

2023: The Hottest Year on Record

DISTURBING news for the aviation industry and humanity: in 2023 the world's global CO₂ emissions are estimated to have hit a new peak — 1.1% above the previous year and higher than pre-pandemic levels. 2023 was also the hottest year on record. Berkeley Earth (see chart below) estimates that the combined land and sea temperature anomalies were 1.54°C (±0.06°) above pre-industrial averages.

This is above the aspiration in the 2015 Paris Agreement to limit global warming to less than 1.5°C. It may be an anomaly, but once we reach that temperature on a consistent basis, the science suggests that it could trigger tipping points from which climate change will be irreversible.

A major reason for this temperature increase was the development of a strong El Niño phase from the middle of 2023 in the Pacific ENSO (El Niño-Southern Oscillation), which can have a major, warming, and sometimes devastating impact on world weather. In late 2023 this combined with a strong positive Indian Ocean Dipole effect — a similar phenomenon on the other side of the world.

Berkeley Earth points out that the largest anomaly in the 19th century was from a “super” El Niño in 1877-78 combined with conditions in the Indian Ocean Dipole similar to those last year. This, it is said, led to widespread droughts in Asia, Brazil and Africa and an estimated 50 million human fatalities.

2023 also saw a significant rise in the sea temperatures in the North Atlantic and a weakening in the currents forming part of the Atlantic Meridional Overturning Circulation (AMOC). Seen as a once-in-100-years

event, the researchers suggest this was as much to do with a lack of airborne dust from the Sahara last Summer and Autumn as the activity in the Pacific. But should this become a new norm, we are warned that the AMOC could fail, giving Europe a new Ice Age and sinking New York and Boston under rising sea-levels. We are encouraged not to panic.

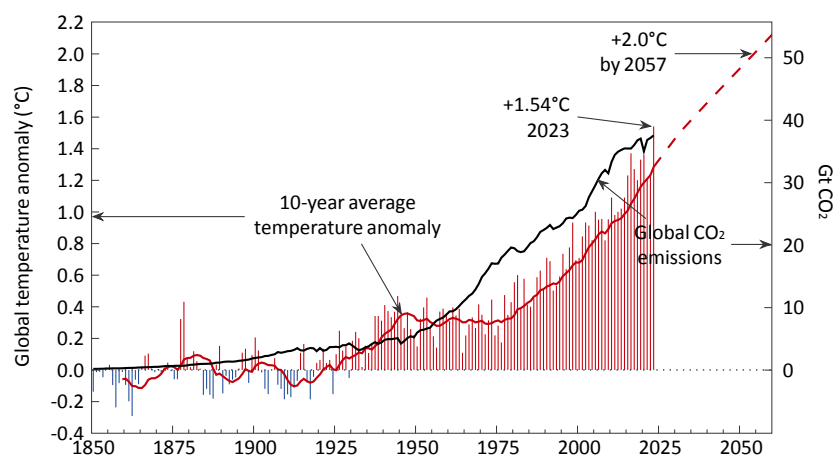
Weather forecasters also observe that the current El Niño is peaking and could turn to the cooling El Niña phase of ENSO by mid-2024; but this cooling phase may not have a major

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impact on global temperatures until 2025. Berkeley Earth are predicting that temperatures in 2024 are likely to be hotter than in 2016 — the previous record high — and may even exceed those of 2023.

GLOBAL AVERAGE TEMPERATURES AND ANTHROPOGENIC CO₂ EMISSIONS 1850-2023



Sources: University of California Berkeley: Global (land and ocean) temperature anomalies relative to 1850-1900 average; Statista; Our World In Data.

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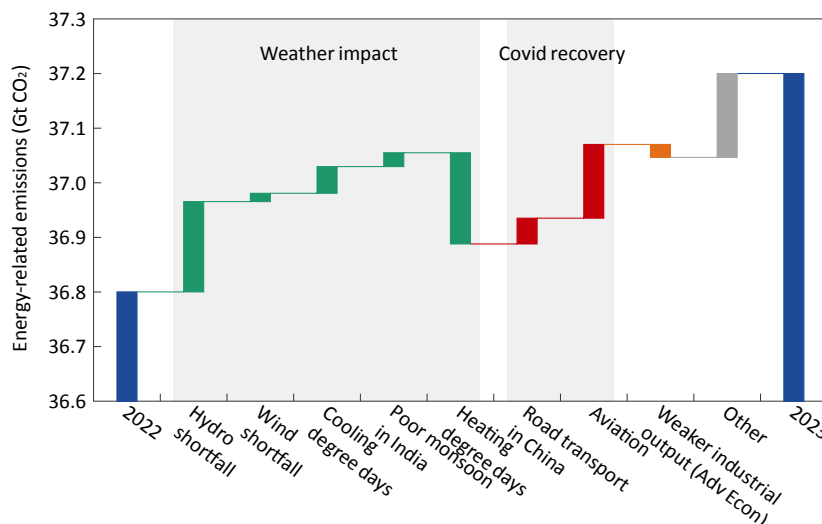
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WEATHER AND TRANSPORT RESPONSIBLE FOR TWO-THIRDS 2023 GROWTH IN CO₂ EMISSIONS



Source: IEA

In addition, 2023 was notable for:

- ✈ New national record high annual averages for an estimated 77 countries, including Bangladesh, Brazil, China, Germany, Japan, and Mexico.
- ✈ Record annual average warmth in both the land-average and ocean-average.
- ✈ Record warmth in most ocean basins, including once-in-a-century levels of warmth in the North Atlantic.
- ✈ Record low Antarctic sea ice during the Antarctic winter.

IEA: Energy based emissions

Meanwhile, the IEA has recently published its annual *CO₂ Emissions Report* for 2023. It has a slightly different perspective.

Although total energy-related CO₂ emissions grew by 1.1% last year, this is considered to be a continuation of the recovery from the pandemic: the average rate of growth in the past decade has “only” been 0.5% a year — a rate of increase last seen in the 1930s during the Great Depression.

This provides a level of optimism that clean energy is starting to have a real effect. 2023 set a new record for the introduction of clean energy: some 540GW added from wind and solar photo-voltaic (PV) farms, 35% up on the previous year. “Between 2019 and 2023, total energy-related emissions increased around 900Mt. Without the growing deployment of five key clean energy technologies since 2019 — solar PV, wind power, nuclear power, heat pumps, and electric cars — the emissions growth would have been three times larger.”

Then the IEA points to the causes behind the increase last year (see graph above). Two thirds of the increase can be directly related to two factors: weather (it was a hot year) and transport (private cars in China but more importantly — *aviation*).



Is SAF a fair COP?

ICAO WAS out in force at the COP 28 meeting in Dubai last December. The organisation addressed the Presidency Roundtable on Energy Transition presenting the outcome of the third ICAO Conference on Aviation and Alternative Fuels (held, conveniently, in Dubai at the end of November), particularly the adoption of an ICAO Global Framework for Aviation Cleaner Energies. The message: aviation's clean energy transition is on.

ICAO states that the framework is to "facilitate the scale-up of the development and deployment of Sustainable Aviation Fuel (SAF), Low Carbon Aviation Fuel (LCAF) and other aviation cleaner energies on a global basis, and mainly by providing greater clarity, consistency and predictability to all stakeholders, including those beyond the aviation sector".

The short-term "aspirational vision" doesn't appear ambitious: to reduce aviation's CO₂ emissions by 5%

by 2030 (from what it would otherwise have been without the use of "cleaner" energies). But it is a vital tool in the long-term target of net-zero by 2050.

In 2024 aviation is likely to be responsible for the emission of 1 billion

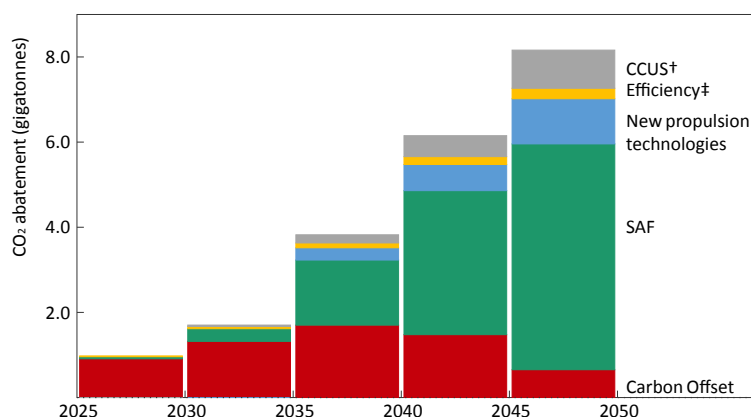
tonnes (1 gigatonne) of CO₂ — back to pre-pandemic levels — still just 2% of global emissions. But over the next 26 years, passenger numbers are forecast to grow from 4.5bn to 10.5bn, and aviation's emissions could double to 2Gt CO₂. The pathway to net zero is based on "carbon-neutral" growth to 2035 (mostly through carbon-offset) followed by aggressive carbon reduction: this, according to IATA, requires the mitigation of 21.2Gt CO₂ over the period.

The use of SAF will account for 65%-70% of the CO₂ abatement required to achieve the target.

How does SAF work?

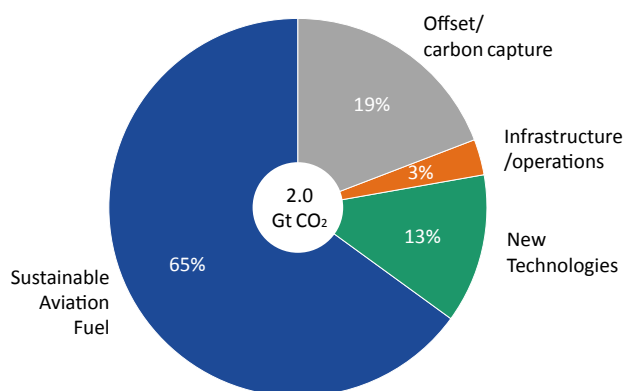
The basic premise behind SAF is the creation of a fuel either from organic feedstocks (that have drawn in CO₂ from the atmosphere or soil as they have grown), recycling CO₂ emissions from waste sources (both

IATA: ESTIMATED ABATEMENT PATHWAYS TO NET ZERO



Source: IATA. Notes: † CCUS=Carbon capture, utilisation and storage;
‡ Efficiency=improvements above "business as usual"

IATA: CONTRIBUTION TO NET ZERO BY 2050



biomass and effluent from industrial processes), or using CO₂ captured directly from the air: this is combined with hydrogen to generate the required hydrocarbon chains. The resultant fuel has a formula fundamentally the same as jet kerosene produced from fossil fuels and consequently produces the same amount and type of emissions as conventional fuel. But the production of the feedstock takes CO₂ out of the atmosphere thus creating a “loop” that has the potential to reduce lifecycle emissions substantially.

Lifecycle emissions reductions from SAF are not generally 100% of CO₂, as they depend on energy sources to process the raw feedstock into fuel and get it into the aircraft. If the production facilities are run on renewable energy, and transport is through pipelines or using alternative energy vehicles, the emissions reduction factor can be improved significantly: even beyond 100% with the addition of carbon capture utilisation and storage (CCUS) of CO₂ or methane (CH₄) from the production processes.

The emissions reduction (ERF) from SAF is a product of the proportion of SAF mixed with conventional fuel (currently limited to 50% but likely to rise to 100% maybe by 2030). The lifecycle reduction in comparison with fossil-based jet fuel — currently estimated to lie around 70%.

Therefore, the use of SAF at the maximum current blend ratio of 50% could “reduce” carbon emissions on a flight by 35%.

SAF Production Pathways

There are a number of approved pathways and processes to generate SAF, depending on the feedstocks used. Each of the pathways has to be tested rigorously and certified for use

by ASTM International (the global standards-setting agency for fuels).

