THAILAND INDUSTRY OUTLOOK 2023-25

AIR TRANSPORT INDUSTRY



March 2023

Krungsri Research

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EXECUTIVE SUMMARY



The airline industry can look forward to solid rates of growth in 2023-2025. Both domestic and international passenger numbers will rise in step with overall recovery in the tourism sector, while on the freight side of the industry, the volume of cargo moved by air will be boosted by the post-pandemic rebound in economic activity. In addition, price competition would be intensifying amid expenses from business rehabilitation, while costs tend to increase in line with higher energy prices.

However, players will also face a number of challenges, including the high cost of fuel, which will add to operating overheads, and increasing competition from the growing entry into Asian freight and passenger markets by major overseas carriers. Beyond this, despite the ending of the COVID-19 pandemic, tighter safety measures are continuing to add to costs as operators respond to changing circumstances. These factors will combine to add to overheads and drag on profits, but given their weaker capital base, limited fleets, and narrow market share, smaller carriers may find this a particularly challenging environment in which to operate.

Krungsri Research view

Krungsri Research views that the outlook for the airline industry is trending upward with the following details:

- **Airport operators: Income will rise with the growing number of flights and strengthening passenger numbers,** while operators will be able to book income now that the grace periods for extending payments are expiring (e.g., those given to airlines and on-site retailers). Airport operators also benefit from their monopoly position and the income g, and passenger and aircraft service charges. Further revenue comes from the leasing of concessions for providing services to carriers (e.g., for catering and for luggage services) and from renting space to retail and restaurant operations. Beyond this, airport operators will continue to enjoy the benefits that accrue to them from government spending on related infrastructure, and overall, these factors will support ongoing growth in business income.

- **Passenger carriers: Incomes will expand moderately** thanks to rising passenger numbers and greater demand for cargo services, themselves the beneficiaries of recovery in the tourism sector and in the economy more generally. Additional income will also come from growth in related businesses such as warehousing and distribution, the sale of souvenirs, and services for the management of passengers, goods, and customs clearance. Operators that are suitably positioned will likely partner with other carriers to build their competitiveness and extend the area that they serve. However, as players look to take market share from other domestic and international carriers, price competition will intensify.
- **Freight services: Players will see their income steadily rise**, although operators that fly smaller cargo aircraft tend to have limited access to capital and are forced to compete with large passenger carriers that also offer freight services. In addition, falling sea freight charges will tend to somewhat weaken demand for air freight services, and as a result, some operators may face liquidity issues. However, recovery in manufacturing and trade, and continuing growth in e-commerce will underpin demand, while partnering with logistics operators that can offer both a broad customer base and steady demand for freight services will help to support ongoing business growth.



Overview

Air transport offers travelers and shippers the advantages of speed, of making access to far-flung locations considerably easier than is the case when using other transport modalities, of being the safest form of transport[1/], and of operations generally running on or close to scheduled times. Air travel is thus steadily gaining favor worldwide. This growing popularity is reflected in the spread of modern airports, the ongoing development of large-capacity cargo and passenger aircraft, the roll-out of new, modern transportation tools and equipment, the upgrade and expansion of warehousing facilities that meet demand generated by airports, and the increasing efficiency of carriers themselves. However, air travel has its downsides, most notably the high per-unit costs relative to other transport modalities, and the need for extensive infrastructure to support the whole air transport value chain.

Generally, carriers can be classified into four types

1) **Passenger carriers** use aircraft that have their cabins fitted out with all the features necessary to provide regular passenger services. For these players, the main source of revenue is ticket sales, which may be boosted by additional income from the auxiliary services. To maintain a steady income stream, passenger carriers may sell a portion of their tickets annually to tour agents at wholesale prices.

2) **Cargo and express air services** typically use freighters equipped with the machinery, equipment, and technology needed for goods handling. Income in this segment comes principally from shipping charges and fees for customs clearance. Most operators offer charter services and ship general cargo, cargo that has special handling requirements, service cargo (i.e., tools and aircraft parts), and diplomatic cargo and mail.

3) **Combined carriers** use spare space in the holds of passenger aircraft to carry freight, thus generating income from both ticket sales and shipping fees.

4) **Other air services** target niche markets, such as sight-seeing flights, pilot training, skydiving, aerial filming and photography, and so on. These services often require the use of specialist aircraft, such as helicopters, balloons, and smaller airplanes.

The majority of firms in this industry are organized as combined carriers, selling hold space through freight forwarders or partnering with domestic and overseas players to run complementary services. This then allows for complete coverage on all the main routes.

1/ 290 airlines are members of the International Air Transport Association (IATA), and these members are responsible for 83% of global air traffic. IATA data shows that over the 5 years from 2017-2021, members reported an average of only 44.2 incidents annually, and so in terms of loss of life, air travel remains significantly safer than the alternatives of cars, buses, motorcycles, trains and boats.

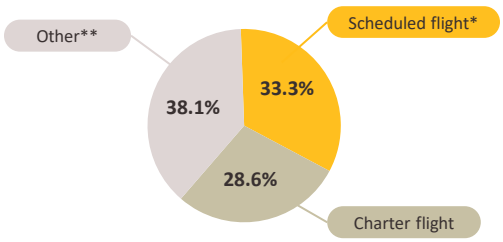
Air travel operations may be further divided into the following three services.

1) **Scheduled services** run on fixed routes to a pre-arranged timetable, allowing operators to allocate planes for passenger and freight in advance, although charter flights may be arranged in addition. 33.3% of Thai operators run services of this type (Figure 1).

2) **Non-scheduled or charter flight services** operate intermittent or one-off flights. These services are provided by 28.6% of Thai operators, most of which are small companies that may have only a single aircraft, meaning that they are not able to exercise a great deal of discretion over the services that they offer. The government has issued regulations specifying that players that operate only a single plane are restricted to providing ad hoc charter flights, while those that run at least two aircraft are eligible to provide program charter flight services.

