	56	40
3.	Malaysia Airports Holdings	Malaysia	1,259	53	10
4.	Airports Corporation of Vietnam	Malaysia	789	80	45
5.	PT Angkasa Pura I	Indonesia	610	58	17
6.	PT Angkasa Pura II	Indonesia	784	52	9

^a Changi Airport Group figures are for the fiscal year ending March 2020 and are for Singapore Changi Airport only. All other figures are at the group level for calendar year 2019.

Note: Revenue figures have been converted from local currencies to United States dollars using the average exchange rate for 2019.

Source: Authors based on airport reports.

Contribution of the Aviation Sector to the Economy of Southeast Asian Countries

In recent decades, Southeast Asia's economy has been growing rapidly due to the expansion of regional production networks, integration with the global economy, foreign direct investment, elimination of trade and investment barriers, a commodity boom, and increased demand from a growing middle-income class. Countries such as Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Viet Nam all saw stable historical GDP growth during 2012–2019. The region's economy grew by an average of 5.1% from 2012–2019. Before the COVID-19 pandemic, economic growth was forecast to continue to grow by an annual average of 5.2% in the 4 following years (2020–2023), based on the Organisation for Economic Co-operation and Development (OECD) Development Centre's projections in 2019.

The aviation sector—including all aspects of air travel (e.g., airlines and airports) and its supply chain (e.g., tourism)—is also one of the main economic drivers of Southeast Asian countries. The aviation industry in the region became a success story in the decade pre-pandemic with an impressive level of growth, driven by air travel demand and tourism. As outlined in earlier sections in this study, the aviation sectors of all Southeast Asian countries benefited from a surge in their tourism sectors, due partially to a huge increase in the number of tourists from the PRC as well as growth in outbound travel that was driven by an expanding middle class. Thailand—which has a leading tourism sector and the biggest aviation industry in the region—contributed \$63.7 billion to GDP in 2018 (including indirect contributions), and supported 3.6 million jobs, according to IATA.

Singapore had the second-largest aviation sector contribution to GDP in 2018 at \$36.6 billion, followed by Indonesia at \$24 billion. The three leading countries far exceed other major aviation markets in the region such as Malaysia, the Philippines, and Viet Nam whose aviation contribution to national GDP was around \$10 billion–\$13 billion. In terms of percentage contribution, Thailand (15.5%) and Singapore (11.8%) had a substantial aviation sector contribution to total GDP in 2018. Other major aviation sectors in the region, such as Indonesia, Malaysia, the Philippines, and Viet Nam, reported a lower GDP proportion contributed by aviation (around 3%–5%). Brunei Darussalam and Myanmar had relatively low GDP contributions due to smaller tourism and aviation-related activities (Table 25).

Table 25 Aviation Contribution to Gross Domestic Product for Leading Southeast Asian Countries, 2018

Country	2018 (%)
Indonesia	2.6
Malaysia	3.5
Philippines	3.4
Singapore	11.8
Thailand	15.5
Viet Nam	5.2

Note: Includes contributions to aviation-related sectors such as tourism.

Source: International Air Transport Association.

Southeast Asia was one of the fastest-growing regions in the decade pre-pandemic with rapid growth in the aviation sector facilitating general economic growth. Southeast Asia's fundamental growth drivers were expected to remain robust, forecast to continue as one of the highest growth regions well beyond 2020, according to IATA.

There was a development gap in terms of both aviation and aviation-related sectors among Southeast Asian countries. Aviation infrastructure was not keeping pace with growth, and many of the Southeast Asian hub airports were operating above their planned capacity. Infrastructure challenges started in the years pre-pandemic and will resurface over the next several years as passenger traffic recovers and grows again.



Assessment of the Impact of the Coronavirus Disease Pandemic

Impact of the Coronavirus Disease Pandemic on Air Traffic in the Region

Pandemic Impact: International Passenger Traffic

COVID-19 had a devastating impact on air passenger traffic in Southeast Asia due to border closures and travel restrictions.

In the first 2 years of the pandemic (April 2020 to March 2022), international passenger traffic in Southeast Asia was reduced by over 95%. While global international traffic was significantly impacted with a reduction of over 80% in the first 2 years of the pandemic, Southeast Asia experienced a much larger reduction as international borders remained closed for longer than most other regions.

International traffic in Southeast Asia started to improve in Q4 2021 and Q1 2022 but was still down by more than 90%, while global international traffic was down by around 60% during the later phases of the pandemic. Some Southeast Asian countries began allowing some quarantine-free travel in the latter part of 2021, but options of places to travel to without quarantine were limited, particularly for travel within Southeast Asia. Quarantine-free travel options remained limited in the first 2 months of 2022 as several Southeast Asian countries shelved plans to reopen or further reopen due to the Omicron variant. The reopening of borders accelerated significantly in March 2022 with several countries fully reopening borders to vaccinated travelers by 1 April 2022.

This section of the study analyzes the impact on passenger traffic from April 2020, the first full month of the pandemic, through March 2022, the last month before most borders in Southeast Asia reopened. While some borders reopened slightly earlier and some slightly later, April 2022 represented the turning point and the start of what is essentially the endemic phase. For the first time since the start of the pandemic, international passenger traffic in Southeast Asia in April 2022 was more than 20% of 2019 levels and in June 2022, international traffic exceeded 30% of 2019 levels. While it could take a few years for a full recovery, the recovery rate should reach 70% in Q1 2023.

International passenger traffic in Singapore Changi Airport only reached 5% of pre-COVID-19 levels for the first time in November 2021 and was only 16% of pre-COVID-19 levels in Q1 2022 despite vaccinated travel lanes, which permitted quarantine-free travel with select countries. Singapore opened to all vaccinated travelers and reopened all borders—including the land border with Malaysia—on 1 April 2022.

Malaysia also opened to all vaccinated travelers on 1 April 2022. International passenger traffic at Kuala Lumpur International Airport was only 9% of pre-COVID-19 levels in Q1 2022. It reached 5% of pre-COVID-19 levels for the first time in December 2021.

International passenger traffic at Bangkok Suvarnabhumi similarly reached 5% of pre-COVID-19 levels for the first time in December 2021 and was only at 7% of pre-COVID-19 levels in Q1 2022. Thailand opened to vaccinated travelers at the beginning of February 2022, but restrictions and requirements remained in place until May 2022, impacting demand.

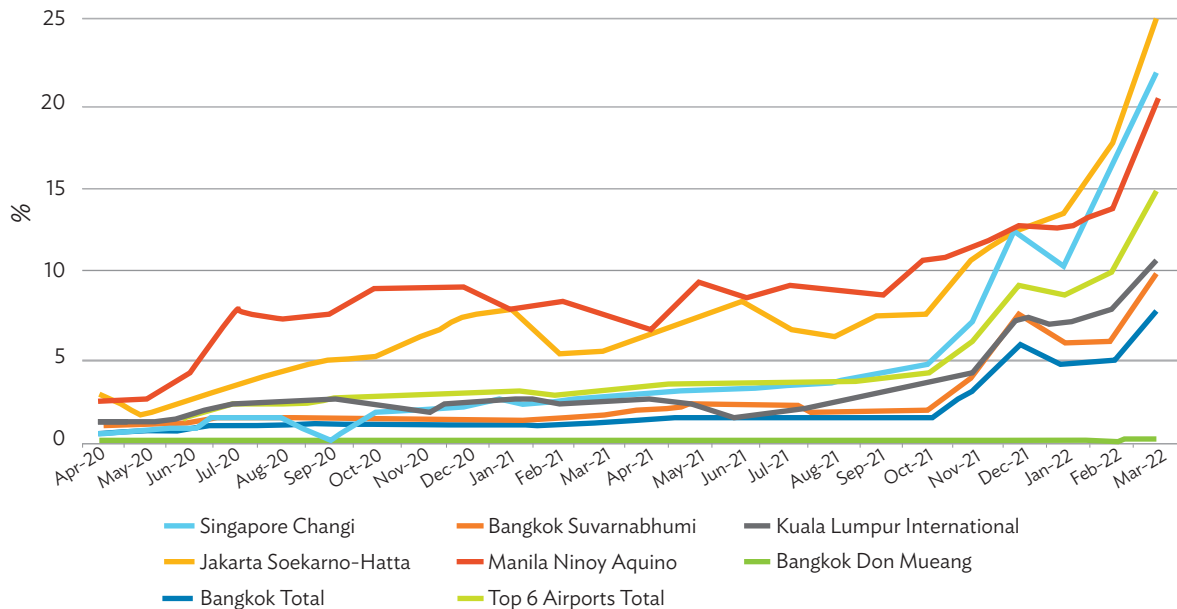
Figure 2 shows the monthly international traffic recovery rate from April 2020 to March 2022 for Southeast Asia's six largest airports (based on 2019 passenger traffic). For each month, the recovery rate uses the equivalent month from 2019 as a baseline.

As Figure 2 indicates, Manila had the strongest recovery rate in February and March 2022. The Philippines reopened to all vaccinated travelers in late February 2022, which led to a surge in traffic.

Indonesia also experienced an improvement in international traffic as restrictions were eased in late 2021 and early 2022, including ending a ban on overseas visitors in January 2022. However, quarantine requirements were only lifted in March 2022 (early in the month for Bali and late in the month for the rest of the country). Indonesia started a more meaningful recovery in international traffic in April 2022 with international departing passenger traffic at Jakarta reaching 36% of 2019 levels although Bali—which only reopened to international traffic in February 2022—was still only at 9% of 2019 levels.

Jakarta and Manila had relatively stronger international traffic than Bangkok, Kuala Lumpur, or Singapore throughout the pandemic although traffic was still less than 10% of pre-COVID-19 levels until October 2021. This is due to Indonesia and the Philippines having more essential international traffic, including worker or labor traffic, which continued throughout the pandemic. In comparison, there was virtually no leisure and business

Figure 2 International Passenger Recovery Rate for Top Six Southeast Asian Airports, April 2020 to March 2022



Notes:

1. The top six airports are based on total passenger traffic in 2019.
2. The recovery rate was calculated using 2019 as a baseline.
3. Jakarta's recovery rate is based on departing international passengers as total international passenger traffic is unavailable.
4. For the other airports, the recovery rate is based on total international passengers.

Source: Authors using data from Changi Airport Group, Airports of Thailand, Malaysia Airports Holdings Berhad, Manila International Airport Authority, and Statistics Indonesia.

travel—which the other main international airports heavily rely on—in the first 18 months of the pandemic (and only very limited leisure and business travel in the following 6 months).

Manila Ninoy Aquino is normally the fourth-largest international airport in Southeast Asia behind Singapore Changi, Bangkok Suvarnabhumi, and Kuala Lumpur International, and ahead of Bangkok Don Mueang. However, in the first 12 months of the pandemic (April 2020 to March 2021), Manila handled more international passengers than any other Southeast Asian airport every month. Singapore Changi regained its status as Southeast Asia’s largest international airport in the subsequent 12 months (April 2021 to March 2022), but Manila Ninoy Aquino was still the second largest, ahead of Bangkok Suvarnabhumi and Kuala Lumpur International, for 10 of these 12 months (Figure 3).

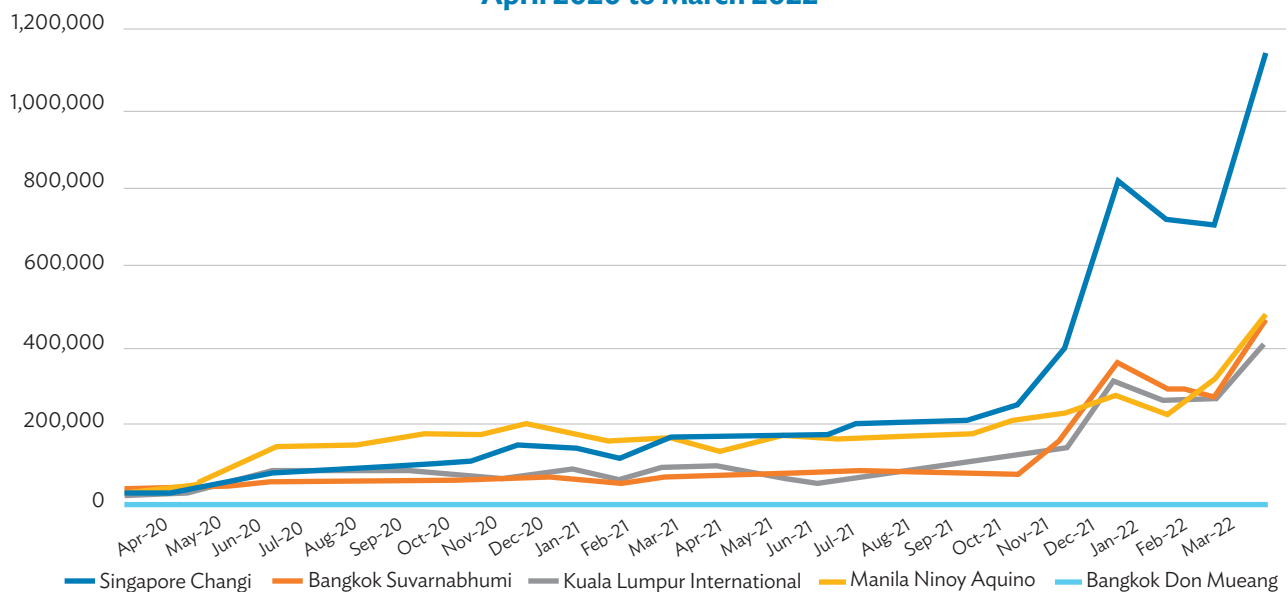
Among the top five international airports in Southeast Asia, Bangkok Suvarnabhumi and Bangkok Don Mueang handled the smallest number of international passengers over the first 24 months of the pandemic. Over the first 24 months of the pandemic, Suvarnabhumi international traffic was down by 97.3% compared to a 96.7% reduction for Kuala Lumpur International, 95.3% for Singapore Changi, and 90.6% for Manila Ninoy Aquino.

Don Mueang traffic was down by 99.9% in the first 24 months of the pandemic as almost all international traffic in the Bangkok market was focused on Suvarnabhumi (Table 26). Don Mueang caters almost entirely to LCCs, which stopped operating virtually all international services during the pandemic. Total Bangkok international traffic (for the two Bangkok airports) was down by 97.9% in the first 24 months of the pandemic.

The significantly higher reduction for Bangkok reflects Thailand’s high reliance on inbound leisure traffic.

Thailand began reopening in July 2021 by allowing visitors from select countries to enter Phuket without quarantine. The rest of Thailand reopened at the beginning of November 2021, permitting visitors from select countries to enter any international airport without quarantine. Quarantine-free travel for all vaccinated travelers

Figure 3 Monthly International Passenger Traffic for Top Five International Airports, April 2020 to March 2022



Note: The top five is based on international passenger traffic in 2019.

Source: Authors using data from Changi Airport Group (CAG), Airports of Thailand (AOT), Malaysia Airports Holdings Berhad (MAHB), and Manila International Airport Authority (MIAA).

Table 26 International Passenger Traffic for Top Five International Airports: First 24 Months of the Pandemic

Rank	Airport	Passengers (million)	Reduction (%)
1.	Singapore Changi	6.3	95.3
2.	Bangkok Suvarnabhumi	2.8	97.3
3.	Kuala Lumpur International	2.9	96.7
4.	Manila Ninoy Aquino	4.5	90.6
5.	Bangkok Don Mueang	0.1	99.9
	Bangkok Subtotal	2.9	97.9
	TOTAL	16.7	96.0

Notes:

1. Rank based on 2019 traffic.
2. Reduction is calculated using 2019 as a baseline.

Source: Authors based on data from Changi Airport Group, Airports of Thailand, Malaysia Airports Holdings Berhad, and Manila International Airport Authority.

was permitted from early February 2022. However, none of these measures resulted in a meaningful recovery of international traffic due to restrictions and requirements. International traffic in Bangkok was only 6% of pre-COVID-19 levels in December 2021 as well as Q1 2022.

International traffic at Phuket was slightly higher but still rather insignificant given the efforts to attract international visitors to the popular holiday island. The Phuket Sandbox scheme represented the first attempt by a Southeast Asian country to reopen international tourism when it was launched in July 2021. International traffic improved only slightly at Phuket, reaching 2%–3% of pre-COVID-19 levels in the first 3 months of the scheme (July, August, and September 2021), ending 14 months of virtually no international traffic.

International traffic at Phuket reached 4% of pre-COVID-19 levels in October 2021, 6% in November 2021, and 13% in December 2021. There were no significant improvements in early 2022 with Phuket international traffic at only 15% of 2019 levels in January 2022, 13% in February 2022, and 15% in March 2022. This was all very modest given the

attention placed on Phuket during this period. Most of the initial international passengers to Phuket were not tourists but residents of Thailand—including expatriates—electing to spend time in Phuket to avoid having to quarantine in Bangkok or other cities.

There was a similar experience in Malaysia with Langkawi, an island that was reopened in late October 2021 under a quarantine-free scheme that was the only way for nonresidents to enter the country. The scheme did not have a significant impact on international passenger traffic at Langkawi International Airport—where limited international flights resumed in late 2021—or Kuala Lumpur International Airport, where most tourists or returning residents using the Langkawi scheme transferred to domestic flights. In the first 4 months, the scheme attracted less than 5,000 international tourists.

Viet Nam followed Malaysia and Thailand with a sandbox scheme for Phu Quoc, an island that reopened to international tourists in late November 2021. International charter flights to Phu Quoc were arranged from select markets but had a limited impact and did not generate significant traffic. The experiences at Phu Quoc, Langkawi, and Phuket highlighted how difficult it is to recover inbound international traffic with a restrictive and limited local scheme or without a general reopening, which all three countries eventually pursued a few months later.

Phu Quoc has traditionally been more focused on domestic tourism. In 2019, Phu Quoc handled 3.7 million passengers and Langkawi handled 3.0 million passengers, but each airport had well under 1 million international passengers (most international travelers to Langkawi fly via Kuala Lumpur). Phuket is a much larger international tourist destination and has a major international airport, handling 10.7 million international passengers in 2019. Phuket was among the 10 largest international airports in Southeast Asia pre-pandemic.

Bali is another top 10 international airport—handling 13.8 million international passengers in 2019—but did not have any international services in the first 22 months of the pandemic. International flights to Bali finally resumed

in February 2022 after Indonesia lifted a ban on international flights at the airport and started a pilot scheme for reopening the island to international tourists. This also had a limited impact on tourists but was a very short-lived scheme compared to Phuket, Langkawi, or Phu Quoc as Indonesia implemented a general reopening only 1 month later.

The general issue with all the sandbox destinations was that travel to the islands was complicated, bureaucracy was significant, and the risk of being stuck in an unplanned location following a positive COVID-19 test was not insignificant. For most travelers, the beaches could wait, with the sandboxes often being used as an officially sanctioned “back door” into the country for residents.

Two other top 10 international airports in Southeast Asia—Ho Chi Minh City and Ha Noi—did not have any scheduled international passenger services for 21 months. Viet Nam lifted a ban on scheduled international arrivals in January 2022, permitting scheduled international flights to resume from nine cities before allowing flights from all destinations in March 2022. In the first 21 months of the pandemic, Viet Nam only allowed international charter flights which were specially arranged for repatriating passengers (or during the Phu Quoc sandbox scheme, for visitors). Monthly traffic data is not available for Ho Chi Minh City or Ha Noi, but international passenger traffic to Viet Nam was down by roughly 99% during this period.

In 2021, Vietnamese airports handled only about 500,000 international passengers. In 2020, there were 7.4 million international passengers in Viet Nam, a reduction of 82% compared to 2019, with almost all these passengers traveling in the first 3 months of the year.

Overall international traffic in Southeast Asia was down by 82% in 2020 to about 62 million passengers. The reduction was consistent across Southeast Asia with all international traffic down in all countries by 79%–83%, based on data from aviation authorities and airport groups from each country. The consistency in the reduction across all Southeast Asian countries is not surprising given that there was hardly any international traffic in the last 9 months of the year.

International traffic started declining in February 2020, impacted by the suspension of services to the PRC, as well as increasing traveler concern and corporate travel restrictions, which in turn prompted airlines to start cutting capacity and canceling empty flights. Virtually all international services were suspended by the end of March 2020 as borders shut. International traffic was down by 99% in Q2 2020 as most countries were in lockdown with only essential travel permitted (mainly repatriating passengers). International traffic picked up slightly in the second half of 2020—with more essential travel including worker traffic—but was still down by 98%. Borders in Southeast Asia remained closed in the second half of 2020 except for some reciprocal green lanes, which were forged between a limited number of Southeast Asian countries and countries outside the region. These lanes were limited to business travelers and generated very limited traffic due to onerous restrictions and strict quotas.

In 2021, international traffic in Southeast Asia was reduced by 97% (to around 10 million) compared to 2019 levels. Traffic was down by slightly more than 97% through the first three quarters before improving modestly in Q4 as limited quarantine-free travel was permitted.

The Philippines had the lowest international traffic reduction in Southeast Asia in 2021 (93%) reporting 2.2 million international passengers for 2021 compared to 30.5 million passengers in 2019 (based on Philippines Civil Aeronautics Board data). The Philippines has significant worker traffic, a segment that continued throughout the pandemic albeit at significantly reduced volumes compared to 2019.

All the other major Southeast Asian countries had reductions of at least 95%, including around 97% for Indonesia, 97.5% for Malaysia, 95.5% for Singapore, around 98% for Thailand, and around 99% for Viet Nam.

International traffic in Southeast Asia was much more impacted than most other regions in 2021 due to prolonged border closures, in particular for travelers from other Southeast Asian countries. Prolonged border closures in important source markets in other parts of Asia and the Pacific—such as Australia, Japan, New Zealand, and the PRC—also impacted Southeast Asia. Longer-haul destinations, such as Europe and the US, were open to Southeast Asian travelers for most of the pandemic, but the complex processes involved in exiting and reentering Southeast Asian countries meant that people were reluctant to travel except for urgent business or personal reasons. Global international passenger traffic was reduced by 74% in 2020 and was down by 72% in 2021 compared to 2019 levels. Southeast Asia had international traffic reductions that were about 8 percentage points higher than the global average in 2020 and about 23 percentage points higher in 2021. This highlights the damage prolonged border closures had on Southeast Asia's aviation industry.

Pandemic Impact: Domestic Passenger Traffic

Domestic passenger traffic in Southeast Asia did not reduce nearly as sharply as international traffic but was significantly impacted by local travel restrictions during the pandemic. In all Southeast Asian countries, there were periods when domestic air travel was not allowed or was severely restricted. As these periods were longer and the restrictions more severe in certain countries, the impact varied significantly by country.

In 2020, Southeast Asian domestic traffic was reduced by 53% to around 103 million passengers. This was close to the overall global domestic reduction of 50%. The Southeast Asian domestic market, therefore, performed relatively well in the first 9 months of the pandemic. While there was very little domestic traffic in Q2 2020, domestic traffic recovered relatively rapidly in the second half of 2020 in some of Southeast Asia's major markets.

Domestic traffic reached 100% of pre-COVID-19 levels in Viet Nam and 80% of pre-COVID-19 levels in Thailand in late 2020. Domestic traffic in Indonesia reached 50% of pre-COVID-19 levels in late 2020, while Malaysia and the Philippines were slower to recover. Domestic traffic in Malaysia reached about 35% of pre-COVID levels in September 2020 before falling again in Q4, while the Philippines had less than 15% of pre-COVID-19 levels for the entire period.

The Philippines recorded the largest reduction in 2020 among all Southeast Asian domestic markets with a drop of 77%, Malaysia by 69%, Indonesia by 56%, Thailand by 45%, and Viet Nam by 23% (Table 27).

The variation across Southeast Asia is due to each country having different domestic travel restrictions. While there were virtually no domestic travel restrictions in Thailand and Viet Nam in the second half of 2020, domestic travel restrictions were in place for most of the Philippines. Local government policies had a huge impact, impeding domestic recovery as only essential travel was permitted for several provinces and cities.

Restrictions were eased in Indonesia and Malaysia for periods of 2020 but were reimposed in response to new waves of COVID-19 cases in early 2021. Case numbers were very low in Thailand and Viet Nam in the second half of 2020, allowing domestic travel to flourish. While the recovery rate in Viet Nam was higher, the recovery in Thailand was equally impressive given that a large proportion of Thailand's domestic market typically consists of overseas visitors traveling around the country, a segment of the domestic market that was shut off as there were no overseas visitors.

Domestic traffic in Southeast Asia was more impacted in 2021 than in the second half of 2020 as it was severely restricted for several months in all the major domestic markets. Domestic traffic initially weakened in early 2021 due to restrictions relating to a spike in cases in most countries. After improving slightly in March and April, domestic traffic plummeted from May to September as the Delta variant hit Southeast Asia hard, leading several countries to ban domestic travel. Vaccination rates were still relatively low during this period in most Southeast

Table 27 Southeast Asia Domestic Passenger Movements by Country, 2020 vs 2019
(million)

Rank	Country	2019	2020	Reduction (%)	Source
1.	Indonesia	80	35	56	Government (DGCA)
2.	Thailand	38	21	45	Government (CAAT)
3.	Viet Nam	37	29	23	Airports (ACV)
4.	Philippines	30	6.9	77	Government (CAB)
5.	Malaysia	28	8.6	69	Airports (MAHB/Senai)
6.	Myanmar	3.0	1.3	57	Government (ASEAN Secretariat)
7.	Lao PDR	1.2	0.7	42	Government (ASEAN Secretariat)
8.	Cambodia	0.7	0.3	57	Government (ASEAN Secretariat)
	Total	218	103	53	

ACV = Airports Corporation of Vietnam, ASEAN = Association of Southeast Asian Nations, CAAT = Civil Aviation Authority of Thailand, CAB = Civil Aeronautics Board (Philippines), DGCA = Directorate General of Civil Aviation, Lao PDR = Lao People's Democratic Republic, MAHB = Malaysia Airports Holdings Berhad.

Notes:

1. Passenger traffic has been rounded to the nearest million except when traffic is less than 10 million passengers in which case it has been rounded to the nearest 100,000.
2. For airport authority figures, domestic has been adjusted to avoid double counting each passenger.
3. Timor-Leste is excluded (it has a very small domestic market with less than 50,000 passengers pre-COVID-19).

Asian countries, resulting in a much bigger impact from the Delta variant than countries in other regions that had higher vaccination rates. July and August were particularly bad as domestic traffic in Southeast Asia slipped to less than 10% of pre-COVID-19 levels due to lockdowns and/or strict domestic travel restrictions in all the major Southeast Asian markets.

Domestic markets in other regions performed better throughout 2021, partially due to higher vaccination rates which enabled domestic travel to continue following the emergence of the Delta variant. Globally, domestic passenger traffic was reduced by 32% in 2021 compared to 2019 levels. In Southeast Asia, the reduction was almost 70% as some countries restricted domestic travel by even closing interstate borders.

All the main domestic markets in Southeast Asia declined for the year by significantly more than the global average. In 2021, domestic passenger traffic dropped in Indonesia and Viet Nam by about 60% while the reduction in Thailand was about 75%. The reduction in the Philippines was 81% and in Malaysia 83%.

Domestic traffic in all the main markets started to improve in Q4 2021 as high vaccination rates enabled countries to ease restrictions. In December 2021, all six of Southeast Asia's main domestic markets were above 50% of pre-COVID-19 levels for the first time since the start of the pandemic.

Domestic traffic continued to improve in Q1 2022, although some markets had a temporary setback early in the year due to the Omicron wave. Overall domestic traffic dropped slightly in January 2022 compared to December 2021 but improved again in February and March 2022.

Over the first 24 months of the pandemic (April 2020 to March 2022), domestic traffic in Southeast Asia was down by around 70%. This highlights how the domestic market was hardly a panacea for Southeast Asia's aviation industry during the pandemic although it certainly performed better than the international market. The strict entry restrictions for international travelers—who by connecting to domestic flights make up a significant

proportion of domestic passengers in many Southeast Asian markets with generally higher yields than local domestic passengers—was also a depressing factor throughout the pandemic.

Among the top 10 domestic airports in Southeast Asia, Kuala Lumpur International had the largest reduction with domestic passenger traffic dropping 80% in the first 24 months of the pandemic. Manila Ninoy Aquino had the second-largest reduction with domestic passenger traffic dropping by 78% in the first 24 months of the pandemic.

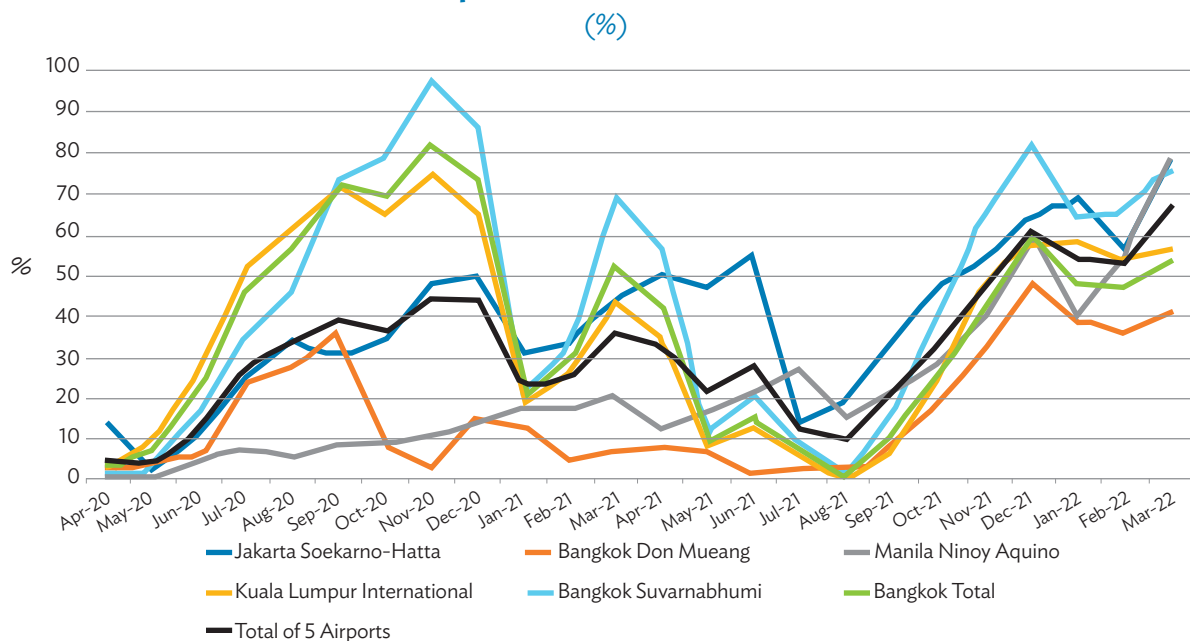
Malaysia and the Philippines were the most impacted in the main Southeast Asian domestic markets. While there were some improvements in early 2021, domestic travel in both countries only really started to recover in late 2021.

While Indonesia, Thailand, and Viet Nam were overall less impacted, they also endured very challenging periods. Indonesia's domestic market had several setbacks as restrictions were eased and reintroduced several times during the pandemic. In the first 24 months of the pandemic, domestic traffic at Jakarta Soekarno-Hatta was reduced by 64%.

After a relatively strong second half of 2020, Thailand had a setback in early 2021 and a more major setback around the middle of the year. Domestic traffic for Bangkok's two airports—Don Mueang and Suvarnabhumi—was reduced by a combined 66% in the first 24 months of the pandemic, including 54% for Suvarnabhumi and 70% for Don Mueang.

Figure 4 provides an overview of monthly domestic traffic during the pandemic for Bangkok Don Mueang and Bangkok Suvarnabhumi, as well as Jakarta Soekarno-Hatta, Kuala Lumpur International, and Manila Ninoy Aquino. Combined figures for the two Bangkok airports are also provided. The figure highlights how there were huge fluctuations in domestic traffic over the 24 months of the pandemic which were caused by on-and-off domestic travel restrictions. The total combined reduction for these five airports over the 24 months was 71%.

Figure 4 Domestic Passenger Recovery Rate for Select Southeast Asian Airports, April 2020 to March 2022



Note: Recovery rate percentage calculated using the same months from 2019 as a baseline.

Source: Authors based on data from Changi Airport Group (CAG), Airports of Thailand (AOT), Malaysia Airports Holdings Berhad (MAHB), Manila International Airport Authority (MIAA), and Statistics Indonesia (BPS).

Soekarno-Hatta is Southeast Asia's largest domestic airport, with 37.4 million domestic passengers in 2019. Don Mueang is the second largest, with 23.5 million passengers, and Suvarnabhumi had another 12 million, resulting in 35.5 million passengers for the overall Bangkok market.

Manila Ninoy Aquino had 22.9 million domestic passengers in 2019, while Kuala Lumpur International had 17.4 million. The overall Kuala Lumpur market consisted of 19.5 million domestic passengers including the 2.1 million handled by Kuala Lumpur Subang. The overall Jakarta market consisted of 43.4 million domestic passengers including 6 million for Jakarta Halim. Subang and Halim are not included in Figure 4 as these smaller airports do not report monthly traffic data.

Ha Noi and Ho Chi Minh City are also not included in Figure 4 as the Airports Corporation of Vietnam (ACV) does not report monthly traffic data. Overall, Viet Nam had similar setbacks as Thailand in 2021, including a smaller setback early in the year and a major setback in Q2 and Q3, after becoming the only Southeast Asian market to reach pre-COVID-19 domestic traffic levels in late 2020. Ho Chi Minh City is the third-largest domestic market in Southeast Asia after Jakarta and Bangkok, while Manila is the fourth largest and Kuala Lumpur the fifth largest. Ha Noi, Surabaya, Bali, Cebu, and Makassar are the other top 10 domestic markets in Southeast Asia, based on 2019 passenger traffic.

Pandemic Impact: Airline Traffic, Load Factors, Cargo Traffic, and Fleet

Airlines and airports with a high proportion of domestic traffic were relatively less impacted during the pandemic, as governments generally allowed more freedom to travel domestically than internationally during this time.

As a sector of the industry, LCCs were less impacted than FSCs during the pandemic as they typically rely more on domestic traffic than FSCs. For example, Citilink was larger than FSC parent Garuda Indonesia during the pandemic, but pre-pandemic Garuda was significantly larger. Citilink is predominantly a domestic airline and during the pandemic cut back less domestic capacity than Garuda.

All Southeast Asian LCCs have sizable domestic operations except AirAsia X, Jetstar Asia, and Scoot. Jetstar Asia and Scoot do not have any domestic traffic as they are based in Singapore. AirAsia X is a widebody LCC that generally only serves international destinations, and started some domestic flights in 2022.

LCCs based in Indonesia, Thailand, and Viet Nam were less impacted. These were the leading domestic markets in Southeast Asia during the pandemic. Malaysia and the Philippines already had smaller domestic markets pre-pandemic, and the gap between the three larger markets widened during the pandemic as domestic travel was more restricted in these countries (Table 28).

Table 28 is meant to provide a snapshot of traffic reductions in 2020 and 2021 and does not include all the top Southeast Asian airlines because 2021 traffic is not available for all airlines (as of June 2022). Total airline traffic for the 15 airlines included in Table 28 was reduced by 71% in 2020 and 87% in 2021 compared to 2019 levels. This includes a reduction for LCCs of 66% in 2020 and 84% in 2021 compared to a reduction for FSCs of 71% in 2020 and 87% in 2021. This data is indicative only of the impact of LCCs and FSCs as not all of Southeast Asia's major airlines are included.

In 2020—and again in 2021—the airlines with the smallest reductions in traffic were all LCCs.

While FSCs have been more impacted in terms of passenger traffic, they are generally bigger cargo operators. Cargo has been a lifeline during the pandemic, generating revenues to help offset the huge reduction in passenger traffic.

Table 28 Passenger Traffic for Select Southeast Asian Airlines, 2021 and 2020 vs 2019
(million)

Airline	Country	Model	2019	2020	2021	2020 Reduction (%)	2021 Reduction (%)
AirAsia	Malaysia	LCC	35.0	9.1	3.1	74	91
VietJet	Viet Nam	LCC	24.9	15.0	5.4	40	78
Singapore Airlines ^a	Singapore	FSC	27.2	4.9	1.9	82	93
Thai AirAsia	Thailand	LCC	22.2	9.5	2.9	57	87
Garuda Indonesia	Indonesia	FSC	19.7	5.3	3.4	73	83
Thai Airways	Thailand	FSC	19.4	3.5	0.19	82	99
Cebu Pacific	Philippines	LCC	19.0	4.1	2.8	78	85
Malaysia Airlines	Malaysia	FSC	14.0	2.9	1.1	79	92
Citilink	Indonesia	LCC	12.2	5.5	7.5	55	38
Scoot	Singapore	LCC	11.1	2.0	0.27	82	98
Philippine Airlines	Philippines	FSC	9.3	2.2	1.3	76	86
Philippines AirAsia	Philippines	LCC	8.6	2.0	0.88	77	90
Indonesia AirAsia	Indonesia	LCC	8.0	2.2	0.80	73	90
PAL Express	Philippines	FSC	7.0	1.5	1.4	79	80
AirAsia X	Malaysia	LCC	6.1	1.1	0	82	100
Bangkok Airways	Thailand	FSC	5.9	1.9	0.54	68	91
Jetstar Asia	Singapore	LCC	4.5	0.78	0.15	83	97
Cebgo	Philippines	LCC	1.9	0.38	0.26	80	86
LCC TOTAL			153.5	51.7	24.1	66	84
FSC TOTAL			102.5	22.4	9.8	78	90
TOTAL			256.0	74.1	33.9	71	87

FSC = full-service carrier, LCC = low-cost carrier.