➔ Fischer-Tropsch (FT)

The FT process takes any carbon containing material and breaks it into individual building blocks of H₂ and carbon monoxide (CO) gasified to form syngas. FT synthesis then combines these building blocks into synthetic paraffinic kerosene.

Two different FT processes have been certified by ASTM to date, one that produces a straight paraffinic jet fuel (SPK) and one that also produces additional aromatic compounds (SPK+A). Typical feedstocks include renewable biomass such as municipal solid waste (which would otherwise go to landfill), agricultural wastes and forestry residues, wood and energy crops.

➔ Hydrotreated Esters and Fatty Acids (HEFA)

HEFA refines biological oils or fats into SAF through a process that uses hydrogen (hydrogenation). In the first step of the HEFA process, the oxygen is removed by hydrodeoxygenation. Next, the straight paraffinic molecules are cracked and isomerised to jet fuel chain length. The HEFA process for SAF is similar to that used for (and therefore competes with) renewable diesel production, only with more severe cracking of the longer chain carbon molecules. Typical feedstocks are used cooking oil, tallow (eg from pig, sheep and cattle carcasses), distiller’s corn oil, tall oil, algae and vegetable oils from jatropha and camelina.

➔ Hydrotreated Fermented Sugars to Synthetic Iso-Paraffins (SIP)

The SIP process is biological. Microbes are used to convert C₆ sugars into farnesene, which after treatment with hydrogen can be used as SAF. The maximum blend ratio with conventional jet fuel is 10%.

➔ Alcohol to Jet (AtJ)

AtJ converts alcohols produced by fermenting bio-waste into synthetic paraffinic kerosene by removing the oxygen and linking the molecules together to get the desired carbon chain length (oligomerisation). Currently, there are two feedstocks approved for use in the AtJ technology: ethanol and iso-butanol, and the sources can be agricultural waste products such as stover, crop straws, grasses and forestry slash.

➔ Catalytic Hydrothermolysis Synthetic Jet Fuel (CHJ)

CHJ converts fatty acid esters and free fatty acids into SAF via catalytic hydrothermolysis followed by any combination of hydrotreatment, hydrocracking, or hydroisomerization and fractionation. The feedstocks are triglyceride-based: plant oils, waste oils, algal oils, soyabean oil, jatropha oil, camelina oil etc.

➔ Hydroprocessed Hydrocarbons, Esters and Fatty Acids (HC-HEFA)

Biologically-derived hydrocarbons and free fatty acids and fatty acid esters are upgraded in the HC-HEFA process similar to the HEFA process: they are hydroprocessed to saturate the hydrocarbon molecules and remove all oxygen. A recognised bio source is the *Botryococcus braunii* species of algae. The maximum blend ratio is 10%.

➔ Co-processing

Co-processing is an additional method to accelerate SAF production. This involves the use of sustainable feedstocks (vegetable oils, waste oils and fats, or Fischer-Tropsch wax) as a small input into the refining of conventional fossil-based jet fuel in existing crude oil refineries. It is not a SAF-focused production pathway, but an opportunity to accelerate SAF production using existing

infrastructure while dedicated SAF facilities scale up. ASTM limits the blend ratio to 5%.

✈️ Power-to-Liquids (PtL)

PtL is a non-biological pathway to produce sustainable fuel. Electricity from renewable sources is used to split water molecules into “green” hydrogen and oxygen through electrolysis. CO₂ is captured from industrial sites, or direct from the air, converted into carbon monoxide and combined with the H₂ to form syngas and through the FT process converted to generate the required hydrocarbon chains. To be sustainable, the power source has to be entirely from renewable sources such as solar or wind (and the resulting H₂ “green”) and not diverted from other uses. The feedstocks are (green) electricity and air and water.

Green Hydrogen

IATA estimates that the industry will have a need for 120m tonnes of green hydrogen by 2050: 20% of which may be for hydrogen powered flight, but the majority for the production of SAF. (It is needed for HEFA processes as well as PtL.)

Currently, according to the IEA, a mere 1% of the global 100m tonne production of hydrogen can be

classified as low-emission, and virtually all of that is generated by facilities using fossil-fuels mitigated through CCUS (known as “blue” hydrogen).

The agency estimates that by 2030 there may be global capacity for 15m tonnes of green hydrogen through electrolysis. In the meantime, SAF produced from PtL is economically prohibitive with production costs, net of the value of carbon reduction, estimated at nearly \$4,500/tonne, five times the

current cost of conventional jet.

Is there enough feedstock?

Commercial aviation this year is forecast to use nearly 300m tonnes of jet fuel — slightly higher than pre-pandemic levels. By 2050 the industry total requirement could be for energy double this amount, ie equivalent to 600m tonnes.

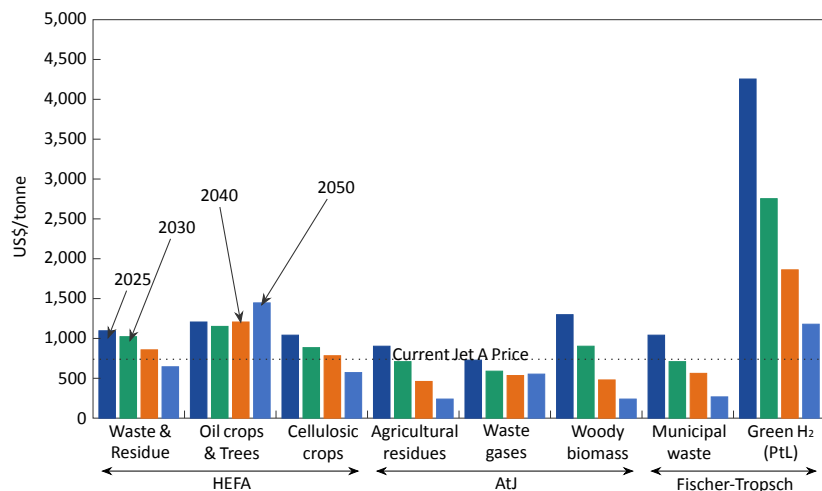
It is expected that battery, hybrid, and hydrogen powered aircraft will increasingly become available for short haul flying during the 2030s, but by 2050 may account for only 15% of the power required. As a result the industry could need c500m tonnes of hydrocarbon fuel.

The Air Travel Action Group (ATAG) in its Waypoint 2050 report of 2021 presented analysis suggesting that there is a current feedstock availability to produce 205m tonnes of SAF from biomass, waste and industrial gases.

The analysis considered three key constraints:

✈️ **Sustainability:** environmental and social limitations on feedstock

SAF NET PRODUCTION COST



Source: ATAG.

Note: production costs estimated net of value of carbon reduction (\$100/tCO₂ in 2030 rising to \$200/t in 2050)

SAF AVAILABILITY (m tonnes)

	2020	2050
Waste and residue lipids	11.6	13.9
Oil crops and trees	13.4	16.1
Cellulosic cover crops	24.8	27.4
Agricultural residues	52.5	57.9
Woody biomass	51.7	51.7
Municipal solid waste	22.0	22.0
Industrial waste gases	28.6	9.5
Total	204.6	198.5

Source: ATAG Waypoint 2050

availability, such as the constraints on land that can sustainably be used for energy crops, or the fraction of agricultural residues that must be left on the land to maintain the soil quality.

✈ **Fairness:** the balance of feedstocks that can be used for SAF production, compared to use by other sectors. Many of these feedstocks are used today for heating, animal bedding or feed, soaps, lubricants, and as raw material for oleochemicals industry.

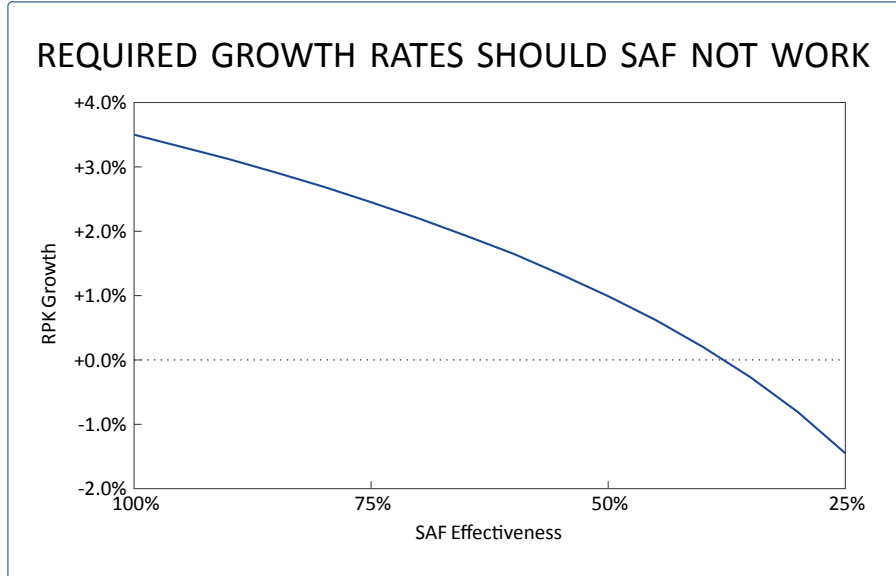
✈ **Economics:** volumes of feedstock that can be used to produce fuels and enable flights at economically sustainable socially acceptable prices.

Over time, some of these sources will change: industrial waste gases are likely to fall as other industries decarbonise, but competition for liquid fuels from road transport is likely to diminish with an accelerating uptake of electrically powered vehicles. New plant based material may become economically viable. By 2050 it estimates the total potential little changed at 198m tonnes.

Under the group's central scenario, biological feedstocks become fully utilised by 2040, requiring a massive shift of production to PtL using renewable energy. By 2050 PtL could account for 60% of total SAF production, but at a cost: ATAG estimates that PtL production costs even in 2050 would be \$1,470/tonne before accounting for the value of carbon reduction.

What if SAF doesn't work?

There is no plan "B". There is currently no foreseeable economic source of energy to power long haul flights (which account for 80% of the industry's emissions) that is not based on hydrocarbons. Consequently, to continue to allow flights of more than



3,500km, the airline industry will continue to emit 3.16tCO₂ for each tonne of kerosene burnt. Current forecasts for growth from ATAG and IATA — of say 3.1% in passenger numbers (and 3.5% in passenger kilometres) over the next 26 years — already account for a slowing in growth from past trends, partly on a normal S-curve path as the industry matures, but also taking account of the increase in costs inherent in decarbonisation efforts. If the quantity of SAF produced cannot be scaled to fit the anticipated fuel needs under current forecasts, the forecasts will have to adjust to meet the commitment to net zero. And that growth rate may have to be negative.

As an exercise we reverse-engineered those forecasts to add in a variable for the effectiveness of SAF implementation. The chart above shows a (rather depressing) representation of the level of growth that the industry *would* be allowed to achieve to ensure CO₂ neutrality by 2050 at various levels of effectiveness (100% effectiveness means SAF fully achieves its projected role in emissions reduction and air travel grows at IATA's forecasted base rate; 25% means that only a quarter is

achievable through SAF and emissions reduction has to come mostly from a reduction in air travel).

However, IATA's chief economist Marie Owens Thomsen, quoted in *ATW*, maintains: "There are solutions for replacing fossil fuels. There are no solutions for replacing aviation."

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AirAsia/Capital A: The Power of Imagination

AIRASIA should have everything going for it. It is based in a region of relatively high traffic growth, competing with a handful of somewhat moribund (with one or two exceptions) flag-carriers. It is a genuine Ultra Low Cost Carrier (ULCC): pre-pandemic it could boast one of the lowest unit costs in the world at 2.2US\$/ASK ex-fuel.

Launched in 2002 by Tony Fernandes and his business partner Kamarudin Meranun, it grew strongly: in 2019 it carried 83m passengers at a load factor of 85% and had a combined fleet of 246 A320s (with 362 on order and plans to double the fleet over ten years). In 2023, still recovering from the pandemic it carried 57m.