3) **Other specialist flight services** include sight-seeing and training flights, skydiving, air ambulances, and aerial filming and photography (e.g., to report on traffic congestion or for weather forecasting). 38.1% of Thai operators provide these kinds of services.

Figure 1: Share of Thai AOL Service Route (2021)



Note: * Scheduled flight services include charter service
** Others such as service by balloon, by helicopter, for testing, for sight-seeing, for skydriving, etc.
Source: The Civil Aviation Authority of Thailand (CAAT)

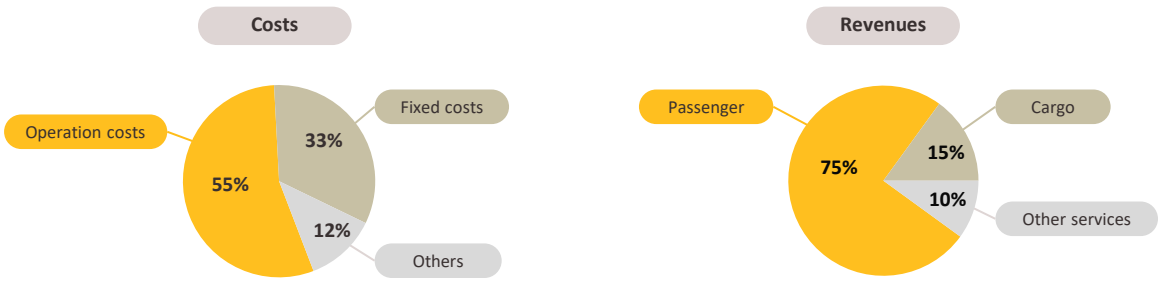
Table 1: Cost of Transportation per Unit (2016)

Mode	THB per ton-km
Road	1.72-2.12
Water	0.64-0.65
Air	**10.00**

Note: Water mode includes inland and coastal
Source: Office of Transport and Traffic Policy and Planning (OTP)

Generally, **the unit costs of moving goods by air is higher than for other transport modalities** (Table 1), with airline business costs split between: ***(i) operating costs***, which comprise 55% of the total and include purchases of fuel (30-35% of all operating costs, though this may rise to 40-45% when oil prices spike[2/]); ***(ii) fixed costs*** (33% of the total), including staff costs (which can be especially high for those with specialist skills), the cost of purchasing or leasing aircraft, and fees for managing flight information and related systems; and ***(iii) other costs***, such as those incurred for regular aircraft checks and maintenance, fees for scheduled maintenance, and charges for the use of airports and parking facilities. **In terms of sources of income,** these are split approximately 75% from passenger services, 15% from airfreight, and 10% from other services (Figure 2).

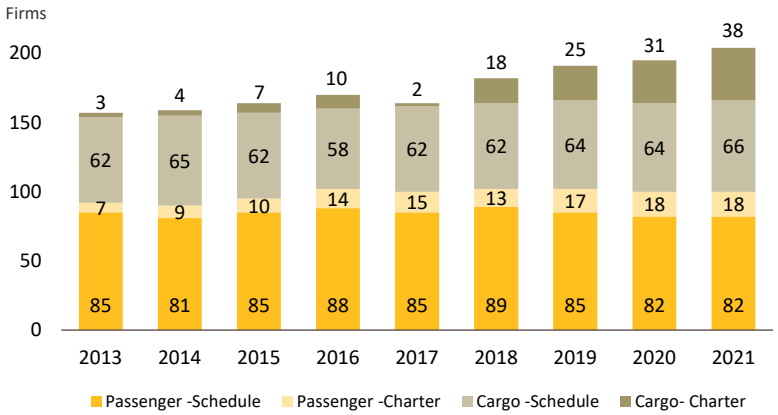
Figure 2: Share of Airline Cost & Revenue



Source: Company data compiled by Krungsri Research

2/ Airlines often reduce the risk of being adversely affected by price spikes by hedging against changes in the price of aviation fuel.

Figure 3: Number of Air Transport Provider By Type of Services



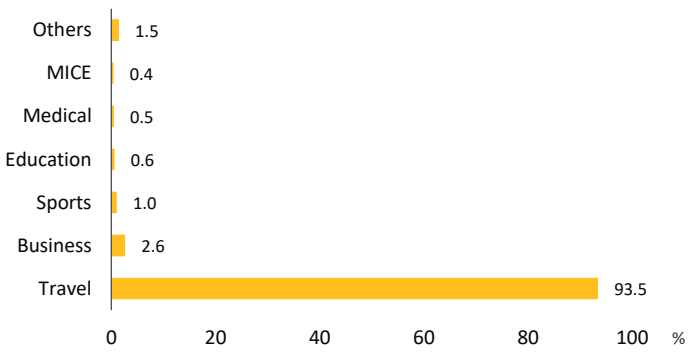
Source: Department of Business Development (DBD)

Operators in this business may be of two types: (i) those that have an air operator's license and that own or lease their own aircraft for use on regular or charter flights; and (ii) those that do not operate their own flights but instead act as agents for those that do, selling space in aircraft to third parties (e.g., tour companies or freight forwarders). **As of 2021, including both Thai and overseas players, there were 204 operators registered in Thailand** (Figure 3) (source: Department of Business Development) split between the following:

- **Passenger carriers**: 100 companies offered passenger flights in 2021 (49.0% of all airlines operating in Thailand), of which 82 ran scheduled flights. 23 of these were large carriers, including Thai Airways, Nok Air, and Thai Smile, while joint ventures with overseas players included Thai AirAsia X (Malaysian) and Thai Vietjet Air (Irish and Vietnamese). 18 airlines did not run regular flights, but only 1 of these was a major carrier, namely Thai Lion Air Mentari (a Thai-Indonesian joint venture).