^a Includes SilkAir, which was absorbed by Singapore Airlines in 2021; for comparison purposes, SilkAir passenger traffic has been added to the Singapore Airlines totals.

Notes:

1. Passenger traffic is rounded to the nearest 100,000, except when below 1 million, where it is rounded to the nearest 10,000.
2. AirAsia X did not operate any scheduled passenger flights in 2021.

Source: Authors based on data from airline reports and aviation authorities.

Table 29 Cargo Traffic for Southeast Asia's Top Three Airports, 2021 and 2020 vs 2019
(million tonnes)

Rank	Airport	2019	2020	2021	2020 Reduction (%)	2021 Reduction (%)
1.	Singapore Changi	2.01	1.54	1.95	23	3
2.	Bangkok Suvarnabhumi	1.36	0.91	1.12	33	21
3.	Manila Ninoy Aquino	0.72	0.53	0.59	26	22
	TOTAL	4.09	2.98	3.66	27	12

Note: 2021 reduction is calculated using 2019 as a baseline.

Source: Authors based on data from Changi Airport Group (CAG), Airports of Thailand (AOT), and Manila International Airport Authority (MIAA).

Among all Southeast Asian airlines, Singapore Airlines has by far the largest cargo business. Passenger traffic at Singapore Airlines Group—which includes Scoot—was reduced by nearly 95% in 2021 to only 2.1 million, compared to 38.1 million in 2019. The group’s cargo traffic decreased by only 19% to 1.014 million tonnes in 2021 compared to 1.245 million tonnes in 2019, while yields increased significantly.

Cargo traffic at Singapore Changi Airport was reduced by only 3% in 2021 compared to 2019 levels. Among the top three cargo airports in Southeast Asia, Bangkok Suvarnabhumi and Manila Ninoy Aquino still had reductions of over 20% in 2021, but the cargo was a strong point compared to passenger traffic (Table 29).

Singapore Airlines has a fleet of seven 747 freighters, but most of the group’s cargo traffic has typically been on passenger aircraft operated by Singapore Airlines or Scoot. Both airlines operated passenger aircraft as pure freighters throughout the pandemic and were also able to carry more cargo per flight than pre-pandemic on the passenger flights which were still operating as the low passenger loads meant more cargo capacity was available.

The Singapore Airlines passenger load factor was 22% in 2021, while Scoot’s load factor was 11%. Singapore’s three carriers (Singapore Airlines, Scoot, and Jetstar Asia) had among the lowest load factors in Southeast Asia and globally in 2021, driven by Singapore’s absence of domestic traffic. All three airlines benefited from support provided by the Government of Singapore to help airlines maintain networks and Changi’s hub status throughout the pandemic despite limited passenger demand.

Table 30 Passenger Load Factor for Select Southeast Asian Airlines, 2021 vs 2020 and 2019
(%)

Airline	2019	2020	2021
Philippines AirAsia	88	80	80
VietJet Air	87	80	70
Cebu Pacific	86	76	61
Scoot	86	74	11
Thai AirAsia	85	75	68
AirAsia	84	74	76
Indonesia AirAsia	84	69	64
Singapore Airlines	84	57	22
Jetstar Asia	84	64	17
AirAsia X	81	74	N/A
Thai Airways	79	65	13
Citilink	75	47	57
Malaysia Airlines	75	63	45
Garuda Indonesia	74	44	31
Bangkok Airways	68	63	59

N/A = not applicable.

Notes:

1. Some low-cost carriers report load factor based on seats rather than available seat kilometers.
2. Cebu Pacific load factor includes Cebgo.
3. AirAsia X did not operate any passenger services in 2021.

Source: Authors based on data from airline reports.

Load factors for all airlines were lower than normal during the pandemic, particularly in the international market. However, the low passenger loads were partially offset by much higher volumes of cargo on each passenger flight. (International load factors in Southeast Asia improved significantly after borders reopened, and several airlines recorded load factors that were at or even above pre-COVID-19 levels in the last 9 months of 2022.)

Airlines that have large domestic operations generally had much higher load factors during the pandemic, but domestic passenger flights typically do not carry much cargo. For example, all the AirAsia short-haul affiliates and VietJet were able to maintain relatively high load factors in 2020 and 2021. While these two airline groups had significant international operations pre-pandemic, they did not operate many international flights during the pandemic and focused predominantly on domestic services.

Overall airline load factors were much higher in 2020 compared to 2021, but load factors in the first couple of months of 2020 were close to normal. Passenger load factors in the last 9 months of 2020 were generally lower than 2021 levels, but as traffic volumes were so tiny during this period, they only impacted the annual figures slightly (Table 30).

During the pandemic, several Southeast Asian airline groups used passenger aircraft as freighters—primarily widebody aircraft but also some narrowbody aircraft—to offset the huge reduction in belly capacity driven by the suspension of most international passenger flights. The number of in-service freighter aircraft also increased, but from a very small base as Southeast Asian airlines have traditionally relied almost entirely on belly capacity to support their cargo businesses.

The number of in-service freighters increased from about 40 aircraft pre-pandemic to about 60 aircraft as of the end of March 2022. The number of in-service passenger aircraft was reduced over this period by nearly 30% from about 1,900 aircraft pre-pandemic to about 1,300 aircraft at the end of March 2022.

In the early phases of the pandemic—when there was very little passenger traffic—the in-service passenger aircraft fleet was down over 70%. For example, at the end of April 2020, there were less than 600 passenger aircraft in service in Southeast Asia. During this period, a large portion of the in-service passenger fleet was temporarily used as freighters.

Airlines have gradually brought passenger aircraft back to service. Around two-thirds of the passenger aircraft fleet was in service as of the end of 2020. For much of 2021, the fleet shrank again as Southeast Asia's domestic markets were impacted by lockdowns and travel restrictions, leading to a reduction in the number of narrowbody aircraft (as most domestic services use narrowbody aircraft). The in-service fleet started to grow rapidly again in Q4 2021 as the narrowbody aircraft parked earlier in the year came back to service, resulting in the total in-service fleet returning at the end of 2021 to similar numbers as of the end of 2020.

Q1 2022 saw continued growth in the in-service fleet, and Southeast Asia's in-service fleet will grow throughout 2022 as passenger traffic continues to recover.

Aircraft utilization rates were much lower than normal during the pandemic. Southeast Asian airlines have therefore also been able to add back capacity as demand recovers by better utilizing their fleets.

Table 31 Southeast Asia Passenger Aircraft In-Service Fleet: First 24 Months of the Pandemic

	Widebody	Narrowbody	Regional	Total	Recovery (%)
End of December 2019	415	1,108	404	1,927	
End of March 2020	128	429	325	882	46
End of April 2020	113	238	216	567	29
End of May 2020	140	397	234	771	40
End of June 2020	154	581	300	1,035	54
End of September 2020	171	666	330	1,167	61
End of December 2020	193	725	348	1,266	66
End of March 2021	205	655	346	1,206	63
End of June 2021	210	497	344	1,051	55
End of September 2021	224	459	340	1,023	53
End of December 2021	258	653	340	1,251	65
End of March 2022	272	722	341	1,335	69

Note: Recovery % based on a baseline of end December 2019 (pre-pandemic).

Source: Centre for Aviation.

Impact of the Pandemic on the Financial Performance of Southeast Asian Airlines and Airports

Impact on Airline Financial Performance

During the pandemic, air travel in the region was adversely affected by government mitigation strategies against COVID-19, such as lockdown measures, border closures, entry restrictions, testing and quarantine requirements, and domestic travel restrictions.

The sudden drop in air traffic in 2020 significantly impacted the financial performance of airlines, leading to negative earnings across the board. All the publicly listed airlines in Southeast Asia (including subsidiaries and affiliates) had a combined revenue reduction of 67% in 2020 compared to 2019 (Table 32). The revenue reduction in 2021 compared to 2019 was even sharper, at about 75%. This is an approximate figure as not all these airlines have disclosed revenue figures for 2021. Most of the airlines that reported figures for 2021 generated lesser revenues in 2021 than in 2020; this is mainly because revenue levels were close to normal in the first 2 months of 2020.

Losses moderated significantly in 2021 despite the further reduction in revenues. This is partly due to one-off restructuring-related losses that were incurred in 2020. Profit and loss figures are not listed as the figures are not comparable due to how different airlines accounted for restructuring-related and other one-off items. Some Southeast Asian airlines reported net operating profits in 2021 but based on most accounting standards, there were losses across the board given the meager revenues.

In both 2020 and 2021, Singapore Airlines remained by far the largest airline and airline group in Southeast Asia in terms of revenue generated. Although Singapore Airlines was impacted more severely than other airlines in the region as it does not have a domestic market, its cargo operation enabled it to continue generating more revenue than other airlines. Singapore Airlines' losses narrowed significantly in 2021—due primarily to strong cargo traffic—but in the first 2 years of the pandemic, it incurred net losses of around \$4 billion.

Singapore Airlines Group did best among Southeast Asian carriers in strengthening its balance sheet, raising over \$15 billion since the start of the pandemic. The airline group pursued a large mix of liquidity-boosting measures including rights issues, secured financing, convertible bonds, credit lines, unsecured loans, and aircraft sales and/or leasebacks. The government played a critical role in backing some of these initiatives and provided other types of support to Singapore Airlines Group and Singapore's aviation sector overall. This provided Singapore and Singapore Airlines with a competitive advantage over other airline groups in the region that did not have such strong government support. This lack of support resulted in several bankruptcies.

For example, Thai Airways had to endure a massive overhaul and restructuring under bankruptcy court protection after the government declined to provide financial support in May 2020. It was initially expected that the Government of Thailand would step in and recapitalize the struggling flag carrier, but the government rejected a request for a bailout loan, forcing Thai Airways into administration with a total debt of \$8 billion. The group incurred a net loss of \$4.5 billion in 2020 and faced the risk of liquidation if it was unable to restructure.

Garuda Indonesia also ended up in bankruptcy court much later in the pandemic, starting a court-supervised restructuring in late 2021. The Garuda Group posted a net loss of \$2.5 billion in 2020.

Philippine Airlines completed a bankruptcy court-supervised restructuring in late 2021, emerging from the process much quicker than Garuda Indonesia and Thai Airways. The group incurred a loss of \$1.5 billion in 2020. Its reorganization plan included more than \$2 billion in permanent balance sheet reductions from creditors and a new

Table 32 Revenue Performance of Publicly Traded Airlines in Southeast Asia, 2019–2021
(\$ million)

Airline	Airline Group	Country	Revenue 2019	Revenue 2020	Revenue 2021
Singapore Airlines	Singapore	Singapore	10,072	3,855	4,074
SilkAir	Airlines Group		701	25	N/A
Scoot			1,301	237	583
VietJet Air	VietJet Aviation	Viet Nam	2,179	784	556
Vietnam Airlines	Vietnam Airlines Group	Viet Nam	3,129	1,313	1,205
Philippine Airlines	PAL Holdings	Philippines	2,985	1,115	1,192
PAL Express					
Bangkok Airways	Bangkok Airways	Thailand	772	245	85
Malaysia AirAsia	Capital A	Malaysia	1,814	450	418
Philippines AirAsia		Philippines	528	128	47
Indonesia AirAsia		Indonesia	484	111	51
Thai AirAsia		Thailand	1,339	436	183
Cebu Pacific	Cebu Air	Philippines	1,638	456	326
Cebgo					
Malaysia AirAsia X	AirAsia X Group	Malaysia	734	222	66
Thai AirAsia X		Thailand	310	96	28
Indonesia AirAsia X		Indonesia	16	8	0
Nok Air	Nok Airlines	Thailand	409	215	199
NokScoot			232	42	0
Thai Airways	Thai Airways International	Thailand	5,533	1,526	616
Thai Simile					
Garuda Indonesia	Garuda Group	Indonesia	3,801	1,247	1,330 ^a
Citilink			876	343	

^a The Garuda Group revenue figure for 2021 is at the group level as it did not provide a revenue breakdown by airline subsidiary in 2021.

Notes:

1. Revenues for all airlines are for the calendar years 2019, 2020, and 2021.
2. PAL Holdings, Cebu Pacific, and Thai Airways do not provide revenue breakdown by airline subsidiary.
3. Vietnam Airlines has two airline subsidiaries, VASCO and Jetstar Pacific, which are not included in their financial figures.
4. VietJet does not report financial figures for partially owned airline affiliate Thai VietJet.
5. Capital A is the new name of the AirAsia Group as of 2022; the group was originally named AirAsia Berhad.
6. NokScoot was a joint venture between Thailand's Nok Air and Singapore Airlines wholly owned subsidiary Scoot that ceased operations in 2020.
7. Indonesia AirAsia X ceased operations in 2020.
8. SilkAir was absorbed by Singapore Airlines in 2021.
9. Revenue figures have been converted from local currencies to US dollars using the average exchange rate for 2019, 2020, and 2021.

Source: Authors based on data from airline reports.

\$505 million investment—providing additional liquidity—in long-term equity and debt financing from its majority shareholder. Unlike Garuda Indonesia or Thai Airways, Philippine Airlines does not have any government ownership.

Vietnam Airlines is majority government owned and has been pursuing an out-of-court restructuring after recording a net loss of \$500 million in 2020. Viet Nam's Ministry of Planning and Investment stated in mid-2021 that Vietnam Airlines had fallen into "an extremely difficult situation and is on a verge of bankruptcy." A set of restructuring solutions have since been implemented, including restructuring its fleet by deferring payments, reducing aircraft leasing costs and postponing delivery of new aircraft, restructuring assets through aircraft sales and leasebacks, restructuring its investment portfolio, accelerating organizational and corporate governance

restructuring, and issuing additional shares. The flag carrier has been continuing operations with support from the government while continuing to restructure by streamlining its organizational structure and enhancing efficiency.

Southeast Asia's leading LCC group, AirAsia, incurred losses of over \$2 billion in the first 2 years of the pandemic. Connected long-haul group AirAsia X—which has incurred losses of over \$7 billion—was even more impacted by the pandemic as it relies entirely on the international market. Malaysia AirAsia X completed a court-supervised bankruptcy restructuring in early 2022, while Thai AirAsia X began the process in May 2022. Thai AirAsia X became the third airline from Thailand to file for bankruptcy, joining Thai Airways and Nok Air which began the process in 2020 and, as of late 2022, were still in bankruptcy.

The review of the financial performance of publicly traded Southeast Asian airlines during the pandemic shows that all airlines were significantly impacted. While market conditions improved in 2022 and some Southeast Asian airlines returned to profitability in Q2 and Q3, annual losses are likely for most airlines. Airlines must maintain continued support from their stakeholders and financiers.

Impact on Airport Financial Performance

The sudden drop in air traffic during the pandemic resulted in a huge negative impact on airports in the region, with the impact being felt across both aeronautical and non-aeronautical revenues, while costs of operating terminals and airfields are largely fixed. Aeronautical revenues—such as aircraft landing charges and security charges—dropped as airlines cut capacity. Non-aeronautical revenues derived from duty free, food and beverage, and car parking activities also plummeted as there was virtually no international traffic.

While domestic traffic was less impacted, non-aeronautical opportunities are much more limited in the domestic sector. Airport charges, fees, and taxes are typically smaller for domestic passengers, driven in part by government policies of cross-subsidizing domestic air travel from international revenues. With domestic accounting for almost all traffic during the pandemic, it became impossible for these airports to maintain profitability.

An analysis of Southeast Asian airports group financial performance during the pandemic shows that most airports suffered from financial turbulence during the pandemic. For example, AOT revenues were reduced by 72% in 2020 and 88% in 2021 (compared to 2019), leading to losses of over \$700 million over the period. MAHB revenues were reduced by 65% in 2020 and 68% in 2021, leading to losses of over \$400 million (Table 33).

Several airports in the region received support and relief packages from governments and undertook cost-cutting measures. Airports reduced variable costs and cash outflow, where possible, by closing some terminals, cutting salaries, furloughing staff, curtailing contract services, and postponing capital investments. This helped airports maintain their operations and mitigate losses, but there was still a massive impact on revenues and profits. At the same time, some airports took advantage of the lack of traffic to carry out capital improvements and major maintenance, which was easier and therefore cheaper to do in an uncongested environment.

Impact of the Pandemic on the Economy and Gross Domestic Product Growth of Southeast Asian Countries

Southeast Asian economies were impacted negatively and significantly by COVID-19. The region's GDP decreased to 4.0% in 2020, followed by a more serious deterioration in mid-2021 as the Delta variant led to a new round of lockdowns. However, the overall economic outlook for the region remains positive in 2022, with different recovery scenarios among member countries depending on various factors.

Table 33 Revenue and Net Profit Margin of Leading Southeast Asian Airport Groups, 2019–2021
(\$ million / %)

Airport Group	Country	2019	2020	2021
Changi Airport Group ^a	Singapore	2,228 / 19	505 / (137)	678 / (89)
Airports of Thailand	Thailand	2,123 / 40	600 / (19)	250 / (219)
Malaysia Airports Holdings	Malaysia	1,259 / 10	444 / (58)	404 / (46)
Airports Corporation of Vietnam	Viet Nam	789 / 45	335 / 26	208 / 8
PT Angkasa Pura I	Indonesia	610 / 17	249 / (64)	224 / (102)
PT Angkasa Pura II	Indonesia	784 / 9	401 / (43)	381 / (70)

(-) = negative.

^a Changi Airport Group figures are for the fiscal years ending March 2020, March 2021, and March 2022 and are for Singapore Changi Airport only.

Notes:

1. All other figures are at the group level and are for calendar years 2019, 2020, and 2021.

2. Revenue figures have been converted from local currencies to US dollars using the average exchange rate for 2019, 2020, and 2021.

Source: Authors based on data from airport reports.

The Philippines had the sharpest GDP dip in 2020 (–9.6%), followed by Thailand (–6.1%) and Malaysia (–5.6%). Viet Nam's economy was the most resilient, with positive GDP growth (2.9%) in 2020. This corresponds with the fact that the crisis had the most severe effects in Indonesia, Malaysia, and the Philippines with over 1,500 COVID-19 cases per million people in each country during this period. In comparison, Cambodia, the Lao PDR, Thailand, and Viet Nam averaged fewer than 100 cases per million people.

In 2021, the negative impact of COVID-19 on the Southeast Asia economy and GDP was more significant than early expectations. The impact was particularly severe in Q2 and Q3 2021 as many Southeast Asian countries faced the extremely contagious Delta variant of the virus against a backdrop of delayed vaccination implementation, leading to long lockdowns. Consequently, Southeast Asia's GDP forecasts for 2021 were revised downward although GDP growth was still achieved compared to the weak base of 2020 (Table 34).

After 2021, most Southeast Asian countries are expected to have positive growth. While the region's GDP is estimated to have increased at the rate of 3.1% in 2021, it is projected to grow by 5.0% in 2022. During 2022–2026, countries with the most positive growth outlook are Cambodia (~6.5%), the Lao PDR (~5.7%), the Philippines (~6%), and Viet Nam (7%). While the post-COVID-19 economic outlook for Thailand and Singapore is better than pre-COVID-19 forecasts, the outlooks for Cambodia, the Lao PDR, and Timor-Leste are significantly lower. This results in a wider gap between more developed and less developed countries, exacerbating an issue in Southeast Asia (Figure 5, Table 35).

One significant factor driving growth in the region is the “China+1” strategy being pursued by many manufacturers, seeking to reduce their dependency on the PRC as a manufacturing base. This is driving significant foreign direct investment into countries such as Malaysia and Viet Nam and is likely to increase the demand for air cargo to move components and finished goods around the region as well as to final destinations.

Table 34 Gross Domestic Product Growth Forecast 2022–2023
Forecast by Country: Estimated Pre-Coronavirus Disease and during Coronavirus Disease
 (%)

Country	2022F Pre-COVID-19 ^a	2022F After COVID-19	% Change	2023F (Pre-COVID-19) ^a	2023F (Estimated Under COVID-19)	% Change
Brunei Darussalam	2.00	2.60	0.60	2.00	2.40	0.40
Cambodia	6.90	5.70	(1.20)	6.90	6.40	(0.50)
Indonesia	(2.10)	5.90	8.00	(2.10)	6.40	8.50
Lao PDR	7.00	4.20	(2.80)	7.00	4.50	(2.50)
Malaysia	4.60	6.00	1.40	4.60	5.70	1.10
Philippines	6.60	6.30	(0.30)	6.60	7.00	0.40
Singapore	2.70	3.20	0.50	2.70	2.70	0.00
Thailand	3.70	4.50	0.80	3.70	4.00	0.30
Timor-Leste	3.90	3.80	(0.10)	3.90	2.60	(1.30)
Viet Nam	6.50	6.60	0.10	6.50	6.80	0.30

() = negative, COVID-19 = coronavirus disease, F = forecast, Lao PDR = Lao People's Democratic Republic.

^a Pre-pandemic estimate of average annual growth rate; Myanmar excluded.

Source: Authors based on data from Asian Development Bank, International Monetary Fund, Organisation for Economic Co-operation and Development, and World Bank.

Table 35 Gross Domestic Product Growth and Forecast, 2020–2026
 (%)

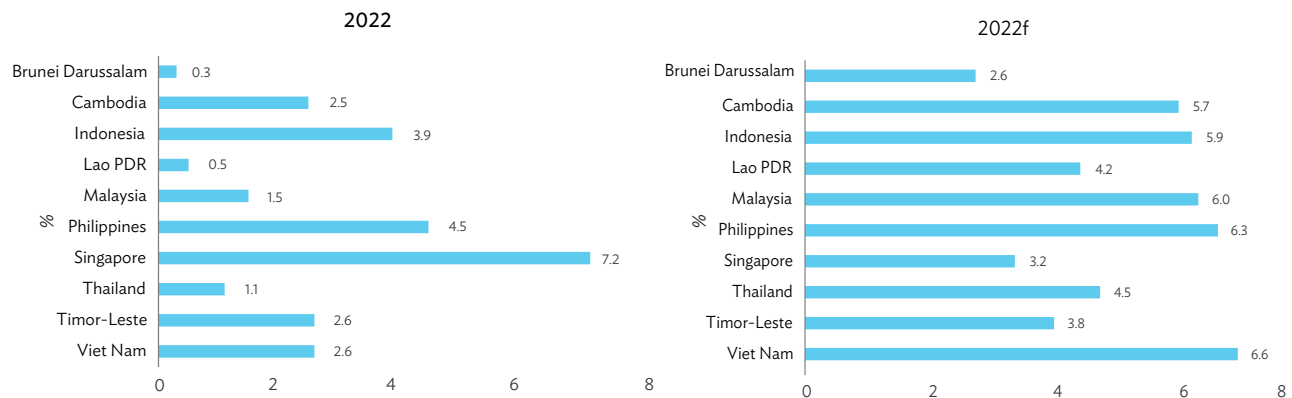
Country	2020	2021	2022f	2023f	2024f	2025f	2026f
Brunei Darussalam	1.1	0.3	2.6	2.4	2.2	2.1	2.1
Cambodia	(3.1)	2.5	5.7	6.4	6.5	6.5	6.6
Indonesia	(2.1)	3.9	5.9	6.4	5.6	5.3	5.2
Lao PDR	0.5	0.5	4.2	4.5	5.7	6.0	5.8
Malaysia	(5.6)	1.5	6.0	5.7	5.3	5.0	5.0
Philippines	(9.6)	4.5	6.3	7.0	6.7	6.5	6.5
Singapore	(5.4)	7.2	3.2	2.7	2.6	2.5	2.5
Thailand	(6.1)	1.1	4.5	4.0	3.6	3.5	3.6
Timor-Leste	10.4	2.6	3.8	2.6	2.0	2.8	3.0
Viet Nam	2.9	2.6	6.6	6.8	7.0	7.1	6.9

() = negative, f = forecast, Lao PDR = Lao People's Democratic Republic.

Note: Forecast based on information available at the time of writing (second quarter of 2022); Myanmar excluded.

Source: Authors based on data from International Monetary Fund and World Bank.

Figure 5 Gross Domestic Product Growth and Forecast, 2021–2022
(%)



f = forecast, Lao PDR = Lao People's Democratic Republic.

Note: Forecast based on information available at the time of writing (second quarter of 2022); Myanmar excluded.

Source: Authors based on data from International Monetary Fund and World Bank.

Impact of the Pandemic on the Aviation and Tourism Sector

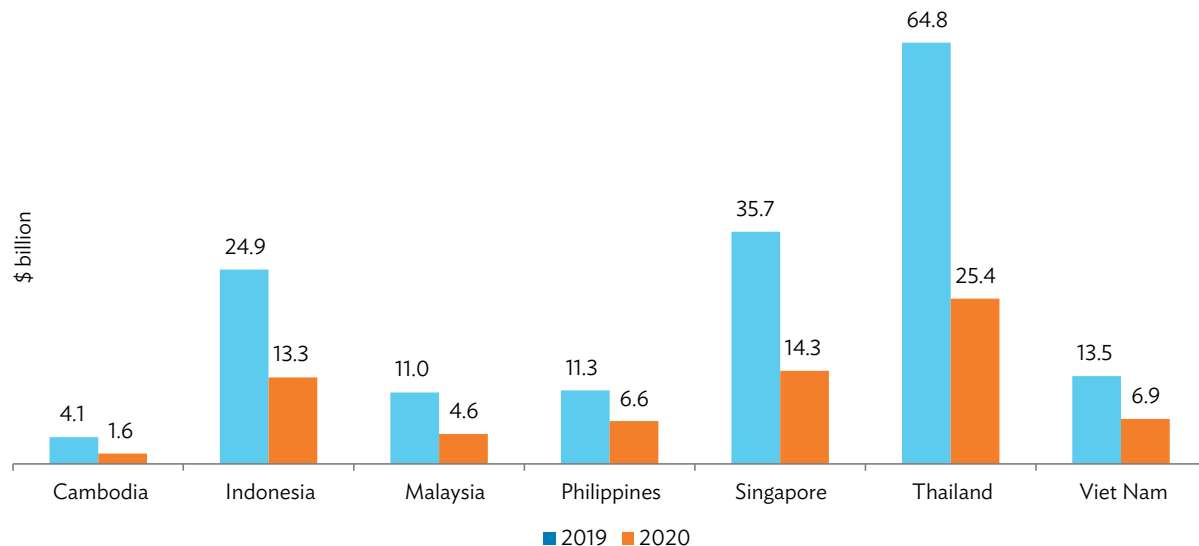
Before 2020, both air passenger traffic and new aircraft on order in the region were quickly expanding, attracting interest from international suppliers who were keen to expand their presence in Southeast Asia.

In 2020, the significant decrease in air transport-related revenues across all Southeast Asian countries due to the COVID-19 pandemic particularly impacted countries with high aviation contributions to GDP, causing sharp reductions (Figure 6). For example, there was a reduction of over 50% in aviation sector-related contribution to GDP in Cambodia (-61%), Malaysia (-58%), Singapore (-60%), and Thailand (-61%).

The massive drop in passengers also negatively impacted Southeast Asia's labor market. The aviation and tourism sectors account for about 42 million jobs in Southeast Asia, according to World Travel & Tourism Council data. Aviation directly accounts for roughly 11% (4.6 million) of jobs. Aviation indirectly accounts for another 10% (about 4.4 million). This includes aviation-related jobs at construction companies, fuel companies, manufacturers, and other suppliers. Tourism accounts for about 29 million jobs in Southeast Asia across hotels, restaurants, local transport, retail, and entertainment establishments, among others. Aviation plays a critical role in supporting many of these jobs.

The pandemic had a devastating short-term impact on the labor market worldwide, including in Southeast Asia. While employment in the region was on a steady upward trend pre-pandemic, all countries suffered from a significant employment loss due to COVID-19. However, the impact varied by country. For example, the Philippines saw the largest working hour losses (13.6%) in 2020, while Brunei Darussalam, the Lao PDR, and Thailand observed smaller losses of only 4%. This was partly driven by the higher case numbers in certain countries, leading to longer periods of restrictions. Some of these differences can also be explained by the various approaches of Southeast Asian governments to providing stimulus measures and support to maintain employment rates.

Figure 6 Aviation Sector's Gross Value-Added Contribution to Gross Domestic Product, 2019–2020



Source: Authors based on data from International Air Transport Association (IATA) and World Travel & Tourism Council.

Responses from Governments to Manage the Pandemic and Revive the Aviation Sector

Wide adoption of highly aggressive restrictive measures helped most countries in Southeast Asia contain COVID-19 in the early stages of the pandemic. However, the restrictive measures created a sudden shock to the economy and disrupted people's lives. Due to highly restrictive measures, demand for air travel and tourism dropped significantly, creating survival issues for many companies in the aviation and related sectors, putting many people at risk of losing their jobs. Hard measures adopted by governments at the early stage also proved to be less successful in 2021 when new variants of the virus emerged.

Countries in Southeast Asia and globally accelerated their policy intervention during the pandemic to support the aviation sector. Government support measures for the aviation sector in the region came in the form of direct aid (such as government subsidies, soft loans, or equity and/or cash injection) and partially in the form of tax relief and wage subsidies. In general, policy interventions aimed to support the aviation sector have come through the following:

- (i) Untargeted subsidy schemes, which are designed to provide capital for businesses to survive the crisis irrespective of their activity (e.g., Indonesia's \$6.7 billion COVID-19 economic recovery plan and Malaysia's \$1.8 billion wage subsidy program);
- (ii) Targeted sector schemes (e.g., Singapore's \$1 billion One Aviation Support Package); and
- (iii) Direct support measures for affected businesses (e.g., Viet Nam's \$174 million soft loan to Vietnam Airlines).

Except for Singapore, Southeast Asian countries did not implement targeted support schemes for the aviation sector or only provided very small programs compared with their total spending or total economic stimulus packages. Some countries offered untargeted support schemes covering all industries and sectors. While

some airlines and other aviation industry companies benefited from these untargeted schemes, the impact was relatively insignificant. The support scheme in Singapore was exceptional and included several types of support, providing aviation companies in Singapore with a competitive advantage over similar companies in other Southeast Asian countries which generally received limited or no support.

Globally, the level of support for the aviation sector also varied significantly, but there was more support in other regions. Europe, North America, and some parts of Asia and the Pacific (such as Australia, New Zealand, and North Asia) had a much higher level of government support for their aviation sectors than Southeast Asia. This includes general support packages as well as financial support packages for airlines. While some Southeast Asian flag carriers—many of which are government owned—have received financial support from their governments, the number of airlines receiving such support is relatively small compared to other regions, where such financial support in many cases was even offered to privately owned airlines. Privately owned airlines in Southeast Asia have had no targeted government financial support and limited other types of government support during the pandemic. They have had to rely heavily on the private sector—including their suppliers and financiers—to continue.

Some Southeast Asian airlines did benefit indirectly from domestic tourism schemes that were launched by some countries during the pandemic to support the tourism sector by reviving domestic tourism in the absence of international tourists. For example, Thailand successfully stimulated domestic travel during the pandemic by offering subsidies for flights and hotel stays. However, the impact of these programs was relatively limited given the generally low revenues associated with domestic flights and the fact that many of the domestic tourists taking advantage of these subsidies did not travel by air.

Support Programs for the Aviation Sector from Development Finance Institutions

Besides collaborative initiatives put forward by governments, development finance institutions (DFIs)—such as ADB, the World Bank Group, and the International Transport Forum (ITF)—took broad, fast action to help Southeast Asian countries strengthen their pandemic response; improve public health interventions; and guide recovery measures in air travel, tourism, and commerce. Supporting initiatives and programs include guiding frameworks and tools, reports and corresponding webinars, high-level policy dialogue, and financial support.

ADB has been one of the DFIs supporting the recovery of Southeast Asia's overall economy, including the aviation sector. In terms of general support to help Southeast Asian members to recover from the devastating consequences of COVID-19, ADB has contributed \$5.8 billion in financing along with vaccination support programs. In the aviation sector, ADB provided a \$135 million loan under the Expansion Project for Presidente Nicolau Lobato Airport (2021) to support the Government of Timor-Leste. This project aims to help Timor-Leste diversify its economy, supporting post-COVID-19 recovery in trade and tourism. In aviation-related sectors, in 2021, ADB provided \$1.5 billion in budget support for Thailand through ADB's Active Response and Expenditure Support Program and \$6.8 million in grants in 2022 to help revive tourism in Cambodia.

The World Bank has supported the purchase and distribution of COVID-19 vaccines, tests, and treatments in several Southeast Asian countries including Indonesia, the Lao PDR, and the Philippines. In the aviation sector specifically, the associated organization International Finance Corporation (IFC) backed \$250 million in convertible bonds to Cebu Pacific as part of a transaction that also involved private equity firm Indigo Partners.

There are also supporting initiatives and programs that have been launched by ITF and Japan International Cooperation Agency to support the recovery of Southeast Asia's air transport sector. In 2020, ITF partnered with the United Nations Economic and Social Commission for Asia and the Pacific to develop COVID-19 Recovery Guidelines for Resilient and Sustainable International Road Freight Transport Connectivity in ASEAN. These guidelines are included in the ASEAN Comprehensive Recovery Framework and its Implementation Plan, which was used to help guide recovery measures as countries started to open up. The Japan International Cooperation Agency has been supporting Timor-Leste alongside ADB in the upgrade project at Presidente Nicolau Lobato International Airport, including a \$44 million grant for the construction of a passenger terminal building.



Post-Pandemic Assessment

Government Consensus on Air Travel Protocols

After 2 years of strict travel measures and extended lockdowns, in Q2 2022, governments of Southeast Asian countries started to shift their policies from treating COVID-19 as a pandemic to endemic. This shift took into account the negative economic impacts of prolonged lockdowns and travel restrictions, which caused a significant drop in economic activity, particularly for the aviation and tourism sectors. The emergence of the Omicron variant was also a factor as it was milder than earlier variants with Southeast Asia's mainly vaccinated population able to recover at home without overloading the health-care system. This enabled Southeast Asian countries to accelerate their transition to endemic or "living with COVID" policies.

By May 2022, most countries in Southeast Asia were fully open to vaccinated visitors and no longer required quarantine upon arrival. While Singapore and Thailand were among the early movers with schemes to allow some quarantine-free travel that essentially resulted in a partial reopening of borders, Cambodia became the first Southeast Asian country to fully reopen to all vaccinated travelers in November 2021. Other Southeast Asian countries were initially reluctant to follow due to the emergence of Omicron, but a few months later decided to fully reopen once it became clear that Omicron was relatively mild and its waves had subsided. The Philippines was the second Southeast Asian country to fully reopen in February 2022. Several other countries followed in March, April, and May, leading to the reopening of virtually all borders in Southeast Asia by mid-May 2022. Once a few Southeast Asian countries reopened fully, the pace of reopening accelerated as other countries were persuaded to follow to be competitive from an inbound tourism perspective.

There was a similar trend in lifting COVID-19 testing requirements. Initially, all Southeast Asian countries continued to require pre-departure and/or arrival tests although the type of test required (antigen or PCR) varied. In March 2022, Cambodia became the first Southeast Asian country to lift all testing requirements for international arrivals. Other Southeast Asian countries followed over the next couple of months and, by the end of May 2022, most countries had removed all testing requirements. The pressure to remove testing requirements increased as more countries eased or removed restrictions, creating a domino effect.

A key limiting factor in the initial phase of the recovery was testing requirements. Testing requirements as well as other COVID-19-related requirements can make it cumbersome to travel internationally. If they reemerge, they could again become a challenge and a barrier to the revival of the aviation and tourism sectors in the region.

In the first few months of the recovery phase, it became increasingly important to think about resurrecting passenger confidence to fly. This could not have been achieved without the permanent removal of all testing and all other COVID-19-related requirements, which creates a flight experience that is bureaucratic and unwelcoming.

As international travel in Southeast Asia resumed, travelers preferred destinations with the least resistance. By the end of May 2022, Southeast Asian countries generally eliminated restrictions and requirements. However, some restrictions and requirements lingered, impacting the demand in some markets. This was particularly the case in some countries in other regions as restrictions remained, making it hard to travel including to or from Southeast Asian countries.

The outlook for international travel in Southeast Asia is now positive assuming governments do not reimpose testing and other requirements. In Q2 2022, Southeast Asian countries moved faster than generally expected with relaxing border restrictions and COVID-19-related travel requirements. This resulted in a recovery of international traffic in Q2 and Q3 2022 which was faster than expected. However, this only marked the first phase in the recovery of international traffic for Southeast Asia. Air travel must continue to become less cumbersome and more normal. A full recovery in passenger confidence and traffic levels could take years.