From its base in Malaysia, it has expanded its brand throughout ASEAN through with subsidiary or affiliated airlines in Thailand, Indonesia and the Philippines.

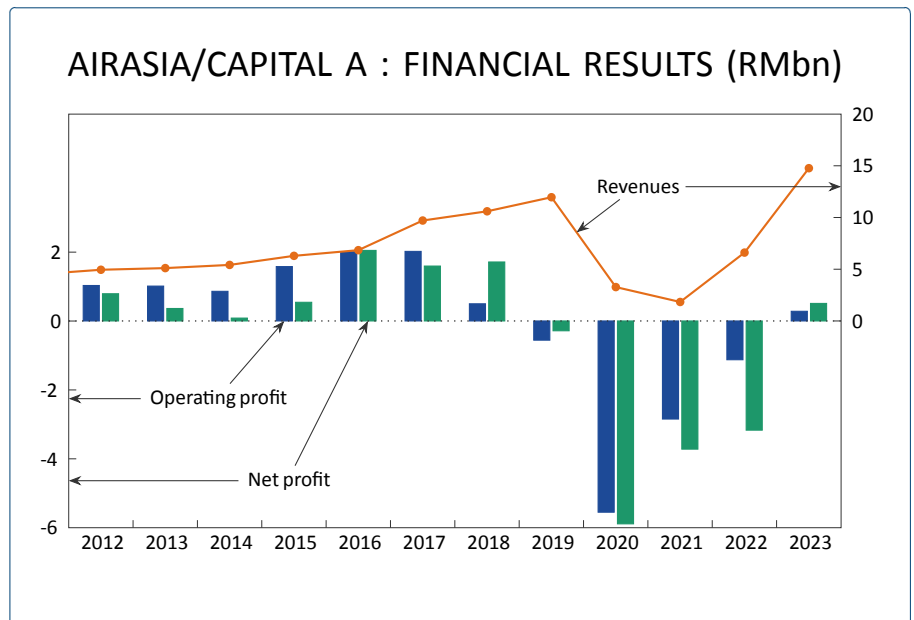
It has been profitable: for most of the 2010s it had been able to generate underlying operating margins averaging 23%, and net margins of 15%.

Yet it always seems to be in search of a new strategy.

Simplicity lacking

The basis of AirAsia's success was adapting the Ryanair model to the Asian market, initially using the expertise of Conor McCarthy, formerly COO at the Irish airline. But AirAsia has deviated from one aspect of the Ryanair KISS (keep it simple *stupid*) model: it has ignored simplicity.

Ryanair's Michael O'Leary has created a wild, sometimes obnoxious,



persona for public consumption, but when it comes to Investor Days or analyst briefings, he is razor sharp in explaining Ryanair's strict adherence to its core strategy, its operations and plans, and, importantly, how precisely these are represented in the airline's accounts. He and his team have a mastery of detail and the ability to present clear unambiguous numbers, which give investors confidence. Tony Fernandes, despite his undoubted charisma, does not.

Similarly, Ryanair's published accounts are standard, austere and useful, whereas AirAsia's annual reports are overloaded with glossy photos, irrelevant adverts, long on detail, short on meaning, and seem designed to obfuscate.

Part of the difference might be attributed to culture. Malaysia stands ranked third (high is bad) after Russia and the Czech Republic on *The Economist's* "crony-capitalist" list;

57th (low is bad) on Transparency International's Corruption Perception Index (CPI).

Then there is Tony Fernandes' career history. As a former auditor at Virgin Atlantic, financial controller at Virgin Communications, before moving on to Warner Music in Malaysia, he perhaps models his *persona* on Richard Branson rather than O'Leary. (The AirAsia affiliates and subsidiaries, as well as separately quoted AirAsia X, are covered by brand licence agreements).

More can be explained by the fact that ASEAN, despite previous political attempts, does not have a single aviation market. There is a freedom of access to routes, but a disparate treatment of ownership and control rules.

As a result, AirAsia's expansion in the region has had to be constructed through convoluted ownership structures, local partnerships in local AOCs, dubious official levels

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of control and separate local share listings. In the chart right we show a simplified corporate structure for the AirAsia Group which officially changed its name to Capital A Group in 2021. Also shown are three failed subsidiaries.

Strategic meandering

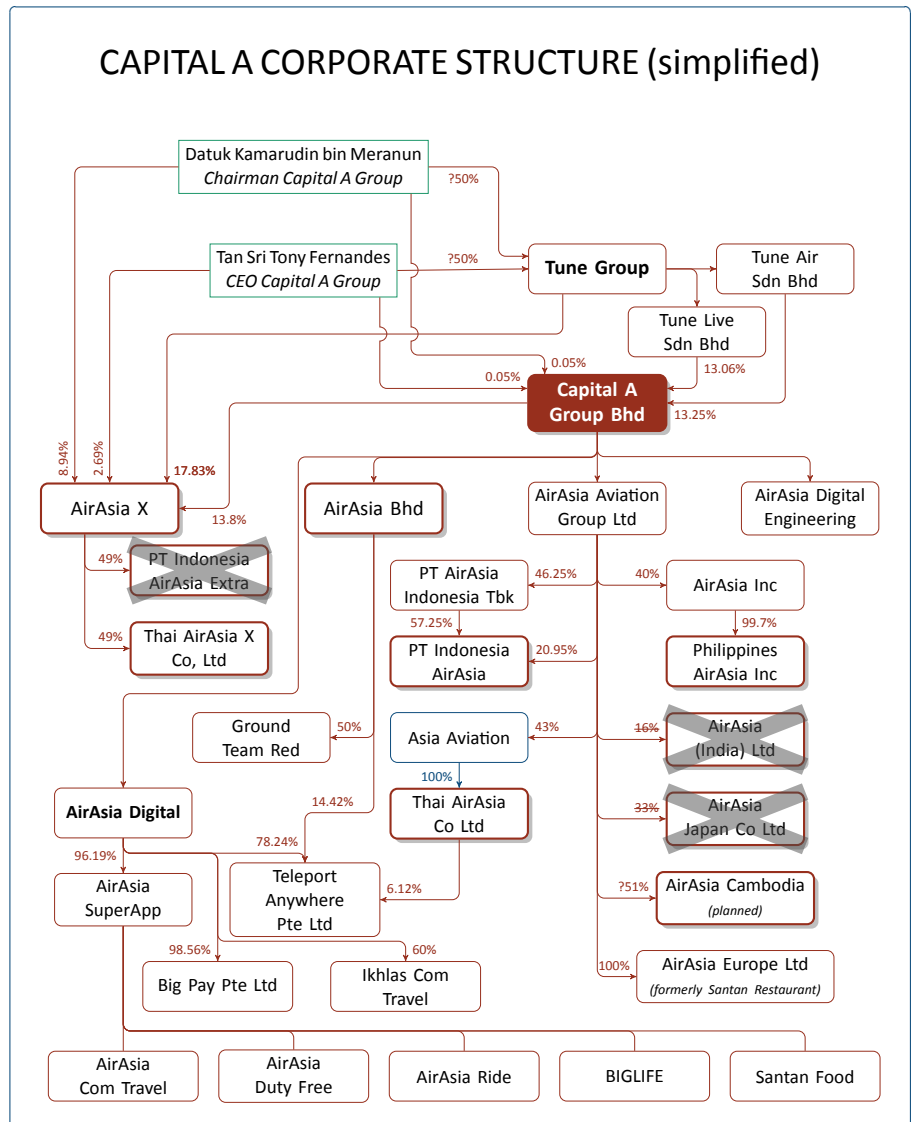
Maybe Tony Fernandes gets bored, and tempted by latest trends.

When aircraft outsourcing appeared fashionable, AirAsia established a leasing company, Asia Aviation Capital Ltd (most of the equipment being leased to AirAsia companies). In 2018 it decided to go “asset-light” and sold it to entities controlled by BBAM.

At the same time Big Data emerged, and the Group decided to “go digital”. During the pandemic lock-down, Tony Fernandes accelerated investment in the digital space, possibly inspired by the massive market values placed on ASEAN digital unicorns — Shopee, GoTo Gojek and Grab.

He set up AirAsia SuperApp, incorporating an online travel and lifestyle booking agency, a fintech payments system called Big Pay, a cargo logistics company called Teleport Anywhere (there’s nothing mundane about the choice of company names), duty free, food delivery, and ride share. It also set up an MRO business named AirAsia Digital Engineering.

In January 2022, AirAsia Group Bhd formally changed its name to Capital A Bhd. The change of name was to reflect the Group’s new core business strategy as “an investment holding company with a portfolio of synergistic travel and lifestyle businesses”. (This move incidentally provided it with the convenient excuse no longer to disclose the separate fi-



ncial results of its airlines.)

Five year net losses: \$2.6bn

AirAsia has been ravaged by the pandemic. In July 2020, with flying all but halted, its auditors questioned its ability to continue as a going concern.

By the end of 2020, after reporting annual losses of RM5.9bn (US\$1.4bn) its net equity had turned negative to the tune of RM3.7bn (US\$0.9bn) and Bursa Malaysia served the group with a PN17 notice, threatening to delist the shares from the exchange unless it produced within six months a viable plan to get its finances in order. AirAsia

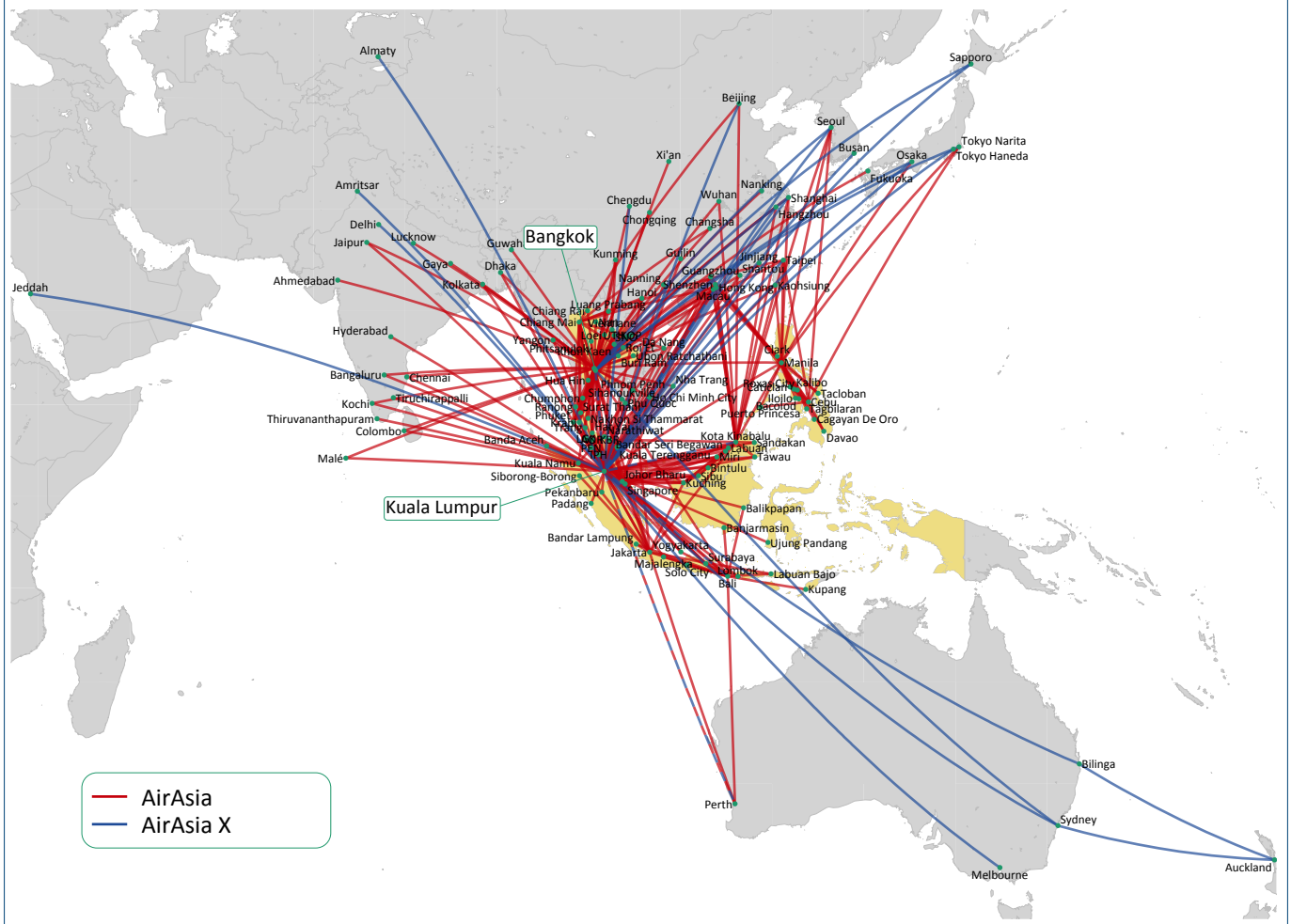
has successively appealed to have that deadline extended: it currently expires at the end of June 2024.

