



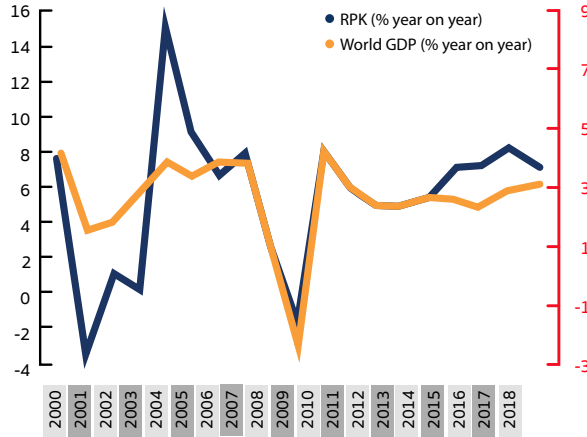
AVIATION
AND LOGISTICS



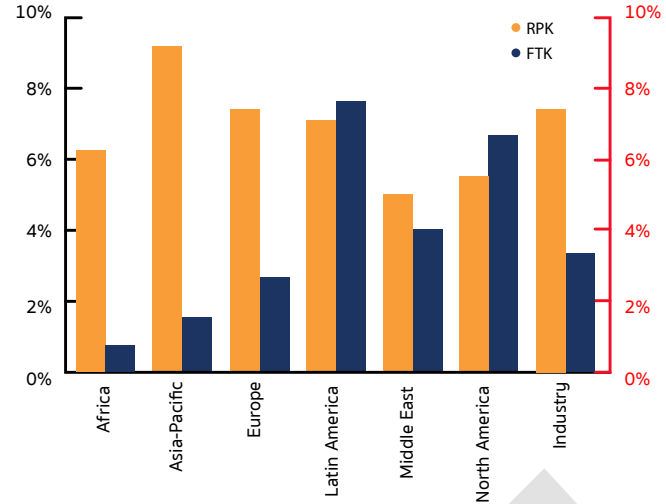


Industry Overview

RPK versus world GDP growth



Regional passenger and freight demand outcomes



Robust Demand

In 2018, industry-wide revenue passenger kilometers (RPK) increased by 7.4%, surpassing the long-run industry average growth rate by approximately 2 percentage points.

Growth in Asia

Airlines from the Asia-Pacific region saw 9.5% increase in passenger growth, leading the way. This is followed by European and Latin American airlines.

Regional Outlook

Lessors, Airlines, and Banks are optimistic about growth in China and the Rest of Asia.

OPTIMISM LEVELS OF REGIONAL GROWTH

	LESSORS	AIRLINES	BANKS
Africa	2.54	2.00	2.56
Middle East	3.23	2.50	2.89
South America	3.38	2.50	2.78
North America	4.31	3.00	4.44
Europe	3.54	3.00	3.89
Rest of Asia	3.85	3.50	3.67
India	3.31	3.00	2.78
China	4.54	4.00	4.00

Average 1 (very pessimistic) – 5 (very optimistic)



Global Market

Industry
in Thailand

Investment
Incentives
in EEC

Related
Agencies

Source: KPMG, The Aviation Industry Leaders Report 2019

AVIATION AND LOGISTICS

Aerospace Value Chain

Global Market

Industry in Thailand

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Related Agencies



Aerospace Manufacturing

Tier 4

Processing/ Material Supply:
-Special Processes
-Materials

Tier 3

Components :
-Engine parts
-Circuit Boards
-Cabin Interiors

Tier 2

Sub-Systems :
-Engine Module
-Propulsion Sub-System
-Satellite

Tier 1

System Integration:
-Engine Assy
-Airframe Assy
-Avionic System

Aircraft Final Assembly, Finish, and Delivery

End Customers:
-Airlines
-Military
-Cargo



Services

MRO:
- Aircraft MRO
- Airframe/ Components MRO

Others Related Services:
- R&D
- Training Center
- Scientific Lab
- Air Transportation



Supporting Industries

- Machines
- Tooling
- Testing Equipment

Source: Choochom, V., 2019. Aerospace Industry. [Online].

Supply Chain Management Strategy in the Aviation Industry

A supply chain is vital to any aviation and aerospace organization's success. Innovative companies are looking towards adopting digital technology, localization, and vertical integration to meet strategic and financial goals.