With the ease of travel restrictions in Southeast Asian countries, there has been a big surge in travel demand. This surge is visible in initial traffic figures for air- and accommodation-related Google search volumes. Bookings in the last three quarters of 2022 picked up significantly, and forward bookings for early 2023 are relatively strong. In many Southeast Asian countries, bookings and searches that were made in the month after borders reopened were stronger than pre-COVID-19 levels. While this does not lead to a full recovery as the bookings were spread out over several months, it indicated there is significant pent-up demand for travel in the region, and people's interest in travel rose significantly with relaxed travel restrictions.

Reopening of the People's Republic of China

The PRC is a vital market for the Southeast Asian aviation sector, and it will be hard for the region to fully bounce back to pre-COVID-19 levels until outbound tourists of the second-largest economy in the world begin to travel internationally again. Southeast Asia was rapidly opening up in Q2 2022; however, it is not clear when outbound tourists from the PRC will fully come back. The recovery in Southeast Asia will be slower for markets such as Cambodia, Thailand, and Viet Nam, where inbound tourists from the PRC contributed a big part of their tourism and aviation sectors pre-COVID-19.

Reference to Past Global Crises and Lessons Learned

The COVID-19 pandemic has hit global economies hard, but over the years, there have been other crises that have had similar economic impacts including wars, pandemics, and financial crises. In assessing the potential speed of recovery from COVID-19, it could be valuable to look at some lessons learned, and effective measures taken following earlier crises. The crises selected include the Gulf War (1990), the 9/11 terrorist attack (2001), the severe acute respiratory syndrome (SARS) outbreak (2003), the global financial crisis (2008), and the swine flu pandemic (H1N1) (2009). These crises were selected because of their impact on air travel. Although their impact is different from COVID-19, significant lessons can be learned from them. Historical data of past global crises show that global airline traffic needed a maximum of 3 years to recover despite the adverse impacts of the crisis (Figure 7).

Through analyzing the recovery pathway of global passenger traffic during past crises, COVID-19 has a significantly higher infection rate and global impacts. The magnitude of COVID-19 impacts on the aviation sector is likely to be much greater than in previous crises and the industry will, at best, fully recover by the fourth year of the pandemic.

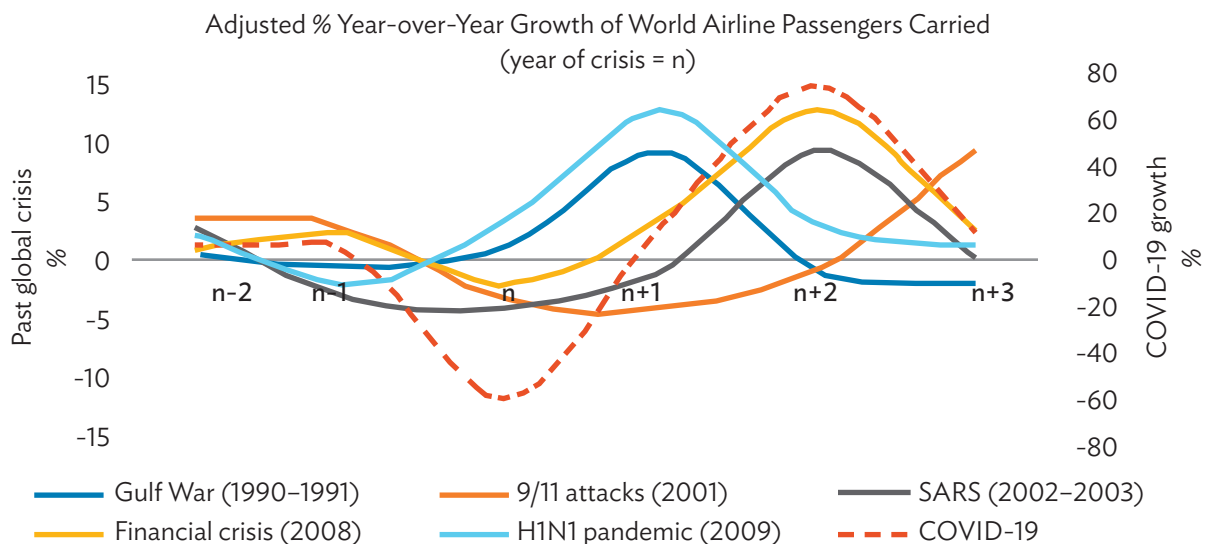
The Figure 7 analysis looked at the year over year (Y-O-Y) growth of global scheduled passenger traffic for the selected past crises. During normal times, passenger traffic grows at a rate of about 1.5 times the world GDP. The growth rate was adjusted by excluding the GDP growth to focus on the pure impact and recovery of these crises.

Ramping Up Operational Readiness

Airline capacity restoration in Southeast Asia picked up significantly in Q2 2022 as the region started recovering from COVID-19 and reopened borders. In June 2022, domestic seat capacity in Southeast Asia reached about

Figure 7 Adjusted % Year-over-Year Growth of Scheduled Global Passengers Traffic
(year of crisis = n)
(%)

Past Global Crisis	Crisis Year (n)	n-2	n-1	n	n+1	n+2	n+3
Gulf War (1990–1991)	1990	0.80	(0.61)	1.33	9.11	(0.71)	(1.79)
9/11 attacks (2001)	2001	3.23	2.79	(3.10)	(3.87)	(0.62)	9.04
SARS (2002–2003)	2002	2.79	(3.10)	(3.87)	(0.62)	9.04	0.38
Financial crisis (2008)	2008	0.80	2.29	(1.90)	3.57	12.50	2.91
H1N1 pandemic (2009)	2009	2.29	(1.90)	3.57	12.50	2.91	1.32
COVID-19	2020	6.4	3.6	(60.0)	17.5	76.6	13.25



(-) = negative, COVID-19 = coronavirus disease, H1N1 = swine flu, SARS = severe acute respiratory syndrome.

Source: Authors based on data from International Civil Aviation Organization, International Air Transport Association (IATA), World Bank (for COVID-19 n+3, IATA's June 2022 forecast was used).

90% of pre-COVID-19 levels, while international seat capacity was at about one-third of pre-COVID-19 levels (compared to June 2019).

While most countries in the region quickly lifted their travel restrictions and requirements, airlines and airports only gradually picked up their international capacity. Domestic capacity was restored much quicker and in some Southeast Asian markets was above pre-COVID-19 levels by mid-2022.

The gradual return of international capacity is partly demand driven as it will take time for international travel demand to recover, particularly with restricted travel numbers from the PRC. While there has been strong demand in certain segments of the market (such as outbound leisure) and on certain routes, overall demand for international travel in Southeast Asia is still well below pre-COVID-19 levels. International passenger traffic in Southeast Asia overall may only reach 70% of 2019 levels in Q1 2023, although in certain markets—such as Singapore—traffic will have reached 70% by the end of 2022.

Table 36 Impact Analysis of Global Crises

Global Crisis	Bounce-Back Year	Analysis
Gulf War	n+1	This crisis led to a short-term impact at the time of the crisis. It mainly affected the countries and region involved. There was growth in the year of the crisis and a bounce back a year after the crisis.
9/11	n+3	Global passenger traffic suffered a reduction over 3 years (2001–2003) before returning to its precrisis level in 2000. The United States experienced a significant loss in traffic demand and revenue while other regions were less impacted.
Severe acute respiratory syndrome (SARS)	n+2	Monthly international passenger traffic returned to its precrisis level within 9 months after the SARS outbreak . However, after adjusting the growth rate, the full recovery of global airline traffic took 2 years. There was a significant short-term loss of traffic in Asia while other regions were not significantly impacted.
Financial crisis	n+2	There was a marginal drop in global passenger traffic of 1.9% compared to 2007, with a bounce-back recovery in n+2.
H1N1	n+1	The impact of this crisis was not very significant and hard to gauge as it came just after the global financial crisis. There was a 3.6% increase in passenger traffic during the year of this crisis, which is unusual for a crisis year, but this was the initial recovery year following the global financial crisis in 2008.
Coronavirus disease (COVID-19)	n+4	The unprecedented COVID-19 pandemic has caused major disruption and heavy economic losses to the aviation industry due to the double hit from travel restrictions and economic fallout. Global passengers can bounce back to 2019 levels by 2024–2025, which is slower than previous crises.

H1N1 = swine flu, SARS = severe acute respiratory syndrome.

Source: Authors based on data from various sources including International Civil Aviation Organization (ICAO), International Air Transport Association (IATA), and World Bank.

The gradual return of international capacity is also partially supply driven as it takes time for airlines and airports to rebuild capacity. In some Southeast Asian markets, demand exceeded capacity in Q2 and Q3 2022, leading to high load factors and high fares for passengers that did not book their trips early. During the pandemic, airlines, airports, and other types of companies in the ecosystem (such as ground handlers) laid off a significant portion of their workforce to reduce fixed costs. It takes time to bring back prior workers and retrain, particularly pilots. For many jobs, there are not enough former workers that are willing to return and new employees must be recruited. It takes significant time to recruit (particularly in countries that rely on overseas workers), train new workers, and get them familiar with operations, especially given the changes in operations since pre-COVID-19. In addition, after having learned their lessons from the pandemic, some industry leaders are taking a progressive approach to gearing up and prefer to be able to switch to a more conservative posture in case of sudden changes.

Reactivating aircraft is also a slow process and for some Southeast Asian airlines has not been done fast enough to keep up with demand in their home markets. There has been a shortage of slots and capacity at aircraft maintenance facilities since the market started recovering. Securing hangar slots and the parts needed to reactivate aircraft has been challenging, particularly for airlines with weak balance sheets. Some aircraft require significant work and investment to reactivate as they have been sitting idle in hot and humid conditions for 2 years. While some Southeast Asian airlines have been able to reactivate their entire fleet, it could take several more months and even years for some airlines to achieve this.

Overall, Southeast Asia has been able to cope with workforce constraints and related issues relatively well compared to other regions. Airports in Southeast Asia avoided the chaotic scenes that emerged at airports in other regions throughout Q2 2022. Airports and the overall aviation sector in Southeast Asia have been more proactive in managing labor force issues to avoid meltdowns. However, there are workforce constraints in several areas, resulting in longer than normal queues and lower than normal service standards at some Southeast Asian airports. Airports are hoping to maintain high service standards, but this will require continued investment in boosting the workforce—including hiring and training—across the airport ecosystem.

Airlines will also need to invest in hiring and training new crew to keep up with demand as traffic continues to recover. Southeast Asian governments can facilitate the recovery by putting in place policies and programs aimed at making the aviation sector attractive for employees. Retaining skilled aviation workers has been an issue as other industries have become more attractive. The Southeast Asia aviation sector will need to increase recruitment as well as retention efforts or risk not being able to handle the recovery and anticipated growth.

At the same time, the Southeast Asia aviation sector needs to be prepared for a potentially long period of high volatility with possible rapid increases or decreases in demand. There needs to be sufficient flexibility and support to ensure the resources are in place to deal with spikes in demand as well as any new downturns. If there are new downturns, staffing levels may need to be maintained along with investments in training to avoid any future implications.

Recommendation 1:

Southeast Asia's aviation sector should increase investment in recruiting, training, and retaining workers. Southeast Asian governments need to put in place policies and programs to facilitate this, enabling the aviation sector to keep up with the recovering demand and deal with potential volatility.

Safety Standards

In Southeast Asia—although the safety of aviation is generally close to international levels—there is a concern relating to government safety oversight of airlines and airports in certain countries. Travelers in such countries must therefore rely on airlines themselves to maintain safety standards where oversight is lacking.

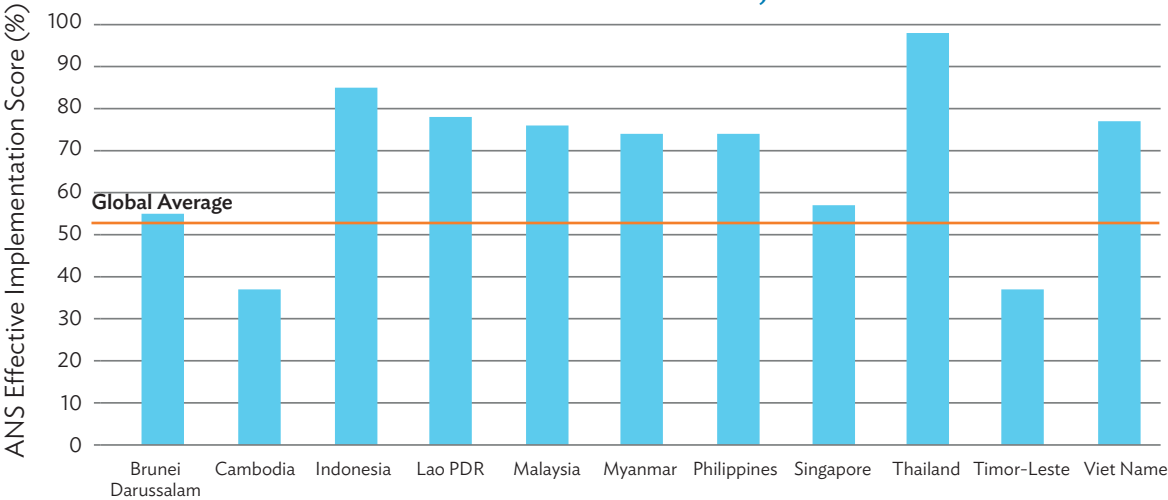
According to the International Civil Aviation Organization (ICAO), although Southeast Asia has a strong focus on aviation safety, there is an imbalance among countries in the region in terms of the ability of the government to implement international aviation safety standards. The effective implementation score of Southeast Asia is 69.21% as of 2019, slightly higher than that of the global average (68.88%) and Asia and the Pacific averages (64.18%), according to ICAO data. Major aviation markets such as Malaysia, the Philippines, and Singapore generally have an effective implementation score higher than the global average. Singapore has been providing air traffic services with the highest standards of safety and efficiency, following international law and ICAO standards and practices. Meanwhile, the scores of other countries in the region are relatively low, especially in smaller markets such as Brunei Darussalam, Cambodia, and Timor-Leste (Figure 8).

Pre-COVID-19, the accident rates for Southeast Asia were consistently slightly above global average rates; however, this changed in 2018 with accident rates in Southeast Asia aligning with the global average, according to ICAO data (Figure 9).

According to a survey conducted by ICAO in 2018–2019 among countries in Asia and the Pacific, the top needs in aviation safety of Southeast Asian countries are State Safety Program implementation, aerodrome certification, qualified technical personnel, and technical guidance tools and provisions of safety-critical information. During this period, the growth of the aviation industry in the region—together with complexities created by COVID-19—has spurred more safety risks and safety-related needs among Southeast Asian countries.

Safety facilities first need to serve the growing aviation demand, particularly in less developed industries. While governments have been developing facilities and equipment based on the international standards of ICAO, they have lagged in the development of air navigation safety facilities and airport security equipment required for safe operation, making aircraft aviation safety a recurring problem. In Indonesia for example, while aviation operations are spread across the country, there are not enough maintenance repair and overhaul (MRO) hangars to ensure sufficient aircraft quality, particularly outside major cities.

Figure 8 Effective Implementation Score of Air Navigation System of Southeast Asian Countries, 2019

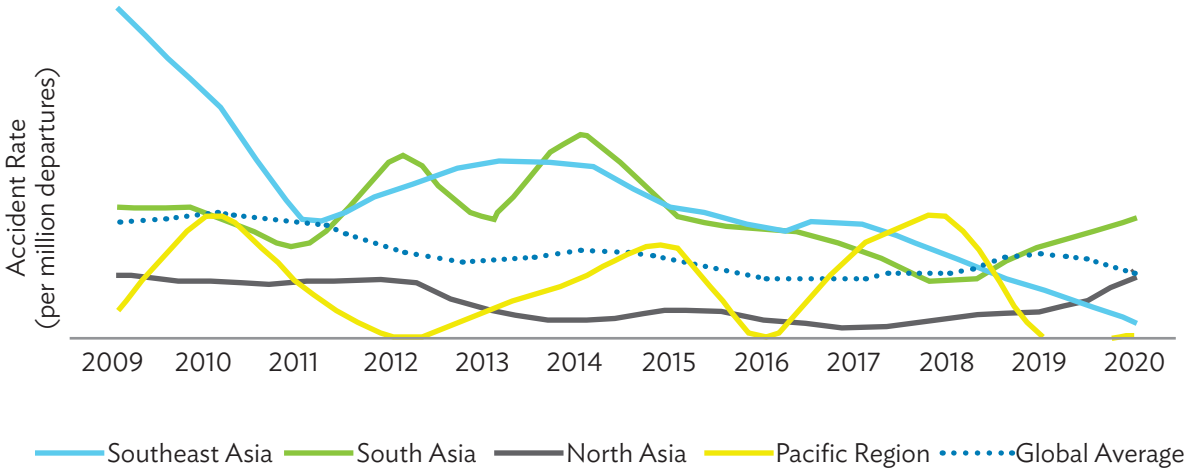


ANS = air navigation system, Lao PDR = Lao People's Democratic Republic.
Source: International Civil Aviation Organization.

Aircraft that were grounded during the pandemic require significant maintenance and several million dollars in parts as many of these aircraft were cannibalized. However, airlines in several markets lack sufficient funds to cover this maintenance and the parts that are required.

Generally, the pandemic has exacerbated safety-related concerns across many areas including oversight and pilot training. Pilots flew significantly less during the pandemic, and some pilots did not fly at all. It will take time and significant investment for these pilots to rebuild their skills.

Figure 9 Accident Rate of the Asia and Pacific Subregions, 2010–2020



Source: International Civil Aviation Organization Asia Pacific Region Annual Safety Report 2021.

Government oversight is a concern due to budgetary constraints. Several Southeast Asian countries already were suffering from insufficient levels of oversight, including an insufficient number of inspectors, pre-pandemic. Staffing levels were reduced during the pandemic, and there was not much training. Southeast Asian countries now need to focus on hiring and training to ensure sufficient aviation oversight. This is particularly important as some countries are keen to pass aviation safety audits by the US and European authorities, which are required to restore safety rankings and enable their airlines to launch, resume, or add flights or codeshares in these markets.

A lack of qualified technical personnel is another concern. Some workers—after a long period of unemployment or pay cuts—have either moved to other less volatile industries, lack motivation and willingness to come back, or no longer possess the required skills and capability to return to the aviation sector. Some highly qualified workers—including expatriate pilots and operational personnel—left the region during the pandemic for jobs in markets that recovered faster.

For many jobs, new employees must be recruited, but it takes significant time to recruit and train new workers and get them familiar with operations, especially with changes in operations since pre-COVID-19. This—together with the lack of practical experience of furloughed personnel after long periods out of work, slow responses during routine tasks, and limited access to simulators and training centers—has led to increased numbers of basic mistakes by operational personnel.

The mental well-being of operational personnel is a contributing factor in the emerging risk, according to ICAO. This is due to long inactivity periods or reduced flight hours during the pandemic as well as perceived future uncertainties.

Recommendation 2:

Southeast Asian countries should increase their focus on aviation safety, ensuring that there are sufficient oversight resources and that they comply with all international safety standards.

Air Navigation Systems

In addition to safety-related aspects, the air navigation system is of essential importance in maintaining operational efficiency to keep up with robust growth in travel demand, while reducing environmental impacts such as fuel burned and carbon dioxide (CO₂) emitted from air traffic congestion.

For less developed aviation markets in Southeast Asia—such as the Lao PDR—there are challenges associated with their underdeveloped air navigation system infrastructure. While the development of aviation facilities and equipment in these countries is built based on ICAO international standards, the air navigation safety facilities and airport security equipment required to prevent terrorism lagged, posing more concerns about the safe operation of aircraft. For local airports where there are insufficient radio facilities, flights are operated with low-precision instruments and visual observation, increasing the risks from upheavals, including unpredictable weather changes. Post-COVID-19, with the rapid recovery of air travel demand, it is even more crucial for Southeast Asian governments to take improvement actions on their air navigation facilities.

Acknowledging the unprecedented growth of the Asia and Pacific aviation sector, in 2019, the Asia/Pacific Seamless Air Traffic Management (ATM) Planning Group and ICAO initiated the Asia/Pacific Seamless Air Navigation Services (ANS) Plan, a forward-thinking effort to modernize the ATM system and related services to match the capabilities and future performance requirements of aircraft models. However, up until 2022, the progress of this plan had been stagnant, mainly due to uneven support and commitment among the member countries.

Southeast Asian governments have also made efforts to improve and enhance the quality of their air navigation systems. For example, Malaysia's Ministry of Transport expects that the new \$150 million air traffic control center in Kuala Lumpur will facilitate an increase in flight movements from 84 to 108 aircraft per hour, fully utilizing all three runways simultaneously at Kuala Lumpur International Airport. Singapore and Indonesia, in early 2022, completed an agreement to address long-standing issues over airspace management.

Southeast Asian countries are facing funding issues that could delay upgrades to air traffic control systems or air navigation infrastructure. This presents a genuine threat to the ongoing growth and viability of the regional air transport sector, and unless addressed, will impair the region's competitiveness and restrict economic growth and job creation. These issues must be resolved, potentially with support from DFIs.

While financial support is essential, other aspects such as capacity building and collaborative technical assistance (e.g., in-depth studies on the ANS landscape of the region to warrant attention from governments) are also needed. Partnerships between financiers and other aviation key stakeholders—including regional partners—are also critical to ensure efficient implementation across the region.

Recommendation 3:

Southeast Asian countries should continue to invest in upgrading their air navigation systems to ensure there is sufficient capacity to keep up with future demand and consider alternative funding options to avoid delays in implementing upgrades due to budget constraints caused by the pandemic. Southeast Asian countries should also continue to work on coordinating their air navigation systems to ensure a higher level of efficiency and improve the overall use of airspace.

The Financial Outlook for Southeast Asian Airlines and Related Trends

The outlook for the Southeast Asian airline sector has improved considerably, with some airlines reporting profits in 2022. While international passenger revenues are still well below pre-COVID-19 levels, they improved dramatically following the reopening of borders and easing of travel restrictions. Domestic passenger revenues are, in many cases, back to pre-COVID-19 levels, and cargo revenues are at or near record highs.

However, most of the main airlines or airline groups in Southeast Asia rely on the international passenger segment to generate a majority of revenues. Except for those airlines that rely predominantly or entirely on the domestic market, total revenues will not fully recover until international passenger traffic reaches or nears pre-COVID-19 levels, which is not likely for some time.

Most airlines in Southeast Asia restructured during the pandemic, resulting in significant cost reductions in several areas including aircraft leases. This enabled some airlines to generate profits in 2022 despite total revenues being below pre-COVID-19 levels and fuel cost increases. However, most airline or airline groups in Southeast Asia remained unprofitable and were unlikely to turn an annual profit in 2022.

Financial prospects are brighter if the international passenger market fully recovers, especially if traffic to and from the PRC resumes. Some airlines have achieved a permanent reduction in some costs which should make it easier to generate profits once revenues fully recover.

Some of the cost reductions achieved are not permanent and will gradually revert. For example, several Southeast Asian airlines or airline groups have negotiated temporary reductions in monthly aircraft lease payments that will expire, resulting in the resumption of 100% payments. Some airlines also negotiated power by the hour arrangements, which temporarily allowed payments based on the hours an aircraft is operated. Some of these have expired or will expire by 2023, resulting in the resumption of typical monthly aircraft lease payments.

For 2 years, several Southeast Asian airlines did not make any aircraft leasing payments or made only very small payments. While payments have since resumed, it will take time for airlines to make up for the lost payments and resume full monthly payments. In many cases, aircraft leases have been extended to help make up for the lost payments, which impacts re-fleeting plans as well as aircraft maintenance costs.

Several airlines also need to make up for missed payments with other suppliers. While some airlines cut debts as part of bankruptcies, most airlines in Southeast Asia pursued out-of-court restructurings, resulting in agreements with creditors that involve gradually increasing payments. Airlines will also have to contend with payments related to new debt that had to be added during the pandemic to boost liquidity and survive the crisis. High debt levels could make it hard for airlines to generate profits—or a sufficient profit margin to cover return on investment—for several years even with a full recovery of revenues.

There are also costs associated with ramping up operations. Several Southeast Asian airlines cannibalized aircraft during the pandemic as they lacked the cash to pay for parts to support their active fleet. Market conditions have since improved, generating the demand for reactivated aircraft. But reactivating cannibalized aircraft can be extremely expensive and—often—aircraft parts and maintenance suppliers require up-front payments given the issues they had in collecting payments from airlines during the pandemic. Several Southeast Asian airlines have not been able to reactivate aircraft as quickly as they would like. The cost of reactivating aircraft is likely to increase further as the aircraft that remain grounded are the aircraft that require the most work and have been cannibalized the most. Many of these aircraft are not in good condition as they have been in hot and humid conditions for over 2 years. Repairing and restoring these aircraft is inescapable as even if airlines do not keep them, they will have to be in good condition before being returned to leasing companies.

There are many other costs associated with ramping up operations, including training. During the pandemic, Southeast Asian airlines were not able to keep all their pilots or keep all their pilots flying the minimum hours required to maintain currency. As airlines add back flights and reactivate aircraft, they need to cover retraining costs as well as train new hires. Recruiting pilots also has become challenging. Many of the pilots that were working in Southeast Asia pre-pandemic found jobs in other regions that recovered much earlier. These pilots are often not interested in returning to Southeast Asia, and the global pool of pilots is limited with Southeast Asian airlines competing against airlines in other regions that benefited from an earlier recovery, are in a better financial position, and generally have more attractive compensation packages. These issues are not just limited to pilots, but also other specialized positions that require experienced personnel and training. Southeast Asian airlines should be able to hire and train enough employees to restore capacity to pre-COVID-19 levels, but the cost of this will be significant, impacting profitability.

Fuel is another escalating cost. While in theory airlines can pass this on to consumers by charging higher airfares and/or introducing fuel surcharges, in Southeast Asia this is usually not possible as passengers are very price sensitive. Competition is also intense, and if some airlines continue to offer low fares to stimulate demand or as part of a strategy to increase market share, competitors cannot afford to increase fares.

Overcapacity and irrational competition remain major concerns for the Southeast Asian airline sector in the post-pandemic era. This was not an issue in the first several months of the recovery due to a supply-demand imbalance, which led to high airfares and rational competition. However, this imbalance is expected to end sometime in 2023 given the gradual restoration of capacity and an anticipated reduction in demand.

The Southeast Asian airline sector was already unprofitable pre-pandemic and was underperforming from a profit perspective compared to the global average. While traffic grew rapidly in the several years before the pandemic, several Southeast Asian markets suffered from overcapacity and irrational competition, impacting yields and profitability.

There were about 20 Southeast Asian airlines that were publicly traded pre-pandemic, including affiliates or subsidiaries of airline groups. More than half of these airlines incurred cumulative operating losses in the 7 years (most individual, as well as combined) pre-pandemic (2014 to 2019), including in 2019.

Market conditions began deteriorating in 2014 due to overcapacity as the rate of expansion outpaced demand in many markets. Overcapacity continued to be an issue for several years although the severity varied depending on the market and the year. While Southeast Asia had one of the fastest-growing air transport markets, much of this growth was stimulated by very low fares which made it difficult to achieve profitability. Competition intensified due to aggressive expansion by competitors as well as the launch of new airlines in some markets.

Market conditions in the post-COVID-19 era are likely to be similar as airlines are eager to resume capacity and growth. While some Southeast Asian airlines or airline groups have shrunk their fleets as part of restructurings, most have kept most or all of their aircraft. Most of the main competitors also still have large order books which will result in a steady stream of aircraft deliveries over the next several years. While some of these deliveries will be used to replace older aircraft or restore fleets to pre-COVID-19 levels, a large share is growth aircraft. Most of the competitors are still committed to long-term growth although there is some flexibility with aircraft deliveries to delay some of this growth.

New competitors are also entering the market, further increasing the risk of overcapacity and irrational competition in the post-pandemic era. Even if demand continues to improve, supply could increase faster in many Southeast Asian markets as airlines are pressured to restore capacity and compete with new entrants.

The total number of airlines in Southeast Asia has increased since the start of the pandemic as there have been very few casualties. The two Southeast Asian airlines that suspended operations were small niche operators. Eight Southeast Asian airlines or airline groups have so far survived court-assisted restructuring processes, including some airlines that were already in a very weak financial position pre-pandemic and may not have survived were it not for the pandemic (Table 37).

Table 37 Southeast Asian Airlines and/or Airline Groups That Have Restructured under Court Supervision

Airline	Country of Domicile	Country of Court Intervention	Status as of November 2022
AirAsia X	Malaysia	Malaysia	Completed
Garuda Group	Indonesia	Indonesia	In progress
Lion Group ^a	Indonesia	France	Completed
Malaysia Airlines ^a	Malaysia	United Kingdom	Completed
Nok Air	Thailand	Thailand	In progress
Philippine Airlines	Philippines	United States	Completed
Thai AirAsia X	Thailand	Thailand	In progress
Thai Airways	Thailand	Thailand	In progress

^a Restructurings only involved part of the company, particularly aircraft leases.

Source: Authors based on public resources and airlines reports.

Creditors and suppliers have generally been very supportive of Southeast Asian airlines during the pandemic, recognizing that liquidation was not in their long-term interest. Support included taking major cuts as part of the court-led restructurings, as well as major concessions that were agreed upon as part of out-of-court restructuring programs implemented by airlines. For many industry suppliers, Southeast Asia is a strategically important market with massive growth potential. If major players collapsed, the Southeast Asian market could be set back by years, significantly limiting the potential for long-term growth. Collapses would have also resulted in aircraft that would have to be remarketed, impacting the global market.

The lack of any significant consolidation during the pandemic makes it harder for the Southeast Asian airline sector to achieve sustainable profitability in the post-pandemic environment. Several Southeast Asian markets were already suffering from too many airlines before COVID-19. While such intense competition is good for consumers, it is not sustainable in the long run.

Since the start of the pandemic, the number of competitors has increased on domestic trunk routes in three of the main domestic markets: Indonesia, Malaysia, and Viet Nam. These markets may now have more airlines than they can sustain. Trunk route competition in Thailand and Viet Nam also has intensified due to rapid expansion during the pandemic by some smaller competitors.

The post-pandemic competitive environment also is being impacted by inequalities that have resulted from some Southeast Asian airlines securing strong government support while others had very limited or no support. The airlines with significant support have generally been able to restore capacity much faster, resulting in much higher market shares in the initial recovery phase for international air travel compared to pre-pandemic. The airlines with significant support were able to maintain higher staff levels during the pandemic, enabling a faster ramp-up once demand started to recover. The support also facilitated a stronger financial position, enabling them to take advantage of opportunities in the post-pandemic marketplace and weaker competitors.

Inequalities have potentially negative long-term implications as they can distort the market and lead to protectionist policies. Some governments now feel compelled to protect their airlines—in some cases to protect their investments in flag carriers or the overall aviation sector—but in some cases, the response to the inequalities puts their airlines at a competitive disadvantage. One common disadvantage of protected national flag carriers is their lack of motivation to create truly competitive service offerings or enhance efficiency, which consequently causes their lack of ability to keep up with technological and operational trends.

The regulatory environment has become more challenging as well as uncertain. Several airlines have struggled to secure slots at major Southeast Asian airports to resume certain flights and routes. Any permanent shift away from the liberalization that emerges in the post-pandemic environment would be a setback, making it harder for the Southeast Asia aviation sector to achieve sustainable profitability.

Inequalities and possible changes in the regulatory environment particularly impact LCCs. While LCCs are generally well positioned as they cater to segments of the market that are recovering faster (short-haul and leisure), it is FSCs that have generally secured more government support and benefit from the unequal and protectionist policies. There are a few exceptions—LCCs that are owned by FSCs—but these account for a relatively small share of the total LCC market. Most LCCs in Southeast Asia are independent and have not had any government support.

LCCs should be the main drivers of air transport growth in the post-pandemic era, as they were in the 2 decades pre-pandemic. But if there are unnatural impediments or an unfavorable regulatory environment, LCCs may not be able to expand or expand at the same rate they were pre-pandemic.

Southeast Asian LCCs gained domestic market share during the pandemic and in the early endemic phase but have been losing international market share. LCCs accounted for about 29% of the total international seat capacity in Southeast Asia in June 2022 compared to 35% in June 2019. The share for independent LCCs was only 18% in June 2022, a drop of 10 percentage points compared to 28% in June 2019.

In the regional international market (within Southeast Asia), LCCs accounted for about 48% of total seat capacity in June 2022 compared to 53% in June 2019. The capacity share for independent LCCs dropped by 10 percentage points, from 39% in June 2019 to 29% in June 2022.

Independent LCCs should be able to close this gap and eventually again gain international market share. This is only possible with equal opportunity and a liberal regulatory environment.

Recommendation 4:

Southeast Asian governments should consider providing industry generic support packages to help all airlines recover from the financial impact of the pandemic and reduce debt levels. Financial assistance or restructuring support for any specific airline should be examined carefully on a case-by-case basis to ensure that fair industry competition can be maintained.

Recommendation 5:

Southeast Asian governments should continue to work on adopting liberal aviation policies and avoid protecting their airlines, facilitating growth and a healthier aviation sector over the long term.

The Role of Association of Southeast Asian Nations

The Association of Southeast Asian Nations (ASEAN) includes all Southeast Asian countries except Timor-Leste, which has been seeking membership in the bloc since 2011, and in November 2022, secured in-principle approval to become the 11th member of ASEAN. ASEAN has had 10 member countries since 1999 when Cambodia joined. The Lao PDR, Myanmar, and Viet Nam also became members in the 1990s, joining Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore, and Thailand.

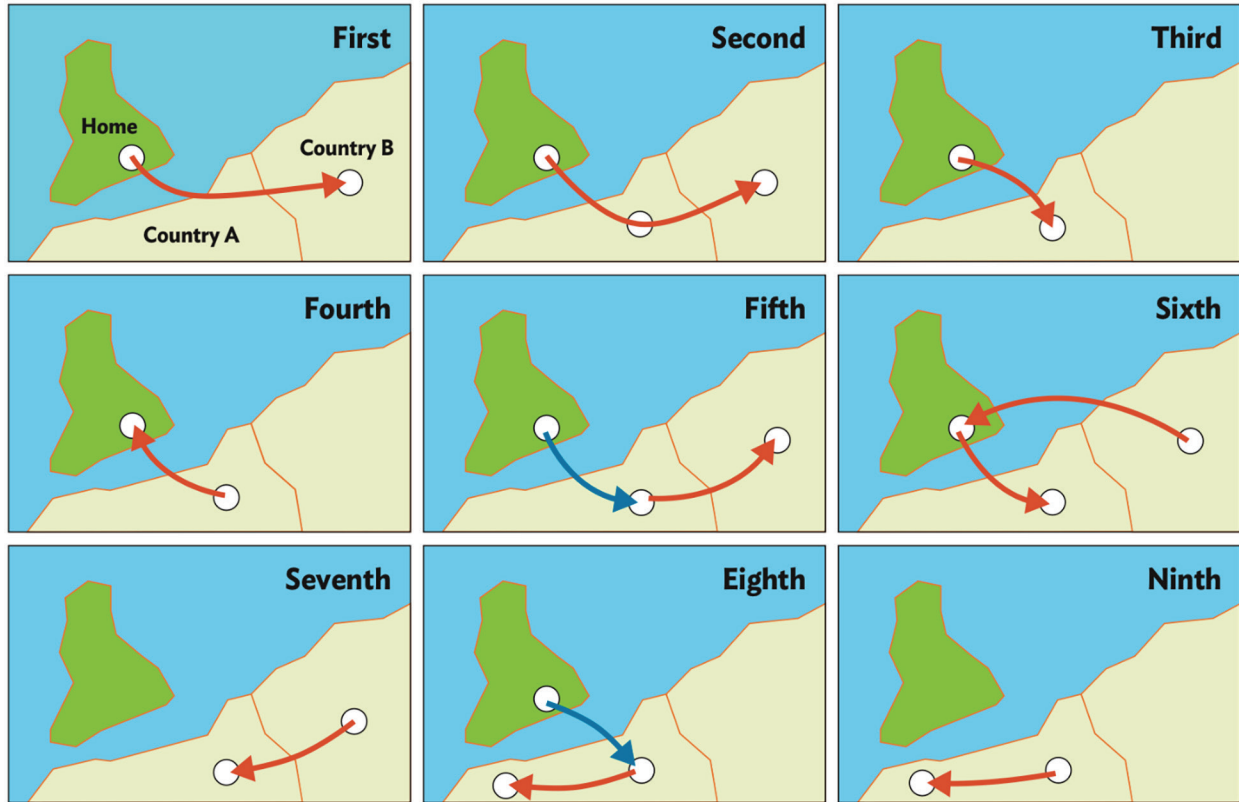
The ASEAN Secretariat has been involved in air transport for several decades. It serves as a platform for cooperation between the region's aviation authorities with regular meetings on key issues such as safety, security, and air traffic management. In aviation safety and security, ASEAN works with European Aviation Safety Agency, ICAO, and other organizations on oversight and harmonization of regulations. In air traffic management, ASEAN facilitates an air navigation master plan for the region and has a new area focusing on the impact of drones.