In 2021 the group raised a small amount of equity of RM336m (US\$80m) through a private placement and held a rights issue to raise RM1bn in convertible unsecured Islamic debt securities (carrying an annual 8% “profit” in place of interest). But by the end of that year, following annual losses of RM3.8bn, the net asset deficit had widened to RM6bn.

Asia has been slower to recover from the pandemic than other parts of the world, and borders did

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AIRASIA ROUTE MAP



AIRASIA/AIRASIA X FLEETS

		In service	Parked	Total	Avg Age (years)	Δ v 2019	Orders	Δ v 2019
AirAsia	A320ceo	131	35	166	12.1	-34		
	A320neo	26	13	39	6.1	-1		-13
	A321-200F	3		3	24.0	+3		
	A321neo	3	1	4	4.1		362	+13
		163	49	212	11.0	-32	362	
AirAsia X	A330-300	23	2	25	13.0	-14		
	A330-900		2	2	4.6		15	-63
	A350-900							-10
	A321neo						20	-10
		23	4	27	12.4	-14	35	-83
Total Group		186	53	239	11.2	-46	397	-83

CAPITAL A GROUP FINANCIAL DATA

FY End Dec (RMm)*	2019	2020	2021	2022	2023		At end	Dec 2023	Dec 2019
Revenue	11,965	3,131	1,683	6,437	14,772		Fixed Assets†	13,615	12,418
Net Income	(286)	(5,888)	(3,721)	(3,304)	508		Other non-current assets	11,925	7,885
							Cash	703	2,588
Operating cash flow	3,722	(2,168)	(678)	(282)	1,047		Other current assets	1,664	2,704
Net capex	4,108	489	389	(210)	(23)		Current liabilities	(14,874)	(7,135)
Free cash flow	7,830	(1,679)	(289)	(493)	1,024		Net current assets	(12,507)	(1,843)
Inc in debt	(4,860)	(412)	734	(314)	(864)		Total Assets	13,033	18,459
							Debt‡	(17,444)	(10,275)
Equity raised (dividends paid)	(3,409)		336				Other liabilities	(6,058)	(5,274)
Total cash flow	(439)	(2,091)	782	(806)	161		Equity	(10,469)	2,911

Notes: * MYR1=US\$0.21; † Includes right of use assets; ‡ Including lease liabilities

not really start to open until early 2022. AirAsia had one advantage in Malaysia (and to a lesser extend Thailand): a strong market share in the domestic markets which it could exploit while its flag-carrier competitors were undergoing bankruptcy. Nevertheless, the group still lost another RM3.3bn in that year pushing the net asset deficit to RM9.4bn (US\$2.1bn).

At least 2023 started off with the positive news that China had abandoned its zero-Covid policy, and traffic recovery could resume. Revenues more than doubled to RM14.8bn: this was 25% higher than that achieved in

2019, despite operating at only 80% of prepandemic levels. The group was able to generate an operating profit of RM280m for the year — its first such profit since 2018. The airline businesses accounted for 91% of total revenues.

By the way, it appears that “super-app” is no longer fashionable: Capital A has renamed its version to AirAsia MOVE.

Meanwhile, at the beginning of 2023 Capital A implemented a master brand licensing agreement between AirAsia Bhd (ie, AirAsia Malaysia) and AirAsia Aviation Group Ltd (which owns the investments in

the other AirAsia operating airlines) and a sub-licensing agreement with Asia Aviation (separately quoted on Bangkok’s stock exchange) and its subsidiary Thai AirAsia.

By some accident, sleight of hand, or accounting quirk, Capital A is now able (or forced) to consolidate Thai AirAsia as a subsidiary. This resulted in an accounting gain of RM1.4bn to allow the group to publish a net profit of RM508m in 2023.

However, the transaction had a negative impact on the balance sheet and the equity deficit increased further to end the year at RM (10.5)bn. If intangibles — mostly dubious valu-

AIRASIA X FINANCIAL DATA

FYE Dec (RMm¶)	2018	2019	2020*	2022†	2023		At end Dec	2023	2019
Revenue	4,571	4,393	1,241	878	2,528		Fixed Assets	1,301	8,136
Net Income	(301)	(489)	(31,634)	32,983	366		Other non-current assets	1,179	239
							Cash	61	358
Operating cash flow	98	659	201	93	(1)		Other current assets	589	968
Net capex	(9)	861	(4)	6	(15)		Current liabilities	(879)	(2,558)
Free cash flow	89	1,520	197	99	(16)		Net current assets	(228)	(1,233)
Inc in debt	(191)	(1,165)	(114)		(154)		Total Assets	2,251	7,142
Finance costs	(28)	(299)	(318)				Debt	(1,360)	(5,451)
Equity raised					49		Other liabilities	(762)	(1,468)
Total cash flow	(131)	55	(235)	99	(120)		Equity	130	224

Notes: * 18 months to June 2020; † 18 months to Dec 2022; ¶ MYR1=US\$0.21

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ations of goodwill and landing rights — are excluded that deficit would rise to RM (15.2)bn.

In short, the accounts do not look very healthy.

Long-Haul Low Cost: seemed a good idea at the time

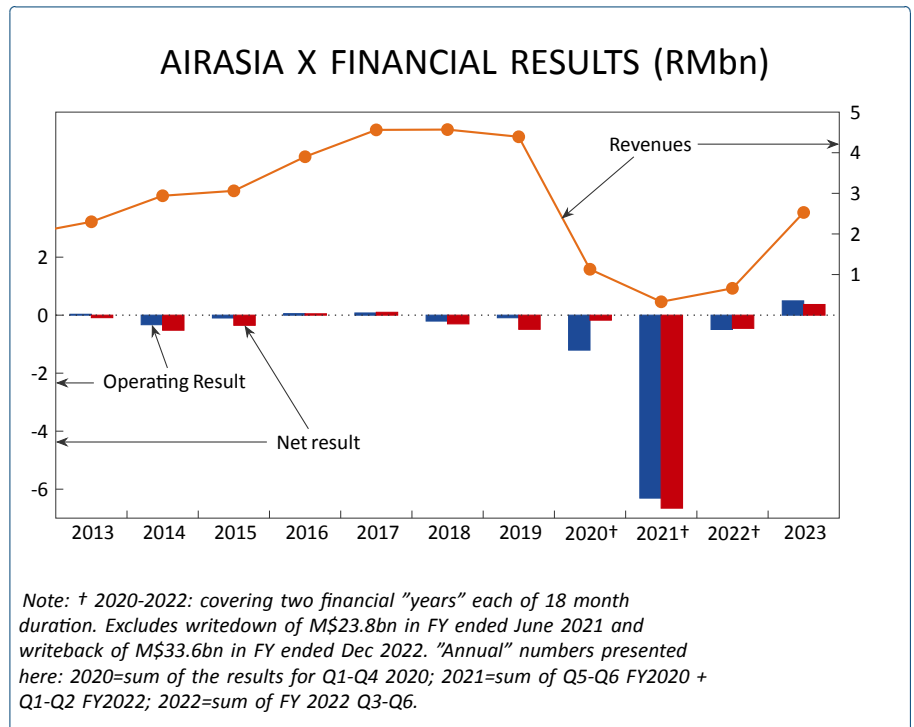
AirAsia X Bhd, was established in 2007, reputedly with backing from Virgin, Orix and others. It had some initial success and achieved a modest positive net result in 2012, the year before its IPO on Bursa Malaysia, and an operating margin of nearly 2% in 2017 and 2018.

In the ten years to 2019 it lost a total RM1.5bn — an average negative net margin of 5%. It ended 2019 with a fleet of 39 A330s, carried a total of 8.7m passengers (including 2.6m at its non-consolidated, 49%-owned associate company, Thai AirAsia X); and generated net losses of RM(0.5)bn on revenues of RM4.4bn.

With optimistic exuberance AirAsia X ordered 10 A350s in 2010 from Airbus. Then, in 2014 it placed an order for 55 A330-900s, later increased to 66. And then at Farnborough in 2018 it announced an additional 34, bringing its total commitment to 100 A330-900s. This made AirAsia X Airbus's largest customer for the type, accounting for a third of the manufacturer's backlog. In Paris the following year, AirAsia X ordered 30 A321neoXLRs, paring the A330 order back to a commitment for 78 aircraft.

And then the pandemic hit, and AirAsia X — long haul, widebody, international — had nowhere to fly and went into hibernation. It too was served with a PN17 from the stock exchange.

The results for the following three calendar years are somewhat meaningless. In a stroke of genius the com-



pany decided to have two extended financial years of 18 months each, while it went through a period of court supported debt restructuring, so that it could write off RM24bn (US\$5.8bn) in one "financial year" and write back RM34bn (\$8bn) the following.

As a result of the restructuring, those Airbus orders were cut: finally getting rid of the A350s, reducing the A330s on order to 15; and the A321XLRs to 20. A mooted rights issue never appeared — but the courts agreed to a capital reduction and share consolidation. The PN17 was finally lifted in November last year. The company raised RM49m in a private placement of new equity at the end of 2023.

AirAsia X started to come out of hibernation and resume passenger flights in the final (6th) quarter of FY 2022. The results for 2023 show revenues of RM2.5bn (still less than half the prepandemic level), operating profits of RM492m and net profits of RM366m; passenger numbers

reached 2.8m for the Malaysian operation and 1.3m at the Thai. The Indonesian joint venture, being chased for underpaid taxes, has been dormant since the beginning of 2019.

These financials are somewhat unbelievable — the accounts show various levels of otherwise unexplained income (and display a remarkable inability to proof-read public statements) — but if true would represent the highest underlying income and margins in the company's history. Excluding, that is, the extraordinary RM33bn (US\$8bn) net profit it reported for FY2022, on revenues of a mere RM878m.

The numbers for Thai AirAsia X are also somewhat meaningless — nominally making a pretax profit in 2023 of RM2.1bn on revenues of RM1.5bn. But the Thai associate had applied for its own bankruptcy protection in 2022, emerging in late 2023, so there is undoubtedly some strange accounting. In any case, the Thai operation is not consolidated, being accounted for using the equity

Aviation Strategy

method (and the holding value in the books has been written down to zero); and AirAsia X's share of the Thai profits will not be recognised in the accounts until they exceed accumulated unrecognised losses currently standing at RM285m.