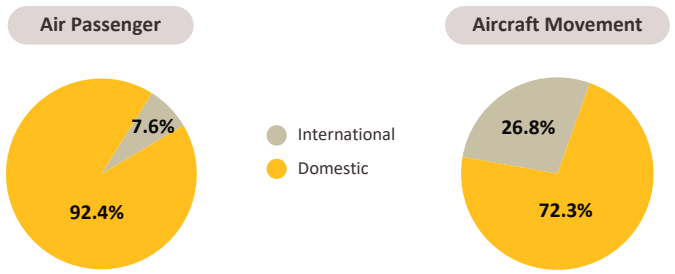
  Growth in the passenger segment has naturally moved in step with the expansion in the tourism sector since 93.5% of travelers arriving in Thailand do so for the purpose of tourism (Figure 4). However, over 2020 and 2021, the need to tackle the spread of COVID-19 through the imposition of restrictions on international and domestic travel created an extremely difficult business environment for carriers. Players responded to these challenges by shifting to a much greater focus on the domestic market (Figure 5) and by placing a greater emphasis on providing cargo services (Figure 6). Thailand's busiest airports are Suvarnabhumi and Don Muang, which as of 2021 handled a combined 51% of all Thai air travelers.

Figure 4: Share of Passenger Journey in Thailand by Objective (2020)



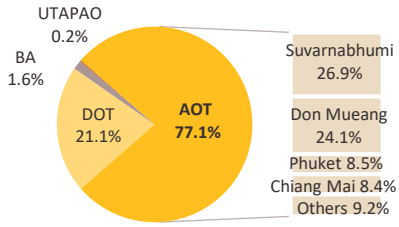
Source: National Statistic office (NSO)

Figure 5: Share of Flight & Passenger of Thais AOL by Service Route (2021)



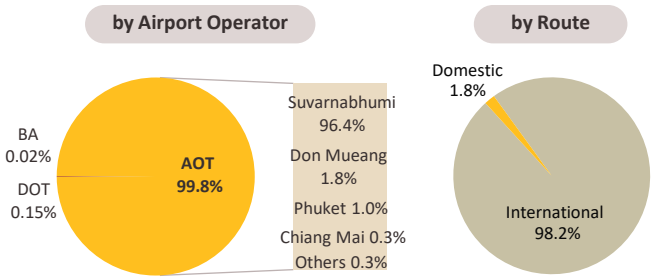
Source: CAAT

Figure 6: Share of Air Passenger in Thailand (2021) by Airport Operator



Note: AOT (Airport of Thailand), DOT (Department of Airports), BA (Bangkok Airways), UTAPAO (Royal Thai Navy)
Source: CAAT

Figure 7: Share of Air Cargo in Thailand (2021)



Note: AOT (Airport of Thailand), DOT (Department of Airports), BA (Bangkok Airways)
Source: CAAT

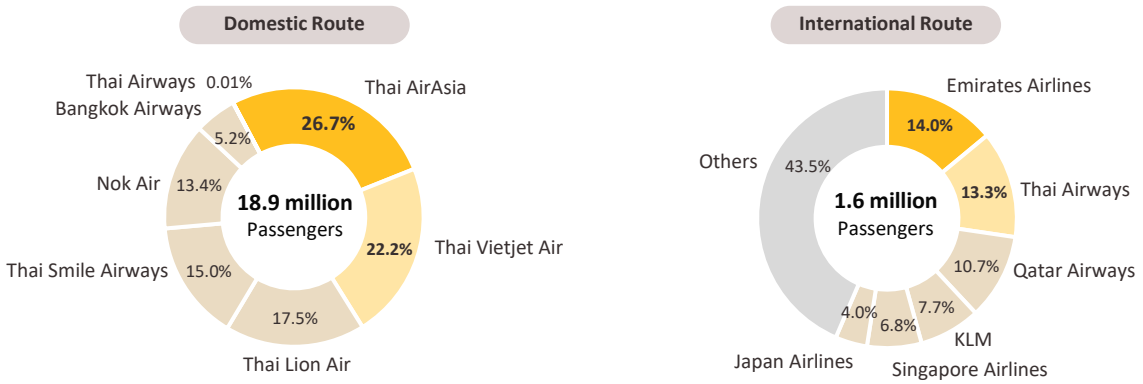
- **Airfreight operators:** There are 104 airfreight companies operating in Thailand (51.0% of all licensed airlines), 66 of which run scheduled flights. There are 6 major players in this segment, including Bangkok Airways (which has its own commercial warehousing facilities at Suvarnabhumi and at another 3 airports), FedEx Thailand (a joint venture with Dutch investors), K-Mile Air (a joint Thai-Swiss venture), and DHL Express International (a joint venture with German players). 38 companies do not offer scheduled flights. All of these are SMEs, though some are joint ventures with overseas players, including Air Mail Logistics (Thai-Hong Kong), Rise Again (Thai-Chinese), and Strong Tower (also Thai-Chinese).

  Goods that are shipped by air are typically small or light and are generally of a high value or require special handlings, such as gems and jewelry, fresh-cut flowers, vaccines, antiques, artworks, computer parts, and electronic equipment. 98.2% of airfreight is bound for overseas markets (Figure 7) since domestically distributed goods are generally moved by road, while sea routes are usually used for the international shipping of goods that are moved in bulk. The market is also strongly influenced by the fact that airfreight is significantly more expensive than the alternatives. Almost all goods shipped by air in or from Thailand (99.8% of the total) pass through airports belonging to the Airports of Thailand (AOT), including Suvarnabhumi and Don Muang (source: CAAT, data as of 2021).