There are several regular workshops and seminars aimed at improving ASEAN's aviation capability through capacity building and information sharing. ASEAN facilitates regular meetings with airlines through the semi-annual ASEAN Airline Meeting and is looking at reintroducing a similar regular meeting for airports. There are several aviation related initiatives in ASEAN's 20-year Transport Strategic Plan.

ASEAN has also been active in pursuing the liberalization of air services through multilateral agreements. An initial multilateral agreement on the liberalization of services was signed by member countries in 2009. While cargo was fully liberalized from the first phase, initially only passenger flights between capital cities were liberalized. The liberalization of passenger flights between secondary cities was finally implemented in 2016.

Airlines from member countries have since had unlimited third, fourth, and fifth freedom rights. This, in theory, enables airlines to operate unlimited flights starting at any airport in their home country and any ASEAN airport. While the agreement is often referred to as the ASEAN "open skies," it falls short of full open skies as seventh, eighth, and ninth freedom rights were not included. Without eighth or ninth freedom rights, ASEAN airlines are not able to operate domestic services outside their home country as they are in the European Union (EU). Without seventh freedom rights, LCCs cannot base an aircraft in other ASEAN countries as they do in the EU. ASEAN airlines also have not been able to launch fifth freedom routes that involve backtracking or are not straight lines (Figure 10). In one example, a Malaysian carrier was unable to secure rights to operate a flight from Singapore to Yangon that started in Kuala Lumpur.

So far ASEAN's "open skies" agreement has not had any impact on the market. Virtually no fifth freedom rights within ASEAN have been launched since the implementation of the agreement. By the time the agreement was fully implemented, there were limited opportunities for fifth freedom routes due to slot restrictions at several of the major ASEAN airports, which make it difficult to launch fifth freedom routes that could be potentially viable. Overcapacity and intense competition on routes within ASEAN were also common by the time the agreement was implemented, making it hard for airlines to commercially justify using new fifth freedom rights.

Figure 10 The Nine Rights of Freedom in Aviation

Source: Civil Aviation Authority of Singapore.

In addition, Southeast Asia's leading LCC groups had already established joint ventures in other ASEAN countries, enabling them to earlier launch many of the routes they would be able to operate using fifth freedom rights. Several ASEAN countries also already permitted fifth freedom rights on a bilateral basis. The fifth freedom rights provided by the multilateral agreement were therefore essentially moot and, as the agreement did not provide seventh or eighth freedom rights, there was nothing new of significance.

In the decade pre-pandemic, ASEAN was also active in pursuing multilateral agreements with other countries or blocs. An agreement with the PRC was signed in late 2010, initially resulting in unlimited third and fourth freedom rights between ASEAN and the PRC. Fifth freedom rights were added in 2014 but were limited to a list of mainly secondary or tertiary cities on both sides. With the main cities excluded, the ASEAN-PRC agreement did not have an impact, and there have been no examples of fifth freedom routes launched since its implementation.

In June 2021, ASEAN signed an agreement with the EU, representing the world's first bloc-to-bloc agreement. This agreement—which was concluded in October 2022—provides unlimited third and fourth freedom passenger rights for airlines from ASEAN and EU countries as well as fifth freedom rights capped at 14 per week for each airline. There is no limit on cargo flights.

The ASEAN-EU agreement—which came after several rounds of negotiations over several years—is being implemented as of 2022. But while it is a noteworthy achievement for ASEAN-EU relations, the multilateral air transport agreement is not likely to have a significant impact. The ASEAN-EU market is already relatively liberal with limited or no restrictions on third and fourth freedom rights between individual countries based on bilateral agreements. Several bilateral agreements also already provide fifth freedom rights.

While a few new fifth freedom routes could be launched that were not possible previously, it is unlikely there will be a significant expansion of direct services between ASEAN–EU in the post-pandemic era. Competition in this market intensified in the decade pre-pandemic due to aggressive one-stop competitors, primarily from the Middle East and Türkiye. Such competition will continue in the post-pandemic environment. The objective of the ASEAN–EU agreement is to enable ASEAN and EU carriers to compete more effectively against airlines from other regions, but it does not offer much and will not alter the overall market environment. ASEAN carriers have generally been reducing their presence in the EU—or even exiting the market entirely—and fifth freedom rights won't prompt them to relook at this market.

There have also been discussions between ASEAN and several countries in Asia and the Pacific. As of 2022, there are ongoing air transport agreement negotiations with Japan, New Zealand, and the Republic of Korea. ASEAN is keen to start negotiations with India, a critical market for the Southeast Asian aviation sector that has been constrained by traffic rights issues, but so far India has not been interested.

While so far multilateral or open skies agreements have not had an impact, it is still worthwhile for ASEAN to continue to pursue liberalization on a multilateral basis. If ASEAN countries in the future agreed to adopt a single air transport market and true “open skies” within ASEAN, there would be a significant impact. Although not every airline would benefit, the overall market would benefit from increased competition, resulting in more rapid traffic growth for the entire region. There would be a potential economic benefit for every Southeast Asian country as well as the whole region.

New multilateral agreements with other blocs or countries could also have an impact depending on the details of these agreements. So far there has been a reluctance in Southeast Asia to fully embrace air transport liberalization despite the clear economic benefits. Pre-pandemic, several countries were reluctant to adopt liberal policies and while agreeing to sign multilateral agreements at the ASEAN level they insisted on carveouts or exclusions that essentially protected their carriers. During the pandemic and in the early phases of the endemic era, some Southeast Asian countries became even more protective of their local carriers, particularly government-owned flag carriers. This may be temporary as more liberal policies emerge in Southeast Asia, both on unilateral as well as bilateral and multilateral bases. The ASEAN Secretariat could play an important role in advocating and facilitating such policies in the post-pandemic era.

The ASEAN Secretariat could also assume an important role in improving cooperation and coordination between Southeast Asian countries to facilitate recovery in international air travel. This could include harmonizing air travel protocols and policies. For example, slot policies are ununiform and have been an area ASEAN has been looking to potentially address.

During the pandemic, air travel protocols and requirements varied significantly across Southeast Asia, and there was virtually no harmonization or uniformity. ASEAN did not succeed at addressing this issue despite some discussions and agreements that were never implemented. This impacted the ability of Southeast Asia's aviation and tourism sectors to recover, and as a result, Southeast Asia fell behind other regions.

For example, an ASEAN air travel corridor which was initially announced in November 2020 never materialized. The corridor would have established a multilateral framework for quarantine-free business travel during the pandemic to expand the arrangement to include leisure travel in a subsequent phase. There were a few short-lived bilateral examples of quarantine-free business travel schemes in Southeast Asia, such as reciprocal green lanes, but nothing was achieved on a multilateral basis. The multilateral air travel corridor initiative moved very slowly for a year and a half before it became moot as borders reopened.

Efforts to establish a common ASEAN vaccine passport—which was initially discussed in 2021—also never succeeded. Vaccine recognition and verification in Southeast Asia became an issue in Q1 2022 with examples of some Southeast Asian countries rejecting passengers that had arrived from another Southeast Asian country

as they would not accept their vaccine certificate. This issue essentially became moot in Q2 2022. While a multilateral solution was never implemented, some Southeast Asian countries adopted bilateral solutions and some countries unilaterally adopted new vaccination recognition policies that made it easier for all vaccinated travelers. However, vaccine recognition and verification issues continued with some countries in other regions refusing to permit all vaccinated travelers from some Southeast Asian countries. All these issues generally became moot as policies, regulations, or protocols were relaxed, but there is a concern they could return in the future if new, more contagious variants emerge.

While ASEAN was largely ineffective during the pandemic from an air transport perspective, this does not mean it will not be able to assume a significant role in air transport in the post-pandemic era. ASEAN should still aim to become a platform for both liberalization of air transport and the harmonization of air travel protocols and policies. Lessons can be learned from the pandemic as well as pre-pandemic, resulting in a more meaningful role in the post-pandemic era.

Southeast Asia's aviation industry would benefit if all Southeast Asian countries worked more on a multilateral basis. The ASEAN Secretariat is the ideal—and realistically the only—platform to achieve multilateral solutions.

Recommendation 6:

Southeast Asian countries should work together under ASEAN to pursue more multilateral air transport agreements and ensure air travel protocols and policies are harmonized.

Impact of Air Cargo

While passenger traffic in Southeast Asia was decimated for 2 years by border restrictions, air cargo experienced a much more modest reduction and was back to pre-COVID-19 levels by the end of 2021. Cargo yields were also high, resulting in crucial revenue throughout the pandemic that provided Southeast Asian airlines with a lifeline that helped offset the huge reduction in passenger traffic during a turbulent time. Several Southeast Asian airlines used passenger aircraft to transport cargo during the pandemic, providing critical capacity to keep supply chains moving.

Globally, nearly half of all air cargo before COVID-19 was carried on passenger flights using aircraft bellies, but in Southeast Asia, the reliance on bellies is even stronger, at around 85%. The use of passenger aircraft as freighters became common globally during the pandemic to fill the void from the huge reduction in passenger flights. Southeast Asian airlines were particularly large participants in this trend as they have very few dedicated freighters. Generally, Southeast Asian airlines also continued to use passenger aircraft as freighters for longer than airlines in other regions. In Q2 and Q3 2022, some passenger aircraft continued to be used as freighters in Southeast Asia although the number was reduced significantly as international passenger flights resumed.

Southeast Asia is leading e-commerce growth, with e-commerce spending projected to double from \$174 billion in 2021 to \$363 billion in 2025, according to a forecast from Google, Temasek Holdings, and Bain & Company. Although the precise contribution to air cargo traffic is difficult to quantify, the rapid expansion of e-commerce is expected to boost air cargo growth in the Southeast Asia region in the coming years.

E-commerce sales reached \$220 billion in 2021 with Indonesia accounting for the largest share with \$53 billion in e-commerce revenues, according to Cargo Facts Consulting. There is huge growth potential for Indonesia's domestic air cargo market given Indonesia's vast size and archipelagic geography. However, this growth could be constrained as consumers in Indonesia are very price sensitive, and rising fuel prices make it challenging for air cargo operators, particularly as they rely heavily on older, fuel-inefficient aircraft.

Thailand is the second largest e-commerce market in Southeast Asia, with \$21 billion in sales in 2021, followed by Malaysia (\$14 billion), Viet Nam (\$13 billion), and the Philippines (\$12 billion). Singapore generated \$7 billion in e-commerce sales in 2021 but has by far the highest e-commerce market penetration rate at 12% compared to 3%–6% for other Southeast Asian countries. The overall penetration rate is well below the global average. For example, the e-commerce penetration rate is 19% in the US, 18% in the PRC, 10% in Japan, and 9% in Australia. This highlights the opportunities for e-commerce to drive air cargo growth in Southeast Asia as e-commerce becomes more popular and as the region's middle-class population continues to grow.

Most of this growth will be on regional routes within Southeast Asia (domestic and international) and between Southeast Asia and the PRC, the source of cross-border e-commerce. Therefore, there are huge opportunities for Southeast Asian carriers. Some Southeast Asian airlines have started taking on narrowbody freighters to increase their capability to cater to rising e-commerce demand on regional routes. The narrowbody freighter fleet—which consists of only 40 aircraft—could easily double in size over the next decade. Most of the narrowbody freighter fleet will also need to be replaced as the fleet predominantly consists of older generation 737s that are at least 20 years old.

Overall, there is a huge opportunity for the Southeast Asian aviation sector to boost air cargo revenues. Southeast Asian airlines have traditionally relied less on cargo than their counterparts in other regions and should consider investing in freighters and focusing more on cargo in the post-pandemic era.

While Southeast Asian airlines started to focus more on cargo during the pandemic—it became a necessity for survival—their cargo market share is relatively small. Foreign airlines carry most cargo to and from Southeast Asia. With the right strategies, investments, and focus, Southeast Asian carriers can narrow the gap and benefit from the anticipated rapid e-commerce-driven growth in air cargo within Southeast Asia (domestic and regional). Southeast Asian airports also need to increase their focus on air cargo and make the necessary investments to help facilitate growth in this increasingly important segment of the aviation market. Southeast Asian airports have traditionally relied less on cargo than their counterparts in other regions.

Recommendation 7:

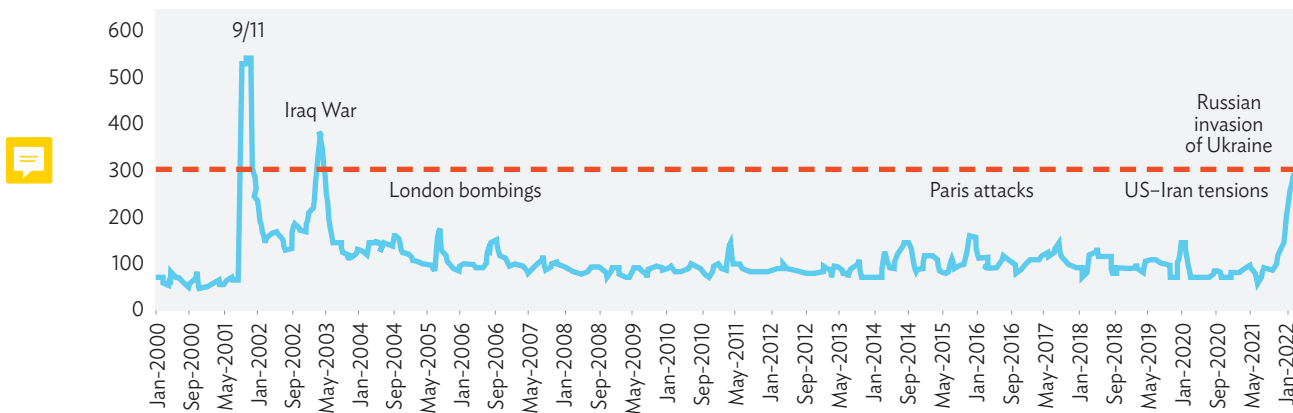
Southeast Asian airlines should increase their focus on air cargo and invest in freighters to facilitate rapid air cargo growth in the region and improve their share of Southeast Asia's booming air cargo market. Southeast Asian airports should increase their focus on air cargo and invest in air cargo-related infrastructure to facilitate rapid air cargo growth in the region and close the gap with rival hub airports in other regions.

The Impact of Longer-Term Trends on the Recovery of Aviation; Macro Analysis

Geopolitical Events, Supply Chain Crisis, and Inflation

Looking further ahead, the recovery of the aviation sector in Southeast Asia will be further complicated as demand for air travel is impacted by far-reaching factors, including the Russian invasion of Ukraine in Europe and a new supply chain crisis in the PRC. Global tensions have reached their highest level since the 9/11 event and the Iraq war in the early 2000s (Figure 11).

The Russian Federation is a major supplier of crude oil; refined petroleum (petrol, diesel, gas, and coal); and other commodities such as wheat, metals, fertilizers, and other raw materials. Sanctions on the Russian Federation have inevitably led to sharp rises in these commodity prices.

Figure 11 Geopolitical Risk Index

US = United States.

Source: Geopolitical Risk (GPR) Index. <https://www.matteoiacoviello.com/gpr.htm>.

The global supply chain has also been affected by COVID-19 policies in the PRC. Lockdowns in major cities of the PRC disrupted manufacturing and logistics activities in Q2 2022, leaving businesses with huge delays to shipments, particularly for consumer electronics and other consumer products. Consequently, these events have increased the upside risk to inflation and could force regulators to implement tighter monetary policy and a higher cost of borrowing. These factors will have long-lasting and cumulative impacts on countries, businesses, and consumers, which would put downward pressure on the supply and demand of air travel.

One of the immediate effects would be the steep increase in aviation fuel prices. The price of crude oils and aviation fuels already increased in 2021 and early 2022 and skyrocketed following the Russian invasion of Ukraine. Forecasts indicate that oil prices could drop but may remain elevated until the end of 2023. Although future oil prices and when the Russian invasion of Ukraine may end are impossible to predict, there is a concern about a long-term impact on the aviation sector.

Supply concerns can be partially offset by increased output from members of the Organization of the Petroleum Exporting Countries to ease prices. However, the quantum is still less than production from the Russian Federation, which holds 7% of the global supply. As fuel represents a significant proportion of airline operating costs (30%–40%), higher fuel prices will put downward pressure on airlines to manage their operating costs and could impact profitability. Higher fuel prices also make it more challenging to bring back capacity, even if there is sufficient demand.

Although some airlines are hedged and have implemented fuel surcharges, this is only a partial and somewhat temporary solution. Furthermore, many airlines in the region stopped hedging during the pandemic. Some were not able to secure a hedge due to most of their fleets being grounded.

While airfares have increased in some markets and several airlines have implemented fuel surcharges, in many cases these are not sufficient to fully offset escalating jet fuel prices. Historically, airlines often are unable to pass on higher fuel prices to consumers as airfares are a function of supply and demand. Southeast Asia has generally been a very competitive and oversupplied aviation market, and consumers are generally price sensitive. While there has been an increase in average fares—particularly for last-minute travel—in some markets, there could again be pressure on fares in 2023 as more capacity is restored. Southeast Asian airlines are generally eager to bring back capacity—once a sufficient workforce is in place and aircraft are reactivated—to improve efficiencies and restore economies of scale.

The Rising Middle Class in the Region

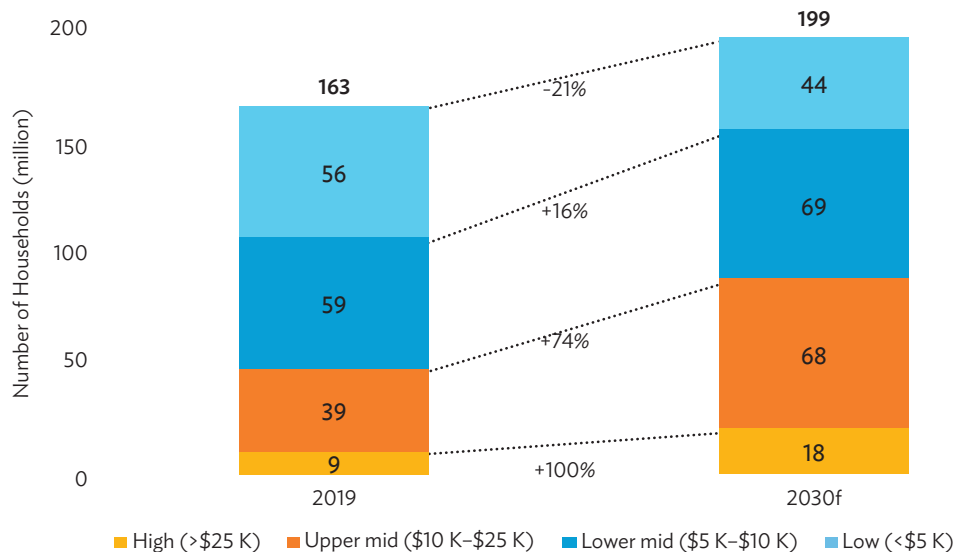
The rising middle class of Southeast Asia has been a key driver for air travel demand in Southeast Asia, and the region’s middle-class population is generally expected to continue growing rapidly. The rapid expansion of the middle class during 2011–2022 led to higher discretionary incomes exceeding travel threshold levels. This has led to a much larger air travel population in Southeast Asia, particularly as the middle-class expansion coincided with a reduction in average fares and a huge increase in the number of low-fare seats due to the rapid expansion of Southeast Asian LCCs.

This trend is expected to continue, with the middle-class population growing further during 2019–2030, resulting in an even larger population of air travelers and LCCs adding even more capacity. The World Economic Forum forecast in 2019 that the number of high-income and upper-high-income households in ASEAN countries would almost double from 48 million in 2019 to 86 million in 2030, while the proportion of low-income households would decrease by 21% for the same period (Figure 12).

This forecast predates the pandemic. While there is still a strong foundation for further middle-class growth in Southeast Asia over the long term, there is some uncertainty in the near term given the impact the pandemic has had on income levels. The middle-class population could shrink in some countries due to the economic fallout from the pandemic and a possible recession. While any middle-class reversal would likely be temporary under such a scenario, it would take much longer for the anticipated middle-class growth to be achieved as it could be a few years before the population of air travelers returns to pre-COVID-19 levels.

Slower middle-class growth or even a temporary reduction in the middle-class population is a major potential concern for the Southeast Asian aviation sector. While Southeast Asian airlines are generally optimistic about future demand for air travel, any decrease in discretionary income or stagnation in income growth can impact the average number of trips per year for the region’s middle-class population. Airlines may need to stimulate demand by offering low fares as well as new payment options. For example, “pay later” options for flights have become popular in several markets globally during the pandemic as some consumers that were impacted by the pandemic do not have the funds to pay for air travel.

Figure 12 Forecast Change in the Number of Households in Association of Southeast Asian Nations Countries by Income Group, 2019–2030 Forecast



ASEAN = Association of Southeast Asian Nations, f = forecast, K = thousand.
Source: World Economic Forum.

Southeast Asia's population has been adversely impacted economically by the pandemic to the point that they no longer have the savings or discretionary income levels to travel by air. But it is unclear what portion of the population is in this category and for how long will they be unable to travel. The impact also varies significantly depending on the country. According to ICAO, aviation demand responds strongly to changes in income, and the level of change in demand is relatively larger for developing economies. Generally, the poorer population has been more vulnerable than high- or middle-income populations, which account for most air travel demand. In 2021, the poorest 40% had not started to recover their income losses, while more than 45% of the initial income losses of the top 40% had been recovered, according to World Bank data.

Changes in Travel Patterns and Preferences

The pandemic has had a major impact on travel and tourism, changing the priority, behavior, and preference of travelers with potentially dramatic consequences for the airline business. There has been a particular impact on business travel, some of which could become permanent. Leisure travel patterns have also changed with consumers tending to prefer longer stays in one destination rather than multiple destinations.

Generally, a slower recovery of the business segment is expected. Global business travel is expected to reach about three-quarters of pre-pandemic levels in 2023. Experiences from past crises such as 9/11 or the global financial crisis show that leisure travel—in particular, the visiting friends and relatives (VFR) segment—tends to recover faster. This is also expected in the post-pandemic era and has implications for airlines in terms of pricing and operations, especially for long-haul routes that relied mainly on business travelers for profits pre-pandemic.

Due to increased workplace flexibility and changes in corporate travel policies—including an increased commitment to carbon footprint reduction—a permanent reduction in business travel growth is predicted. The Net Zero movement and the broadening of corporate emissions reduction targets have encouraged companies to consider alternative business travel options that are more sustainable, including more frequently switching to teleconferencing. During the pandemic, business travelers became comfortable with online meetings, resulting in meetings that previously required travel now being done using teleconferencing platforms.

Business travel recovery will likely witness not only a reduction in frequency but also an increase in duration. In the post-pandemic era, there is likely to be a focus on fewer longer meetings as well as combining business travel with leisure. Quick business trips for a single meeting could become less common. This could have significant long-term implications on airlines, particularly FSCs that relied heavily on business traffic pre-pandemic.

Business travel was already evolving pre-pandemic from its traditional form, and there were an increasing number of trips combining business and leisure travel, known as “bleisure travel.” Around 60% of business trips were extended for leisure purposes pre-pandemic, according to Expedia. This trend will continue to accelerate in the post-pandemic era as many travelers look to leverage the new freedom of remote working to work and travel at the same time, resulting in longer trips.

If there is a long-term reduction in business travel, the aviation sector may need to consider adjusting its strategies. For airlines, there is an opportunity to fill some of this void by attracting more premium leisure traffic, which became more popular during the pandemic. However, premium leisure has different patterns from premium business in terms of preferred destinations and flight timings. Pricing may also have to be adjusted as premium leisure is a more price-sensitive segment than premium business.

There may also be a shift in travel preferences from connecting to direct flights, which will impact both airlines and hub airports. With this shift, it could become increasingly important for airlines and airports to consider emission reduction and fuel efficiency.

Recommendation 8:

Southeast Asian airlines need to adapt to changing travel patterns and preferences by adjusting their networks, pricing, and revenue management strategies and aircraft configurations.

Consumer Spending and Confidence

For leisure travel, demand has been recovering rapidly since countries reopened. Still, under the impact of COVID-19, confidence in travel varies by location, and the preferences of leisure travelers are changing.

Consumer preferences have shifted toward flexibility in booking travel to accommodate changes at short notice. Cancellation and refund policies have had to become more flexible to adapt to these preferences.

Some Southeast Asian travelers are now preferring shorter trips and travel that limit interactions to smaller groups of family or friends. Leisure customers are generally price sensitive although pent-up demand from consumers with more secure jobs may drive spending spikes. Solo travel is trending up, especially among financially independent working individuals. Young travelers appear more willing to travel due to perceived lower risks to their health. This segment of the population could drive recovery and future growth as their income levels rise, leading to growing purchasing power and more frequent trips.

Several Southeast Asian airlines have adopted strategies to target millennials. Airlines will need to adapt as customer preferences and passenger expectations continue to evolve in the post-pandemic world.

Many consumers have shifted their spending patterns online during the pandemic, and this includes the ways they buy travel and engage with travel-related companies. At the same time, some consumers have changed their work preferences and the type of work they are willing to do. This is driven by remote working opportunities and new experiences gathered during the pandemic. As a result, airlines, airports, and other organizations in the travel sector are finding it hard to recruit and retain staff. This can be partly addressed by introducing digital technologies that reduce the number of staff needed, particularly for routine and antisocial jobs.

Recommendation 9:

Southeast Asian airlines need to adapt to changing passenger and worker expectations by embracing digitalization and new technologies.

Environmental Measures and Strategies

According to Air Transport Action Group, the global aviation sector produced 915 million tonnes of CO₂ in 2019, equivalent to around 2.1% of all CO₂ produced by humans. Acknowledging the responsibilities of the industry in a globally sustainable future, the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) was established by ICAO to stabilize net CO₂ emissions from international aviation from 2021, and to reduce airline CO₂ emissions by 50% by 2050 compared to 2005 levels, aligning with the Paris Agreement goal for global warming not to exceed 1.5°C. This aligns with the resolution passed by IATA member airlines, committing to achieve net-zero carbon emissions from their operations by 2050. Accordingly, IATA members will commit to a four-pillar strategy to pursue its climate action goals, including the agreement on CORSIA, new less carbon-intensive technology (with a priority for sustainable aviation fuel), more efficient operations, and better infrastructure.

Considering a holistic approach to the recovery of the Southeast Asian aviation industry, sustainable initiatives are needed to avoid solely focusing on short-term solutions to survive, thereby increasing the resilience of the

aviation sector against environmental risks. Environmental considerations will become an important component of the aviation industry's strategy to become more resilient.

An implication of COVID-19 in these environmental strategies and measures in Southeast Asia is the increase in financial constraints on airlines. The pandemic has worsened the financial performance of Southeast Asian airlines, which were previously suffering from low profit margins due to aggressive and at times irrational competition. Losses during the pandemic and the return of intense competition in the post-pandemic era—along with elevated fuel prices—put industry players into a financially disadvantaged position, making it more challenging for them to afford sustainable transition measures. There could be a further impact on airlines if Southeast Asia adopts economic instruments implemented by other regions aimed at aviation sustainability, such as environmental taxation on aviation emissions. If imposed, such environmental taxation is likely to result in reductions in passenger traffic as most travelers in Southeast Asia are price sensitive. This emphasizes the need for industry stakeholders to work together and find sustainable solutions for the aviation sector, potentially through making green and sustainable finance products more accessible.

Airlines and governments in Southeast Asia have started to advance sustainable aviation fuel (SAF) technologies. Malaysia, Singapore, and Thailand are the first in Southeast Asia to prepare for SAF, putting in place policies and plans at both the government and airline levels that could push the rest of the region. However, Southeast Asia is generally behind other regions in the transition to a more sustainable future for the aviation sector.

Development financial institutions (DFIs) could potentially support Southeast Asian countries to develop sustainable aviation policies, such as public policy support for innovation to advance SAF technologies, or technical support to introduce carbon reduction initiatives for airlines and airports. Government-backed price floors for the early stages of SAF production to boost investor confidence and support for the development of SAF production facilities by directly de-risking investments are also needed. A regional mandate should be considered stipulating a minimum amount of SAF to be added to jet fuel that could be gradually implemented over the next 2–3 decades.

Recommendation 10:

Southeast Asian countries should accelerate efforts to advance the decarbonization of aviation, with a particular focus on sustainable aviation fuel (SAF) technologies. Southeast Asian countries should consider price floor support for the early stages of SAF production and a regional mandate requiring a minimum amount of SAF with a gradual increase to ensure long-term sustainability targets are met.

Potential Impact of Drones and Electric Vertical Takeoff and Landing Vehicles

The pandemic has paved the way for greater interest in unmanned and alternative technology aerial vehicles, particularly in the Asia and Pacific region.

Major initiatives and new drone technology are growing the market for drones, suggesting potential applications such as air taxis and cargo transport. The application of drones for cargo transportation offers a potentially more practical and scalable implementation to transform Southeast Asia's air cargo sector. Air freight transportation performed by drones can play a key role in intermodal connectivity, filling in the gaps between traditional methods of delivery at a lower cost, faster delivery time, and more reliable quality. For example, Dronamics states its newly developed Black Swan can carry 350 kilograms of cargo up to 2,500 kilometers at an 80% lower cost than any aircraft, with a more environmentally friendly operation. Moreover, drones have an advantage in their ability to transport fewer items at a higher frequency, making them a more flexible and efficient alternative to fixed-schedule trains or trucks.

Drone application in air freight transportation could present a practical solution to congested supply chains caused by COVID-19 restrictions as well as normal congestion in major big cities in Southeast Asian countries. They could play a significant role in boosting the general cargo volume and capacity, facilitating the growing regional air freight and e-commerce market. Implementation of such applications requires essential infrastructure development, including telecommunication networks and the operational suitability of 5G networks, with the future potentially lying in projects like flight trials of unmanned aircraft traffic management systems in Singapore.

For maintenance repair and overhaul (MRO) operations, drone solutions are also particularly useful, as remotely piloted drones are utilized to inspect and maintain industrial plants and power lines. Drone solutions can provide multiple benefits, including remote operation at height, in confined spaces, and over distances, eliminating risk and danger associated with human operators. Moreover, while a visual inspection of an airplane takes a day to complete, Airbus stated in 2018 that its MRO drone can capture images in 30 minutes and analyzes the collected data in 2.5 hours. Southeast Asian countries are implementing more applications of drones in MRO. For example, ST Engineering announced, in 2020, that it is utilizing its in-house developed drone solution—DroScan—to carry out a general visual inspection for aircraft maintenance at its MRO facilities in Singapore.

There is also potential in Southeast Asia for piloted electric vertical takeoff and landing (eVTOL) aircraft. eVTOLs could replace conventional aircraft on short island-hopping flights, which are common in several Southeast Asian countries and play a critical economic role in connecting communities. eVTOLs could also be used to expand the catchment areas of Southeast Asian airports by providing a fast and efficient option for traveling to the airport, avoiding road congestion and, in some cases, congested border crossings. For example, they could be used to connect Singapore Changi Airport with Johor Bahru in Malaysia as well as the nearby Indonesian islands of Batam and Bintan.

In early 2022, AirAsia Group signed a memorandum of understanding to lease at least 100 VX4 eVTOL aircraft from leasing company Avolon. AirAsia is keen to use eVTOLs to introduce zero-emissions ultra-short haul travel in Southeast Asia, covering both passengers and cargo. Other Southeast Asian airlines are likely to follow AirAsia in using eVTOLs, potentially by partnering with future eVTOL operators.

There is also the consideration of eVTOL aircraft being developed as short-distance air taxis from and to airports. Emerging developments such as Volocopter—an eVTOL aircraft that can fly two people and their luggage for distances approaching 30 kilometers—might be entering service soon. Multiple benefits can be recognized such as avoiding congestion and minimizing transportation time around urban areas. However, there are challenges and limitations in place in the application of eVTOL taxis, including technological limitations such as access to bandwidth and communications network coverage, concerns of additional city noise, and safety issues (the need to avoid any possibility of collisions with each other, with conventional air traffic, and with buildings and land vehicles). As a result, they cannot be developed as mass-public transportation but will be limited to a very small proportion of passengers.

Many of these developments will depend on the introduction of new policies, for example, how immigration controls can be handled for an eVTOL taxi crossing an international border. Forcing it to only use international airports would mean significantly underusing its potential. In addition, policies for the management of shared airspace between drones and conventional aircraft need to be developed and tested, together with underlying enabling technologies.

Recommendation 11:

Southeast Asian countries should promote the development of drones and electric vertical takeoff and landing aircraft and put in place policies that facilitate their use in transporting cargo and passengers.

Infrastructure Challenges and Opportunities

Several Southeast Asian countries registered high economic growth in the pre-pandemic years. However, inadequacies in their airport infrastructure prevented some countries from fully capitalizing on their potential growth. While the pandemic resulted in traffic reductions, these reductions are not permanent and airport infrastructure in the region still lacks the required capacity over the medium to long term. Boosting that capacity will require considerable capital expenditure.

Due to high capital expenditure costs and budget constraints, governments will need to seek private sector capital for aviation infrastructure development. Even though airports are much more suitable for private sector financing due to financially viable cash flow, certain changes in the legal and regulatory framework of some countries are required to attract private investment for the main hubs and airport infrastructure investments in general. For example, in the Viet Nam market, although the government has made improvements to the public-private partnerships (PPPs) legal framework through the issuance of a new PPP law and guiding documents, there are still numerous limitations that hinder private sector participation in airport investments through PPP. Some of the key limitations include (i) a lack of PPP screening tools and value for money assessments; (ii) an underdeveloped mechanism for risk allocation and selection of appropriate PPP models for airport investments; (iii) technical specification for airport projects is still input driven which limits innovation of the private sector; and (iv) the new PPP law does not expressly include the granting of government guarantees to investors of PPP projects, along with an unclear legal framework for viability gap funding.

Passenger movements at many major airports in Southeast Asia were far exceeding their planned capacities pre-pandemic and even some medium-sized and small airports were starting to experience capacity constraints (Table 38). The need for quality and timely air transport infrastructure will be critical for the region to cope with high demand, remain competitive, and sustain high economic growth.

Table 38 Terminal Passenger Capacity of Largest Airports in Southeast Asia, 2019

Airport	Airport Code	2019 Passenger Traffic (million)	Terminal Passenger Capacity Ratio (2019 Traffic / Total Passenger Capacity)
Manila Ninoy Aquino International Airport	MNL	47.9	157
Juanda International Airport	SUB	23.5	156
Tan Son Nhat International Airport	SGN	41.2	147
Suvarnabhumi Airport	BKK	65.4	145
Phuket International Airport	HKT	18.1	144
Chiang Mai International Airport	CNX	11.3	141
Don Mueang International Airport	DMK	41.3	137
Soekarno-Hatta International Airport	CGK	52.6	125
Da Nang International Airport	DAD	15.5	119
Noi Bai International Airport	HAN	29.3	117
Ngurah Rai International Airport	DPS	23.7	100
Mactan-Cebu International Airport	CEB	12.7	100
Kuala Lumpur International Airport	KUL	62.3	83
Singapore Changi Airport	SIN	68.3	83

Source: Authors based on public resources and airport reports.

To solve this problem, it is the responsibility of governments to plan for air transport infrastructure ahead of demand. Governments also have challenges in allocating sufficient state budget for air transport infrastructure due to other investment needs. Consequently, pre-pandemic congestion-related delays and capacity constraints were rapidly increasing at most hubs in the region. It became a common theme for passengers in Southeast Asia to experience congestion, long queues, and increasing flight delays.

Airlines were also suffering pre-pandemic due to scarce slots, unoptimized slot allocation and runway constraints, having nowhere to deploy their upgraded fleets, and their aircraft were often forced to wait on the ground before takeoff or stack before landing. A comparative assessment of airport departure performance in December 2019 shows that Southeast Asian hubs experienced more delays compared to those in North America and Europe, in part due to inadequate airport infrastructure capacity.

Shortage of runway capacity is the most fundamental constraint on the growth potential of airports in the region. Alleviating this constraint requires significant up-front capital as well as extended planning and regulatory approval. Even though most airport hubs in the region had already exceeded their declared runway capacity in 2019, they have been slow in delivering upgrades of their runway systems, which further impedes their future growth and ability to cater to air traffic demand (Table 39). For some airports, it is not feasible to add new runways, and therefore new or expanded alternative airports are required.