Inspiration! Our brand is valuable: let's sell the brand

It seems clear that Fernandes and Meranun have never wanted to dilute their control over AirAsia, but nor have they had the funds to provide the recapitalisation the airline group needs. Tan Sri Tony has perennially complained about the low valuation the local Malaysian markets have placed on AirAsia: Capital A Group has a current market capitalisation of RM2.89bn (US\$600m); AirAsia X Bhd a mere RM670m (\$140m) — in contrast to Ryanair's €23bn market cap. Part of the reason may well be that the two airlines are the only ones quoted on Bursa Malaysia, whereas,

Tony feels, the large number of airlines quoted on the US exchanges gives rise to a greater market understanding of the sector, and a higher overall valuation.

Airlines are constrained by ownership and control rules, so the group could not reasonably attract a higher level of interest for investment in its airlines than the local exchange could provide. But maybe the AirAsia brand, built up over the past two decades, has unrealised value.

In December 2022, the AirAsia brand was independently valued at US\$1.0-\$1.3bn by UK-based Brand Finance plc. The valuation was based on an income approach, and specifically the royalty relief method: the net present value of future royalty payments.

As mentioned above, the group created the master brand agreements between the separate AirAsia AOCs. We now learn that the short-haul AirAsia airlines will be paying

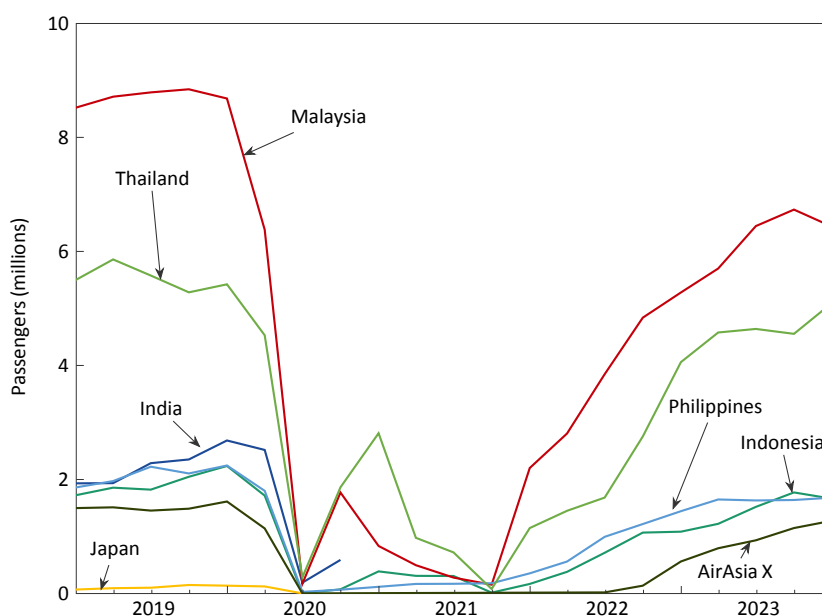
a royalty fee of 1% of revenues, AirAsia X Bhd 0.5%, Thai AirAsia X 1.5%; and Capital A's "digital" offerings 0.5%.

Last November, the group announced its intention to merge some part of its Capital A's operations with NASDAQ-listed SPAC, Aetherium Acquisition Corp. This materialised in February. The details, unsurprisingly, are complicated, involving a newly incorporated Cayman Islands-registered subsidiary Capital A International (CAPI) and its Delaware-registered subsidiary Aetherium Merger Corp, Inc. Capital A's recently formed subsidiary Brand AA — "the registered proprietor for all the rights in the AirAsia trade name and brand image" — will be transferred to CAPI and Capital A will get \$1.15bn from the SPAC in newly issued shares. The group envisages a capital reduction and a transfer of half of those shares to existing Capital A shareholders — and that following the transaction Capital A Bhd will hold 46.1% of the CAPI (to be listed on NASDAQ), Capital A's shareholders 47.9%; and Aetherium's current shareholders 6%.

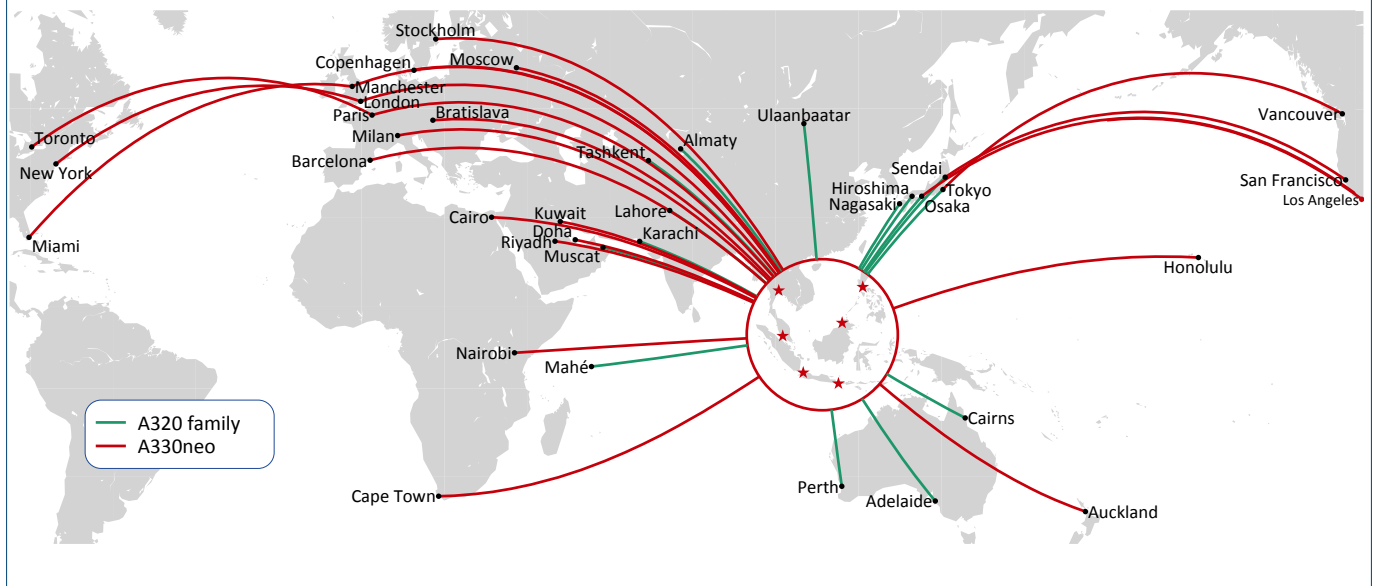
However, there is a risk that the deal may not proceed. Aetherium got into trouble with NASDAQ and was threatened with having its shares delisted. Apart from other small matters, such as forgetting to file quarterly returns, it had fallen foul of NASDAQ's listing rules on SPACs. It is appealing the decision.

As a result of the proposed transaction, CAPI and Brand AA will be deconsolidated, becoming associate companies for accounting purposes. The net effect, so goes the announcement, could be to reduce Capital A's equity deficit by RM2.5bn.

AIRASIA PASSENGER TRAFFIC
BY OPERATING AIRLINE



AIRASIA: LOW COST NETWORK AMBITIONS



Inspiration! Let's sell the airlines

In January 2024 Capital A announced that has offered to sell its airlines — the Malaysian AirAsia Bhd and AirAsia Aviation Group Ltd, the investment vehicle holding the shares in the other AirAsia airlines — to AirAsia X Group Bhd.

Why? “To streamline the Company and its group of companies’ core business activities to focus on aviation services and digital businesses which are essential and complementary to the passenger airlines business”.

The real reason, more likely, is that Capital A Group “... is expected to record gain on dilution of interest... and deconsolidation... and thereby is expected to improve the shareholders’ equity of the Group in its effort to regularise its financial conditions”.

Accountancy wizards can do magic with numbers, so it may be feasible that this transaction could eradicate more of the RM10.5bn equity deficit in Capital A’s accounts.

In February, Fernandes held a big party at the AirAsia HQ in Kuala Lumpur to celebrate a visit from Christian Scherer, the recently promoted CEO of the Commercial Aircraft business at Airbus, and used the occasion to try to put some strategic logic behind the plans.

Tan Sri Tony effusively praised the historic relationship with Airbus, saying: “Our commitment to Airbus never faltered, even through the pandemic. As one of their biggest customers, we have an orderbook of 647 aircraft consisting of 612 A320 Family and 35 A330 Family aircraft with another 362 A321neo, 20 A321XLR and 15 A330neo to be delivered over the next decade as we set our sights on growing bigger than ever in the future.” A bit of hyperbole perhaps: Christian Scherer is unlikely to have forgotten the intense fight when AirAsia X cancelled orders for ten A350 and 63 A330neos during its restructuring.

He also came up with a representative route plan (see map above), stating that “with Airbus support we

want to create the world’s first low-cost network carrier... operating a hub and spoke model with a number of additional virtual hubs spanning Asia, Europe, Africa and the US in the future”.

The vision seems to include using the A330neos, fed by the short haul airlines, to reopen routes to Europe, the obvious places including London and Paris (last operated, unprofitably, in 2012 using A340s) — but also, bizarrely, Bratislava — and tagging on routes from London, Paris and Manchester to the US West Coast; east-bound across the pacific return to Hawaii (which it used to fly to, pre-pandemic, from Osaka), and target new routes to Vancouver, San Francisco and Los Angeles (from Japan).

Admirable ambition perhaps, but not exactly simple. Hub and spoke networks are complicated beasts to manage, requiring waves or banks of inbound and outbound flights to maximise seamless connections of passengers and their luggage; connecting passengers at hubs can provide some of the lowest level of prorate

Aviation Strategy

fares on short haul feeder routes, but provide a large boost to profitability on long haul segments. Missed connections are honoured with a booking on the next available flight.

That model doesn't quite work well with point-to-point ticketing in the traditional LCC model.

Tagged routes, assuming the route rights would be available, add another high level of complexity — for crew rostering, and hotacc costs, let alone ticketing — and, importantly, have constraints on load factors.

And AirAsia X has yet to prove that a long haul low cost airline model is really viable. The strategic vision is almost a complete reversal of the European network model which uses loss-making short haul service to feed a profitable long haul operation.

Perhaps Fernandes thinks he can continue as currently. AirAsia already offers a "Fly-thru" product, which provides through ticketing and luggage transfer on certain select routes (but not all possible connections).

It also allows "self-connection": separately booked flight segments that might provide a connection opportunity. But on self-connecting flights the passenger has to collect their luggage on landing, go through immigration where necessary, and check-in airside for the next flight. In these cases the airline is under no obligation to provide onward carriage: failure to check-in on time



(for example because of a delayed inbound flight) results in a no-show.

The idea that the vision could incorporate a multi-hub strategy may be a bit of an exaggeration. The largest of AirAsia's operations are in Kuala Lumpur and Bangkok — both have their limitations — and the next largest, Manila is crowded, and Jakarta or Bali would be difficult, and Kota Kinabulu irrelevant. However, following a recent visit to Bangkok, Fernandes was quoted as saying "we want to make Bangkok the next Dubai in terms of being a global aviation hub" (somewhat ignoring Dubai's advantage of geographical location).

The airline sales latest

As far as the airline sales proposal, is concerned Tan Sri Tony and Datuk

Kamarudin have stated that they will continue to abstain from deliberating and voting on the proposed sale and acquisition at relevant Board meetings of Capital A and AirAsia X, but then that probably doesn't mean much. And Thai AirAsia X may not be released from the obligations under its bankruptcy reorganisation plan until 2025.

Strangely, there was no mention of these deals, their structure or implications, no discussion of any changes to operational strategy in the publications of fourth quarter and full year results, nor the accompanying analysts' results presentations published by either Capital A Bhd or AirAsia X Bhd at the end of February.

Maybe they forgot to tell the investor relations teams.

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Boeing and Airbus: The Financials

IN 2023 Boeing again reported a net loss, though a lower loss than in the previous year, while Airbus was again profitable, albeit slightly down on the previous year. Over the past five years (2019-23) Boeing has accumulated a net loss of \$24.1bn while Airbus has reported a total net profit of \$9.6bn.