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Related Agencies

Digital technology adoption

Information-sharing data platforms and 3D printing technology adoption have increased supply chain efficiency. Digitally driven models such as joint innovation centers and flexible production sites are further advancing the aerospace manufacturing ecosystem.

Local player inclusion in the global supply network

Suppliers from low-cost local players that have reasonable technological competence provide cost efficiency for global aviation players.

Vertical Integration

The elimination of supplier margin through vertical integration reduces operating costs, allows players to swiftly respond to changes in product specification and demand, gain control over critical process, and reduce time impact of changes.



Industry's drivers of change with higher than average impact and uncertainty (between 2018-2035)



Set 1.

Prioritized drivers (Greater than average impact and uncertainty)

- Alternative fuels and energy sources
- Cybersecurity
- Environmental activism
- Extreme weather events
- Geopolitical (in)stability
- Infectious disease and pandemics
- International regulation of emissions and noise pollution
- Level of Integration along air-industry supply chain
- New modes of consumption
- Price of oil
- Strength and volatility of the global economy
- Tensions between data privacy and surveillance
- Terrorism

Set 2.

Highest rated drivers based on impact on the sector

- Middle class growth in China and the Asia-Pacific region
- Strength and volatility of global economy
- Price of oil
- Global population growth fueled by Asia and Africa
- Cybersecurity
- Terrorism
- Internet(s) of Things
- New aircraft designs
- International regulation of emissions and noise pollution
- Geopolitical (in)stability

Set 3.

Highest rated drivers based on the uncertainty of the impact

- Price of oil
- Terrorism
- Infectious disease and pandemics
- Personal carbon quotas
- Strength and volatility of global economy
- Extreme weather events
- Human-controlled weather
- Geopolitical (in)stability
- Resource nationalism
- Geospatial technology
- Anti-competitive decisions

Global Market

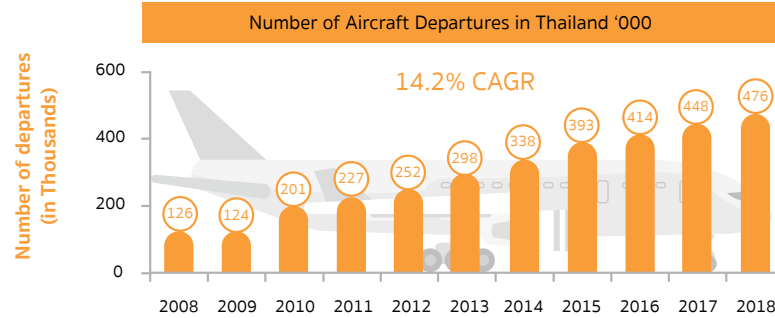
Industry in Thailand

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Related Agencies

Growth of air traffic and passengers in Thailand

Thailand has witnessed strong growth in air traffic and passenger growth exceeding 14% year on year owing to penetration of low cost airlines in domestic and international sectors

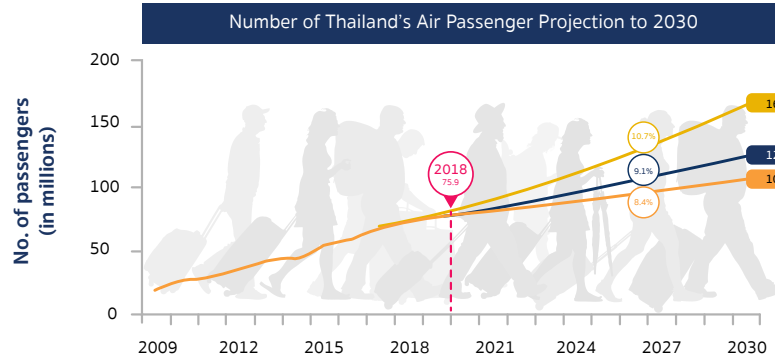


Key Insights

Aircraft departures in Thailand rose with CAGR 14.2% in last decade which was 4 times higher than global rate

Thailand's air passengers also grew from 20 million in 2008 to 76 million by 2018, its CAGR is double of global average in the same period

By 2030, Thailand could register close to 124.4 million passengers with an upside to reach 165.3 million