Table 39 Pre-Pandemic Overview of Runway Constraints and Upgrade Plans of 10 Largest Airports

Airport	Operating Runways Pre-COVID (2019)	Declared Maximum ATM per hour	Peak Hour ATM (2019)	Runway Upgrade / Renovation Plan
Singapore Changi	2 runways: • 4,000m × 60m • 4,000m × 60m	82	82	<ul style="list-style-type: none"> • \$820 million expansion plan to transition to a three-runway system by transforming a separate runway that was used for military purposes into a commercial one and building a new runway for military use. • A new three-runway system was planned in 2015, and related works commenced in 2019 and were expected to be completed by the mid-2020s.
Bangkok Suvarnabhumi	2 runways: • 4,000m × 60m • 3,700m × 60m	64	67	<ul style="list-style-type: none"> • A third runway was proposed in 2017 (\$324 million). • Construction started in 2021 and is expected to be completed within 3 years.
Kuala Lumpur International	3 runways: • 4,000m × 60m • 4,000m × 60m • 4,000m × 60m	84	80	<ul style="list-style-type: none"> • MAHB announced, in 2018, an upgrade of all three runways over 5 years, with work to be completed in 2023. • The third runway was opened several years before the pandemic, making Kuala Lumpur International the only major Southeast Asian airport with three runways and therefore the least congested. • In 2021, the air traffic control system was enhanced, significantly increasing the number of slots available on the three runways.
Jakarta Soekarno-Hatta	3 runways: • 3,660m × 60m • 3,600m × 60m • 3,000m × 60m	80	91	<ul style="list-style-type: none"> • A third runway was planned in 2015 and started construction in 2017 with an estimated cost of \$150 million. • The third runway started operation in late 2019 but resulted in a modest increase in capacity due to the layout of the runways.

Continued on next page

Table 39 continued

Airport	Operating Runways Pre-COVID (2019)	Declared Maximum ATM per hour	Peak Hour ATM (2019)	Runway Upgrade / Renovation Plan
Manila Ninoy Aquino	2 runways: • 3,737m x 60m • 2,258m x 45m	42	52	<ul style="list-style-type: none"> Manila essentially has a single-runway system as the second runway is short and intersects with the main runway, limiting its use to small aircraft. A third runway was earlier considered but dropped in favor of plans to develop a new mega hub airport outside Manila. Manila area runway capacity may also increase due to upgrades at Clark and the development of Sangley Point.
Bangkok Don Mueang	2 runways: • 3,700m x 60m • 3,500m x 45m	60	59	<ul style="list-style-type: none"> Expansion of the runway system is not feasible. Thailand is instead focusing on increasing Bangkok area runway capacity with the third runway at Suvarnabhumi and additional runways at U-Tapao.
Ho Chi Minh Tan Son Nhat	2 runways: • 3,048m x 45m • 3,800m x 45m	44	54	<ul style="list-style-type: none"> Expansion of the runway system is not feasible, and Viet Nam is instead developing a new airport outside Ho Chi Minh City. An \$85 million plan to renovate its two-runway system started in 2020 and is expected to be completed by 2022.
Hanoi Noi Bai	2 runways: • 3,200m x 45m • 3,800m x 45m	23	26	<ul style="list-style-type: none"> A similar \$85 million plan to renovate Noi Bai's two-runway system started at the same time in 2020 and is expected to be completed by 2022.
Bali Denpasar Ngurah Rai	1 runway: • 3,000m x 45m	32	33	<ul style="list-style-type: none"> Runway was extended in 2013 along with construction of a new international terminal. There were several proposals to develop another north-south runway. However, these proposals were abandoned due to the high cost of purchasing land in the areas adjacent to the airport, and the government decided to instead develop a new airport.
Phuket International	1 runway: • 3,000m x 45m	24	26	<ul style="list-style-type: none"> A second runway is not feasible but, as part of a master plan for 2017-2025 which was approved in 2016, the runway will be extended in 2023-2025.

ATM = air traffic management, m = meter, MAHB = Malaysia Airports Holdings Berhad.

Source: Authors based on public resources, airport reports.

Other operational constraints limiting airports in Southeast Asia have been identified across major hubs in the region:

- (i) The pick-up and drop-off areas of airports are often highly congested.
- (ii) Landside accessibility to airports is not well developed and lacks interconnectivity.
- (iii) Airside connectivity capability for passengers transferring between terminals of airports is underdeveloped.
- (iv) Small check-in areas and a lack of boarding gates lead to overcrowding and long queues.
- (v) Slow uptake of technology (e.g., streamlining the various checkpoints, use of robotics) to improve the overall passenger experience.
- (vi) Issues with airport network management systems cause disruption and flight delays.

There is a pressing need across Southeast Asia for aviation infrastructure developments and upgrades, and associated investment plans. Southeast Asian countries also need to maximize the effectiveness of their networks by improving links between airports with other transport modes.

Recommendation 12:

Southeast Asian governments should facilitate the development of adequate aviation infrastructure and incorporate multimodal connectivity in their planning approaches to allow the unfettered development of the industry.

Recommendation 13:

The pandemic gives Southeast Asian countries more time to address aviation infrastructure issues, but the overall challenges remain and Southeast Asian governments need to recognize that pre-pandemic infrastructure issues will return—potentially in the next couple of years—and start to plan accordingly.

Post-Pandemic Network Connectivity Opportunities

People's Republic of China

The PRC was the largest market for Southeast Asia's aviation and tourism sectors in the decade pre-pandemic. It was also by far the fastest growing of the main source markets.

PRC visitor numbers to Southeast Asia increased nearly eightfold in the 10 years pre-pandemic, from 4.2 million in 2009 to 32.3 million in 2019. This resulted in a staggering 22% compound annual growth rate (CAGR) over this period. Among the top 10 source markets, Japan was the second fastest growing with a 13% CAGR, while the other top 10 source markets all had a CAGR of less than 10%.

Southeast Asia-PRC seat capacity doubled in the 4 years pre-pandemic and tripled in 7 years, based on OAG data. There were nearly 500 routes connecting Southeast Asia and the PRC pre-pandemic. Until 2012, there were fewer than 100 routes between Southeast Asia and the PRC. Five years before the pandemic, there were only about 160 routes connecting Southeast Asia and the PRC.

While virtually every international airport in Southeast Asia benefited from the rapid growth in the Southeast Asia-PRC market pre-pandemic, secondary airports had particularly rapid growth. Several secondary destinations in Southeast Asia were relying on the PRC for well over half of their international passenger traffic pre-pandemic. This exposure will be difficult for these airports to fully recover their international traffic without a recovery of the Southeast Asia-PRC market.

Secondary airports with high reliance on the PRC market include Sihanoukville in Cambodia, Vientiane Capital in the Lao PDR, Kota Kinabalu in Malaysia, Mandalay in Myanmar, Cebu and Kalibo in the Philippines, Chiang Mai in Thailand, and Nha Trang in Viet Nam.

All these airports had at least eight routes to the PRC pre-pandemic. Five years before the pandemic, four of these airports (Cebu, Kalibo, Nha Trang, and Sihanoukville) did not have any PRC routes while the other four airports had half as many PRC routes or less.

There were 21 airports in Southeast Asia with at least eight PRC routes pre-pandemic compared to only seven airports 5 years earlier, which accounted for around 80% of all Southeast Asia-PRC routes and over 90% of Southeast Asia-PRC seat capacity pre-pandemic (Table 40).

Overall, there were more than 40 Southeast Asian airports with PRC services pre-pandemic, while around 110 PRC airports had services to Southeast Asia. The Southeast Asian airports with PRC traffic not listed in Table 40 include Bandar Seri Begawan in Brunei Darussalam; Batam, Manado, Solo, and Surabaya in Indonesia; Johor Bahru, Langkawi, and Penang in Malaysia; Nay Pyi Taw in Myanmar; Clark and Davao in the Philippines; Chiang Rai, Koh Samui, Krabi, U-Tapao, and Surat Thani in Thailand; and Da Nang, Cam Ranh, Hai Phong, Phu Quoc, and Van Don in Viet Nam.

Table 40 Top Southeast Asia Airports Ranked by Number of People's Republic of China Routes Pre-Pandemic

k	Airport	Country	December 2019	December 2014
1.	Bangkok Suvarnabhumi BKK	Thailand	41	27
2.	Kuala Lumpur International KUL	Malaysia	31	13
3.	Bangkok Don Mueang DMK	Thailand	31	10
4.	Singapore Changi SIN	Singapore	30	24
5.	Nha Trang CXR	Viet Nam	28	0
6.	Siem Reap REP	Cambodia	25	10
7.	Phuket International HKT	Thailand	21	14
8.	Sihanoukville KOS	Cambodia	21	0
9.	Mandalay MDL	Myanmar	21	1
10.	Phnom Penh PNH	Cambodia	18	4
11.	Bali Denpasar Ngurah Rai DPS	Indonesia	18	4
12.	Yangon International RGN	Myanmar	16	4
13.	Chiang Mai International CNX	Thailand	15	8
14.	Ho Chi Minh Tan Son Nhat SGN	Viet Nam	13	3
15.	Kalibo KLO	Philippines	11	0
16.	Hanoi Noi Bai HAN	Viet Nam	11	4
17.	Wattay International Airport VTE	Lao PDR	10	3
18.	Kota Kinabalu BKI	Malaysia	9	4
19.	Jakarta Soekarno-Hatta CGK	Indonesia	9	5
20.	Mactan-Cebu International CEB	Philippines	8	0
21.	Manila Ninoy Aquino MNL	Philippines	8	4

Lao PDR = Lao People's Democratic Republic.

Source: OAG schedules data.

All these destinations—and Southeast Asia overall—have a pressing need to find new source markets as even when the PRC reopens, it could take years for the Southeast Asia–PRC market to fully recover. Once the market fully recovers (assuming it does), the rate of growth is likely to be significantly slower than the growth rate that was achieved in the decade pre-pandemic, because outbound travel patterns of the PRC will change once outbound travel resumes. The destinations that were most popular pre-pandemic may not be as popular in the post-pandemic era. In line with the development of most air travel markets, as the market matures, group travel—which was prevalent pre-pandemic and dominated many Southeast Asia–PRC routes—may become less common in the post-pandemic era. There may be a permanent shift to more independent travel. Remote destinations could also become more popular. Some Southeast Asian destinations may be well aligned with these new patterns and succeed at attracting future travelers from the PRC, but other destinations may not be well aligned and suffer. There may also be a permanent shift to more domestic holidays, which became more popular during the pandemic due to border closures. This could have a significant impact on Southeast Asia as domestic destinations, such as Hainan and Yunnan, emerge as alternatives to short holidays in Southeast Asia.

Destinations in other regions may also gain popularity as PRC outbound travel patterns shift, leading to a reduction in market share for Southeast Asia. Southeast Asia gained market share in the decade pre-pandemic, accounting for 19% of total outbound PRC visitors in 2019 compared to only 9% in 2009. It could be hard for

Southeast Asia to maintain such a high market share in the post-pandemic era as other regions gain in popularity. Therefore, Southeast Asia may end up with a smaller portion of total traffic numbers. With total traffic likely to expand at a slower rate than pre-pandemic, there could be a profound impact on Southeast Asia's tourism and aviation sectors.

The Southeast Asian tourism and aviation sectors should focus the next several years on reducing their reliance on the PRC and diversifying. It is risky to assume the Southeast Asia-PRC market will quickly recover and, even if it does fully recover, it is risky to assume a return of rapid growth. While a quick recovery and return of rapid growth is a possible scenario, it is unlikely, and Southeast Asia should start to focus more on other markets to drive future growth.

Recommendation 14:

Southeast Asian countries need to find new source markets as the Southeast Asia-PRC market could take several years to fully recover and is unlikely to experience the same kind of growth that was experienced before the pandemic.

India

India could emerge as a massive source market for Southeast Asia. It was already sizable pre-pandemic, generating 5.3 million visitors to Southeast Asia in 2019. This represented a 3.7% share of total visitors and made India the fourth-largest source market after the PRC (22.5%), the Republic of Korea (7.3%), and Japan (4.0%) (Table 41).

Thailand is the largest Southeast Asian market for visitors from India followed by Singapore, Malaysia, and Indonesia. These four markets accounted for 90% of total Indian visitors to Southeast Asia in 2019. They all grew

Table 41 India Visitors to Southeast Asia: 2019 and 10-Year Growth Rate
(‘000)

Country	2019 India Visitors	2009 India Visitors	10-Year CAGR	2019 India Share	2009 India Share
Thailand	1,995.4	596.5	13%	5%	4%
Singapore	1,417.9	725.5	7%	7%	7%
Malaysia	735.3	589.8	2%	3%	3%
Indonesia	657.3	132.6	17%	4%	2%
Viet Nam ^a	169.0	N/A	N/A	1%	N/A
Philippines	135.0	32.8	15%	2%	1%
Myanmar	117.3	8.6	30%	3%	1%
Cambodia	75.3	12.5	20%	1%	1%
Brunei Darussalam	8.9	2.9	12%	3%	2%
Lao PDR	8.2	2.3	14%	0.2%	0.1%
TOTAL	5,319.6	2,103.5	10%	4%	3%

CAGR = compound annual growth rate, Lao PDR = Lao People's Democratic Republic, N/A = not applicable.

^a Viet Nam did not report India visitor numbers before 2017; the 2009 total figure, therefore, excludes Viet Nam, but this does not have a significant impact on the totals or total growth rate (there were fewer than 100,000 India visitors to Viet Nam before 2017).

Note: Timor-Leste was excluded but this does not impact the totals as Timor-Leste has an extremely small number of Indian visitors.

Source: Authors using data from tourism authorities and ASEAN Secretariat.

rapidly in the decade pre-pandemic except Malaysia. Some of Southeast Asia's smaller markets had even faster growth rates in India visitor numbers in the decade pre-pandemic albeit from very small bases.

India visitor numbers to Southeast Asia grew by around 150% in the 10 years pre-pandemic, from only 2.1 million in 2009, resulting in a CAGR of 10%. This outpaced the growth in total visitor numbers of approximately 120% and CAGR of 8%.

However, the growth in India visitor numbers to Southeast Asia in the decade pre-pandemic was modest compared to the PRC and other emerging markets. The growth rate is likely to accelerate over the next decade, driven by an acceleration in the overall outbound India growth rate as well as the huge opportunities that Southeast Asian countries have in attracting more visitors from India. Southeast Asia is well positioned to tap into the massive outbound growth expected from India given the geographic proximity and the popularity of Southeast Asian destinations among Indian residents.

Over the next decade, India could emerge as the next PRC in terms of outbound tourism growth. India and the PRC have similar populations (about 1.4 billion), but the PRC was a much bigger outbound market pre-pandemic with 169 million outbound visitors in 2019 compared to only 27 million for India.

The decade pre-pandemic was very much about PRC growth as total outbound visitor numbers grew from 48 million in 2009. The total outbound PRC market share to Southeast Asia grew from 9% in 2009 to 19% in 2019.

India could become the story in the decade after the pandemic for tourism in Southeast Asia as well as globally. Economic and middle-class growth could drive rapid outbound growth from India in the same way that they drove outbound growth from the PRC pre-pandemic.

Southeast Asia could also potentially grow its share of the outbound India market. In the decade pre-pandemic, Southeast Asia was only able to grow its share of the outbound India market from 19% in 2009 to 20% in 2019, while it grew its share of the outbound PRC market by 10 percentage points. While it may be difficult to achieve 10 percentage point market share growth in India over the next decade, the total size will grow significantly, and Southeast Asia could potentially expand its portion of the outbound India market to over 25%.

The relative affordability of Southeast Asia as a tourist destination will help the region attract Indian residents who travel abroad for the first time. This also follows the travel patterns that emerged pre-pandemic in the PRC with a Southeast Asian country typically serving as the first international destination for new outbound travelers. Southeast Asian countries also often served as the second and third destinations for PRC's new international travelers before their first trips to other regions.

Southeast Asia can offer inexpensive packages to woo price-sensitive Indian travelers, following similar patterns with travelers from the PRC pre-pandemic. Accommodation and attractions are relatively inexpensive in most Southeast Asian countries, and flights connecting Southeast Asia with India are relatively cheap given the high penetration of LCCs in this market. LCCs accounted for around 50% of Southeast Asia-India seat capacity pre-pandemic, based on OAG data. In the 5 years pre-pandemic, LCC capacity between Southeast Asia and India tripled, driving total capacity growth of around 70% as FSC capacity was reduced slightly.

Airlines, particularly LCCs, must continue to add capacity between Southeast Asia and India to ensure there are sufficient low-fare seats to meet growing demand. Without sufficient LCC capacity, Southeast Asia could struggle to compete with other destinations that are also gearing up to attract Indian visitors.

Pre-pandemic bilateral constraints made it difficult for Southeast Asian LCCs to add services to India's main cities. Southeast Asia should encourage India to liberalize by expanding its bilateral agreements with Southeast Asian countries, which cap the number of flights from India's metros (Bengaluru, Chennai, Delhi, Hyderabad,

Mumbai, Kochi, and Kolkata). An open skies agreement between ASEAN and India should also be proposed. This would enable airlines to add capacity in response to demand and encourage competition, which would benefit consumers and facilitate growth.

Slot constraints were also an impediment pre-pandemic, at both Indian metros and major airports in Southeast Asia. But more slots should become available for the Southeast Asia-India market as airports expand and new airports open, assuming the traffic rights are available.

Secondary cities in India generally do not have slot constraints and have benefited from an open skies policy. While India has tightly restricted the number of flights from the metros to all the main Southeast Asian countries—with only relatively modest capacity increases permitted over the years—it has not had any restrictions on non-metros. The open skies policy for non-metros has facilitated rapid growth between several secondary cities in India and Southeast Asia as well as other regions.

For example, the number of flights between Tiruchirappalli and Southeast Asia doubled in the 6 years pre-pandemic. AirAsia was the main driver of this growth, expanding its Kuala Lumpur-Tiruchirappalli service from one to three daily flights.

The number of Southeast Asia flights at several other secondary airports in India more than tripled over the same period but from a very small base. There were 20 airports in India that had services to Southeast Asia pre-pandemic (based on OAG schedules data). However, the six metros dominate, accounting for around 70% of the total Southeast Asia-India seat capacity. Tiruchirappalli is by far the largest of the non-metro markets and had around 60 weekly flights to Southeast Asia pre-pandemic. There is significant ethnic traffic between Tiruchirappalli and Southeast Asia, particularly to Malaysia.

While inbound leisure has huge growth potential, the Southeast Asia-India market has large outbound visiting friends and relatives (VFR) and inbound labor segments that will also likely continue to grow over the next decade. Much of the VFR and labor market is concentrated in southern India.

India is also a large transit market for Malaysia, Singapore, and Thailand. Southeast Asia's main hub airports are well positioned to grow transit traffic to and from India as the overall Indian market grows.

Most of this transit traffic is heading to other destinations in Southeast Asia. Southeast Asia-India services are heavily concentrated in Singapore, Kuala Lumpur, and Bangkok (both airports). Pre-pandemic airports in these three cities accounted for around 93% of Southeast Asia-India capacity.

Pre-pandemic, there were only four other Southeast Asian airports with nonstop passenger services to India: Ha Noi, Ho Chi Minh City, Phuket, and Yangon. The Ha Noi and Ho Chi Minh City services were new with both IndiGo and VietJet launching flights between Viet Nam and India in 2019. These flights (Ha Noi and Ho Chi Minh City to Kolkata for IndiGo, and Ha Noi and Ho Chi Minh City to Delhi and Mumbai for VietJet) resumed in Q2 2022 after a 2-year suspension due to the pandemic. Vietnam Airlines also started competing on the Ha Noi and Ho Chi Minh City to Delhi routes in June 2022. VietJet also launched several new India routes in the second half of 2022, including to Mumbai and Delhi from Da Nang and Phu Quoc as well as to Ahmedabad, Bengaluru, and Hyderabad from Da Nang, Ha Noi, and Ho Chi Minh City. This gave VietJet 17 Viet Nam-India routes compared to only four pre-pandemic. With this dramatic expansion, VietJet became the third-largest Southeast Asian airline group in the Indian market after Singapore Airlines and AirAsia. However, Viet Nam-India total capacity is still much smaller (one-third the size or less) than Viet Nam-Singapore, Viet Nam-Thailand, or Viet Nam-Malaysia, an indication that there is room for more growth between Viet Nam and India.

More airports in Viet Nam could attract services to India in the next few years, including Da Lat and Nha Trang. More secondary cities in India will also likely attract nonstop services from Viet Nam.

Several airports in other Southeast Asian countries may also be able to support nonstop services to India in the post-pandemic era, including Bandar Seri Begawan in Brunei Darussalam; Phnom Penh and Siem Reap in Cambodia; Bali, Batam, Medan, and Jakarta in Indonesia; Luang Prabang and Vientiane Capital in the Lao PDR; Langkawi, Penang, Johor Bahru, Kuching, and Kota Kinabalu in Malaysia; Cebu and Manila in the Philippines; and Chiang Mai, Koh Samui, and Krabi in Thailand.

If all the airports listed above were to gain India services, the number of Southeast Asian airports with nonstop services to India would reach 31. While this may seem like a big number, there were over 40 Southeast Asian airports with nonstop passenger services to the PRC pre-pandemic. Many of these airports will be keen to secure new source markets, especially with India.

Several Southeast Asian airlines were already looking at launching nonstop services to India pre-pandemic, including Batik Air, Cebu Pacific, Garuda Indonesia, Philippine Airlines, and Royal Brunei Airlines. Batik and Garuda previously served India with one-stop services (Batik operating via Kuala Lumpur and Garuda via Bangkok). Garuda also briefly operated nonstop services to Mumbai from Bali in 2018.

All these airlines are likely to launch India services over the next few years. Most of these airlines have placed orders for new generation, long-haul narrowbody aircraft, which are ideal for launching new India routes. These aircraft particularly facilitate potential new routes to India from Brunei Darussalam, Indonesia, the Philippines, and Viet Nam. They also can facilitate new routes to parts of northern India from Malaysia and Singapore. Older narrowbody aircraft lack the range to operate these routes.

The number of Southeast Asia-India routes could easily double from the pre-pandemic level; however, the Southeast Asia-India market is unlikely to match the 500 routes that connected Southeast Asia with the PRC pre-pandemic, because the PRC has significantly more international airports than India. It is also not realistic for many Southeast Asian secondary airports to attract services to India.

India could become a massive growth market for Southeast Asia. However, India alone will not be sufficient and Southeast Asia will need several growth markets to emerge to achieve the kind of overall growth that was achieved pre-pandemic.

Recommendation 15:

Southeast Asian countries should focus on India as the next major growth market and put in place policies to facilitate more capacity and routes in the Southeast Asia-India market.

Regional Southeast Asia

There is enormous potential during 2023-2033 to grow regional traffic within Southeast Asia and intra-Southeast Asia tourism. While growth is achievable in the main country pairs and air routes, there is also potential to establish new services between Southeast Asian city pairs which are underserved or not served at all.

Intra-Southeast Asia passenger traffic has always been heavily concentrated in certain markets. It accounted for three of the world's five largest international routes in 2019: Kuala Lumpur International-Singapore Changi, Jakarta Soekarno-Hatta-Singapore Changi, and Jakarta Soekarno-Hatta-Kuala Lumpur International. Bangkok-Singapore was a top five international city pair when including flights from both Bangkok airports (with Bangkok Suvarnabhumi-Singapore Changi making the top 10).

Intra-Southeast Asia visitor numbers are highly concentrated in markets connecting neighboring countries. For example, the Malaysia-Singapore market accounted for 22% of total intra-Southeast Asia visitor numbers

Table 42 Top Intra-Southeast Asia Markets by Visitor Numbers, 2019

Market	Visitors (million, in both directions)	Portion of Intra-Southeast Asia = Total (%)
Malaysia-Singapore ^a	11.4	21.5
Malaysia-Indonesia	6.6	12.5
Malaysia-Thailand	6.2	11.6
Indonesia-Singapore	5.0	9.5
Lao PDR-Thailand	4.0	7.6
Myanmar-Thailand	2.3	4.4
Singapore-Thailand	1.7	3.2
Thailand-Viet Nam	1.6	3.0
Cambodia-Thailand	1.4	2.7
Malaysia-Brunei Darussalam ^b	1.3	2.5
Indonesia-Timor-Leste ^c	1.2	2.2
Cambodia-Viet Nam	1.1	2.2
Lao PDR-Viet Nam	1.0	1.9
Philippines-Singapore	1.0	1.9
Singapore-Viet Nam	0.9	1.7

Lao PDR = Lao People's Democratic Republic.

^a Malaysia-Singapore excludes Malaysian visitors entering Singapore by land but includes Singapore visitors entering Malaysia by land.

^b Malaysia-Brunei Darussalam excludes Malaysian visitors entering Brunei Darussalam by land but includes Brunei Darussalam visitors entering Malaysia by land.

^c Indonesia-Timor-Leste excludes Indonesian visitors entering Timor-Leste by land but includes Timor-Leste visitors entering Indonesia by land.

Note: For the other markets, all visitors using all modes of transport are included in both directions.

Source: Authors based on data from tourism ministries.

New routes connecting secondary cities that were previously not served nonstop would help drive growth in intra-Southeast Asian passenger traffic and tourism. Potential new routes connecting secondary cities include Cebu-Kota Kinabalu, Makassar-Kota Kinabalu, Chiang Mai-Nha Trang, Da Nang-Penang, Hat Yai-Medan, and Johor Bahru-Bandung.

In addition, some regional routes connecting major cities, such as Kota Kinabalu and Cebu to Ho Chi Minh City, could help to open up new markets.

Air services connecting country pairs that have traditionally not been connected would similarly help drive growth in the intra-Southeast Asian market. Southeast Asian country pairs without any direct services pre-

in 2019. Malaysia-Indonesia accounted for 13% followed by Malaysia-Thailand at 12% and Indonesia-Singapore at 10% (Table 42). While a large number of visitors in these top three intra-Southeast Asia markets cross by land or sea, there are also significant volumes of passengers flying between these countries, as indicated by some of the air routes between these countries which are among the largest in the world.

The 15 markets in Table 42 account for nearly 90% of total intra-Southeast Asia visitor numbers. All these markets are well connected with several daily flights although, for most of them, most visitors cross by land or sea. Only four of these markets (Singapore-Thailand, Thailand-Viet Nam, Philippines-Singapore, and Singapore-Viet Nam) are not connected by land or sea.

There are nearly another 100 intra-Southeast Asia markets which account for a very small portion of total visitor numbers. Many of these have very little traffic and did not have direct air services pre-pandemic. Several of these markets could potentially support direct air services, helping facilitate growth for intra-Southeast Asia tourism and aviation in the post-pandemic era.

There is a lack of direct services connecting secondary cities in Southeast Asian countries that are otherwise well connected. Typically, services have been between primary cities or from primary cities to secondary cities, but not between secondary cities. While air travel between major Southeast Asian cities is generally convenient and cheap, secondary cities are often not well connected, making travel difficult and expensive.

In many cases, a direct flight would be short, but as they do not exist, passengers have circuitous journeys that are time consuming and expensive.

pandemic included Brunei Darussalam–Cambodia, Brunei Darussalam–Myanmar, Indonesia–Lao PDR, Indonesia–Myanmar, Lao PDR–Myanmar, Lao PDR–Philippines, and Myanmar–Philippines. While these markets may seem too small to support air services in the post-pandemic era, air services are necessary in order to stimulate demand, resulting in visitor volumes that could be sufficient to support air services, particularly with smaller gauge aircraft. Southeast Asian countries should look at establishing initiatives to support these types of services as they would benefit their economies and help facilitate the recovery of their tourism and aviation sectors. For some of these routes, small jets (less than 150 seats) would be most appropriate given the distance and market size. As of 2022, these aircraft had been relatively uncommon in Southeast Asia but are operated by a few carriers in a few Southeast Asian countries and are being evaluated by airlines in other countries.

Of the major Southeast Asian countries, the Philippines and Viet Nam have tremendous potential to attract more visitors from other Southeast Asian countries. In 2019, Southeast Asia accounted for only 6% of total visitor numbers to the Philippines and 11% of total visitors to Viet Nam.

The top Southeast Asian source market for the Philippines is Singapore, but there were only 159,000 visitors in 2019. Singapore was the ninth-largest source market for the Philippines behind Canada.

There were only 140,000 visitors from Malaysia to the Philippines in 2019, while the other Southeast Asian countries each had fewer than 100,000. There were 71,000 visitors from Indonesia, 67,000 from Viet Nam, 61,000 from Thailand, 14,000 from Myanmar, 8,000 from Brunei Darussalam, 6,000 from Cambodia, and 1,000 from Lao PDR.

For Viet Nam, Malaysia is its largest Southeast Asian market but was only the seventh largest overall in 2019 with 606,000 visitors. There were 510,000 visitors from Thailand, 309,000 from Singapore, 228,000 from Cambodia, 179,000 from the Philippines, and 107,000 from Indonesia. The other Southeast Asian countries each accounted for fewer than 100,000 visitors.

Philippines–Viet Nam is a good example of a market that could generate significantly higher visitor numbers. The Philippines has a population of around 110 million and Viet Nam has a population of nearly 100 million, but in 2019, there were less than 250,000 visitors in both directions. Pre-pandemic there were four daily flights between the two countries, a relatively modest figure given the sizes of their international markets and their geographic proximity.

Cambodia also has the potential to attract more visitors from Southeast Asian countries. While Southeast Asia accounted for 34% of total visitors to Cambodia in 2019, most of these visitors crossed over by land from the Lao PDR, Thailand, and Viet Nam. These three countries accounted for 26% of Cambodia's total visitors.

In 2019, Cambodia only attracted 89,000 visitors from Singapore, 67,000 from Indonesia, 62,000 from the Philippines, 24,000 from Myanmar, and 1,000 from Brunei Darussalam. Malaysia is a larger source market but still relatively small with Cambodia reporting 203,000 Malaysian visitors in 2019. Malaysia attracted 97,000 Cambodian visitors in 2019.

Malaysia is well served and has nonstop flights to all other Southeast Asian countries. After Brunei Darussalam, Indonesia, Singapore, and Thailand—all of which have large volumes of visitors arriving by land or sea—Malaysia does not have any Southeast Asian source markets with over 500,000 annual visitors. In 2019, Malaysia had 422,000 visitors from the Philippines, 400,000 from Viet Nam, 46,000 from Myanmar, and 27,000 from the Lao PDR.

Philippines–Malaysia is another good example of a market that could attract significantly more visitors and passenger traffic. There is an opportunity to develop air services between east Malaysia and the Philippines. Pre-pandemic there were about 10 daily flights in the Malaysia–Philippines market, but nine of these were from Kuala Lumpur. There were only 7–8 weekly flights from Kota Kinabalu in east Malaysia to Manila.

Kota Kinabalu–Manila and Brunei Darussalam–Manila—which was served with 11–12 weekly flights in 2019—were the only routes pre-pandemic connecting Borneo with the Philippines. The island of Borneo has a population of 18 million spread across three countries (Brunei Darussalam, Indonesia, and Malaysia) and is connected to parts of the Philippines by ferry. The island of Sulawesi in Indonesia is also very close to the Philippines but had only two weekly flights to the Philippines pre-pandemic.

There is an opportunity to improve connectivity in the Brunei Darussalam–Indonesia–Malaysia–Philippines East ASEAN growth area, an initiative that was started by the four countries in 1994 to boost trade and tourism in the subregion. After nearly 30 years, a lack of connectivity continues to be a major impediment to economic growth and regional tourism. The four countries could increase focus on this initiative in the post-pandemic era by promoting tourism within the region (visitors from one country traveling to another country) and new air services. The first of several potential new routes in this subregion could be a service between Kota Kinabalu and Zamboanga in the Philippines, which was initially planned to launch in March 2020. This route was postponed due to the pandemic but is being considered again. There were also several promising new intra-Borneo routes connecting Brunei Darussalam with east Malaysia and Indonesia (Balikpapan, Bintulu, Sandakan, Sibuluan, and Tawau) that were launched in 2019 and have been suspended since the start of the pandemic but could be resumed.

The Lao PDR is another Southeast Asian country that could focus more in the post-pandemic era on attracting visitors from Southeast Asia. Thailand and Viet Nam accounted for over 96% of Southeast Asian visitors to the Lao PDR in 2019. The Lao PDR had only 28,000 visitors from Malaysia and 12,000 from Singapore in 2019 despite having direct flights with these countries. The Lao PDR also had 28,000 visitors from Cambodia, 23,000 from Myanmar, 17,000 from the Philippines, 5,000 from Indonesia, and fewer than 1,000 from Brunei Darussalam.

As a source market, Indonesia has potential for not only the Lao PDR but virtually all Southeast Asian countries. Indonesia is by far the most populated Southeast Asian country—over 270 million people—and has a fast-growing middle class. However, there were only 8.4 million Indonesian visitors to other Southeast Asian countries in 2019. Malaysia (3.6 million) and Singapore (3.1 million) accounted for over 90% of these visitors. The other eight Southeast Asian countries have an opportunity to attract significantly more Indonesian visitors in the post-pandemic environment.

The Philippines and Viet Nam also have huge growth potential as source markets for other Southeast Asian countries. There were only 4.1 million Vietnamese and 2.4 million Filipino visitors to other Southeast Asian countries in 2019.

While there is an opportunity to launch new point-to-point routes connecting two secondary cities, most of the growth in the intra-Southeast Asia market is likely to be focused on the major hub airports. This includes more capacity between hub airports as well as more capacity and new routes connecting major hub airports with secondary cities.

Major hub airports have an advantage in that they can cater to both local intra-Southeast Asia demand as well as traffic that originates or is heading to destinations outside the region. Bangkok, Kuala Lumpur, and Singapore are well positioned to handle traffic traveling between secondary destinations in Southeast Asia and destinations outside the region. Manila and Ho Chi Minh City could also be well situated to serve secondary destinations if they had available slots to accommodate new routes.

Most secondary destinations in Southeast Asia had limited international services pre-pandemic. Unlike the major destinations, the secondary destinations are typically not served from hubs outside the region (for example, from the Middle East). Therefore, secondary Southeast Asian destinations are important feeder airports for Southeast Asian hubs. The main hub airports in Southeast Asia should focus on building regional connectivity in the post-pandemic era as more secondary destinations will reinforce their competitive advantage over hubs in other

regions. More links with secondary destinations throughout Southeast Asia would also help to facilitate economic development and tourism recovery.

As secondary destinations in Southeast Asia grow in popularity—for visitors from other Southeast Asian countries as well as from other regions—the main Southeast Asian hub airports should be able to further expand their Southeast Asian networks and add frequencies to secondary destinations. Singapore Changi and Kuala Lumpur International had by far the most Southeast Asian destinations pre-pandemic. Singapore Changi had 45 while Kuala Lumpur International had 44; combined they accounted for nearly half of all the international routes within Southeast Asia.

Pre-pandemic the Bangkok market overall had 27 international destinations in Southeast Asia (24 for Suvarnabhumi and 20 for Don Mueang, but 17 of the 20 for Don Mueang were also served from Suvarnabhumi). There are another 10 airports with at least nine international destinations within Southeast Asia, but these airports are predominantly only connected with major cities or destinations in Southeast Asia (Table 43). With Bangkok, Kuala Lumpur, and Singapore, a significant portion of their Southeast Asian international destinations consists of secondary cities.

While there is an opportunity for some of the smaller hub airports to attract new routes to secondary Southeast Asian destinations, the main hub airports are likely to continue to account for most of the growth in routes to secondary destinations.

Several new routes connecting the main hub airports with secondary destinations in other Southeast Asian countries were launched in the 3 years pre-pandemic. These secondary destinations include Siborong-Borong,

Table 43 Top Airports for Intra-Southeast Asia International Connectivity, Pre-Pandemic

Rank	Airport	Number of Southeast Asian International Destinations	Total International Destinations
1.	Singapore Changi (SIN)	45	151
2.	Kuala Lumpur International (KUL)	44	121
3.	Bangkok Suvarnabhumi (BKK)	24	147
4.	Bangkok Don Mueang (DMK)	20	76
5.	Ho Chi Minh Tan Son Nhat (SGN)	17	54
6.	Bandar Seri Begawan (BWN)	14	35
7.	Manila Ninoy Aquino (MNL)	12	57
8.	Phnom Penh International (PNH)	11	35
9.	Jakarta Soekarno-Hatta (CGK)	10	40
10.	Hanoi Noi Bai (HAN)	10	44
11.	Siem Reap (REP)	10	40
12.	Penang International (PEN)	9	36
13.	Bali Denpasar Ngurah Rai (DPS)	9	46
14.	Yangon International (RGN)	9	34

Note: Based on passenger destinations served nonstop in December 2019.

Source: OAG.

Lake Toba and Tanjung Pandan, and Belitung Island in Indonesia; Sihanoukville in Cambodia; and Can Tho, Da Lat, Nha Trang, and Phu Quoc in Viet Nam. All these destinations gained new routes from Kuala Lumpur International pre-pandemic. Five of the destinations (the four in Viet Nam and Sihanoukville) also gained new routes from one or two of the Bangkok airports.

Singapore briefly had services to three of these destinations (Phu Quoc, Siborong-Borong, and Tanjung Pandan), but they were dropped well before the start of the pandemic. Several new links from Singapore, Kuala Lumpur, and Bangkok to secondary Southeast Asian destinations are expected in the initial post-pandemic phase, including a Singapore–Sibu service that launched in December 2022.