The stockmarkets' verdict on the two OEMs is indicated by the graph below. Up to the end of 2020, including the period when the MAX crisis emerged and the whole market plummeted when the implications of the pandemic became clear, the share prices of the two OEMs more or less tracked each other, then they diverged, with Airbus strongly outperforming Boeing. Currently, the equity market value of Boeing is about \$123bn while Airbus is capitalised at the equivalent of \$126bn; back in 2017 Boeing was valued at \$175bn almost two and half times Airbus's \$73bn.

Having emerged from the MAX crisis, Boeing looked as if it was restoring stability to its finances before the Alaska Airlines doorplug accident, which management refers to as an "escape". Since then Boeing has been bombarded with expert and not so expert advice on where the US's best known manufacturing company has gone wrong. Its financials are again uncertain.

Boeing's strategy is now to "go slower", reviewing all its processes and supply chains for safety quality. Management at the 2023 results presentation in January emphasised time and again that they were "fo-

cused on safety and quality". The MAX production lines are being slowed, paused, with output targeted at 38 per month this year — as against the recent target of 52 per month. This is in order to make additional inspections both within the corporation and at its suppliers. In a complete reversal of its outsourcing policy Boeing is now proposing to buy its most important supplier, Spirit AeroSystems.

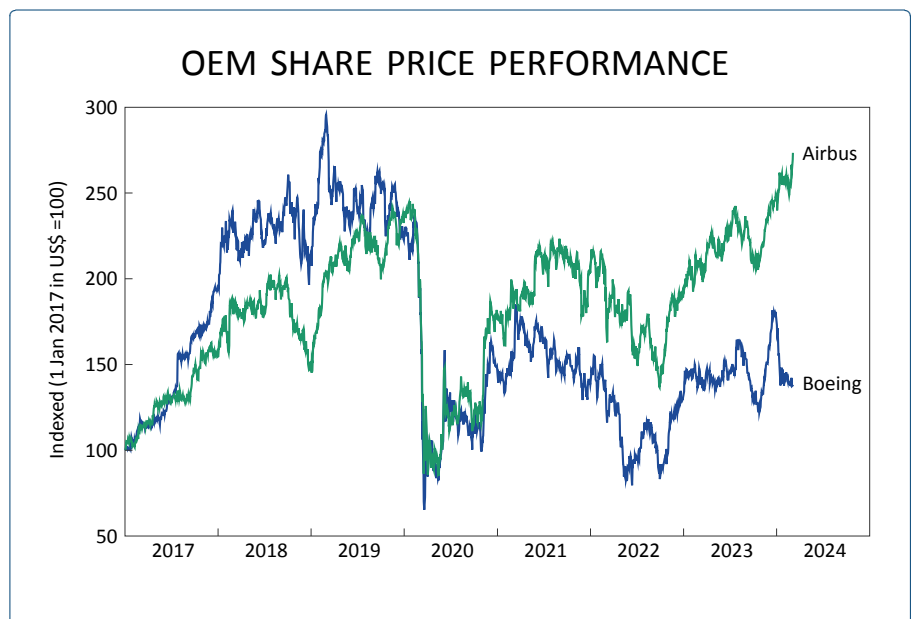
Most critically, the FAA is intensifying its scrutiny, giving Boeing three months to produce a plan for eliminating quality problems and setting new safety standards. The FAA administrator was unequivocal: "Making foundational change will require a sustained effort from Boeing's leadership, and we are going to hold them accountable every step of the way."

Even before the latest crisis, the concept of a grand strategy seems to have been abandoned. Towards

the end of last year Boeing's corporate strategy unit was dissolved, with strategy teams being devolved to the three business units. The concern is that this new structure makes it even more unlikely the company will be able to focus on new designs, such as the long-discussed new mid-sized jet. As engineering types keep pointing out, Boeing hasn't launched a clean-sheet commercial airliner since the 787 in 2004, and the 737 MAX is the latest iteration of an aircraft type conceived in 1964.

Understandably, Boeing no longer provides financial guidance. Its key target had been to reach \$100bn in revenues by 2025/26, which would have returned it to the record sum reached back in 2018. It still officially has the \$100bn target but no commitment to a specific year.

At Airbus there is no *schadenfreude*. CEO Guillaume Faury



AIRBUS CASH FLOWS

€bn	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total Revenue	60.7	64.5	66.5	59.0	63.7	70.5	49.9	52.1	58.8	65.4
Net Result	2.3	2.7	1.0	2.4	3.1	(1.3)	(1.7)	4.2	4.1	3.6
Operating Cashflow	2.6	2.9	4.4	4.4	2.3	3.8	(5.4)	4.6	6.3	6.3
Capex/Acquisitions (net)	(2.7)	(3.1)	(3.0)	(2.3)	(2.0)	(2.2)	(1.5)	(1.7)	(2.6)	(3.3)
Free Cashflow	(0.1)	(0.2)	1.4	2.1	0.3	1.6	(6.9)	2.9	3.7	3.0
Net Investment Inflow/Outflow	(0.6)	(0.4)	2.2	(0.2)	0.4	(0.7)	5.6	(1.0)	0.2	(0.8)
Net Increase/(Decrease) in Debt	1.3	1.5	1.7	0.0	(2.0)	0.3	6.4	(2.0)	(1.1)	(0.1)
Share Buy Backs & Dividends	(0.6)	(1.3)	(1.8)	(1.0)	(1.2)	(1.3)	0.0	0.0	(1.0)	(1.4)
Total financial Flows	0.1	(0.2)	2.1	(1.2)	(2.8)	(1.7)	12.0	(3.0)	(1.9)	(2.3)
Net Change in Cash	0.0	(0.4)	3.5	0.9	(2.5)	(0.1)	5.1	(0.1)	1.8	0.7
Cash Balance (end period)	7.8	7.4	10.9	11.8	9.3	9.2	14.3	14.2	15.9	16.5

remarked at Airbus's results presentation in February that Boeing's problems were a "humbling reminder" of the complexities of aircraft production and the risks inherent in supply chains. Airbus has had its own production problems, notably over the last year with the recall of GTF engines fitted to A320

NEOs, though in this case it is P&W that is bearing the direct \$6bn of costs.

Airbus is giving financial guidance. Based on 800 commercial aircraft deliveries in 2024, up from 735 in 2023, it expects adjusted EBIT of €6.5-7bn, compared to €5.8bn in 2023.

To be fair, Boeing's CEO David Calhoun has received some praise and support from industry figures for his handling of the latest crisis, and there were signs of improvement in the 2023 results but, unfortunately, policies instigated by his predecessor CEOs, James McNerney and Dennis Muilenburg especially, have undermined the corporation.

They succumbed to the obsession with quarterly results and share price momentum, resulting in unsustainable amounts of cash being returned to shareholders. This phenomenon was prevalent in many industrial sectors in the 2010s, and to a certain extent was also followed by Airbus, but the impact on Boeing was especially harsh, with too little capital being allocated for investment in new prod-

ucts or to ensure production quality or simply to bolster reserves in case something unexpected happened.

The financial tables and the graphs on these pages trace the financial fortunes of the two OEMs and provide some interesting insights into their current positions.

In terms of total revenues, which are mostly driven by deliveries, Boeing had been by some margin the bigger company until 2018. But over the next two years its revenues collapsed, and the two OEMs converged in terms of dollar turnover. However, there was a recovery in 2023: an annual increase of 17% to \$77.8bn for Boeing and 14% to \$70.6bn for Airbus.

Boeing had historically been a more profitable company than Airbus, with a net result peaking at \$10.5bn in 2018, a margin of 10.4%, more than twice that of its European rival. The two manufacturers were equally unsuccessful in 2019, Boeing losing \$0.6bn, because of the MAX grounding, and Airbus, \$1.5bn. because of production difficulties with the A321. 2020 was calamitous for

AIRBUS'S BALANCE SHEET

€bn	End 2023
Property and Plant	17.2
Intangibles (inc Goodwill)	16.9
Inventories	33.7
Cash etc	17.8
Other Assets	33.3
TOTAL ASSETS	118.9
Advances and PDPs	48.4
Other Short Term Liabilities	8.6
Pension Plans	2.7
Other Liabilities/Provisions	18.0
Long term debt	23.5
TOTAL LIABILITIES	101.2
EQUITY (DEFICIT)	17.7

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BOEING CASH FLOWS

\$bn	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total Revenue	90.7	96.1	93.4	94.0	101.1	76.6	58.2	62.2	66.6	77.8
Net Result	5.4	5.2	5.0	8.4	10.5	(0.6)	(11.9)	(4.3)	(5.1)	(2.2)
Operating Cashflow	8.8	9.4	10.4	13.3	15.3	(2.4)	(18.4)	(3.4)	3.5	6.0
Capex/Acquisitions (net)	(2.4)	(2.4)	(2.9)	(2.0)	(4.8)	(1.5)	(1.0)	(0.5)	(1.2)	(1.6)
Free Cashflow	6.4	7.0	7.5	11.3	10.5	(3.9)	(19.4)	(3.9)	2.3	4.4
Net Investment Inflow/Outflow	4.9	0.6	(0.5)	(0.1)	0.2	0.0	(17.4)	9.8	5.5	(0.7)
Net Increase/(Decrease) in Debt	(0.4)	1.3	0.2	1.4	1.3	13.0	36.2	(5.6)	(1.3)	(5.5)
Share Buy Backs & Dividends	(8.1)	(9.2)	(9.8)	(12.7)	(13.0)	(7.3)	(1.2)	0.0	0.0	0.0
Total financial Flows	(3.6)	(7.3)	(10.1)	(11.4)	(11.5)	5.7	17.6	4.2	4.2	(6.2)
Net Change in Cash	2.8	(0.3)	(2.6)	(0.1)	(1.0)	1.8	(1.8)	0.3	6.5	(1.8)
Cash Balance (end period)	11.9	11.6	9.0	8.9	7.9	9.6	7.7	8.0	14.6	12.7

Boeing — a net loss of \$11.9bn while Airbus was just moderately bad — a loss of \$1.9bn. Boeing continued to lose money throughout 2021-23, reporting a net loss of \$2.2bn for last year, a margin of -2.8% on revenue. Airbus pushed back into profitability in this period and reported a net

profit of \$3.9bn in 2023, a 5.5% margin.

Historically, Boeing's Commercial division has been firmly supported by the Defense and Global Services divisions. But, for the past two years, Defense has been loss-making, which the company blames on the 15% of its business that is tied into fixed-price government development programmes. Airbus is predominantly a civil aircraft manufacturer, but its Defence and Helicopter divisions have contributed to overall profits for the past two years.

A major difference between the two OEMs used to be Boeing's superior ability to generate cash. Operating Cashflow — ie, profits plus depreciation and amortisation, adjustments for deposits and PDPs (these are paid to the manufacturer usually in three or four tranches, based on the list price not the negotiated discounted price, before the airline takes delivery of the aircraft which is when the manufacturer records the revenue), changes in inventories, creditor/debtor balance, etc — was huge at Boeing: \$15.3bn in 2018, in con-

trast to just \$2.7bn at Airbus. Then everything went wrong — for the period 2019-2021 Boeing's operating outflow totalled \$24.2bn, while Airbus managed to generate positive cash of \$1.4bn during this period. Boeing has managed to return to positive Operating Cashflow over the past two years, generating \$9.5bn while Airbus has produced \$13.5bn.

Subtracting Capex — which includes new and replacement manufacturing equipment, R&D, investments in or divestment from other companies — from Operating Cashflow gets us to Free Cashflow, which again was historically much stronger at Boeing than Airbus. In 2018, for instance, Boeing generated \$10.5bn, dwarfing Airbus's \$2.7bn. (These calculations of Free Cashflow are taken directly from the published accounts; the OEMs may have different definitions.)