Source: Frost & Sullivan

Fleet Composition and growth of major aircraft family

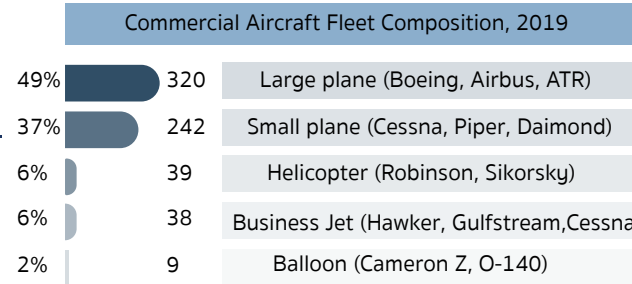
Thailand has a balanced composition of commercial, business jets and general aviation. By 2030, its estimated that commercial airplane fleet will grow to 586 units at 5.65% CAGR

Global Market

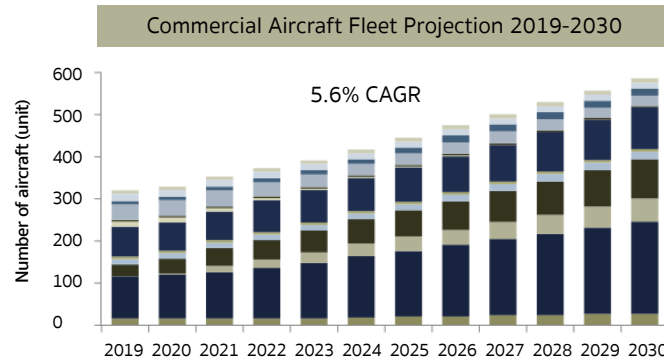
Industry in Thailand

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Related Agencies



- There are 648 aircraft in Thailand as of in 2019, out of which 320 aircraft or 49% are large airplanes for commercial airlines.
- Small plane which have less than 35 seats accounted for 37% of total registered fleet.
- There are 38 business jets that account for 6% of the total fleet.



2030

100+
Aircraft in B737 family

93+
Aircraft in A330 family

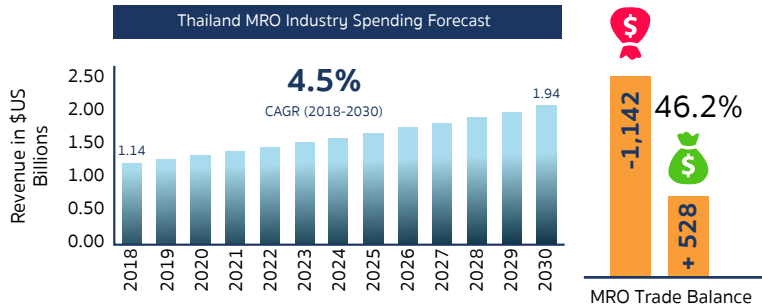
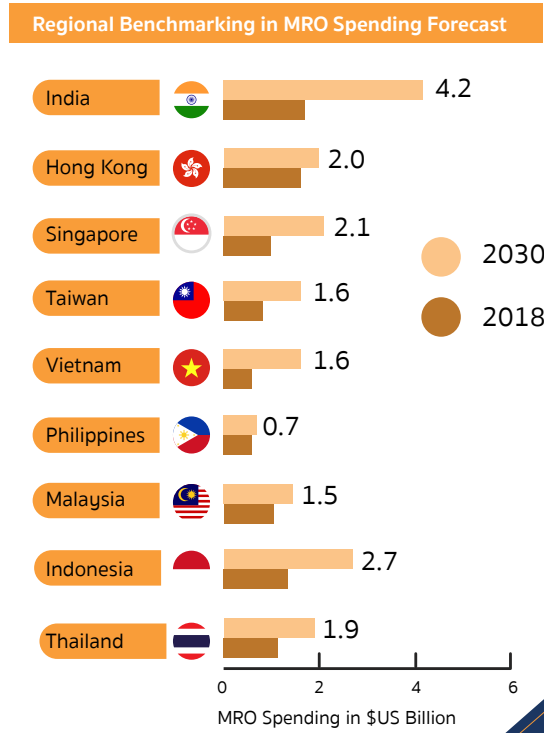
300+
Aircraft in A320 family

Source: Frost & Sullivan



MRO Industry – Current Status & Forecast

Thailand's MRO spending stands close to \$US 1.14 billion as of 2018 and is estimated to grow at 4.5% CAGR till 2030. Total supply of MRO services is close to 46.2% of demand.