In Thailand, airlines or carriers are required to obtain an air operator license (AOL) from the Civil Aviation Authority of Thailand (CAAT), and as of 2021, 34 licenses were active, though only 32 licensed companies were operating. 14 licensed companies operated in the passenger and freight segments. These ran charter or scheduled flights and were able to muster the requisite personnel, planes and business partnerships, though only 9 of these were actively offering services. The remaining 20 operators were generally SMEs offering ad hoc or charter services, though again only 17 were active; naturally, the steep drop off in demand during the COVID-19 pandemic caused some companies to become insolvent, while some subsidiaries were also shut down by their parent company during the crisis.

The Thai airline industry has seen steady growth since 2008 thanks to: (i) liberalization of the industry, first for airfreight (2008), then for domestic inter-city passenger transport (2010), and finally with the implementation of the Asian Economic Community in 2015, the liberalization of travel between the ASEAN zone and other regions; and (ii) the expansion in the number of services offered by low-cost carriers (LCCs), which typically offer tickets priced at a 40-50% discount relative to those of full-service carriers (FSCs), thus making air travel much more widely available. These factors have enticed a greater number of players into the market, but with this, competition has increased from both low-cost and full-service carriers. Over this period, players have also invested heavily in expanding their fleet capacity and the efficiency of their operations[3/], the number of routes that they serve, and the extent to which they market to specific groups, for example for charter services.

Figure 8: Share of Thai AOL's Passenger (Scheduled Flight Services)

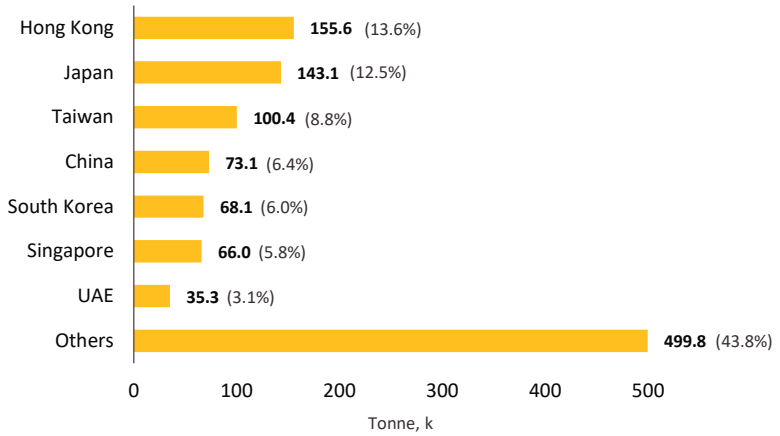


Source: CAAT (2021)

In 2021, 18.9 million passengers were on board **scheduled domestic flights** (Figure 8). Thai AirAsia had the greatest share of this, carrying 5.1 million customers in the year (26.7% of all domestic air travelers), followed by Thai VietJet Air (22.2%), and Thai Lion Air (17.5%). Only 1.6 million passengers were carried **internationally,** of which 0.22 million traveled on Emirates Airline (14.0% of the total). Emirates was followed in importance by Thai Airways (13.3%) and Qatar Airways (10.7%), and for these outbound travelers, the most favored destinations were the UAE, Qatar and Singapore, though these are also major hubs for onward travel to other destinations. **For airfreight,** just 1.8% of the total volume of goods shipped was moved domestically, while for goods flown overseas, the most popular destinations were Hong Kong (12.0% of all Thai-originating freight), Japan (10.7%) and Taiwan (9.4%) (Figure 9).

3/ This is calculated from the cost per available seat kilometers (CASK), which is obtained by taking the total operating costs and dividing this by the total number of seats multiplied by the distance travelled (the 'available seat kilometers', or ASK).

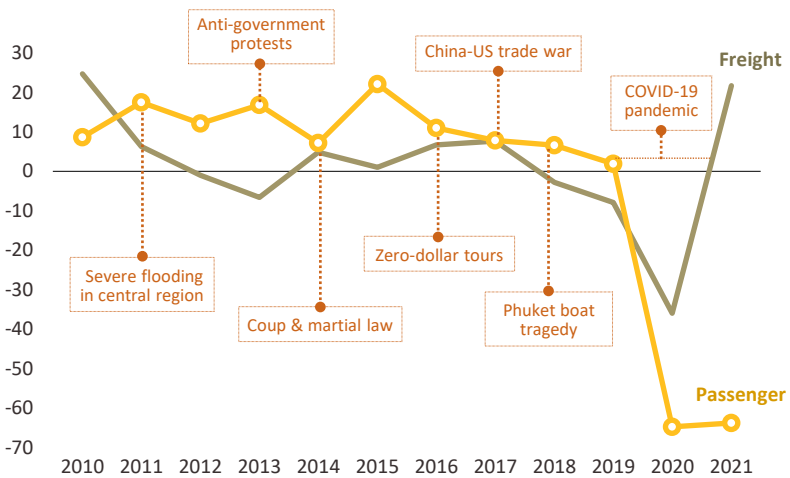
Figure 9: Destination of Cargo Volume
(Scheduled Flight Service, International Route)



Source: CAAT (2021)

Generally, because **most Thai operators are combined service carriers,** they have the flexibility to rapidly reallocate space in their aircraft and schedules between passengers and cargo (Figure 10), and therefore as demand for passenger services rises and falls, operators can dynamically apportion space to cargo services. This has then allowed players not just to preserve income but to grow this as demand has fluctuated.