In startling contrast, during 2019-2021 Boeing's Free Cashflow went negative to the tune of \$27.2bn. Airbus was positive, \$2.6bn, on this measure. The 2022 and 2023 Boeing financials indicate that the Free Cash

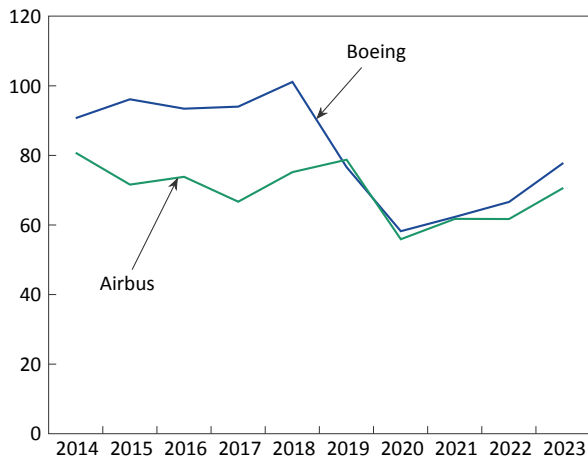
BOEING'S BALANCE SHEET

\$bn	End 2023
Property and Plant	10.7
Intangibles (inc Goodwill)	10.2
Inventories	79.7
Cash etc	16.0
Other Assets	20.4
TOTAL ASSETS	137.0
Advances and PDPs	56.3
Accrued Liabilities	22.3
Pension/Health Plans	8.7
Accounts payable	12.0
Short-term debt	5.2
Long-term debt	47.1
Other	2.6
TOTAL LIABILITIES	154.2
EQUITY (DEFICIT)	(17.2)

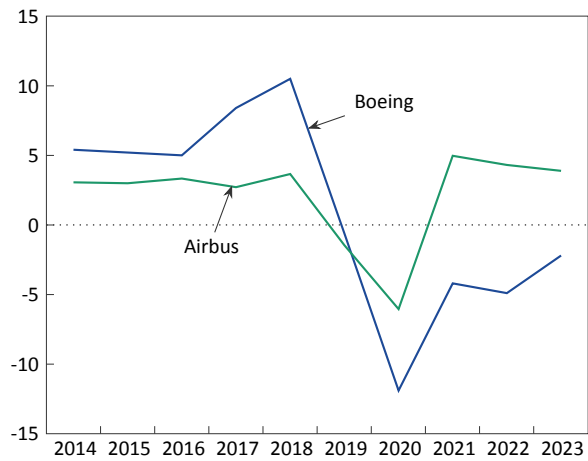
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OEM FINANCIAL DATA (US\$bn)

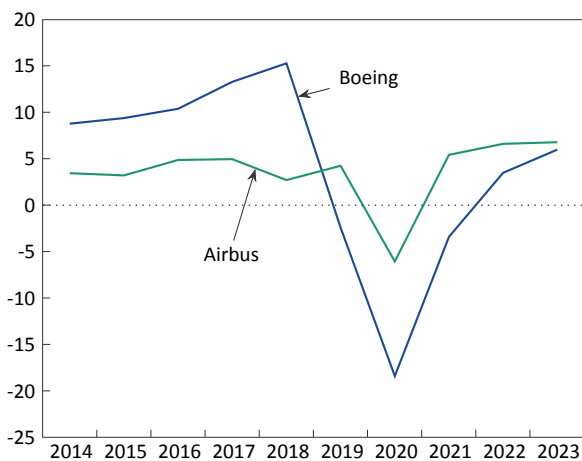
Total Revenues



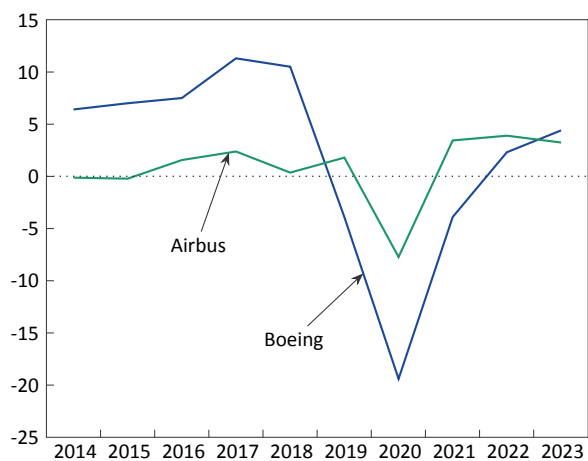
Net Result



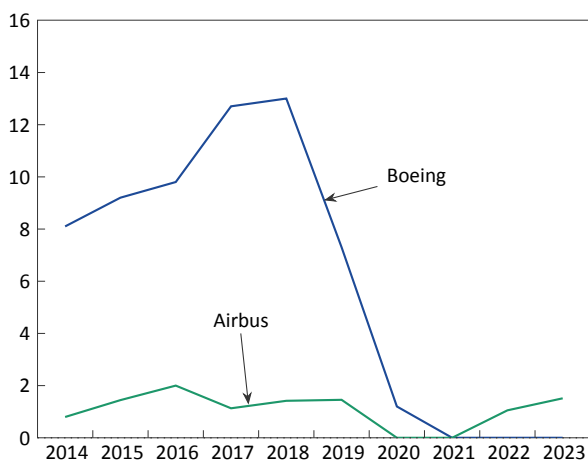
Operating Cashflow



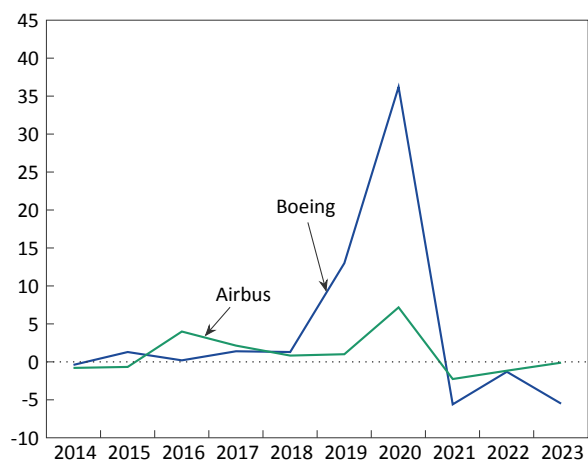
Free Cashflow



Dividends paid plus share buybacks



Change in Net Debt



drain has ended and indeed turned positive — \$6.7bn in total, partly caused by Capex running at about half prepandemic rates. For the same period Airbus's Free Cashflow was \$7.1bn

However, the reality for Boeing is a large part of future cashflow will, in effect, have be used to pay down debt (as opposed to Capex, adding to reserves or dividends). Coming into the crises — first the MAX grounding, then Covid-19 — Boeing found itself with inadequate liquidity, which led to a surge in borrowing to cover liabilities and contingencies: during 2019-21 Boeing increased its net debt by about \$43.6bn, Airbus by a much more modest \$5.2bn. The OEMs did not take industry-specific state loans, but they have benefited from implicit state support. For instance, Boeing's \$25bn bond placement in 2020, was issued against the background of the Federal Reserve's \$2tr commitment to buy up distressed corporate bonds.

In 2022 and 2023 the OEMs have been paying their debt down — Boeing by \$6.8bn, Airbus by \$1.3bn. But Boeing's balance sheet remains weak; its debt (long and short term) stood at \$52.3bn as at the end of 2023, meaning that its balance sheet showed negative net equity of \$17.2bn. Long term debt totalled \$25.4bn at Airbus at the end of 2023; importantly, it has positive net equity of \$19.1bn.

Debt was easily manageable in the era of ultra-low interest rates, but Boeing is now susceptible to a credit rating downgrade which will make it harder to refinance. And over the next three years \$17.7bn of principal repayments are due. Both OEMs currently have investment grade ratings: Fitch rates Boeing's long-term debt at BBB- and Airbus's at BBB+.

Liquidity looks reasonable —

AIRBUS OPERATING RESULTS BY SEGMENT 2023

	€bn	Revenues	Operating Result	Margin
Airbus (Commercial)		47.0	3.6	7.7%
Defence		11.4	0.2	1.8%
Helicopters		7.0	0.7	10.0%
Others and Eliminations		0.0	0.1	na
TOTAL		65.4	4.6	7.0%

as at the end of 2023 Boeing held \$16.0bn in cash and near-cash while Airbus had \$13.7bn. But the uncertainty surrounding production rates at Boeing plus legal threats (the DoJ is apparently examining whether the doorplug escape negates a \$2.5bn deferred-prosecution agreement related to the two MAX crashes).

Boeing has not paid dividends since 2020 and there is little prospect of any in the foreseeable future. Airbus, on the other hand, has restored dividend payments, totalling \$1.5bn for 2023 and has proposed a further special dividend of \$1bn to be paid in 2024.

It is worth recalling what happened to all that cash generated during the good times, 2014-18. During this period Boeing generated \$42.7bn in Free Cashflow but then returned \$52.8bn to shareholders in dividends and, especially, through share re-purchases — in other words it paid out more to shareholders than it was generating internally; it was in

effect borrowing in order to fund its generosity to shareholders (and to senior management whose bonuses were related to the soaring share price). Airbus followed the same policy, albeit on a much smaller scale — generating a total of \$3.9bn and paying out \$6.8bn.

Such a financial strategy was dubious during the good times. It proved to be calamitous when things went wrong, which the certainly did with the MAX grounding, then Covid-19 and now the doorplug escape. Boeing's problems have been attributed to a prioritisation of profits over technological innovation. However, there should be no conflict between these two aims; the real problem was the obsession with short-term maximisation of shareholder value. Maximising shareholder value should not be a strategy in itself; it should be the product of a successful industrial strategy, which Boeing is trying to find again.

BOEING OPERATING RESULTS BY SEGMENT, 2023

	\$bn	Revenues	Operating Result	Margin
Commercial Airplanes		33.9	-1.6	-4.7%
Defense		24.9	-1.8	-7.2%
Global Services		19.1	3.3	17.3%
Others and Eliminations		0.0	-0.2	na
TOTAL		77.9	-0.3	-0.4%

Boeing and Airbus: Orders, Deliveries and Production 2023

IN THE annual aircraft orders race, Airbus trounced Boeing in 2023. It recorded 2,319 new orders, some 60% higher than its rival's 1,456. This was also its best order year: 30% higher than its previous peak in 2014. These figures were up by 115% and 56% respectively from the numbers achieved in 2022.

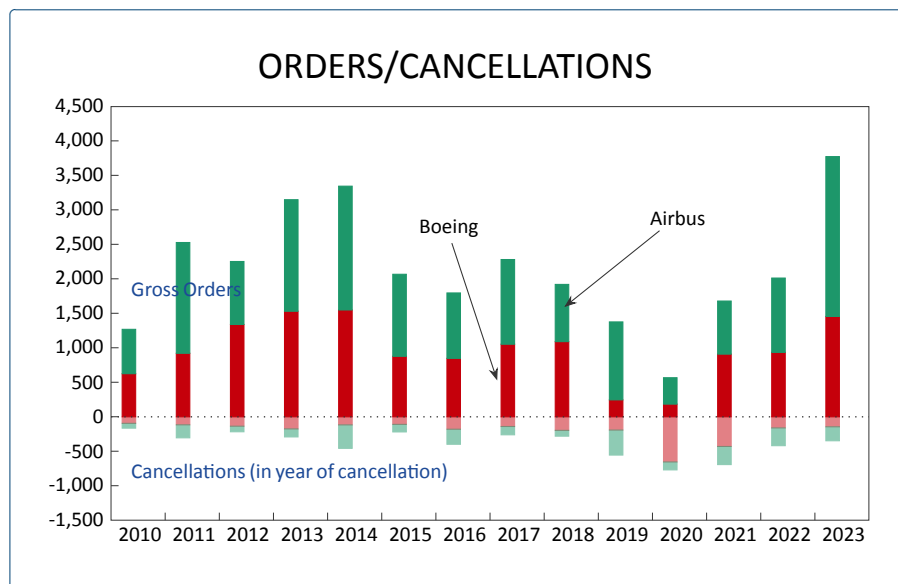
On a net basis, after taking into account cancellations and changes to the backlog, the disparity of performance between the two manufacturers narrowed slightly — but not by much. Airbus reported net orders for the year of 2,116 compared with 820 in 2022; Boeing 1,352 vs 774 in the prior year.