These are numerous secondary destinations that have huge potential to attract more international tourists in the post-pandemic era. This includes tourists from other Southeast Asian countries as well as tourists from outside the region who will access these types of destinations via the main hubs. Many of these destinations have traditionally relied on domestic tourism but in the few years pre-pandemic have become popular among international tourists.

Many other secondary destinations in Southeast Asia could attract their first international services from Southeast Asian hubs in the post-pandemic era. Some of these already have international airports but only had services to North Asia pre-pandemic, while some did not have any international services.

Southeast Asian airports that could potentially gain international services for the first time include Labuan Bajo/Komodo Island in Indonesia, Caticlan/Boracay in the Philippines, and Con Dao in Viet Nam. Upgrades are planned for these three airports, making international flights possible.

Airports that only had international services to North Asia before the pandemic and could attract international services from other Southeast Asian countries include Tagbilaran and Puerto Princesa in the Philippines and Van Don in Viet Nam. New airports in Tagbilaran, located on Panglao Island, and in Van Don, a gateway to Ha Long Bay, opened in 2018. Puerto Princesa, which is located on Palawan Island, opened a new international terminal in 2017.

Several other Southeast Asian airports have international designation but did not have any scheduled international services pre-pandemic. Some of these airports could attract international services in the post-pandemic era.

The total number of international airports in Southeast Asia should increase by the end of 2023. There were 80 Southeast Asian airports with scheduled international services in 2019, compared to 65 airports 5 years earlier. All or nearly all of these 80 airports should have scheduled international services again by early 2023 to mid 2023. While it could take longer for overall international traffic to recover, there are opportunities for some secondary markets to recover faster and for some secondary destinations to attract international services for the first time.

Of the 80 airports with international services pre-pandemic, 50 had fewer than 10 international routes (Table 44). Many of these airports will initially struggle to fully restore their networks due to a heavy reliance on visitor numbers from the PRC, which dropped as a result of the pandemic. Attracting new intra-Southeast Asia international services could help facilitate a recovery in their international traffic, which is important economically as many of these destinations rely heavily on tourism.

Table 44 Connectivity for Smaller International Airports in Southeast Asia, Pre-Pandemic

Country	Airport	No. of International Routes	International Southeast Asian Hubs Connected to
Indonesia	Balikpapan (BPN)	2	Singapore
	Banda Aceh (BTJ)	3	Kuala Lumpur
	Bandung (BDO)	2	Kuala Lumpur, Singapore
	Banyuwangi (BWX)	1	Kuala Lumpur
	Batam (BTH)	1	None ^a
	Lombok (LOP)	3	Kuala Lumpur, Singapore
	Makassar (UPG)	4	Kuala Lumpur, Singapore
	Manado (MDC)	9	Singapore
	Medan (KNO)	8	Kuala Lumpur, Singapore
	Padang (PDG)	3	Kuala Lumpur
	Palembang (PLM)	4	Kuala Lumpur, Singapore
	Pekanbaru (PKU)	4	Kuala Lumpur, Singapore
	Pontianak (PNK)	2	Kuala Lumpur
	Semarang (SRG)	2	Kuala Lumpur, Singapore
	Siborong-Borong (DTB)	1	Kuala Lumpur
	Solo (SOC)	3	Kuala Lumpur
	Tanjung Pandan (TJQ)	1	Kuala Lumpur
	Tarakan (TRK)	1	None
Yogyakarta ^b (JOG)	2	Kuala Lumpur, Singapore	
Lao PDR	Pakse (PKZ)	3	Bangkok
Malaysia	Bintulu (BTU)	1	None
	Ipoh (IPH)	1	Singapore
	Johor Bahru (JHB)	6	None
	Kota Bahru (KBR)	1	Singapore
	Kuala Lumpur Subang (SZB)	3	None ^a
	Kuantan (KUA)	1	Singapore
	Kuching (KCH)	3	Singapore
	Langkawi (LGK)	6	Singapore
	Malacca (MKZ)	1	None
	Miri (MYY)	1	Singapore
	Sandakan (SDK)	1	None
	Sibu (SBW)	1	None
Tawau (TWU)	2	None	
Myanmar	Kawthuang (KAW)	1	None
	Nay Pyi Taw (NYT)	3	Bangkok
Philippines	Davao (DVO)	5	Singapore
	Iloilo (ILO)	2	Singapore
	Puerto Princesa (PPS)	3	None
	Tagbilaran (TAG)	1	None
Singapore	Seletar (XSP)	1	None ^a
Thailand	Chiang Rai (CEI)	6	None
	Hat Yai (HDY)	2	Kuala Lumpur, Singapore
	Hua Hin (HHQ)	1	Kuala Lumpur
	Koh Samui (USM)	5	Kuala Lumpur, Singapore
	Surat Thani (URT)	2	Kuala Lumpur

Continued on next page

Table 44 continued

Country	Airport	No. of International Routes	International Southeast Asian Hubs Connected to
Timor-Leste	Dili (DIL)	3	Singapore
Viet Nam	Can Tho (VCA)	2	Kuala Lumpur
	Da Lat (DLI)	4	Bangkok, Kuala Lumpur
	Hai Phong (HPH)	4	Bangkok
	Van Don (VDO)	1	None

Lao PDR = Lao People's Democratic Republic.

^a Batam had flights to Kuala Lumpur Subang; there were also flights between Kuala Lumpur Subang and Singapore Seletar.

^b A new airport in Yogyakarta, YIA, opened in 2020.

Note: Southeast Asian hubs connected to only include Bangkok (BKK or DMK), Kuala Lumpur (KUL), and Singapore (SIN).

Source: Based on OAG schedules data for December 2019.

Of the 50 airports listed in Table 44, 35 were already connected pre-pandemic with major hub airports in other Southeast Asian countries. These airports could gain more connections to other Southeast Asian hub airports. The 15 airports that did not have any international connections with Southeast Asian hub airports (most had domestic connections with hub airports in their country) could potentially gain their first intra-Southeast Asia connections.

These 50 airports only accounted for 10% of total international routes from Southeast Asia. The top 30 international airports in Southeast Asia will continue to account for an overwhelming majority of international routes as well as international passenger traffic. There is a huge potential for Southeast Asia's smaller airports to grow their international operations from their small base as of 2022. If such growth can be achieved, the aviation and tourism sectors of several countries as well as the broader Southeast Asian economy will benefit significantly.

Recommendation 16:

Southeast Asian countries should work on improving intra-Southeast Asia connectivity, particularly at secondary destinations, and consider initiatives to help facilitate growth in intra-Southeast Asia passenger traffic and visitors.

Other Markets in Asia and the Pacific

Australia; Japan; the Republic of Korea; and Taipei, China are also major markets for Southeast Asia aviation and tourism. All four were among the top source markets for Southeast Asia in 2019 and were growing pre-pandemic. In addition, they are popular destinations for Southeast Asian residents, leading to growing outbound visitor numbers.

The Republic of Korea was the fastest growing of these markets pre-pandemic although the rate of growth did not quite match that of the PRC. In the 5 years pre-pandemic, Southeast Asia–Republic of Korea seat capacity roughly doubled (based on OAG schedules data). Republic of Korea visitor numbers to Southeast Asia also roughly doubled from 5 million in 2014 to 10.5 million in 2019. This is a significant number given the Republic of Korea's population of slightly more than 50 million, an indication of the popularity of Southeast Asia for outbound travelers from the Republic of Korea. Southeast Asia accounted for 37% of total outbound Republic of Korea visitors in 2019, another indication of the popularity of Southeast Asia for Korean travelers from the Republic of Korea.

Viet Nam has become by far the most popular Southeast Asian destination for travelers from the Republic of Korea, attracting 4.3 million visitors in 2019. The Philippines was the second most popular destination with 2 million visitors from the Republic of Korea in 2019 followed by Thailand with 1.9 million. Republic of Korea visitor numbers to Viet Nam increased fivefold in 5 years from 850,000 in 2014, while growth from the Philippines (1.2 million) and Thailand (1.1 million) was more modest in 2014.

Viet Nam–Republic of Korea seat capacity increased nearly fivefold in the 5 years pre-pandemic and accounted for nearly 40% of total Southeast Asia–Republic of Korea capacity pre-pandemic. This was also driven by strong outbound growth as Viet Nam visitor numbers to the Republic of Korea nearly quadrupled from 142,000 in 2014 to 554,000 in 2019 (based on Korea Tourism Organization data). In 2019, Viet Nam was the second-largest outbound Southeast Asia–Republic of Korea market, only slightly behind Thailand. In 2014, it was the sixth largest behind Singapore (246,000 visitors), Indonesia (279,000), Malaysia (409,000), the Philippines (433,000), and Thailand (572,000). Growth in all these markets was modest except Malaysia, which had an increase of 67%.

Southeast Asia–Japan was also a major growth market in the 5 years pre-pandemic with seat capacity increasing by around 70%. Japan visitor numbers to Southeast Asia grew by a modest 20% from 4.6 million in 2014 to 5.7 million in 2019. Southeast Asia is popular among Japanese travelers, accounting for 28% of outbound Japan visitors in 2019, but the overall outbound Japan market only grew by 19% during this period.

Thailand is the most popular Southeast Asian destination for Japanese travelers, attracting 1.8 million visitors in 2019 compared to 1.3 million in 2014. No other Southeast Asian country attracted more than 1 million Japanese visitors in 2019, but four countries each had more than half-a-million Japanese visitors: Viet Nam with 952,000, Singapore with 884,000, the Philippines with 683,000, and Indonesia with 520,000.

The outbound segment of the Southeast Asia–Japan market grew much faster in the 5 years pre-pandemic but on a much smaller base. Southeast Asia visitor numbers to Japan more than doubled, from 1.6 million in 2014 to 3.8 million in 2019 (based on Japan National Tourism Organization data). Thailand–Japan is the largest outbound Southeast Asia–Japan market with Japan attracting 1.3 million Thailand visitors in 2019 compared to less than 700,000 in 2014. The other major outbound Southeast Asia–Japan markets are Indonesia, Malaysia, Viet Nam, and Singapore with each accounting for at least 400,000 visitors in 2019 and at least doubling in size in 5 years (Indonesia and the Philippines more than tripled).

Southeast Asia–Taipei,China seat capacity grew at a similar rate as Southeast Asia–Japan in the 5 years pre-pandemic but is about 30% smaller than Southeast Asia–Japan and about 50% smaller than Southeast Asia–Republic of Korea (based on 2019 data). Taipei,China visitor numbers to Southeast Asia increased by 70% in the 5 years pre-pandemic from 1.9 million in 2014 to 3.2 million in 2019. Thailand and Viet Nam are the most popular and fastest-growing Southeast Asian destinations for travelers from Taipei,China. Viet Nam had 927,000 visitors from Taipei,China in 2019, up from 389,000 in 2014. Thailand had 790,000 in 2019, up from 392,000 in 2014.

The outbound Southeast Asia–Taipei,China market grew by almost 50% in the 5 years pre-pandemic with Southeast Asia visitor numbers to Taipei,China increasing from 1.4 million in 2014 to 2.6 million in 2019 (based on Taipei,China tourism bureau data). Malaysia, the Philippines, Singapore, Thailand, and Viet Nam are the largest outbound markets for Southeast Asia–Taipei,China traffic with each market consisting of about 400,000 to 500,000 visitors in 2019. Thailand and the Philippines had the fastest growth with visitor numbers to Taipei,China nearly quadrupling in 5 years, while Viet Nam visitor numbers tripled. In addition, transit traffic has been a major growth driver in Southeast Asia–Taipei,China traffic with Taoyuan International Airport near the city of Taipei,China a particularly popular connection point for Southeast Asia–North America traffic.

Southeast Asia–Australia growth has been much more modest as seat capacity increased by only around 10% in the 5 years pre-pandemic. Australia visitor numbers to Southeast Asia were relatively flat for several years, hovering between 4 million and 4.5 million per year. Indonesia is the largest inbound Southeast Asia–Australia market with 1.4 million visitors in 2019 followed by Singapore (1.1 million), Thailand (767,000), Viet Nam (384,000), Malaysia (368,000), and the Philippines (286,000).

Southeast Asia visitor numbers to Australia had more significant growth but from a much smaller base. There were 1.5 million Southeast Asian visitors to Australia in 2019 compared to 1.1 million in 2014 (based on Tourism

Australia data). Singapore is the largest outbound Southeast Asia–Australia market followed by Malaysia, Indonesia, the Philippines, Viet Nam, and Thailand—although the latter three are small (less than 200,000 visitors in 2019).

The Southeast Asia–Australia market also has a strong transit component, particularly for traffic beyond Singapore and Malaysia. Singapore is the biggest Southeast Asia–Australia market due in part to the large transit volumes. There were 6.372 million passengers and 24,714 nonstop passenger flights between Singapore and Australia in 2019, according to the Australian Bureau of Infrastructure and Transport Research Economics data. Indonesia was the second-largest Southeast Asia–Australia market with 3.504 million passengers and 19,482 nonstop passenger flights. Malaysia–Australia had 2.389 million passengers followed by Thailand (1.445 million), the Philippines (777,000), Viet Nam (579,000), and Brunei Darussalam (141,000).

The Southeast Asia–Australia market could grow in the post-pandemic era, but the rate of growth is likely to be modest as Australia is a relatively mature market. The Southeast Asia–Japan, Southeast Asia–Republic of Korea, and Southeast Asia–Taipei,China markets could experience more significant growth, but a return to pre-pandemic growth rates will not be easy to achieve.

Southeast Asian countries should focus on building back these four key markets by promoting inbound tourism. A return to 2019 levels is possible for all these markets—both inbound and outbound—in 2023. Fully recovering these four markets is important as it could take much longer for the PRC—which is bigger than these four markets combined—to fully recover. For rapid growth beyond 2019 levels, the focus should be on emerging markets such as India.

Australia; India; Japan; the PRC; the Republic of Korea; and Taipei,China are the dominant markets in Asia and the Pacific for Southeast Asia, with the PRC being much larger than the other five. There are several smaller markets but combined they accounted for only 5 million visitors to Southeast Asia in 2019. While some of the smaller markets have high growth potential, the impact on Southeast Asia’s overall aviation and tourism sectors is not very significant.

Recommendation 17:

Southeast Asian countries should focus on Australia; Japan; the Republic of Korea; and Taipei,China as major source markets to facilitate overall aviation and tourism recovery, recognizing it may take time for the PRC to recover from the impacts of the pandemic.

Long Haul

There are also growth opportunities for long-haul travel connecting Southeast Asia with markets outside Asia and the Pacific. These are relatively mature markets and regional travel (both within Southeast Asia and connecting Southeast Asia with other parts of Asia and the Pacific) is likely to experience faster growth in the post-pandemic era.

During most of the pandemic, long-haul travel from Southeast Asia was stronger than regional travel due to border restrictions. Virtually all borders within Asia and the Pacific remained closed for 18 months (March 2020 to September 2021), and most borders did not open until March or April 2022. Regional travel picked up significantly in 2022 and during 2022–2023 is likely to recover faster than long-haul travel (although the PRC may take longer to recover from the impacts of the pandemic).

From an outbound perspective, holidays closer to home have become more appealing. For some Southeast Asian travelers, this is about risk or a concern that the epidemiological or geopolitical situation could change quickly while

abroad. For some Southeast Asian travelers, the cost of a long-haul trip has become prohibitive due to the economic impact of the pandemic, resulting in lower discretionary incomes for a portion of the middle-class population. High airfares for long-haul flights have also impacted demand.

From an inbound perspective, Southeast Asia faces challenges in attracting visitors from source markets outside Asia and the Pacific. Many visitors from these markets who frequented Southeast Asia pre-pandemic discovered destinations in other regions that reopened much earlier. By the time Southeast Asia reopened its borders, many visitors from the main long-haul source markets in Europe and North America had already planned their summer 2022 holidays. It will take time for Southeast Asia to attract visitors again from these markets.

Long-haul markets accounted for about 24 million visitors to Southeast Asia in 2019, including 16 million European visitors and 6 million North American visitors. Africa, the Middle East, and South America are very small source markets for Southeast Asia, accounting for fewer than 2 million visitors.

While 24 million is smaller than the number of visitors from the PRC, this is a significant figure particularly given that visitors from long-haul markets typically stay longer, spend more, and often visit multiple Southeast Asian countries in a single trip. The number of visitors from outside Asia and the Pacific was also growing pre-pandemic, with Southeast Asian countries attracting about 19 million visitors from long-haul markets in 2014. European visitor numbers to Southeast Asia increased by 23% in the 5 years pre-pandemic, while North American visitor numbers increased by 46%. Southeast Asia-Europe and Southeast Asia-North America are significant outbound markets that were growing pre-pandemic.

Southeast Asia-Europe nonstop seat capacity increased by around 40% in the 5 years pre-pandemic (based on OAG data). Southeast Asia-North America nonstop seat capacity roughly tripled during this period but on a very small base. Most Southeast Asia-North America traffic and a large portion of Southeast Asia-Europe traffic transit in other regions.

North Asia hubs dominate Southeast Asia-North America traffic, offering one-stop connections from several Southeast Asian countries to major cities throughout North America. The Middle East also offers some connections between Southeast Asia and the east coast of North America but is particularly popular for Southeast Asia-Europe connections. In addition to competing on the main Southeast Asia-Europe city pairs that have nonstop options, the Middle East hubs offer attractive one-stop connections for a wide array of Southeast Asia-Europe city pairs that do not have any nonstop options.

Southeast Asia-Middle East capacity increased by around 40% in the 5 years pre-pandemic. Although it is a much smaller local market, there was slightly more Southeast Asia-Middle East capacity than Southeast Asia-Europe pre-pandemic. Most passengers on Southeast Asia-Middle East flights connect beyond the Middle East although Southeast Asia-Saudi Arabia and the Philippines-Middle East are notable exceptions.

Southeast Asia-Saudi Arabia accounted for about 20% of Southeast Asia-Middle East capacity pre-pandemic, and the Philippines-Middle East accounted for about 15%. The Philippines-Middle East is a large labor market and could grow in the post-pandemic era if the overseas Filipino worker population in the Middle East grows. Southeast Asia-Saudi Arabia is a large outbound market, consisting almost entirely of religious traffic, and has the potential for rapid growth in the post-pandemic environment, particularly from Indonesia.

Saudi Arabia has opened to general tourism, which could drive further outbound growth from several Southeast Asian countries. Saudi Arabia has major ambitions to attract (non-religious) visitors with a target of achieving 100 million annual tourists by 2030. It is establishing a second flag carrier, which is likely to serve several Southeast Asian destinations, to facilitate this strategy. There is also potential inbound growth in the Southeast Asia-Saudi Arabia market as Saudi Arabia's large and fast-growing middle-class population travels overseas more frequently.

Southeast Asia–Saudi Arabia will continue to account for a relatively small share of Southeast Asia–Middle East capacity. Future growth in the Southeast Asia–Middle East market is generally contingent on growth in the Southeast Asia–Europe market and the ability of Middle Eastern carriers to capture this growth. The impetus of ASEAN–EU open skies is to facilitate more nonstop services between Southeast Asia and Europe, resulting in improved market share for airlines from both regions after several years of losing market share to airlines from other countries (primarily Türkiye, Qatar, and the United Arab Emirates). However, the Southeast Asia–Europe market was already relatively liberal with very few or no restrictions on the main country pairs. Therefore, the impact of the ASEAN–EU open skies agreement—which was initially forged in 2021 and concluded in 2022—is likely to be limited.

There is likely to be continued growth in the Southeast Asia–Middle East market in the post-pandemic era driven primarily by further expansion by Middle Eastern carriers. Several secondary Southeast Asian destinations gained nonstop services to hubs in the Gulf in the decade pre-pandemic. The number of Southeast Asia–Middle East routes nearly doubled during this period, driven mainly by new services to secondary Southeast Asian destinations.

There were around 30 airports in Southeast Asia with services to the Middle East pre-pandemic. Several of the secondary Southeast Asian destinations with Middle East services are in Indonesia, catering to religious pilgrimage traffic. There were also several Southeast Asian secondary airports spread across six other countries—Cambodia, Malaysia, Myanmar, the Philippines, Thailand, and Viet Nam—that had links with major hubs in the Gulf states pre-pandemic. Nearly all these services have been restored, and more secondary airports in Southeast Asia are likely to attract services to the Middle East as their first long-haul routes. Most of these routes rely heavily on connecting passengers beyond the Middle East, particularly to Europe where Middle East carriers also serve a wide range of secondary destinations that are not served by Southeast Asian carriers.

There were about 20 Southeast Asian airports with nonstop services to Europe pre-pandemic. While this includes several secondary airports, many of these only had services to the Russian Federation. It will be difficult for these airports to restore services to Europe without the reopening of the Russian market. The closure of the Russian Federation airspace also makes it more difficult to support the launch of new routes from Southeast Asia to western and northern Europe. Growth in Southeast Asia–Europe traffic in the post-pandemic era is likely to mainly benefit hubs in the Middle East although it could be some time before this market fully recovers and starts to grow again given the Russian invasion of Ukraine. Over the long term, Southeast Asia–Europe traffic should grow, but the rate of growth and the number of new nonstop routes may be modest.

There were only two Southeast Asian airports with nonstop services to North America pre-pandemic: Manila and Singapore. The number of Southeast Asian airports with nonstop services to North America increased to three in late 2021 following the launch of services from Ho Chi Minh City to San Francisco and increased to four in December 2022 due to the launch of services from Bangkok to Vancouver. The number of Southeast Asia–North America nonstop routes reached 14 at the end of 2022 compared to 10 pre-pandemic with the addition of Bangkok–Vancouver, Ho Chi Minh City–San Francisco, Singapore–Vancouver, and Singapore–New York JFK. The other 10 are Singapore–Los Angeles, Singapore–Newark, Singapore–San Francisco, Singapore–Seattle, Manila–Honolulu, Manila–Los Angeles, Manila–New York JFK, Manila–San Francisco, Manila–Toronto, and Manila–Vancouver.

Further growth in nonstop services between Southeast Asia and North America is possible. However, these are niche services, and most passengers flying between Southeast Asia and North America will continue to fly via hubs in other regions, particularly North Asia and, to some extent, hubs in the Middle East and Europe. The number of nonstop Southeast Asia–North America routes is likely to be reduced to 12 in 2023 as Philippine Airlines is planning to suspend Manila–New York and Manila–Toronto as part of its restructuring. Nonstop North America routes performed very well in 2022 due to a lack of options via North Asia hubs, which have traditionally dominated Southeast Asia–North America traffic but have been very slow to recover due to COVID-19

strategies. As the North Asia hubs restore capacity, it will put pressure on the nonstop Southeast Asia–North America routes and it will be hard for this capacity to be maintained.

There were also only two Southeast Asian airports with nonstop services to Africa pre-pandemic: Bangkok and Singapore. Southeast Asia–Africa is a much smaller overall market and is mainly served via hubs in the Middle East. While there are growth opportunities in the Southeast Asia–Africa market, they are relatively limited and are not likely to have a significant impact on overall growth. It will be difficult for Southeast Asian airlines to justify new nonstop services to Africa. There had only been one Southeast Asian airline operating flights to Africa in recent years, Singapore Airlines, which only serves South Africa.

The overall number of long-haul routes operated by Southeast Asian airlines has been declining due to the restructuring of some of the region's flag carriers. For example, Garuda Indonesia and Philippine Airlines are planning to suspend all their scheduled services to Europe as part of recent restructurings (Garuda will continue to serve the Middle East, and Philippine Airlines continues to service the Middle East and North America although it plans to cut both networks).

Malaysia Airlines also has had just one European route for several years, following earlier restructurings that resulted in several Europe route suspensions as well as a withdrawal of all services to Africa and North America. (Malaysia Airlines still serves the Middle East, including Saudi Arabia and Qatar. The Saudi Arabia services focus on religious pilgrimage traffic using its Amal unit, while Doha was launched in May 2022 as a result of launching a strategic partnership with Qatar Airways.)

Viet Nam's Bamboo Airways recently became a new long-haul operator with services to Europe and North America. Overall, Southeast Asia–Europe and Southeast Asia–North America are not likely to attract many new entrants. Southeast Asian carriers are predominantly focused on Asia and the Pacific as they rebuild their international networks and look at potential new international routes.

Recommendation 18:

Southeast Asian countries should explore potential growth opportunities in Africa, Europe, North America, and the Middle East, but most of the future growth will be regionally within Asia and the Pacific.

Domestic

Domestic markets have so far recovered faster than international markets and should fully recover much earlier. While borders have reopened, some travelers continue to prefer domestic over international holidays. More frequent domestic holidays could become a permanent shift in some Southeast Asian markets although international holidays should gradually gain in popularity again, particularly as middle-class growth resumes in Southeast Asia and discretionary income levels rise.

Some domestic markets will achieve a full recovery faster than others depending on the domestic market's reliance on international travelers. For example, Thailand may not be able to achieve a full domestic recovery or resume domestic growth until international travel is significantly recovered as its domestic market relies heavily on foreigners. This includes international visitors who fly around Thailand as part of multi-destination itineraries as well as international visitors who connect to domestic flights in Bangkok. Malaysia may also struggle to achieve a full domestic recovery or resume domestic growth without this segment. Indonesia, the Philippines, and Viet Nam are more likely to achieve a full domestic recovery as they rely less on these segments. The Viet Nam domestic market was already exceeding pre-COVID-19 levels in the first half of 2022 and is likely to again be the fastest-growing domestic market in Southeast Asia over the next few years.

Even as Vietnamese residents start to travel overseas again, there is huge domestic demand, driven by an expanding middle-class population and facilitated by very low fares as well as rapid expansion by airlines. Other domestic markets in Southeast Asia also have very low average fares and intense competition. In addition to airlines rapidly building back their domestic operations, several Southeast Asian countries have new airlines that have recently launched operations or are planning to commence operations. Airline start-ups typically focus mostly or entirely on the domestic market in their initial phase and spark fare wars as incumbents respond to the new competition.

Capacity on domestic trunk routes will quickly return to pre-COVID-19 levels and, in many cases, exceed pre-COVID-19 levels, driven by new entrants as well as expansion from incumbents. Some of the incumbents have or plan to expand on domestic trunk routes by redeploying capacity that was previously allocated for international services. While the international market has been recovering, the PRC may take more time to recover, and other international routes could take a few years to fully recover. By the time Southeast Asia's international market fully recovers, many airlines will have resumed aircraft deliveries, making it possible to maintain higher domestic capacity levels even once international capacity has been restored.

In addition to more capacity on domestic trunk routes, Southeast Asian airlines have started adding new domestic point-to-point routes. For example, in Viet Nam, the number of domestic routes now exceeds 70 compared to around 60 pre-pandemic. Malaysia and Thailand also now have more domestic routes than they had pre-pandemic although the increase is more modest compared to Viet Nam.

There was a surge in the number of domestic routes pre-pandemic, particularly in the Philippines and Viet Nam. In the 5 years pre-pandemic, the number of domestic routes in the Philippines grew by 50% and in Viet Nam it grew by 36%, driven by the launch of new point-to-point routes bypassing the main cities. There was also growth in the number of domestic routes over this period in Indonesia (20%), Malaysia (9%), and Thailand (9%) (Table 45).

As indicated in Table 45, in May 2022, not all domestic routes had yet resumed in all Southeast Asian countries. However, full domestic network restoration is likely in all these countries by early 2023, and over the next few years, the number of domestic routes is likely to continue to increase.

Table 45 Number of Scheduled Domestic Air Routes for the Main Five Domestic Markets in Southeast Asia

Country	December 2014	December 2019	May 2022
Indonesia	230	275	243
Malaysia	80	87	91
Thailand	58	63	66
Philippines	64	96	63
Viet Nam	44	60	72

Source: Authors based on OAG schedules data for December 2014, December 2019, and May 2022.

While point-to-point domestic growth will continue in the post-pandemic era, this segment of the market will still not account for a major share of total domestic capacity. Most of the point-to-point routes launched in recent times are served less than daily and even the more established point-to-point domestic routes are generally served less than three times per day. While there is an opportunity to add capacity to these routes and launch more new point-to-point routes, these markets generally do not have sufficient demand to support large volumes of capacity. Many of these routes suffer from very low demand during certain times of the year and need to be stimulated to be maintained year-round. Fares are usually lower than domestic trunk routes as most of the traffic consists of price-sensitive leisure passengers, making it difficult to achieve profitability.

Domestic point-to-point routes are important for airlines as they help support scale and provide an alternative platform for growth without relying on slot-congested hub airports. These routes are also important economically and help facilitate growth in domestic tourism. Southeast Asian countries should therefore continue to support and promote domestic point-to-point growth in the post-pandemic era.

Recommendation 19:

Southeast Asian countries with sizable domestic markets should focus on facilitating point-to-point routes to help drive growth for their domestic aviation and tourism sectors.

Future Fleet

New aircraft types could potentially facilitate the launch of new routes and growth in certain Southeast Asian markets.

During 2015–2022, new generation longer-range narrowbody aircraft and new generation small jets have had a significant impact on airline network planning and route economics in other regions. In Southeast Asia, there had not been a significant impact as of 2022. There are very few small jets in Southeast Asia, and the usage of narrowbody aircraft on long-haul routes is not yet common.

Southeast Asian airline groups have massive commitments for new single-aisle aircraft but are generally focused on high-density rather than long-range variants. There are also no commitments for new generation small jets such as the Airbus A220 and Embraer E2. Globally, there are around 600 orders for A220 family aircraft and around 300 orders for E2 family aircraft, but none of these orders are with Southeast Asian airlines.

There are about 200 A220s in service globally and 50 E2s, but none of these are in Southeast Asia. There are about 1,400 older generation E1 family aircraft in service (E170s, E175s, E190s, and E195s) with only about 10 in Southeast Asia. The A220 entered service in 2016 and the E2 in 2018, while the older generation E1 has been in service since 2004. The A220 can carry up to 160 passengers and the E2 up to 146 passengers depending on the variant and configuration.

While small jets are now being considered by several airlines in Southeast Asia, the massive commitments for narrowbody aircraft that predate the pandemic make it difficult to acquire new aircraft types. Slot constraints also make it hard to justify downgauging to smaller jets at the main airports.

Southeast Asian airlines are not easily able to add slots at major airports, and it is difficult to justify setting aside existing slots for thinner routes or smaller aircraft. Several major Southeast Asian airports also disincentivize the use of smaller jets with their charging structure and only offer discounts or new route incentives for larger aircraft.

In addition, the low yield environment of Southeast Asia makes it challenging to profitably operate smaller jets as the unit revenues are generally insufficient to cover their higher unit costs compared to larger single-aisle aircraft. In other regions yields are usually higher and there is a higher proportion of business passengers who are willing to pay a premium for a high frequency schedule.

Southeast Asian countries and airports should consider adopting new slot allocation policies and charging structures to encourage the launch of new regional routes using smaller gauge aircraft. New policies could facilitate new routes and drive improvements in intra-Southeast Asia connectivity, which would, in turn, help facilitate the recovery of Southeast Asian aviation and the overall economy. While long-haul connectivity is also important, it does not make sense to have policies and charging structures that favor widebody aircraft and long-haul routes. Airports, government agencies, and stakeholders should recognize that regional routes—particularly

intra-Southeast Asia and, to some extent, intra-Asia and the Pacific—will drive the recovery and adopt policies accordingly.

Pre-pandemic, several major airline groups in Southeast Asia were pursuing up-gauging strategies, particularly at the main hub airports. This involved transitioning from medium density narrowbody aircraft to higher density narrowbody aircraft as well as in some cases from narrowbody aircraft to widebody aircraft. By up-gauging, airlines were able to maximize their slots (at congested hub airports in Southeast Asia as well as congested destination airports in other regions) and continue growing traffic without adding flights. In the several years pre-pandemic, most major airports in Southeast Asia experienced an increase in average aircraft size with higher seats per frequency and higher passengers per aircraft movement due to airline up-gauging strategies.

Several Southeast Asia groups plan to continue to pursue up-gauging strategies over the coming years. For some airlines, the implementation has been delayed due to the deferral of new aircraft deliveries resulting from the pandemic. Airline order books in Southeast Asia remain largely unchanged, maintaining a focus on large-gauge narrowbody aircraft. Most airlines have restructured but have not reduced or canceled orders with about 1,400 narrowbody aircraft on order mostly consisting of larger variants.

There could be more opportunities for small jets outside the main hubs as, in theory, they are the right size for point-to-point services connecting secondary airports. Secondary airports generally do not have slot constraints and would be more eager than major airports to provide incentives to stimulate the launch of new regional routes. However, yields on point-to-point routes in Southeast Asia are very low as the traffic consists predominantly of price-sensitive leisure or visiting friends and relatives.

Several Southeast Asian airline groups experimented with point-to-point routes bypassing major hub airports in the several years pre-pandemic, but these routes had a high failure rate. Airlines often had to discount below the low average fares offered on trunk routes to stimulate demand, making it difficult to cover costs. These routes were therefore typically unprofitable although in some markets were becoming more common as airlines had no other options for operating additional aircraft due to slot constraints at the major airports. Airlines are likely to focus on major airports as they rebuild capacity in the post-pandemic era but inevitably will have to revisit building up bases at secondary airports after all the slots at the major airports are again utilized. Small jets, in theory, would be a better future option for these secondary airports. However, the massive commitments to larger narrowbody aircraft and the market environment—including low yields and limited business traffic—will continue to make it difficult to implement a small jet strategy.

During 2012–2022, several Southeast Asian airlines evaluated small jets before deciding to continue with larger single-aisle aircraft. In many cases, airlines considered splitting narrowbody orders between small jets and larger narrowbody aircraft but ultimately decided to focus only on larger narrowbody aircraft. There is a new wave of small jet evaluations in Southeast Asia, including in Malaysia, Singapore, Thailand, and Viet Nam. While some of these evaluations could result in aircraft orders, the small jet fleet is likely to remain small overall and primarily used in niche markets, particularly airports that cannot accommodate large narrowbody aircraft.

New generation long-haul narrowbody aircraft are likely to have more of an impact in Southeast Asia in the post-pandemic era. New long-range narrowbody variants could be used to operate routes of 6–8 hours in markets such as Southeast Asia–India (outlined in the section on long-haul post-pandemic network connectivity opportunities). There are potential narrowbody routes in this range connecting parts of Southeast Asia with Australia, the Middle East, and Northeast Asia. This includes a mix of routes that could benefit from an increase in frequencies using smaller gauge aircraft as well as new routes that are too thin to support widebody aircraft.

Widebody aircraft will continue to account for most capacity in these markets. Slot constraints are a challenge in this segment as most of the potential long-haul narrowbody routes are from major Southeast Asian hub airports

rather than secondary airports. Cargo is also an important factor on these routes and can only be fully exploited with widebody aircraft.

Asia and the Pacific are somewhat unusual in that unlike other markets, widebodies on short- and medium-haul routes are often the most economical solution when factoring in cargo revenue opportunities. There have so far been relatively few orders in Southeast Asia and Asia and the Pacific overall for the A321LR and A321XLR, two new long-range narrowbody variants.

As of 2022, there were around 600 orders for the A321LR and A321XLR globally with only around 50 of these in Southeast Asia. There are around another 100 A321LR and A321XLR orders in other parts of Asia and the Pacific, and some of these aircraft could be deployed on Southeast Asian routes, but this is also a relatively small figure given the large size of the overall Asia and the Pacific market.

The A321LR—which entered service in 2018—and the longer-range A321XLR—which is planned to enter service in 2023—are more common in other markets such as Europe–North America. There were over 100 A321LRs in service in 2022, but none in Southeast Asia.

Airlines are planning to start deploying A321LRs and A321XLRs on some Southeast Asia routes, particularly leisure routes such as Bali–Australia where there is limited cargo and premium passenger demand. However, due to the dynamics of route distances, slot availability, competition, and market demand in Southeast Asia, it is not clear whether new long-range narrowbody aircraft will impact Southeast Asia as they have in other markets such as Europe–North America.

Recommendation 20:

Southeast Asian airports and their governments should review airport pricing policies to incentivize small jets and new long-range narrowbody aircraft, which can be used to develop routes that would be economically beneficial and help the aviation sector recover.