Figure 10: Air Traffic Growth of Thailand
(% YoY)



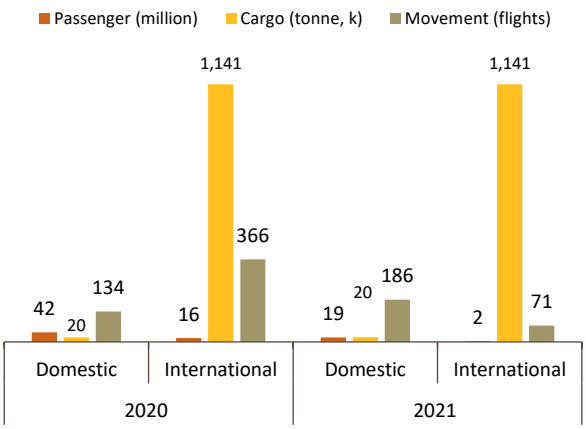
Source: Compiled by Krungsri Research

Situation

The continuation of the COVID-19 pandemic through 2020 and 2021 had dramatic consequences for the global airline industry, and with the closure of national borders and the imposition of strict controls on international travel, the industry plunged deep into the red. The International Air Transport Association (IATA) estimates that in 2021, the worldwide airline industry clocked up combined losses of USD 42 billion, having already lost USD 138 billion in 2020. **The situation began to improve in 2022 with the widespread rollout of vaccination programs** and as the reach of these increased, countries around the world began to ease restrictions on international travel, with consequent effects on demand for air travel. However, recovery has been interrupted first by the outbreak of war in Ukraine in February 2022 and then by the continuation of this into 2023. The effect of this has then been to push up energy costs and add to global inflationary pressures, with the result that growth has slowed in many countries. **IATA thus estimates that for all of 2022, 3.4 billion passengers were carried by air transport, up 83% from the 2021 total. At the same time, 60.3 million tonnes of airfreight were shifted in the year,** bringing the total back close to 2019's total of 61.3 million tonnes, and while the global industry has yet to return to profit, losses are down to USD 6.9 billion from USD 42 billion a year earlier. Moreover, the ICAO estimates that for the first 8 months of 2022, the total number of flights was back to 80% of the pre-pandemic total.

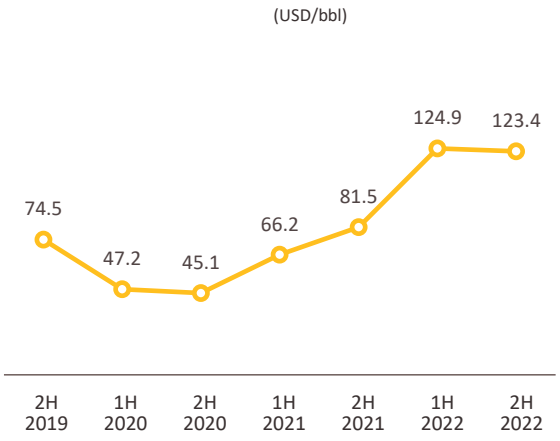
Through 2022, the Thai airline industry has shown signs of recovering in step with global trends. The local industry has benefitted from the following. (i) The government reached its target of administering 100 million COVID-19 shots in December 2021, providing protection for over 70% of the population. In fact, as of September 2022, 143.2 million jabs had been administered, which then provided the government the space needed to relax pandemic controls. This began at the start of 2022, with the country fully reopening to foreign arrivals from July onwards. (ii) Measures have been put in place to promote domestic tourism (e.g., phase 4 of the 'We Travel Together' program) and to encourage international arrivals (e.g., by cutting entry fees). (iii) The economy continues to rebound, with 2022 GDP growth hitting 2.6%, up from 1.5% in 2021. (iv) The baht (as of September 28, 2022) depreciated 12% against the US dollar relative to its 2021 level. This was the sharpest decline in value in 16 years and made Thailand an attractive destination for dollar holders. The effect of these disparate factors has been to stoke a significant increase in the number of domestic and international travelers, and in response to an improving situation, Thai and overseas carriers have expanded their route coverage and increased the number of flights that they are running.

Figure 11: Air Traffic of Thailand



Source: CAAT

Figure 12: Jet Fuel Price



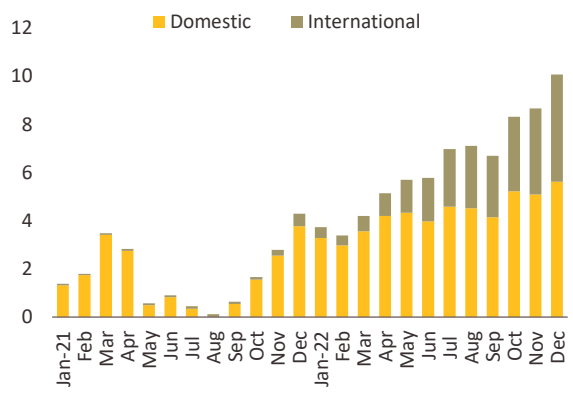
Source: Bloomberg (Average Spot rate)

Nevertheless, **growth is under pressure** from the sharp run-up in inflation, which has decreased consumer spending power and encouraged prospective travelers to be more careful about spending on recreation and air travel. This has happened alongside a jump in crude prices that has added almost 70.0% to the cost of jet fuel since 2021 (for low-cost carriers, fuel accounts for an average of 30.8% of costs, whereas for full-service carriers, this drops to 25.9% (source: CAAT)). However, thanks to strong competition and the current state of the market, carriers have not yet been able to pass these higher costs on to consumers. Moreover, the government has extended assistance to the industry by extending the period for making payments for parking fees and takeoff and landing charges until the end of March 2023 and cutting excise duties on jet fuel until June 2023. Alongside this, players are having to ramp up investment to meet new international health and safety standards and to respond to stricter post-COVID hygiene requirements. This may then impact operations, especially for players that lack liquidity, are in the process of restructuring, or are still recovering from insolvency (e.g., Thai AirAsia, Nok Air, and Thai Airways). **The situation for 2023 is summarized below**

- **The total number of air travelers jumped 262.4% YoY in the year,** rising from 20.9 million in 2021 to 75.8 million a year later. This increase was split between a rise of 120.0% YoY (to 51.5 million journeys) ***for domestic travelers*** and one of 1,200.0% YoY (to 24.3 million journeys) ***for international flyers*** (Figure 13). On the domestic side, the market was boosted by ongoing government stimulus packages that included the 'We Travel Together' scheme, which partly offered both airfare and accommodation incentives for those staying in hotels in Thailand. At the same time, 11.8 million foreign tourists arrived in the year, though the 3 most important markets were all for short-haul travelers from within the region, namely Malaysia, India, and Lao PDR. The international segment grew during the high season (the last quarter of the year) when a greater number of long-haul travelers from Europe, the US, and Russia came to Thailand. Growth was further boosted by the government's decision to extend the length of the permitted stay for visa-free arrivals[4/] (with effect from October 1, 2022). These factors then helped to accelerate the rebound in the tourism sector and to trigger a V-shaped recovery.