Source: Frost & Sullivan

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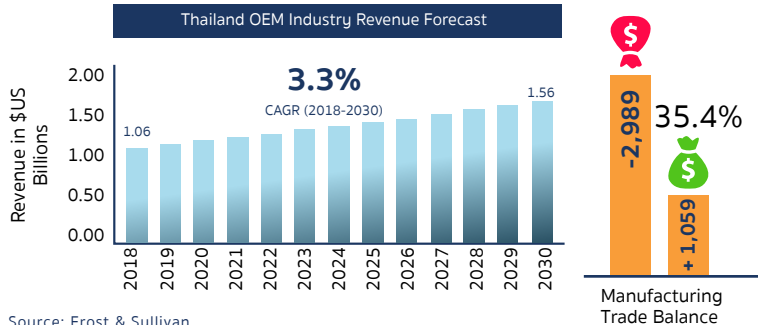
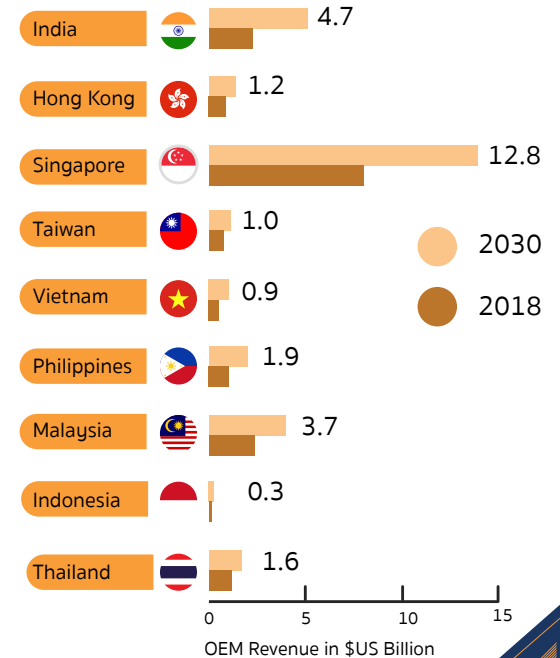


OEM and Manufacturing Industry – Current Status & Forecast

Thailand's OEM revenue stands close to \$US 1.06 billion as of 2018 and is estimated to grow at 3.3% CAGR till 2030. Total supply of manufacturing is close to 35.4% of demand.

OEM / Manufacturing Ecosystem	
Tier 1	SAFRAN, senior Aerospace
Tier 2	Triumph Structures (Thailand) Ltd., Ducommun Technologies, AEROWORKS, Satys
Tier 3	Leistritz, CHROMALLOY, LETS, C.C.S. Group
Tier 4	MinebeaMitsumi, OMADA INTERNATIONAL, COBRA, JINPAO

Regional Benchmarking in Manufacturing Forecast



Source: Frost & Sullivan

AVIATION AND LOGISTICS

Ground Support Equipment – Current Status & Forecast

Thailand's GSE spending stands close to \$US 17.5 million as of 2018 and is estimated to grow at 12.2% CAGR till 2030. Total supply of GSE manufacturing is 380% of the demand.