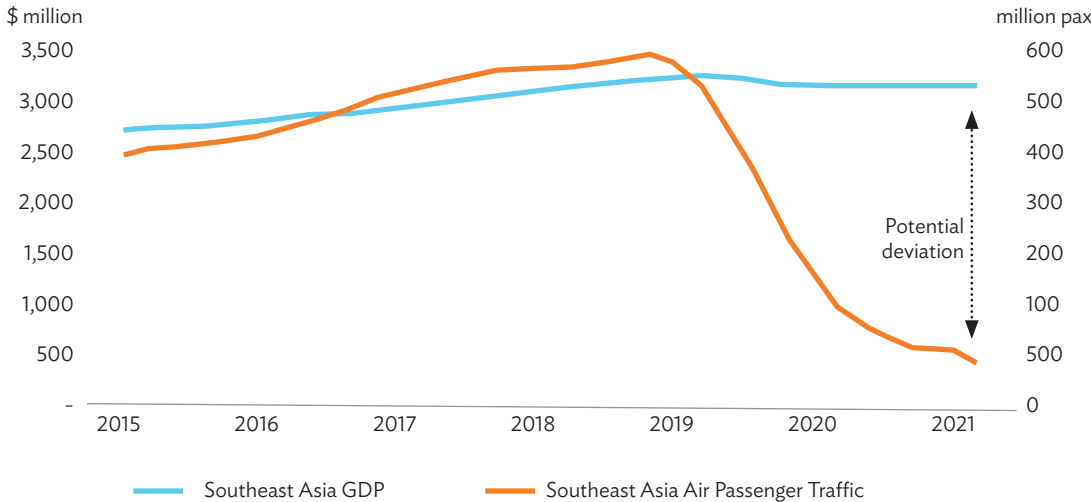
Post-Pandemic Recovery Scenarios

Possible Recovery Scenarios for Passenger Traffic

Historically, GDP growth and air traffic passenger development in Southeast Asia have been highly correlated. During the 5 years before the pandemic, total air passenger traffic in the region grew at a rate of about 1.35 times that of the Southeast Asia GDP. This coefficient changed significantly during the pandemic as travel restrictions impeded air travel. It can be assumed that what has been observed during the pandemic is not a start of a new decoupling trend but rather a temporary deviation as air passenger traffic deviated from GDP growth mainly due to strict travel restrictions of governments. The correlation between GDP and passenger traffic growth should broadly return as these restrictions have now been removed, but it will take time for the market to normalize. In the initial years of the recovery (2022 and 2023), year-over-year passenger traffic is likely to grow at a much higher than normal GDP multiple due to the smaller base (Figure 13). Once traffic exceeds 2019 levels, possibly in 2024, there is likely to be a return to a normal or even a lower than normal GDP multiple.

Given the highly uncertain nature of the pandemic, there are different possible scenarios for air traffic recovery. “Moderate” recovery, “rapid” recovery, and “volatile and constrained” recovery are three possible recovery scenarios for the Southeast Asia aviation sector. The uncertainties are mainly driven by how long the pandemic will last, whether travel restrictions will return, and how fast the economy will recover. There are clear upsides for recovery as vaccines have proven to be effective in preventing severe symptoms of the virus and governments in the region have adopted endemic policies and relaxed travel protocols. If endemicity for countries in the region can be maintained, a stronger rebound of regional air travel demand to pre-pandemic levels is a possibility. Nevertheless, due to the size of the PRC market, the aviation sector in Southeast Asia can only fully recover when

Figure 13 Air Passenger Traffic Correlation with Gross Domestic Product, Southeast Asia



GDP = gross domestic product, pax = passengers.
 Source: Authors based on data from airport authorities, ASEAN Secretariat, aviation authorities, and International Civil Aviation Organization.

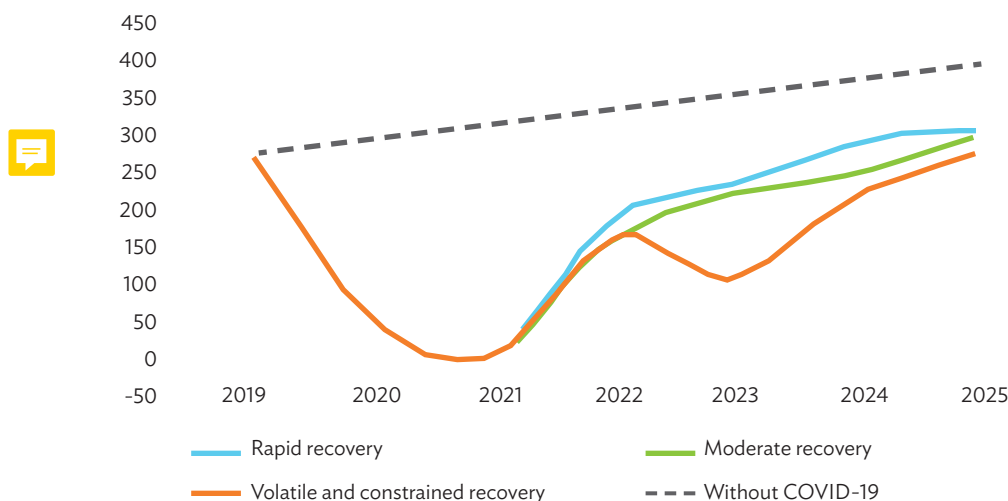
international tourists from the PRC return to Southeast Asia. There are also other important downside risks, with far-reaching negative effects on air travel, including escalating geopolitical events, the global supply chain crisis, and tightening monetary policies to control rising inflation.

The following recovery scenarios have been considered for the Southeast Asia region (Figures 14 and 15):

Rapid recovery: Under the best-case scenario, air travel demand in Southeast Asia will continue to recover rapidly and a full recovery to 2019 levels will be achieved by the end of 2023.

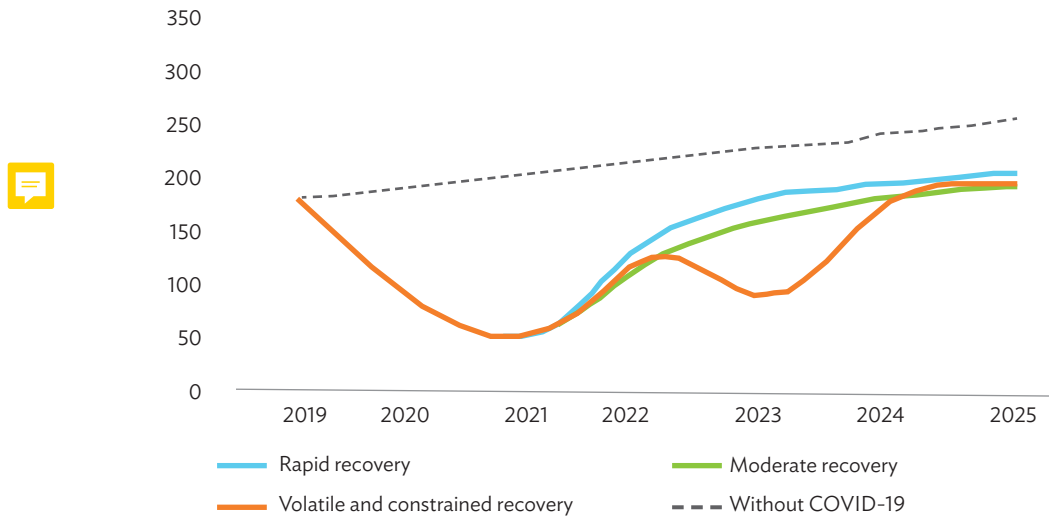
- (i) Vaccines continue to be effective, and countries in the region achieve and/or maintain endemicity.
- (ii) All key markets in the region remain open for travel.
- (iii) No return of testing requirements.
- (iv) No issues with vaccine recognition or visa impediments.
- (v) Robust GDP growth of countries in the region and other key markets, leading to strong air travel demand.
- (vi) International traffic in Southeast Asia started recovering in Q2 2022 following the reopening of borders and easing of travel restrictions and continued recovering in the second half of 2022. This scenario assumes international traffic will continue to recover in 2023 and that there is a return of outbound tourists from the PRC facilitating a full recovery in Southeast Asia international passenger traffic by the end of 2023.
- (vii) Intra-regional traffic will recover fully by early 2023 and exceed pre-pandemic levels by the second half of 2023, helping to offset the reduction in passengers from the PRC which may be below pre-COVID-19 levels until post-pandemic travel numbers recover.
- (viii) India traffic will fully recover by early 2023 and exceed pre-pandemic levels by the second half of 2023, which may offset the reduction in passenger numbers from the PRC.
- (ix) Domestic air travel in Southeast Asia will fully recover by early 2023.
- (x) Robust growth in Southeast Asia's domestic aviation sector will resume by the second half of 2023 due to the availability of cheap domestic flights and a shift in preference toward domestic destinations among travelers.

Figure 14 International Passenger Traffic Recovery Scenarios of Southeast Asia



COVID-19 = coronavirus disease.

Source: Authors' calculation based on data from airport authorities and forecasts from development institutions.

Figure 15 Domestic Traffic Recovery Scenarios for Southeast Asia

COVID-19 = coronavirus disease.

Source: Authors' calculation based on data from airport authorities and forecasts from development institutions.

Moderate recovery: In this scenario, the recovery will be more gradual with traffic returning to 2019 levels by the end of 2025.

- (i) Vaccines continue to be effective, and countries in the region achieve and/or maintain endemicity.
- (ii) All key markets in the region remain open for travel.
- (iii) No return of testing requirements.
- (iv) No issues with vaccine recognition or visa impediments.
- (v) There is a return of outbound tourists from the PRC by mid-2023.
- (vi) Worsening economic conditions, supply chain issues, high inflation, and tightening monetary policy will put downward pressure on the supply and demand of air travel.
- (vii) Airlines restrict capacity to boost profits and offset high fuel prices, leading to lower travel.
- (viii) The recovery rate of international traffic slows down in 2023 and 2024 before eventually reaching pre-COVID-19 levels.
- (ix) Domestic traffic returns to pre-COVID-19 levels by 2023, but growth in 2024 and 2025 is modest.

Volatile and constrained recovery: For this scenario, the emergence of new variants and worsening economic and geopolitical conditions lead to a drop in air travel demand in 2023, delaying the full recovery until after 2025.

- (i) A new more deadly COVID-19 variant will emerge, leading to policy changes and the reintroduction of travel restrictions.
- (ii) Outbound tourists from the PRC will only return in 2024 or later.
- (iii) Worsening economic conditions, high inflation, and tightening monetary policy will put significant downward pressure on the supply and demand of air travel.
- (iv) Airlines restrict capacity to boost profits and offset high fuel prices, leading to lower travel demand.
- (v) Air travel demand will be highly volatile, and new travel restrictions lead to a sharp reduction of international traffic in 2023 compared to the second half of 2022 levels.
- (vi) Travel restrictions and lockdowns also lead to a sharp reduction in domestic traffic in 2023.

Longer-Term Outlook for Passenger Traffic Recovery

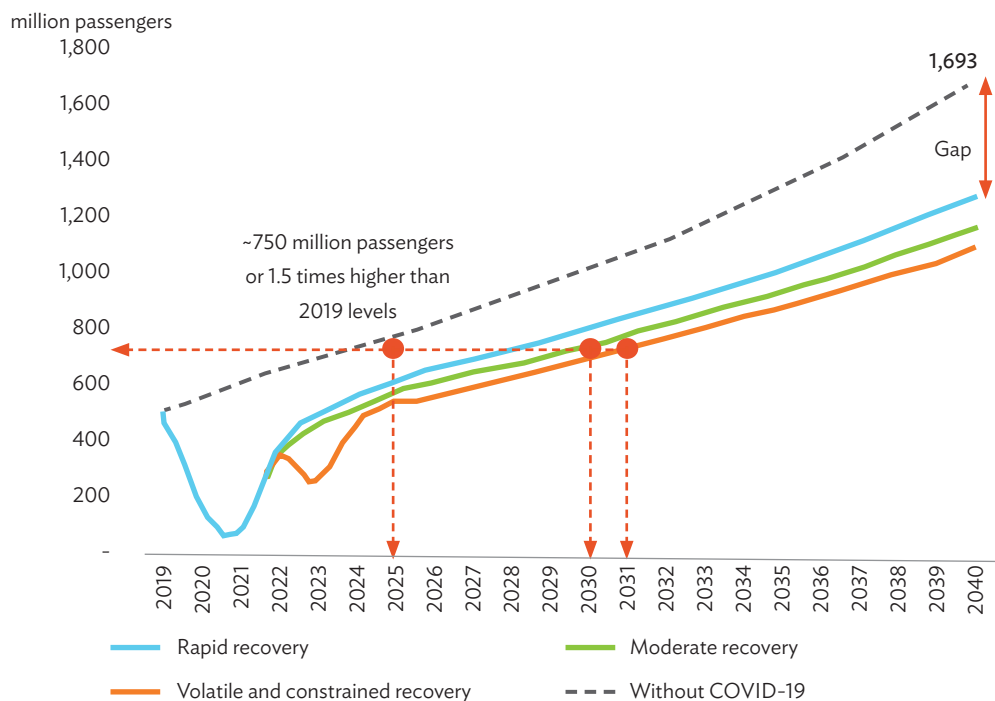
The unprecedented COVID-19 pandemic has caused massive economic losses and disruption for the aviation sector, leading to a much slower recovery compared to past crises. While the outlook for the aviation sector in the long term is uncertain in the aftermath of the pandemic, it is expected that slower economic growth and a possible economic crisis could continue to negatively affect air travel demand.

Analysis using an econometric modeling approach with regression analysis relating historical passenger traffic to the historical GDP of Southeast Asian countries has been used to project a long-term view of the aviation sector based on different recovery scenarios (Figure 16).

Key findings:

- (i) There is a potential structural change in air travel demand and passenger traffic in the post-COVID-19 world due to lower-than-previously-expected global GDP growth after the pandemic.
- (ii) Based on Boeing's forecast, the average GDP growth rate of Southeast Asian countries during 2022-2042 decreased by 50 basis points, from 4.4% (pre-COVID-19 forecast) to 3.9% (post-COVID-19 forecast).
- (iii) Based on available data as of 2022, if there are no growth catalyst events in the next 20 years, it is projected that passenger traffic in Southeast Asia will not be able to reach previously projected levels in the pre-COVID-19 forecast.
- (iv) Before COVID-19, it was projected that air passenger traffic in Southeast Asia will increase by 1.5 times the 2019 level by 2025, which would put significant pressure on the already constrained airport capacity of the region.

Figure 16 Long-Term Projection of Total Passenger Traffic for Southeast Asia



COVID-19 = coronavirus disease.

Note: The projection model mainly functions based on regression analysis relating historical passenger traffic to historical gross domestic product (last 10 years, 2009-2019). Gross domestic product growth forecasts (for 2022-2040) from other institutions (Boeing, International Monetary Fund, and World Bank) have been incorporated to project future passenger traffic volume.

Source: Authors' calculation based on data from airport authorities and forecasts from development institutions.

- (v) Due to the impact of COVID-19, this level of air travel demand may be delayed by 5–6 years, which leaves time for countries in the region to improve their infrastructure capacity to cope with future demand.
- (vi) It is important for Southeast Asian governments to start thinking about how to build adequate, resilient, and sustainable infrastructure to support the recovery of the aviation sector.

Outlook for Cargo Traffic Recovery

Various economic indicators point to potentially strong air cargo volumes and revenues globally—including in Southeast Asia—over the coming years. Air cargo traffic is strongly related to GDP, industrial production, and the rising trend of e-commerce in the region.

- (i) **Gross domestic product:** Air transportation (including air cargo) and regional economic growth are highly interdependent. The demand for air cargo depends on the economic performance of the origin and destination countries. Increases in the GDP growth rate provide a favorable environment for business growth, which in turn drives up exports and imports and general demand for air cargo transport.

According to the International Monetary Fund's economic forecast, Southeast Asian countries are expected to experience strong economic recovery during 2022–2026 with the region's GDP expected to grow annually by 4.5%. Overall freight demand is expected to increase in the coming years as a result of regional economic expansion.

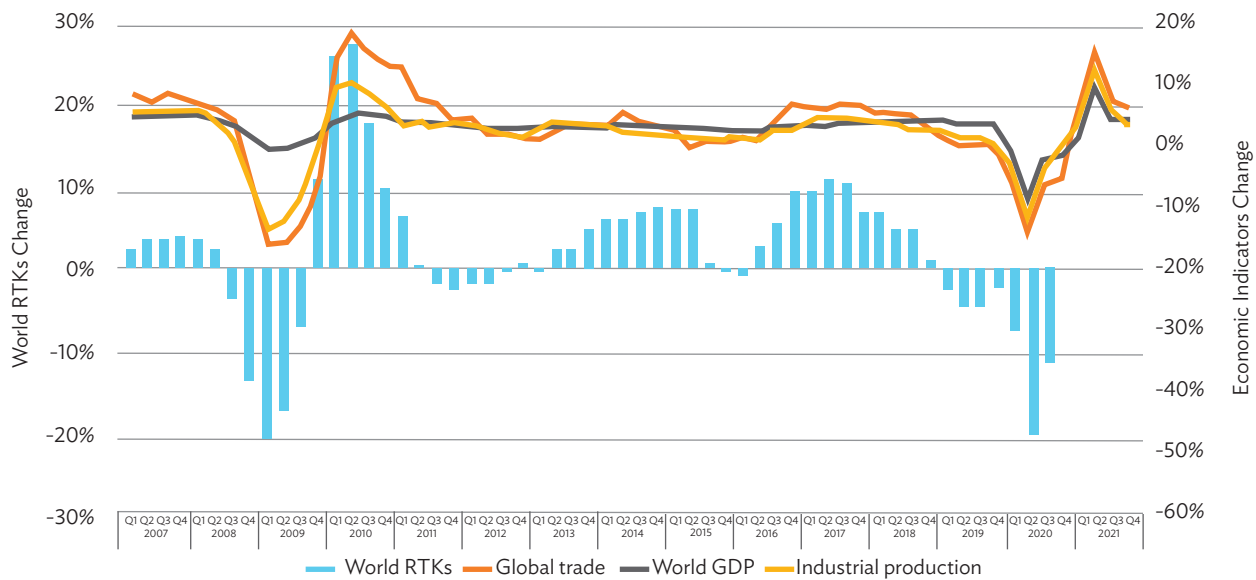
- (ii) **Production and manufacturing:** Air cargo has been driven by robust demand for goods and supply chain issues. The disruption of production as a result of quarantine requirements in various manufacturers across the region has led to longer delivery times, which has prompted businesses to choose air transport to speed up deliveries.

Time-sensitive and high-value products such as pharmaceuticals, perishables, and (during the pandemic) personal protective equipment are among key drivers for air cargo demand. These products require a short transportation time from production to the end user which air cargo transport can provide compared to other types of transport.

In the long term, industrial manufacturing is also one of the key drivers of air cargo flow in the region. The countries with high industrial production rates will require a higher level of international trade as these countries would have a high demand for intercontinental exports. Viet Nam, with low manufacturing costs, has particularly attracted several manufacturing companies, making the country one of the largest exporters in the region and leading to the increasing demand for air cargo. Due to recent geopolitical issues, many manufacturers are also seeking to reduce their dependency on a single country, and Southeast Asia is becoming a beneficiary of increased foreign direct investment as a result; this, in turn, will further drive air cargo demand.

- (iii) **E-commerce:** During 2012–2022, digitalization changed consumer online shopping behavior, which led to a rising e-commerce trend. Pre-pandemic, e-commerce was already growing at double-digit rates and has accelerated its impact on the air cargo market. Movement restrictions and intermittent lockdowns changed consumer behavior and triggered demand for online shopping during the pandemic which appear to have caused a permanent shift in consumer behavior.

While domestic e-commerce business is often supported by ground delivery networks, growth in cross-border e-commerce is promoting an increased role for air cargo (Figure 17).

Figure 17 Relationship between Economic Indicators and Air Cargo Traffic Growth

GDP = gross domestic product, Q = quarter, RTK = revenue tonne-kilometer.

Source: Boeing.

Overall, since many emerging countries have open economies and rely on the international exchange of goods to participate in the world economy, the continued economic growth of these countries will contribute to trade growth. In the long term, advanced economies will continue to be the source and destination for consumer products and high-tech industrial demand. The rise of emerging markets in Southeast Asia will help the region realize a positive outlook for international trade and the air cargo segment.

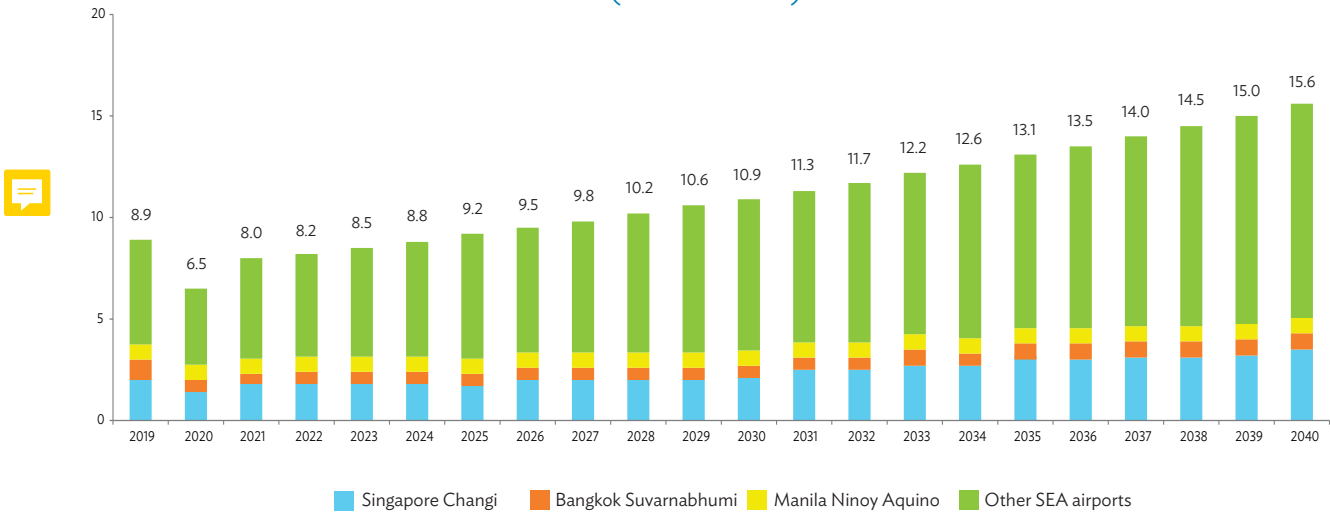
In 2021, Southeast Asia's top three airports (Singapore Changi, Bangkok Suvarnabhumi, and Manila Ninoy Aquino) handled a combined total of 3.66 million tonnes of air cargo, representing 89% of 2019 levels. Southeast Asia has since opened its borders, resulting in an increased demand for goods as its economies recover. While it will take time for international passenger flights to fully recover to pre-COVID-19 levels—which impacts belly cargo capacity—the expansion of e-commerce is expected to drive overall cargo growth. Freighters could continue playing an increasingly important role as belly capacity from passenger aircraft may not be sufficient to meet demand.

In the short term, Southeast Asian countries may experience slow cargo growth due to the impact of the Russian invasion of Ukraine. Lockdowns in the PRC in 2022 also pressured the regional supply chain, and there is a risk of further supply chain disruptions which may impact air cargo demand in Southeast Asia.

Air cargo volumes in Southeast Asia were volatile in the first half of 2022 due to supply chain disruptions. Air cargo traffic was below pre-COVID-19 levels, and the full recovery of cargo traffic as well as the resumption of growth is uncertain.

In the long term, IHS Markit forecasts the industrial production growth in Southeast Asia to be 4.8% Y-O-Y during 2022–2042 with regional GDP expected to grow by 4.0%. According to Boeing's forecast, the air cargo traffic in the region is expected to grow by 4.5% per year in the next 20 years and reach approximately 15.6 million tonnes by 2040 (Figure 18).

Figure 18 Southeast Asia Air Cargo Forecast
(million tonnes)



SEA = Southeast Asia.

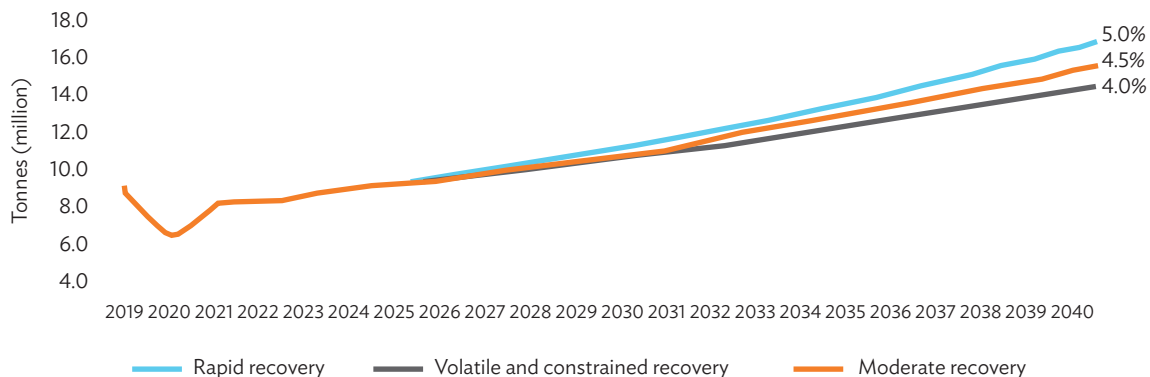
Source: Airport and airport authorities, Boeing forecast.

World air cargo traffic is projected to grow an average of 4.0% per year over the next 20 years to 2040. The Asia and Pacific region will continue to lead the world in average annual air cargo growth. This is driven by rapid middle-class growth—particularly in Southeast Asia and the PRC—and associated rapid economic growth. In addition, industrial manufacturing in the region has an important role in further boosting air cargo flow. Southeast Asian countries—particularly Viet Nam—have attracted manufacturing companies with low manufacturing costs, making the region a large exporter globally.

Possible Recovery Scenarios for Air Cargo

There are three different possible scenarios for cargo air traffic recovery. The moderate recovery scenario is based on the economic recovery and the positive impact of e-commerce on air cargo, while the rapid and constrained forecast scenarios correspond to higher and lower economic and industrial production (Figure 19).

Figure 19 Southeast Asia Air Cargo Recovery Scenarios, 2020–2040



Source: Authors' calculation based on data from airport authorities and forecasts from development institutions.

Rapid recovery

- (i) Southeast Asian countries maintain endemic policies, and all markets in the region remain open for travel.
- (ii) Robust GDP growth will lead to the expansion of air trade in the region, including air cargo.
- (iii) Strong industrial production as part of regional economic recovery.
- (iv) Demand for air cargo operations will remain strong due to e-commerce growth.
- (v) The supply chain realignment trend in Asia may be accelerated because of PRC pandemic policies that impact production and distribution, boosting the growth of Southeast Asia air cargo as manufacturers and suppliers look for cheaper, less restrictive production bases in Southeast Asian countries.

Moderate recovery

- (i) Southeast Asian countries maintain endemic policies, and all markets in the region remain open for travel.
- (ii) Moderate GDP growth will lead to the expansion of air trade in the region, including air cargo.
- (iii) Demand for air cargo operations will remain relatively strong due to e-commerce growth.

Volatile and constrained recovery

- (i) Some uncertainties will linger, dampening the recovery.
- (ii) Worsening economic conditions, high inflation, and tightening monetary policy will put downward pressure on the supply and demand of air travel.
- (iii) Slow international passenger recovery will impact cargo as the region still relies heavily on belly capacity.
- (iv) Supply chains and production lines are disrupted by new virus spikes across the region, which could cause supply chain bottlenecks and negatively affect air cargo.



Country Assessments and Case Studies

Cambodia

Cambodia was one of the fastest-growing air transport markets in Southeast Asia pre-pandemic and has big ambitions for growth in the post-pandemic era. However, due to its heavy reliance on the PRC, Cambodia will need to develop new source markets and reduce its reliance on multicountry itineraries to resume growth and justify airport infrastructure investments.

Inbound international is the dominant traffic segment for Cambodia and was the primary growth driver in the decade pre-pandemic. In 2019, international visitor arrivals accounted for 88% of international traffic in Cambodia, with a nearly 100% share at Siem Reap (1.7 million) and Sihanoukville (700,000), and an over 80% share at the capital Phnom Penh (1.7 million). In 2009, inbound international was similarly dominant, but Siem Reap had 600,000 international visitors and Phnom Penh 500,000, while Sihanoukville only had domestic services.

The PRC visitor market was the main driver growing nearly twentyfold from 2009–2019 pre-pandemic. The PRC accounted for nearly half of all international passengers in Cambodia in 2019.

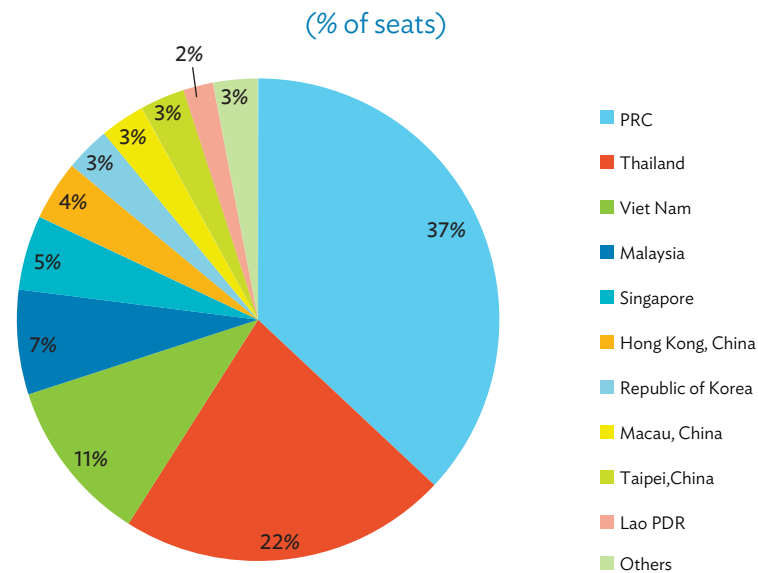
Cambodia has close economic ties to the PRC and should again attract visitors from there when there is a return of PRC outbound tourists. But it could take a few years for the Cambodia–PRC market to reach 2019 levels. In the meantime, Cambodia will need to find other source markets that will require significantly better connectivity.

Pre-pandemic, Cambodia was connected to 14 markets, all within Asia. The PRC dominated, accounting for 38% of the total international seat capacity (Figure 20). The PRC, Hong Kong, China; Macau, China; and Taipei, China accounted for 47%—which markets have taken longer to reopen and will take some time to recover.

Cambodia is connected to eight Southeast Asian countries. Only Brunei Darussalam and Timor-Leste do not have nonstop connections with Cambodia. However, some of the Southeast Asian markets have limited services, particularly Indonesia and the Philippines. There are opportunities to develop the smaller Southeast Asian markets as well as to continue to grow services to the region's main hub airports.

There are also opportunities to develop services to India and grow the Japan and Republic of Korea markets. There are limited services to Japan, while the Republic of Korea is a relatively large market with the potential for further growth.

Australia, Europe, and North America are also important source markets. They are more mature and have traditionally included Cambodia as part of multicountry itineraries, which have become less popular during the pandemic. Cambodia will need to invest in single-destination marketing to attract more long-haul tourists. New long-haul services would facilitate growth in these markets but will be hard to attract.

Figure 20 Cambodia International Capacity Share by Market, 2019

Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China.

Source: OAG.

Domestic tourism became important during the pandemic but has virtually no impact on the aviation sector as most domestic tourists travel by road. Cambodia has a small domestic air transport market that relied predominantly on foreign tourists. Cambodian carriers therefore could not fall back on the domestic market during the pandemic, and their high reliance on PRC traffic has made it very difficult to recover. The market is very competitive with five privately owned Cambodian airlines along with flag carrier Cambodia Angkor Air, all of which focused primarily on the PRC pre-pandemic. Some of the private airlines suspended flights during the pandemic and may not resume services, but new start-ups are emerging which will ensure a high and perhaps unsustainable level of competition.

Cambodia may need to provide support for the airline and tourism sectors for a few years as it will take time for Cambodia to recover given the high reliance on the PRC. Tourism businesses will also need support.

New privately owned airports are under construction in both Phnom Penh and Siem Reap. The new airport outside Phnom Penh is planned to open in 2025 with an initial capacity of 13 million annual passengers, expanding eventually to 50 million annual passengers. The new airport outside Siem Reap is planned to open in 2023 with an initial annual capacity of 7 million passengers and a future potential capacity of 20 million passengers.

It is not realistic for either airport to become a hub. None of Cambodia's airlines are sizable or have network (hub and spoke) models. Developing a hub airline in Cambodia would be very difficult given the competitive environment in the region and the size of Cambodia's market. However, the Cambodian tourism sector should eventually fully recover and grow again, which would justify the new airports.

Cambodia should consider adopting a new aviation strategy and reviewing its policies to help facilitate recovery. Close alignment with a tourism strategy will be critical. New source markets or new growth markets cannot be secured without improved air services. Several initiatives may be required to attract more foreign airlines (such as the Middle East hub carriers) and develop a network that is less focused on the PRC.

Cambodia should also invest in training, particularly in the areas of aviation safety and oversight. Cambodia's aviation sector has potential but also has many challenges and shortcomings.

Recovery strategy recommendations for Cambodia

- (i) Increase focus on services to other Southeast Asian countries and try to attract new services to India and the Middle East.
- (ii) Promote tourism in potential new source markets and focus more on longer stays rather than multicountry itineraries.
- (iii) Adopt a new aviation strategy to better align with tourism and maximize the benefits of new airport infrastructure.

Indonesia

Indonesia has massive growth potential in the post-pandemic era and could emerge as one of the world's largest air transport markets. Achieving its full potential will require significant investment and a clear national aviation strategy.

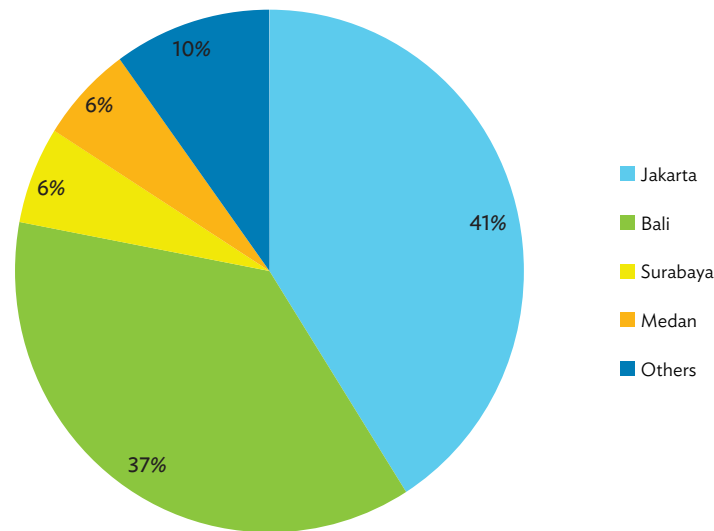
The domestic market was already about 80% recovered in Q2 2022 and is likely to be back at 2019 levels by the end of 2023. A large and expanding middle class, along with an archipelagic geography, positions Indonesia for a resumption of rapid domestic growth during 2024–2034. A domestic market of 200 million passengers per year by 2034 is a feasible target given the size of the country (5,000 kilometers wide with over 17,000 islands) and its population (over 275 million).

While Indonesia's international market is much smaller and will be much slower to recover, there is also huge long-term potential. International traffic should be back to 2019 levels by 2024 and could reach 100 million passengers per year by 2034. Outbound demand will grow as Indonesia's young population is eager to travel overseas, particularly as their income levels improve. Inbound demand will grow as several emerging leisure destinations (which are already popular domestically) start to gain international popularity. Traditionally, Bali has dominated the inbound market, but Indonesia is keen to develop other destinations, facilitating the expansion of several international airports.

In 2019, there were 21 airports in Indonesia with regularly scheduled international traffic. Jakarta and Bali dominated, accounting for 77% of total international traffic. The top four airports—including Surabaya and Medan—accounted for 90% (Figure 21).

The other 17 airports suffered during the pandemic as they were entirely shut for international services, and in 2022, the government was slow to reopen them for international services. While small, these airports have huge long-term potential, particularly for regional connections within Southeast Asia. Indonesia should focus on redeveloping international services at the smaller airports to help facilitate a recovery in tourism and provincial economies, which have been severely impacted by the pandemic.

While Indonesia has huge potential to emerge stronger in the post-pandemic era, there are also significant challenges to overcome. Indonesia will need to upgrade airports throughout the country, including the main cities, provincial capitals, secondary destinations with tourism potential, and the new federal capital. The air traffic management (ATM) infrastructure also requires upgrading. Investments in human resources are required—particularly with training—to ensure the industry has sufficient qualified staff to support rapid growth. Strengthening the capabilities of aviation authorities—including oversight resources—should be another priority.

Figure 21 Indonesia International Passenger Traffic by City of Origin, 2019

Source: Indonesia Directorate General of Civil Aviation.

The economic impact of the pandemic causing budget constraints has already impacted ATM upgrades and Indonesia's ability to support its aviation industry. The government should consider new options for financing ATM upgrades and other aviation-related projects that are critical for facilitating growth and are also needed to comply with international standards.

The economic environment is uncertain and could lead to a reduction in discretionary income levels, resulting in a temporary reduction in air travel demand. Indonesia is a price-sensitive market vulnerable to inflation and rising costs.

There is also uncertainty in the airline sector. Some long-standing competitors have been restructuring, while new competitors are emerging. There are now three government airlines and six privately owned airlines competing on domestic trunk routes. Three of these nine competitors are new: Super Air Jet, Pelita Air, and TransNusa Air.