Figure 13: Monthly Air Passenger Traffic Movement

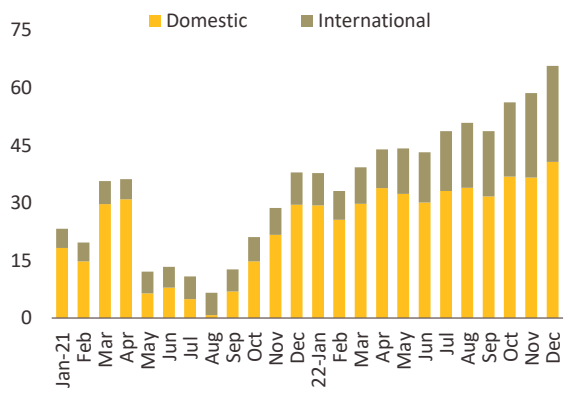
(Person, m)



Source: CAAT (2021-2022)

Figure 14: Monthly Aircraft Movement

(Flight, k)



Source: CAAT (2021-2022)

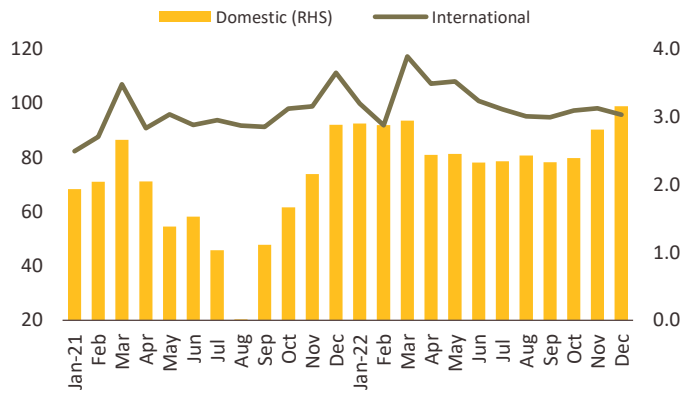
- **The number of flights also rose in the period, moving in step with increasing demand.** These thus jumped 121.1% YoY to a total of 0.57 million flights, up from 0.26 million in 2021. ***In the domestic segment,*** the number of flights strengthened by 111.1% YoY to 0.39 million as carriers reopened almost all the routes that had been shut during the pandemic, while ***the number of international flights*** jumped 147.1% YoY to 0.18 million (Figure 14). Demand was lifted by the ending of the Test & Go program for fully vaccinated arrivals in May, the abandonment of the Thailand Pass for Thai nationals in June, and the full reopening of the country in July. This then encouraged carriers to reopen international routes and to steadily increase the frequency of flights in parallel with the rising number of foreign tourists. In addition, the market was helped further by the decision by other Asian nations (e.g., Japan and South Korea) to also reopen to foreign arrivals.

4/ The length of visa-free stays has been extended from 30 to 45 days, while the length of visas issued on arrival has been extended from 15 to 30 days. This has effect from 1 October, 2022 to 31 March, 2023.

- **Air freight volumes likewise increased through the period,** though at the much lower overall rate of 6.4% YoY, rising from 1.16 million tonnes in 2021 to 1.23 million tonnes in 2022. ***On the domestic front,*** freight volumes jumped 53.5% YoY to 0.03 million tonnes, whereas the much bigger ***international market*** saw growth of 5.6% YoY, which took this to a total of 1.2 million tonnes (Figure 15). Demand for air freight services has been boosted by growth in the export sector, in particular for the shipping of goods such as medicines, medical supplies and devices, semiconductors, and express e-commerce deliveries, as well as by the return of consumer spending patterns to normal. Players have also been expanding the reach of their services, for example through Thai Smile's Smile Cargo, which offers logistic and air freight services in the ASEAN region, and Teleport, a joint venture between AirAsia and K-Mile to provide charter freight services.

Figure 15: Monthly Air Cargo Movement

(Tonne, k)