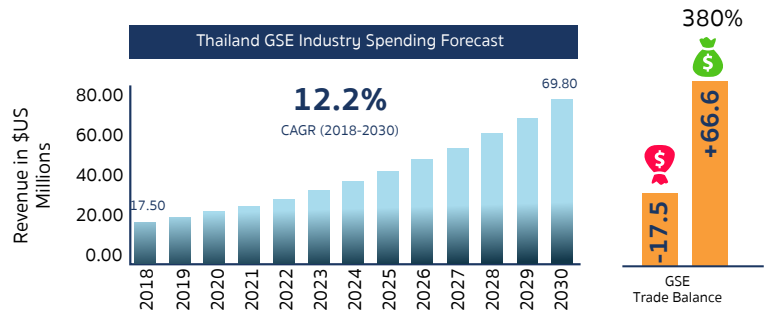
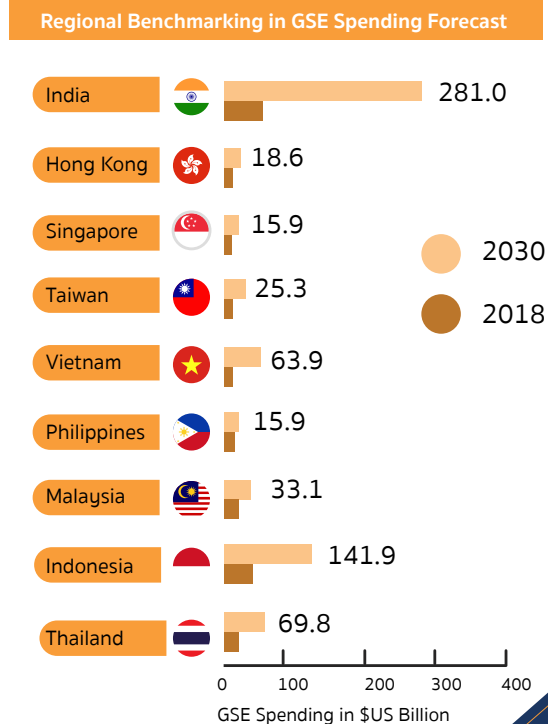
OEM / Manufacturing Ecosystem

Ground Support Equipment

COMPANY
VESTERGAARD panus SAMMITR
SINFONIA GTV CHO

Ground Service Provider

TGGS THAI GROUND SERVICES BFS AOTGA
Bangkok Flight Services
BAGS Ground Services Amscent



Source: Frost & Sullivan

Investment incentive package for investment projects in the Eastern Economic Corridor (2020-2021)

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Key features	Investment Incentives	Targeted activities			
		Section 8	A1	A2	A3
1. Standard tax package	Tax holidays	10 Years (no cap)	8 Years (no cap)	8 Years	5 Years

Human resource development programs (additional tax incentives)

2. Investment projects which are engaged in human resource development programs	Tax holidays	2 Years (no cap)	-	-	-	+
	50% reduction of CIT	-	3 Years	3 Years	3 Years	

Projects located in the four promoted zones for specific industries (EECi, EECd, EECa and EECmd) OR industrial estates and promoted industrial parks

3. Investments located in EECi, EECd, EECa and EECmd	Tax holidays	1 year (no cap)	-	-	-	+
	50% reduction of CIT	-	2 Years	2 Years	2 Years	

OR

3. Investments located in industrial estates and promoted industrial parks.	Tax holidays	1 year (no cap)	-	-	1 Year	+
	50% reduction of CIT	-	-	-	-	

Remarks:

- A1 : Knowledge-based activities focusing on R&D and design to enhance the country's competitiveness.
- A2 : Infrastructure activities for the country's development, activities using advanced technology to create value-added, with no or very few existing investments in Thailand.
- A3 : High technology activities which are important to the development of the country, with a few investments already existing in Thailand.
- Section 8 : Technology and Innovation Development includes targeted core technology development such as development of biotechnology, nanotechnology, advanced materials technology and digital technology.

New investment promotion measure in EEC

- Starting January 2, 2020

According to the announcement of the Board of Investment No.2/2563, announced on January 15th, 2020,

- Applications must be submitted by the last working day of 2021.

- Projects located in the four promoted zones for specific industries (EECi, EECd, EECa and EECmd) are eligible for the incentives without application deadline.



A number of leading universities offer specific courses in aerospace maintenance

These include

- 

Chulalongkorn University
- 

Thammasat University
- 

Kasetsart University
- 

King Mongkut's University of Technology
- 

Rangsit University
- 

Assumption University
- 

Rajamangala University of Technology Krungthep

Supporting Organizations

- 

Ministry of Transport
has overall responsibility for transportation, traffic planning, and transport infrastructure development
- 

Department of Airports (DOA)
operating under the Ministry of Transport, the DOA is in charge of the operation of airports belonging to the government.
- 

Civil Aviation Authority of Thailand (CAAT)
the CAAT is mandated with the enforcement of laws on air navigation, the negotiation of air service agreements with international civil aviation organizations, and the promotion of Thailand's aviation industry
- 

Airports of Thailand Public Co., Ltd. (AOT)
manages Thailand's six international airports.

Example of Key Players



Example of Airlines Operating in Thailand

Domestic Routes



International Routes