Super Air Jet launched operations in August 2021 and quickly expanded. Pelita Air was a charter airline that only operated regional aircraft until April 2022 when it launched a new scheduled operation using narrowbody aircraft. TransNusa started a new scheduled operation using narrowbody aircraft in October 2022. It was previously a regional airline—operating turboprop aircraft—before suspending operations in 2020.

The six long-standing competitors on domestic trunk routes are Batik Air, Citilink, Garuda Indonesia, Indonesia AirAsia, Lion Air, and Sriwijaya Air. Garuda, Citilink, and Pelita are government owned. The other six are privately owned with Batik, Lion, and Super Air Jet all owned by the same family.

LCCs now dominate the domestic market, accounting for about 70% of seat capacity in 2022 compared to about 55% pre-pandemic (based on OAG data). The Lion Group of airlines also has become dominant, accounting for around 70% of domestic seat capacity in 2022 compared to about 50% pre-pandemic. Competition is intense and is likely to intensify further, pressuring yields and making it difficult for airlines to achieve profitability over the long term.

Airline profitability in Indonesia improved in 2019 due to a reduction in domestic capacity, which resulted in much higher yields. Losses, overcapacity, and irrational competition were common in prior years, putting Indonesian carriers in a relatively weak financial position pre-pandemic. The pandemic left them in an even weaker and—for some—a precarious state.

Some airlines struggled to ramp up domestic capacity as demand returned, and in the international market, they are generally struggling to compete with foreign airlines. Foreign airlines accounted for about 70% of international seat capacity in 2022 (based on OAG data). The Indonesian government has put in place policies aimed at facilitating higher market share for local airlines but this could slow down the recovery of the overall market.

Significant investment in the Indonesian airline sector is needed to enable carriers to compete more effectively in the international market. Significant investment in airlines is also required to facilitate a full restoration of capacity and a resumption of growth, both domestic and eventually international. Key investment areas include financing new aircraft and new or expanded maintenance facilities. It also includes the restoration of aircraft, as a portion of the fleet was cannibalized during the pandemic and requires significant work to reactivate.

Many Indonesia-registered aircraft were still grounded in the second half of 2022. The process of reactivating the remaining aircraft will be long, slow, and expensive given the generally poor condition of these aircraft.

Indonesia should look at measures to help airlines recover but avoid protectionist measures. It should relook at its aviation strategy to ensure there are clear objectives with the three government-owned airlines and its overall aviation policies. It should promote new routes—both domestic and international—and facilitate growth in both markets with liberal, rather than protective, policies.

In the domestic market, the development of new point-to-point routes would facilitate economic development and domestic tourism. The international market suffers even more from a lack of connectivity, particularly from secondary cities, making it difficult to attract international tourists as domestic to international connections are tedious and expensive.

Recovery strategy recommendations for Indonesia

- (i) Invest in airports, air traffic management, and training.
- (ii) Attract new point-to-point domestic and international routes.
- (iii) Resume development of secondary airports with a focus on regional international services within Southeast Asia.
- (iv) Adopt a new national aviation strategy clearly outlining the role of government carriers and providing policies aimed at facilitating growth.

Lao People's Democratic Republic

The Lao PDR reopened borders in May 2022, and international connectivity improved after more than 2 years of very limited services. The recovery of the Lao PDR aviation and tourism sectors will be a long process given a high reliance on the PRC and multicountry itineraries for other visitors. The domestic aviation market and the Lao PDR-PRC market are also impacted by a new high-speed rail line connecting Vientiane Capital with Luang Prabang and Kunming.

The PRC accounted for 21% of total visitors to the Lao PDR in 2019 and 27% of visitors that arrived by air, according to data from the Ministry of Information, Culture and Tourism. Flights to the PRC accounted for

26% of the total international seat capacity from the Lao PDR in 2019, based on OAG schedules data. The PRC accounted for 35% of the Lao Airlines' international seat capacity in 2019, and China Eastern was the second-largest foreign airline in the Lao PDR after Vietnam Airlines.

The Lao PDR was served by only 20 foreign airlines in 2019, including eight from the PRC. The Lao PDR was connected to 17 cities in the PRC in 2019, although over half of these did not have regular services.

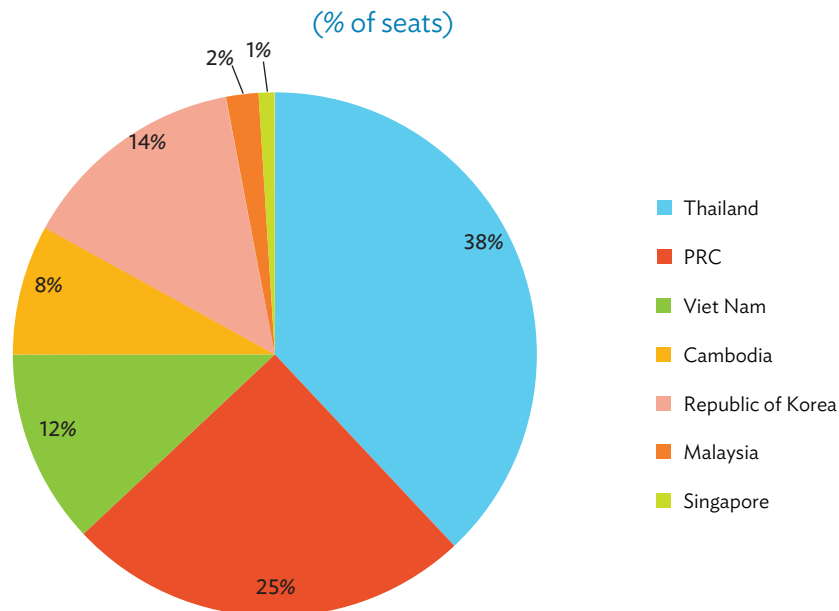
Overall, the Lao PDR was connected in 2019 to 31 international destinations in seven countries. There were no services outside Asia. The Lao PDR relies on Asian hub airports—particularly Bangkok Suvarnabhumi—to connect with the rest of the world (Figure 22).

Thailand was the largest destination, accounting for 38% of the total international seat capacity from the Lao PDR in 2019, including 37% for both Bangkok airports combined. A large proportion of passengers flying to Bangkok connect beyond Bangkok, but there is also significant local traffic, including tourists that combine the Lao PDR and Thailand.

Visitors also often frequently combine the Lao PDR with Cambodia and Viet Nam. Ha Noi is the third-largest destination behind Kunming and Bangkok. Phnom Penh and Siem Reap in Cambodia are the fifth and sixth largest with most of the passengers on these flights consisting of overseas tourists visiting both Cambodia and the Lao PDR. Seoul is the fourth-largest destination with Incheon Airport serving as a hub, particularly for Japan and North America. The Republic of Korea is also a key source market, accounting for 4% of total visitors to the Lao PDR in 2019 but 22% of visitors by air.

The Lao PDR should continue to focus on the Republic of Korea in the post-pandemic environment but also needs to find new source markets. There is huge potential to attract more tourists and flights from Southeast Asia—particularly from non-neighboring countries—as there is already significant traffic from Thailand and Viet Nam. There is also huge growth potential from India and Japan, which could support new nonstop flights within

Figure 22 Lao People's Democratic Republic International Capacity Share by Country, 2019



Lao PDR = Lao People's Democratic Republic, PRC = People's Republic of China.
Source: OAG.

the next few years. Long-haul flights would also drive growth in aviation, tourism, and the broader economy but will be difficult to attract.

The Lao PDR needs to increase its investment in tourism marketing as it is a relatively unknown and underappreciated destination, even in several other Southeast Asian countries. Investment is required to promote the Lao PDR as a destination worth visiting alone rather than combined with other countries. The Lao PDR has the potential to thrive in the post-pandemic era as more travelers focus on (i) staying longer in one country, (ii) rarely visited destinations, (iii) culture, and (iv) ecotourism. It could also benefit from the digital nomad trend, resulting in long stays by travelers who can work remotely. Significant work is required to promote the Lao PDR and build up air services.

There are enormous challenges confronting the Lao PDR aviation sector which are—in many respects—more daunting than what more developed Southeast Asian countries face in the post-pandemic era. A new high-speed rail line has decimated demand on the main domestic air route as it has cut travel time from Vientiane Capital to the popular tourist town of Luang Prabang from 6 hours to 2 hours. There were about 400,000 annual seats on this route pre-pandemic, based on OAG data. This is not a lot of capacity compared to trunk routes in the major Southeast Asian countries, but it was a significant generator of revenues for airlines in the Lao PDR given their small size.

High-speed trains began connecting Vientiane Capital and Luang Prabang in late 2021 with some trains continuing north to the border town of Boten for a total journey of slightly over 400 kilometers and 3 hours. The new line continues on the PRC side for another 600 kilometers, ending in Kunming. Freight services to the PRC began during the pandemic with passenger services expected to be added by the end of 2023. This could impact demand for flights from Vientiane Capital and Luang Prabang to Kunming as well as the broader Lao PDR-PRC market because, in Kunming, there are high-speed rail connections to other cities in the PRC. Tourists from eastern PRC could opt to fly to Kunming and take the train to the Lao PDR rather than fly to Luang Prabang or Vientiane Capital.

Both Luang Prabang International Airport and Wattay International Airport (in Vientiane Capital) were expanded pre-pandemic and are capable of handling more international flights, although both are still relatively small. The Lao PDR could benefit from further airport infrastructure upgrades although any projects would be relatively small in scale. In 2021, a feasibility study was launched for expanding the tiny terminal at Luang Prabang, which opened in 2012 along with a runway extension that enabled jet operations. The Wattay international terminal was expanded in 2018, doubling capacity to a modest 2.3 million passengers per year. The expanded terminal was already operating at about 70% to 80% of capacity pre-pandemic.

The government should start assessing options—including financing options—for the future development of its main international airport. Upgraded airport infrastructure at the capital is critical to support anticipated growth, both in tourism and the overall economy.

There are also international airports at Pakse and Savannakhet in southern Lao PDR. These are very small and will probably only require a modest level of investment along with the approximately 10 airports that only have domestic services (which are operated by flag carrier Lao Airlines and small regional airline Lao Skyway). These airports have an important social role in providing connectivity to rural areas and would benefit from upgrades to ensure they comply with international standards.

The Lao PDR will not become a major destination or a hub for the region. However, there is an opportunity for the Lao PDR to focus more on tourism to improve and grow its economy, which has been significantly impacted by the pandemic.

Annual international passenger traffic could exceed 5 million by 2030, compared to 2.3 million passengers pre-pandemic if new inbound growth markets can be unlocked. In the decade pre-pandemic, international traffic grew sixfold but on a very small base, driven primarily by the PRC. Domestic traffic tripled, exceeding 1 million annual passengers pre-pandemic, but is likely to shrink in the post-pandemic period (with traffic significantly lower in 2023 compared to 2019) due to the impact of the new high-speed rail line. The focus should shift to maintaining essential services to rural areas.

Outbound traffic is limited and accounted for only about 30% of total international traffic pre-pandemic. Outbound demand is now impacted by the devaluation of the local currency, which has made it difficult for most of the local population to travel overseas. Domestic tourism became popular during the pandemic and will continue to have an important role. However, domestic tourism does not generally benefit the Lao PDR aviation sector as most domestic tourists drive or take the new train. Domestic tourism also has a much smaller economic impact than international tourism, and several businesses which relied on international visitors—particularly in Luang Prabang—have shut down.

The Lao PDR will need to invest in tourism and aviation but has budget constraints given the severe economic impact of the pandemic. It faces decisions on aviation as it looks at the potential privatization of Lao Airlines. The government-owned flag carrier has always struggled to compete against larger foreign airlines because it lacks scale and is not well known in the overseas markets it serves. Devaluation of the local currency—which results in a huge spike in costs which are mainly in US dollars—and rising fuel prices add to the challenges. Attracting foreign investment will be very difficult. The Lao PDR may need to relook at its aviation strategy and focus more on facilitating growth from foreign airlines.

Recovery strategy recommendations for the Lao People's Democratic Republic

- (i) Increase focus on regional Southeast Asia as well as India, Japan, and the Republic of Korea.
- (ii) Attract new international routes and diversify by connecting with more hub airports.
- (iii) Increase efforts to promote tourism, taking advantage of the global rise in ecotourism, longer stays in single countries, and rarely visited destinations.
- (iv) Relook at aviation strategy and focus on opportunities to facilitate growth by foreign airlines.
- (v) Invest in small-scale airport infrastructure upgrades.

Philippines

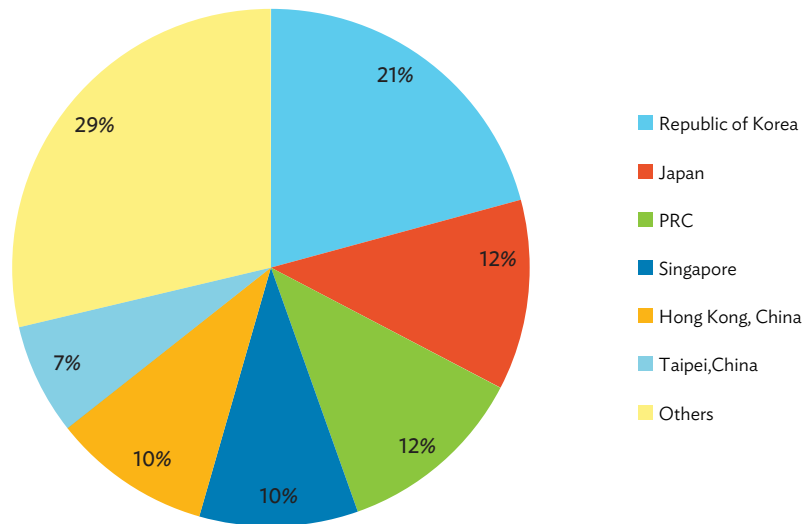
Aviation plays a critical role in the Philippines due to its archipelagic geography and large diaspora. The Philippines aviation sector recovered rapidly in 2022 as it relies less on inbound tourism—and less on the PRC—than most other Southeast Asian countries.

The Philippines aviation sector still needs government support to fully recover from the pandemic, which had a massive financial impact due to long lockdowns and a lack of government support. Infrastructure investments are also needed to fully unlock the long-term growth potential of the Philippines aviation market.

The Philippines' aviation sector is heavily reliant on North Asia, which accounted for five of the six top markets pre-pandemic. In the post-pandemic era, there is a huge opportunity for intra-Southeast Asia traffic. Southeast Asia accounted for only 6% of total visitor numbers to the Philippines in 2019.

There are opportunities to continue to grow the domestic market, which had nearly recovered by the second half of 2022. Point-to-point domestic routes—which increased significantly in the several years pre-pandemic due to congestion in Manila—could account for a large share of the domestic growth over the next decade.

Figure 23 Philippines International Passenger Traffic Share by Market, 2019
(% of seats)



PRC = People's Republic of China.

Note: Estimated origin and destination traffic based on marketing information data tapes (MIDT) booking data.

Source: OAG.

The infrastructure challenges in Manila must be resolved as the growth opportunities in the secondary hubs for both domestic and international traffic are somewhat limited given that so much of the demand is from passengers originating or heading to Manila. There are several airport projects planned for the Manila area, and strong interest from the private sector in making the investments is needed for these projects to succeed. The Government of the Philippines needs a clear plan and strategy for developing airports in the Manila area as well as nationally.

There is a pressing need to expand airport capacity in the Manila area as demand for air travel to and from the Greater Capital Region of Manila is recovering rapidly and will soon again be above capacity, with massive long-term growth potential if the infrastructure is put in place to accommodate the demand. However, pursuing any of the Manila area projects in isolation is not sensible. Once there is a clear strategy and plan for the Manila area, it will also become easier to plan for the rest of the country, where there is also still a need for airport infrastructure development and interest from investors.

The new administration should look at all PPP options and come up with a process that ensures it gets the most out of each asset and the best solution for all stakeholders. Unsolicited proposals and “Swiss Challenges”—which were common for airport projects pre-pandemic—are options but do not always result in the best outcome. The administration should conduct a thorough review of alternatives, ideally with input from development financial institutions (DFIs), industry stakeholders, and potential partners. The government should look at a wide range of options for financing airport infrastructure and not rely entirely on unsolicited proposals from the private sector. It will also need to consider its ability to repay and higher demand risks in the post-pandemic era.

Pre-pandemic, the Philippines was looking to spend nearly \$20 billion on 12 airport projects, including \$14 billion on the New Manila International Airport. These assets are crucial but need to be guided by a coherent airport strategy to boost the recovery of the aviation sector.

The Government of the Philippines should also consider infrastructure development initiatives to leverage the potential of its air cargo market. Policy and strategy adjustments are needed to ensure both the airline and airport sectors can grow in line with demand during 2022–2042.

Recovery strategy recommendations for the Philippines

- (i) Support the development of intra-Southeast Asia markets, particularly in the Brunei Darussalam–Indonesia–Malaysia–Philippines East ASEAN growth area.
- (ii) Promote infrastructure investments and continue to attract private sector participation in the development of airport assets.
- (iii) Facilitate recovery of the aviation sector through support initiatives and policy adjustments.
- (iv) Pursue development of air cargo infrastructure and support air cargo operators to realize the potential of the fast-growing e-commerce sector in the Philippines.

Thailand

Thailand—Southeast Asia's largest air transport market pre-pandemic—has massive growth potential in the post-pandemic era, driven by inbound demand for travel from other Southeast Asian countries as well as from source markets outside the region. Strategic infrastructure investment, policy adjustments, and support measures for its aviation sector are needed to facilitate growth.

Pre-pandemic, the Thailand aviation and tourism sectors relied heavily on tourists from the PRC, and there was also significant traffic from the Russian Federation, particularly to holiday destinations such as Phuket. However, these key sources of traffic may not return to their pre-COVID-19 levels for several years. Thailand will need to grow its other major source markets and find new source markets.

As is the case with Southeast Asia overall, there are particular opportunities for Thailand to attract growth from India, Japan, the Republic of Korea, and Taipei, China. Pre-pandemic Thailand was already the largest Southeast Asian country for tourists from these key markets.

India, Japan, and the Republic of Korea were among Thailand's largest aviation markets pre-pandemic. However, the PRC dominated, accounting for around 25% of total international passengers (based on origin and destination [O&D] traffic) (Figure 24).

The high reliance on the PRC will make it difficult for international traffic to fully recover in the near to medium term. This will impact the Thailand airline sector, which incurred huge losses during the pandemic, resulting in three airlines filing for bankruptcy court protection as there was little or no government support. The likely return of intense competition and elevated fuel prices will also make it very challenging for the sector in the post-pandemic era. The Government of Thailand should consider policies and programs to facilitate the recovery of the airline sector, which is critical for supporting tourism and the overall economy.

Operational readiness is also a concern. Airlines have been forced to downsize their fleet and employees as they conduct major financial restructuring. Thai Airways went through a bankruptcy procedure, which resulted in a reduction of trust in the airline, particularly among suppliers, but also among passengers. Lack of qualified labor—including flight crew, engineers, operational staff, and airport terminal staff—is a global issue that prevents the aviation sector from recovering to pre-COVID-19 operational levels. To build system resilience and improve the operational readiness of its large aviation sector, the Government of Thailand must take measures to address the problem and roll out measures to support airlines and the aviation workforce. It is also important for airlines and airports to plan for staff recruitment, training, equipment reactivation, as well as digitalization to increase efficiency and capacity.

Concerning its aviation infrastructure plan, the Government of Thailand—along with airport operators—will need to take advantage of the slower period to build new infrastructure and optimize or ramp up the capacity of their

assets to support the eventual full return of pre-COVID-19 demand and growth. It has been estimated that \$15 billion is needed for Thailand to develop new aviation infrastructure and expand the capacity of its key airports by 2030. Projects are planned to be delivered through PPP with a total investment of \$10 billion, led by the development of U-Tapao International Airport in the strategic eastern economic corridor outside Bangkok.

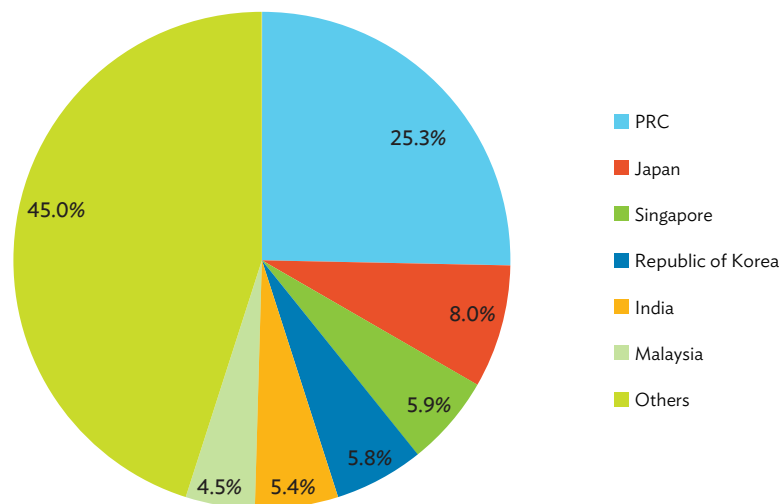
U-Tapao is one of several major development projects in the eastern economic corridor, which will be linked to Bangkok—including both Bangkok airports—by a new high-speed rail line. Enhancement of (ATM) capability in the Bangkok area is also critical to solving problems with ATM and airspace-related issues and fully utilizing future Bangkok area airport capacities.

Rapid e-commerce growth presents potential opportunities for the Thailand air cargo sector. To fully develop the Thailand air cargo market, efficient logistics and supply chain operations must be maintained. Improvements in air cargo-related infrastructure and the adoption of digital innovation in the air cargo industry are needed.

Recovery strategy recommendations for Thailand

- (i) Increase focus on regional international routes within Southeast Asia as well as India, Japan, and the Republic of Korea as PRC traffic will not likely return to its pre-COVID-19 peak level in the short term.
- (ii) Promote aviation infrastructure investments to improve and optimize capacity, particularly in the eastern economic corridor.
- (iii) Transform Thailand into a regional air cargo hub by pursuing partnership opportunities for freighters, air cargo warehouses, and investments in logistics infrastructure.
- (iv) Roll out measures to support airlines and the aviation workforce to address the numerous challenges that confront the industry as it tries to recover from the pandemic, including operational and financial.

Figure 24 Thailand International Passenger Traffic Share by Market, 2019
(% of seats)



PRC = People's Republic of China.

Note: Estimated origin and destination traffic based on marketing information data tapes (MIDT) booking data.

Source: OAG.

Timor-Leste

Timor-Leste is by far the smallest and least developed air transport market in Southeast Asia. However, it has huge potential as Timor-Leste emerges as a tourism destination and develops economically.

The upgrade and expansion of Presidente Nicolau Lobato International Airport in the capital, Dili, should help facilitate growth. However, Timor-Leste will need to adopt an overall aviation strategy and implement several initiatives to promote tourism and attract new air services (Figure 25).

As of 2022, Dili had only three scheduled international routes: Denpasar on the Indonesian island of Bali, Darwin in Australia, and Singapore. Bali has traditionally been the main international route with service from multiple Indonesian carriers, providing connections to the rest of Indonesia and beyond. In 2019, Bali accounted for 81% of the scheduled seat capacity from Timor-Leste. Charter flights to Bali and other Indonesian destinations are also common.

Darwin has traditionally been the gateway to Australia, Timor-Leste's largest source market and a close partner. Qantas launched regularly scheduled services on the Dili-Darwin route in March 2022 using regional jets. This is a significant development for Timor-Leste as Qantas should help Timor-Leste attract more Australian tourists, leveraging the Qantas strong domestic network and brand in Australia.

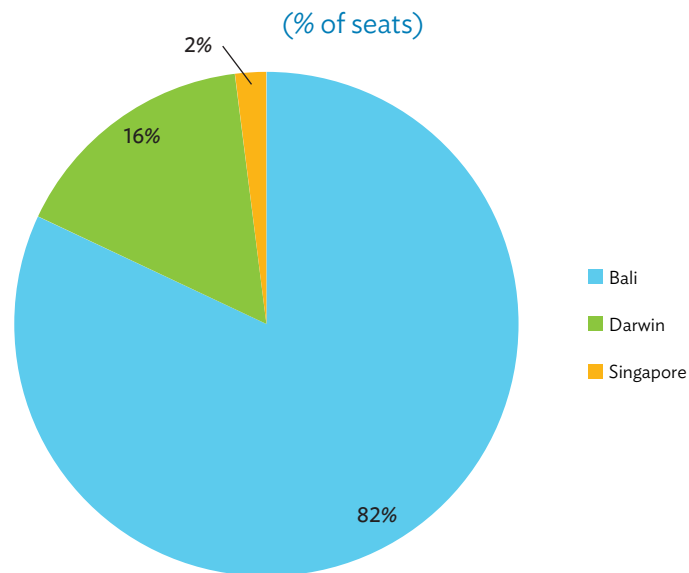
Qantas previously operated ad hoc or charter flights to Dili—including during the pandemic—while regional carrier Air North for several years was the only airline offering scheduled services between the two countries. Air North continues to operate turboprops on the short distance between Dili and Darwin but with fewer frequencies than in 2019.

Pre-pandemic, Singapore was the main connection point for other markets, particularly Europe. The Dili-Singapore service was operated twice weekly pre-pandemic by Bhutan's Druk Air on behalf of Air Timor. This service was suspended during the pandemic but resumed in September 2022 at a reduced frequency. During the pandemic, the Singapore service was replaced by a service to Kuala Lumpur that was operated for Air Timor by Batik Air Malaysia (formerly known as Malindo Air).

Government-owned Air Timor does not have any aircraft capable of operating international services and therefore wet leases or charters aircraft from foreign airlines to maintain a minimum level of connectivity. These arrangements are not ideal and require significant subsidies, but it is critical until the market can be developed to the point that it can commercially support more international services.

Timor-Leste should relook at the best model for maintaining and developing air services. Developing a proper flag carrier is not likely to be a viable solution, particularly in the short to medium term given the small size of the market and the investment that would be required. Attracting foreign airlines will therefore be needed to benefit from an upgraded international airport. Once the upgrade project is completed, Dili's airport will comply with International Civil Aviation Organization (ICAO) safety standards and have an extended runway capable of handling fully loaded narrowbody aircraft along with a new terminal.

Developing air services will be very challenging for at least the next few years. Timor-Leste and its partners will need a clear and well-funded strategy for air service development. Airlines will have to be incentivized and supported. Timor-Leste should consider establishing a program and budget for securing and maintaining new air services through 2028, at which point the market will have hopefully developed and services can be sustained on a commercial basis.

Figure 25 Timor-Leste Scheduled International Capacity Share by Destination, 2019

Source: OAG.

A strategy for domestic airports should also be considered. Timor-Leste has several domestic airports, mainly catering to general aviation including private aircraft and medical evacuation flights. There is potential to develop more scheduled domestic flights, which are limited and are operated with very small aircraft. While international flights from secondary airports are possible and have been considered previously, focusing on Dili is sensible given the small size of the overall market.

Timor-Leste's aviation and tourism sectors were at a very early stage in their development pre-pandemic with Dili's annual traffic consisting of only 187,000 passengers in 2019. The pandemic set back development and significantly impacted aviation and tourism businesses. Timor-Leste will need to support these nascent sectors, potentially for several years. New companies will need to be incubated and existing companies developed. Infrastructure will need to be improved across the ecosystem and not just at the gateway airport.

Attracting international tourists to an unknown and relatively undeveloped destination requires significant investment in many areas. Close alignment between aviation and tourism—from a development and strategy perspective—will be necessary to properly maximize the investment in each sector.

For aviation, investment in training across many technical areas, such as oversight and security, will be important. Air service agreements with new source markets will need to be negotiated. Potential foreign airlines need to be identified, and clearly defined air service development projects should be implemented. Timor-Leste should focus on source markets and airlines in Southeast Asia. There is huge potential to attract visitors from other Southeast Asian countries and develop several new regional routes or—in the case of Kuala Lumpur and Singapore—to develop these as permanent fixtures with more capacity.

Targeting LCCs should particularly be a priority. AirAsia has looked at Timor-Leste for several years but has so far only served Dili with occasional charter flights from Indonesia. Timor-Leste is an obvious hole in its network as AirAsia serves all other Southeast Asian countries and is by far the largest airline group for services within Southeast Asia.

Other Southeast Asian LCCs should also be targeted as they have successfully stimulated demand and growth across Southeast Asia. LCCs could potentially connect Dili with several Southeast Asian destinations, offering

reasonable fares that will facilitate Timor-Leste's emergence as a destination as well as make air travel more affordable for the local population. A high fare environment—which almost always occurs when there are no LCCs and limited nonstop options—makes it virtually impossible to achieve growth. Attracting LCCs—or even one LCC—would instantly create a low fare environment and significantly improve connectivity.

Timor-Leste is at a critical juncture in its development. Now is the time to invest in multiple areas across aviation and tourism.

Recovery strategy recommendations for Timor-Leste

- (i) Attract new international routes with a focus on regional services within Southeast Asia and LCCs.
- (ii) Invest in improvements across the aviation and tourism ecosystem.
- (iii) Invest in aviation oversight, safety, and security.
- (iv) Closely align aviation and tourism strategies to maximize investment in airport upgrades and expansion.

Viet Nam

Pre-pandemic, Viet Nam was the fastest-growing aviation market in Southeast Asia and among the fastest-growing markets globally. It has recovered faster than most other Southeast Asian markets, with domestic traffic at significantly higher levels than pre-COVID-19 as of 2022. The aviation sector still faces challenges given the financial impact of the pandemic and because it could take a couple of years for international traffic to fully recover.

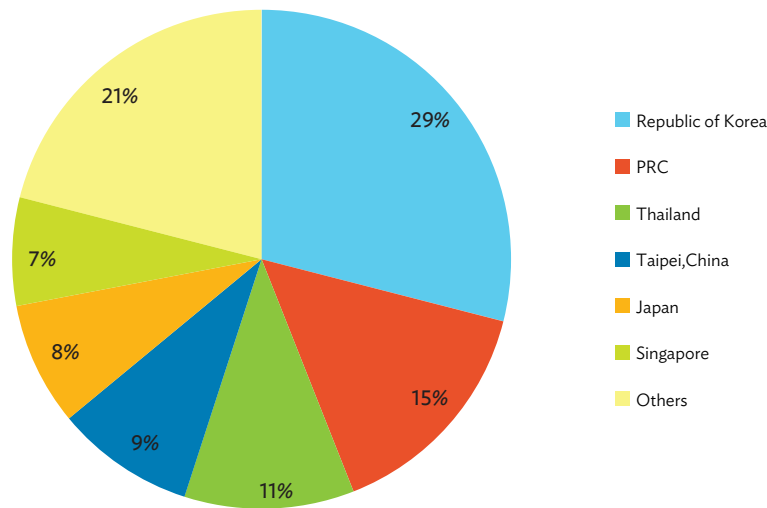
Viet Nam's international market relies heavily on North Asia—including the PRC—which has impacted its ability to recover. However, there are opportunities to grow regional traffic within Southeast Asia and India, which is a relatively new market for Viet Nam with several recently launched new routes.

The PRC was Viet Nam's second-largest international market in 2019 after the Republic of Korea. Taipei, China and Japan were also among Viet Nam's top five markets (Figure 26). While over the long term these will continue to be important source markets, Viet Nam needs to diversify and attract new services from other markets. This will enable a return of rapid international traffic growth, complementing the rapid domestic traffic growth that Viet Nam is already again experiencing.

Viet Nam will need to continue investing in airport infrastructure to ensure there is sufficient capacity to keep up with the resumption of rapid growth. Pre-pandemic, the government already identified the aviation sector as a key area for development. Despite the pandemic, the government is now planning to spend more on airport infrastructure, including the construction of new airports and the upgrade or renovation of existing airports. With the introduction of new PPP laws in 2021 and government commitment to attracting private investment, the PPP model is likely to play a significant role in the Viet Nam aviation sector in the post-pandemic era.

The Civil Aviation Authority of Vietnam also identified key strategic areas for development, including airport infrastructure, air traffic management systems as well as multimodal transport and logistics service centers at airports to cater to anticipated rapid growth in demand for air cargo. By 2030, Viet Nam is planning to increase air navigation capacity to 2.5 million flights per year, the total number of commercial airports to 28—including 13 international airports—and the number of commercial aircraft in operation to 400. There are now more than 200 aircraft operated by Vietnamese carriers with nearly another 400 aircraft on order. There are 22 airports in Viet Nam with scheduled services; 9 of these had international services pre-pandemic.

Figure 26 Viet Nam International Air Traffic Share by Market, 2019
(% of seats)



PRC = People's Republic of China.

Note: Estimated origin and destination traffic based on marketing information data tapes (MIDT) booking data.

Source: OAG.

Planned airport development and upgrade projects until 2030 will need \$17.65 billion. Some major upcoming projects include the first phase of the new Long Thanh International Airport outside Ho Chi Minh City and new terminal buildings for the airports at Ho Chi Minh City and Ha Noi. There are also proposals to develop five other “greenfield” airports through PPP. Private sector participation is encouraged for upcoming aviation infrastructure project financing as there is limited government budget for aviation infrastructure projects.

Airport connectivity in Viet Nam is also an important and strategic area for investment due to landside congestion and overcapacity, including highly congested pick-up and drop-off areas at Noi Bai (Ha Noi) and Tan Son Nhat (Ho Chi Minh City) airports. A subway line connecting Tan Son Nhat Airport and a light railway line connecting the new Long Thanh International Airport are important airport connectivity-related investments in the Ho Chi Minh City area.

Airlines in Viet Nam are struggling as international traffic—their main source of revenue and profit—is slow to recover and the price of fuel is high. The government has been supportive, providing various direct and indirect financial assistance for the aviation sector during the pandemic. This included a reduction in taxes, fees, and charges as well as a \$174 million no-interest loan to Vietnam Airlines. However, more support is required for the airline sector to fully recover.

Recovery strategy recommendations for Viet Nam

- (i) Increase focus on services within the Southeast Asia region and develop other untapped or underdeveloped markets, such as India, that have high growth potential.
- (ii) Attract new international routes to regional airports with attractive tourism destinations nearby, including charter flights promoted by tour operators.
- (iii) Promote private sector participation to develop airport infrastructure and better optimize airport capacity.
- (iv) Promote investment in air cargo and logistics facilities to accommodate increasing e-commerce demand.
- (v) Improve connectivity to airports and reduce road traffic through the development of multimodal connections, including new rail services.



Conclusion

COVID-19 is not the only major crisis in the history of aviation, and despite severe impacts from previous crises, the industry has proven to have a cyclical characteristic, bouncing back from dips to growth periods. Much of this can be explained by the industry's correlation with the global economic and geopolitical landscape. The aviation sector has displayed remarkable resilience and the ability to adapt its business models to meet changing market conditions. Nevertheless, unlike other past crises, COVID-19 is more enormous in both scale and impacts across the whole aviation value chain.

The unprecedented circumstances that the aviation industry is facing require adapting rapidly and being prepared for the emergence of new international and domestic conditions. More than ever, it is critical for the industry to embrace higher levels of collaboration and partnership to recover and continue thriving in a post-COVID-19 world.

Looking across the whole aviation value chain, airlines and airports are the most impacted subsectors and have a significantly higher degree of difficulty. To support the recovery of the aviation sector, a coordinated joint effort is required from regulators, development partners, financiers, investors, and service providers. This would help airports and airlines get the right match between supply and demand, provide cost-effective operations, deliver capital investment and/or liquidity at the right time, secure a sound financial position, and set a business plan that aligns with the new environment.

It could take several years for the aviation sector to fully recover, and COVID-19 impacts may also result in structural and/or long-term changes in air travel demand. Recovery strategies for the sector will need to be responsive, flexible, resilient, and innovative.

In the short and immediate term, it is critical to focus on ensuring essential connectivity—both intra-regionally and with other key markets—to help the aviation sector in Southeast Asia recover. To achieve this, governments in the region will need to continue treating COVID-19 as endemic and ensure any travel requirements are implemented in a harmonized and collaborative way. In addition, airlines and airport operators will need financial support to cope with their financial losses, higher costs, and ramp-up requirements to meet recovering demand. The industry also needs to think further ahead to be more resilient by optimizing its infrastructure and embracing new technologies to meet new customer expectations and operational realities.



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Landscape Study on Southeast Asia's Aviation Industry

COVID-19 Impact and Post-Pandemic Strategy

Before the coronavirus disease (COVID-19), Southeast Asia had one of the world's fastest-growing air transport markets, but this region lost over 80% of its passenger traffic due to the pandemic. Examining operational, infrastructure, and financing issues within the Southeast Asian aviation network, this publication analyzes case studies from select economies in the region to explore diverse recovery scenarios. Recognizing the industry's resurgence is crucial to Southeast Asia's post-pandemic economic recovery, this publication recommends optimal strategies to help the members of the Asian Development Bank rebuild stronger aviation value chains through regional and multisectoral collaboration, for a more resilient and sustainable future.

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