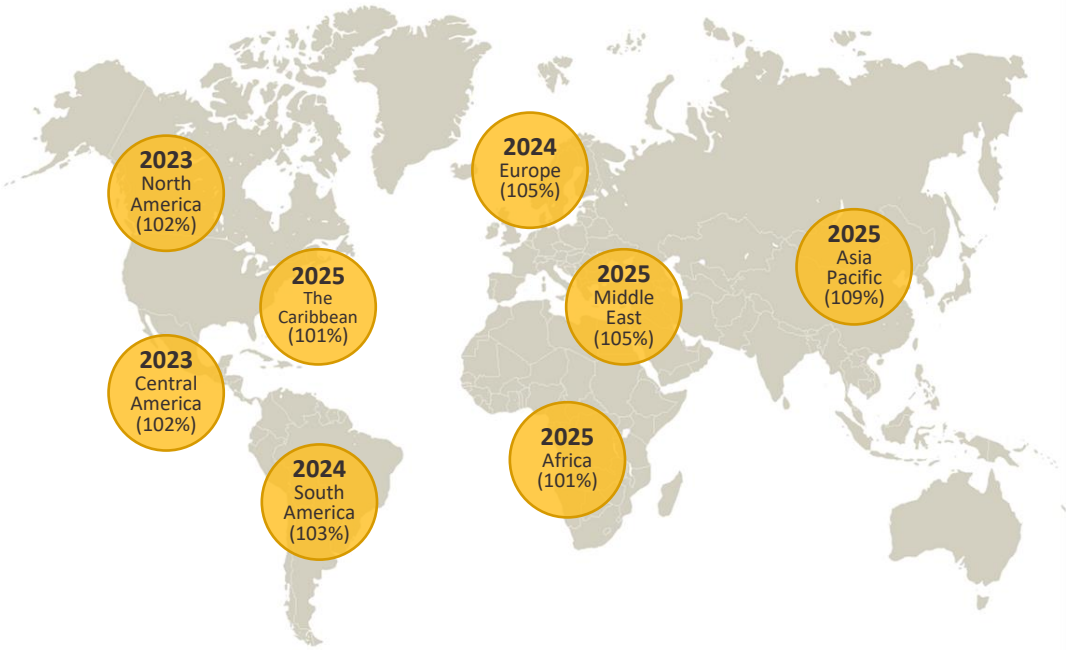
Source: CAAT (2021-2022)



Outlook

The IATA has predicted that overall, the airline industry should return to profit in 2023, while the number of flyers will be back to its 2019 pre-pandemic level by 2025. North and Central America will recover most rapidly, and these will be back generating profits in 2023. Europe and South America will return to normal conditions in 2024, while the rest of the world, including the Asia-Pacific region, will have to wait until 2025 for a full recovery (Figure 16). The differences in these regional timelines stem from variations in how fast COVID-19 restrictions have been relaxed, and in particular from the fact that China's zero-COVID policy was only loosened at the start of January 2023. On the freight side of the industry, the market will benefit from growth in Asian exports.

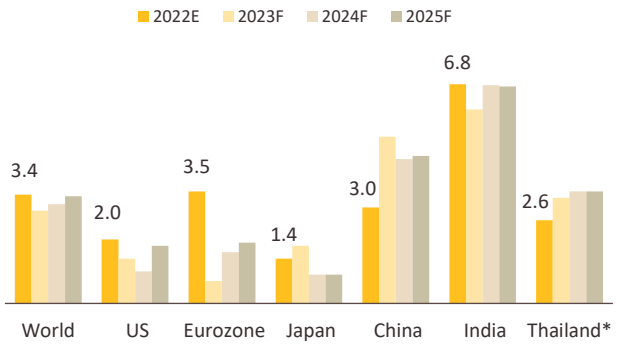
Figure 16: Time and Level of Each Market to Full Recovery



Note: Full recovery to 2019 levels (%)
Source: IATA

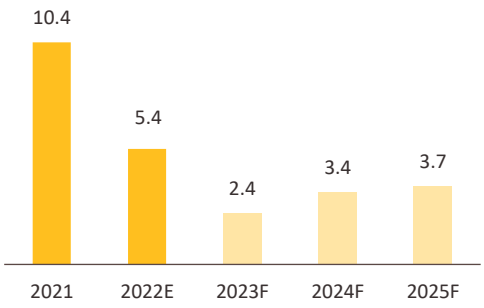
Demand for Thai-based air travel and air freight services will be lifted by a number of factors. ***(i) World trade and the global economy will tend to steadily strengthen*** (Figure 17 and 18), with the IMF forecasting that although global growth will dip to 2.9% in 2023, this will accelerate to 3.1% and 3.4% in 2024 and 2025. Similarly, growth in world trade is expected to drop from 5.4% in 2022 to 2.4% in 2023 but then to bounce back to 3.4% and 3.7% in 2024 and 2025. ***(ii) The Thai economy grew by 2.6% in 2022, and growth should run in the range of 3.0-4.0% over the next 3 years,*** and with economic activity returning to normal, demand for business travel will strengthen. ***(iii) The relaxation of controls on international travel, especially the decision by the Chinese authorities*** to abandon its zero-COVID policy at the start of 2023, will help to lift demand for air travel. ***(iv) The Thai government has introduced policies to help attract high-potential travelers,*** including MICE visitors, long-term residents, health and medical tourists, the elderly, and sportspeople, as well as focusing more heavily on marketing Thailand as a travel destination to Asian tourists (e.g., Indians, Singaporeans, and Vietnamese). Carriers will also benefit from changing work patterns and the rise in hybrid- and tele-working, as well as from stronger demand for air travel for leisure. (***v) Government measures continue to provide support for the industry,*** including cuts to airport renting spaces fees that will run into 2023 and granting permission to

Figure 17: World GDP Growth Projection
(% YoY)



Sources: IMF (Jan 2023), Krungsri Research (Thailand*)

Figure 18: World Trade Volume Projection
(% YoY)



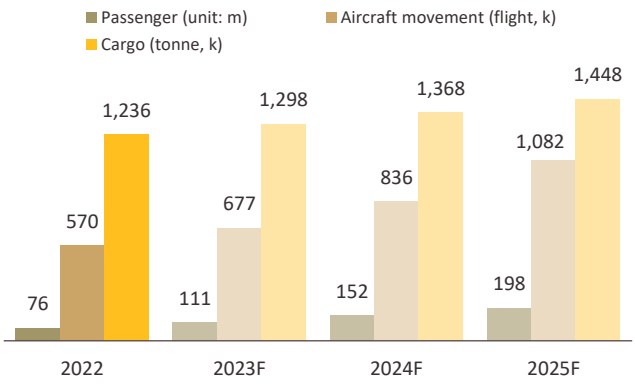
Sources: IMF (Jan 2023)

carriers to distribute food and drinks on flights (with effect from July 2022). ***(vi) To help prepare for a greater number of travelers, officials have plans for rolling upgrades to airports and connected infrastructure.*** This will include: upgrades to the Satellite 1 concourse at Suvarnabhumi as preparation for the April 2023 tourist season; expansion of the M7 motorway linking U-Tapao and Map Ta Phut (scheduled to open at the end of 2025); the opening of the U-Tapao Aviation City and aircraft service center in 2026; the high-speed airport rail link, which will connect 3 airports and 4 other SRT rail stations (opening in 2027); phase 3 of the upgrades to Don Muang Airport (2026), which will add additional warehousing space; and opening up the airspace in the northeast of the country to help boost international arrivals to Udon Thani and Buriram, where the airports will be upgraded to international status.

Trends for the air travel and transport market over 2023-2025 are summarized below (Figure 19).

- **The total number of travelers (arrivals and departures) will grow by an average of 35-40% annually over the next 3 years,** and this rate of growth should then bring the industry back to its 2019 pre-COVID level of 165 million trips by 2025. The domestic market will make a full recovery ahead of the international market since the former involves quicker short-haul flights. Nevertheless, demand for international travel will steadily strengthen, the Travelsilience survey thus shows that as of 2023, although Asian travelers were increasingly worried about rising prices, 81% still expected to travel overseas, and 54% of Thai travelers expected to take more than 5 trips. **Krungsri Research therefore expects that overall traveler numbers will rise from 75.8 million in 2022 to 110.8 million in 2023, 151.6 million in 2024, and 197.9 million in 2025.** The domestic market will also expand, with an anticipated 145 million trips made in 2023, of which a number will fly, while foreign arrivals are expected to reach around 42 million by 2025.

Figure 19: Growth of Thailand's Air Traffic



Source: Krungsri Research

- **The number of flights will rise by an average of 20-30% annually** as operators look to keep pace with higher demand by expanding their services. The number of domestic flights will be lifted by carriers' plans to lay on additional services to business destinations and to tier-two cities, while now that countries have relaxed restrictions on entry and exit (most obviously in China), the international market will expand in step with the rising number of foreign tourists. In addition, some carriers have plans to open new routes to destinations including Kathmandu (Nepal), Vientiane (Lao PDR), Hanoi and Ho Chi Minh City (Vietnam), Dhaka (Bangladesh), and Lucknow (India).
- **The air freight market is expected to expand by 5-6% per year in terms of volume.** The domestic air segment will benefit from the development of connecting road, rail, and sea infrastructure, including the EEC-Laem Chabang motorway, the shipment of premium-grade durians by air at the start of the durian season and by ship mid-season, the dual-track railway, and the links to neighboring countries made via the 3-airport rail-link (Suvarnabhumi-U-Tapao). The government's infrastructure development program is thus helping to broaden the choices available to commercial operations, while international cargoes will be lifted by the general expansion in global economic activities and trade, the particular need to transport medicine and vaccines, and ongoing growth in e-commerce (the e-Conomy SEA 2022 report estimates that the Thai e-commerce sector will expand at an annual average rate of 13% over 2023-2025), with demand for express delivery services tending to rise across the Asia-Pacific region.
- **The cost of A1 jet fuel is likely to remain elevated.** Prices rose with the outbreak of war in Ukraine and the surge in the cost of crude that this triggered. These have since remained high as a result of the continuation of the war and the impact of sanctions on the supply of Russian oil to world markets. At the same time, **Krungsri Research expects that demand for commercial jet fuel will rise rapidly with recovery in the tourism market globally, which will raise consumption to some 12-17 million liters per day in 2023 and 2024, and then to 18-20 million liters per day in 2025. This outcome would then bring the demand side of the market back to close to where it was in 2019.**

Despite the broadly positive outlook for carriers over the next few years, **the industry will nevertheless face a number of challenges. (i) Geopolitical risks continue to threaten the industry,** especially those arising from the war in Ukraine, which may yet force oil prices higher, adding to operators' costs, eroding consumer spending power, and reducing demand for air travel. **(ii) Competition is intensifying as major overseas carriers** increasingly enter Asian markets for passenger and cargo services, and in response to this changing environment, Thai airlines will need to overhaul their operations, for example by becoming more efficient at managing the balance between passenger and cargo space. **(iii)** Following the COVID-19 shutdown in services over 2020 and 2021, **carriers may now face difficulties offering a full range of services** due to problems with staffing. **(iv) The need to implement new rules and regulations will add to costs.** This will include new safety measures that are being introduced by the global aviation industry[5/], measures to reduce the release of greenhouse gases, for example by using greener sustainable aviation fuels (SAFs), or by using newly designed aircraft that are less polluting (International Air Transport Association, 2022). In addition, the EU is planning to introduce fees for carriers landing in EU airports that operate planes with emissions in excess of established guidelines. **(v) Operators will need to invest in meeting tighter post-COVID health standards,** for example by improving levels of hygiene and by facilitating contactless travel, which, if they are to meet the requirements imposed by the World Health Organization and the International Civil Aviation Organization, may then require airlines to change how they operate and how they provide services. Increasing both traveler convenience and airline health standards may involve a greater reliance on automated systems, though the net effect of this would be to raise consumer confidence in air travel. These factors are most likely to affect smaller players, and because these have only limited access to capital, smaller fleets, and a narrow market share, they will likely find it more difficult to compete in the coming period.

5/ These have been stipulated by various international aviation authorities and include the need to address significant safety concerns (SSCs), checking the full ICAO coordinated validation mission (full-ICVM), and carrying out the Federal Aviation Administration's international aviation safety assessment (IASA). Carriers operating in Europe also need to meet the safety certification standards set by the European Union Aviation Safety Agency (EASA). In addition, as per the agreement reached at the COP 26 meeting held in November 2021, Thailand has set the goal of reaching carbon neutrality by 2050 and of hitting net zero emissions by 2065, and this will have additional consequences for carriers.

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