Both manufacturers ended the year with further record order backlogs of a total 14,814 (over 55% of the current fleet in service worldwide): Airbus at 8,598; Boeing on 6,216.

There were once again distinct differences in the performance of the two manufacturers' sales teams in 2023.

Narrowbody/Widebody

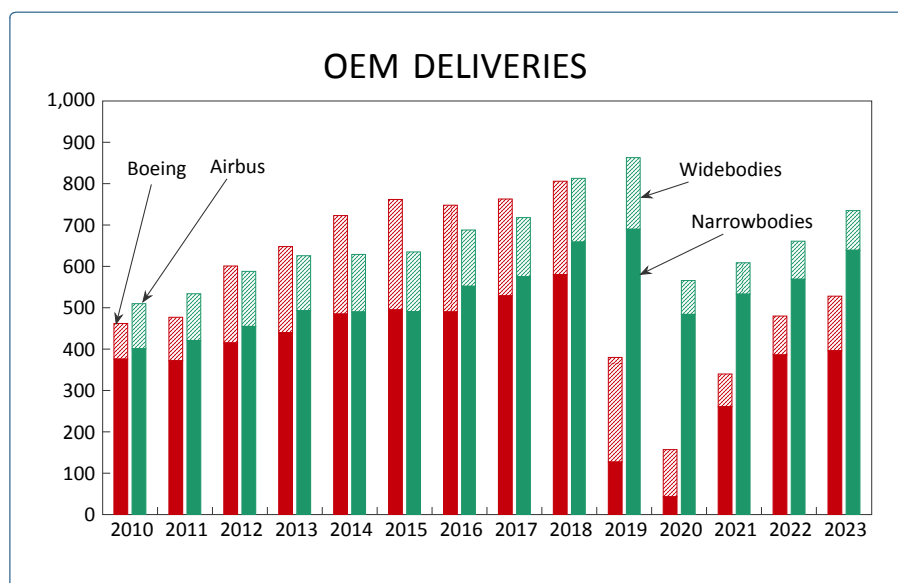
Firstly on narrowbody aircraft Airbus outgunned its rival yet again with a net 1,830 units ordered, more than double Boeing's 883. It's not just the fight between the A320 and 737 families — the workhorses of the short-haul markets — Airbus is helped by having the A220 (formerly Bombardier's C-Series) in its offering and accounting for 142 of last year's orders. Airbus has outperformed Boeing in this segment in each of the past ten years — having announced a net 8,844 narrowbody orders over



the decade, 79% above Boeing's 4,937 units — and boasts a backlog at the end of December of 7,197 A320s and 600 A220s compared with Boeing's backlog of 4,799 737s.

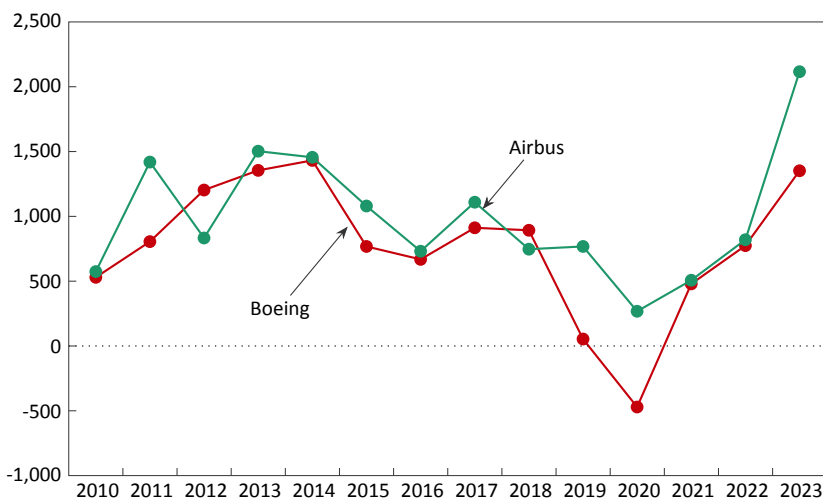
On widebody equipment the fortunes appear reversed. Boeing registered 469 net orders, more than double the 190 reported for 2022

— its best year's performance, and nearly two-and-a-half times the annual average of the past decade. It is helped by its tanker version of the 767 for which there were 30 new orders, while there were 126 for its 777 and 313 for the 787; and this was achieved in spite of some 15 787 and 26 777 cancellations.

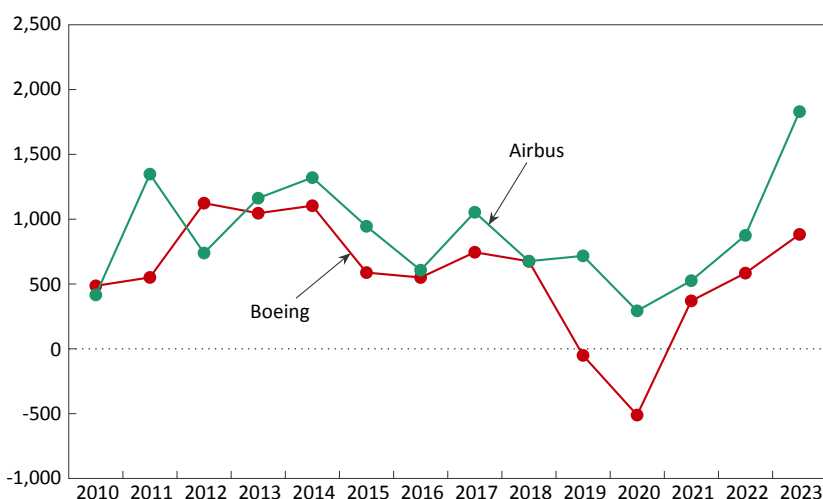


Aviation Strategy

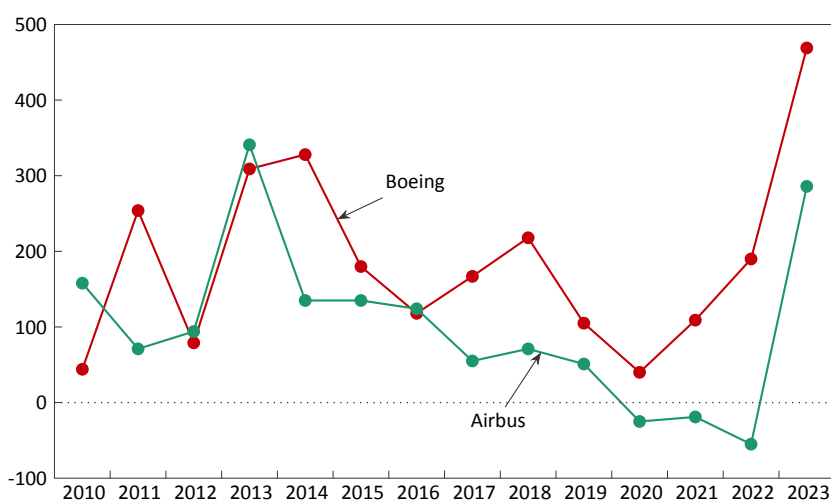
TOTAL NET ORDERS



NET NARROWBODY ORDERS



NET WIDEBODY ORDERS



Airbus registered net orders of 286 widebody units in 2023. There must have been a feeling of relief in Toulouse: in each of the previous three years it has recorded net cancellations (acrimonious public row with Qatar over A350 paint issues, AirAsia X bankruptcy reorganisation of over-ambitious growth expectations). There were new orders for 42 A330s, 285 passenger A350s and 15 orders for its yet-to-be-built A350 freighter. But there were cancellations for 37 A330s and 19 A350s.

Over the past decade Boeing has outsold Airbus in the widebody sector: total net orders for 1,924 aircraft over the ten years, more than twice its competitor's 758, and Boeing had a backlog at the end of 2023 of 1,417 units compared to 801 at Airbus.

Regional disparity

Orders from leasing companies were once again at a relatively low level, accounting for just 9% of each of Boeing's and Airbus's gross orders.

Boeing's intake of orders was relatively evenly spread around the world: 21% in Asia/Pacific, 18% in Europe, 15% in Middle East/Africa and 16% in North America.

It benefited from a handful of mega-orders: newly revitalised under Tata's ownership, Air India's fleet renewal programme generated orders for 190 737s, 10 777s and 20 787s (see *Aviation Strategy*, Mar/Apr 2023); Ryanair finally got the price it wanted and put in firm orders for 150 737s; Southwest likewise added another 156 737s; and, Emirates put its hand up for an additional 106 of the long-delayed 777X (it now has a total of 205 of the type on order, making up 45% of the backlog).

Slightly surprising was the order in December 2023 from Lufthansa

BOEING ORDERS 2023

	Customer	737	767	777	787	Total
Asia/Pacific	Air India	190		10	20	220
	Air Niugini				2	2
	Akasa Air	4				4
	Azerbaijan Airlines				8	8
	China Airlines				8	8
	EVA Air				5	5
	Greater Bay Airlines	15				15
	Japan Airlines	21				21
	Qantas				12	12
	SCAT Airlines	7				7
	Skymark Airlines	4				4
	Türkmenhawaýollary	4				4
	Asia/Pacific Total	245		10	55	310 21%
Europe	British Airways				6	6
	Lufthansa	40			7	47
	Luxair	8				8
	Ryanair	150				150
	SunExpress Airlines	45				45
	TUI Travel PLC	9				9
	Europe Total	252			13	265 18%
MEAF	Emirates			106		106
	Ethiopian Airlines	20			11	31
	Riyadh Air				39	39
	Royal Air Maroc				2	2
	Royal Jordanian				4	4
	Saudia				39	39
	TAAG Angola				4	4
	MEAF Total	20		106	99	225 15%
N America	Air Canada				18	18
	Atlas Air			2		2
	Southwest	156				156
	United				50	50
	North America Total	156		2	68	226 16%
	GOL Linhas Aereas	1				1
	South America Total	1				1 0%
Lessors	Air Lease Corporation				2	2
	Aviation Capital Group	13				13
	Avolon	80				80
	BOC Aviation	7				7
	SMBC Aviation Capital	25				25
	Lessors Total	125			2	127 9%
	Unidentified	188		8	76	272
	Government/Military		30			30
	Gross Orders	987	30	126	313	1,456
	Changes/Cancelled	-104		-26	-15	-145
	Net Orders	883	30	100	298	1,311
	Backlog	4,799	104	514	799	6,216

for 40 737MAXs (plus 60 options) — the carrier's first return to Seattle for short haul types in 30 years.

Airbus's order profile in 2023 was skewed to Asia/Pacific (38% of the total) and Europe (31%).

It too benefited from Air India's buying spree (210 A320s and 40 A350s), and was boosted by another massive order for 500 A320s from India's largest airline, Indigo. Qantas usefully provided orders for 12 A350s under its "Project Fysh" international fleet renewal programme (balanced with orders for 12 787s from Boeing).

Notable narrowbody orders in Europe came from easyJet and Turkish, for 157 and 150 A320s respectively. Among widebodies Airbus picked up useful A350 orders: 79 from Turkish and 50 from Air France-KLM.

Deliveries

The previous cycle's delivery peak was in 2018 (see graph on page 20) when Boeing and Airbus between them delivered 1,619 aircraft. (It would have been even higher in the following year had it not been for the grounding of the 737MAX in March 2019.) In 2023 the two OEMs delivered a total of 1,263 planes.

Boeing delivered 528 aircraft in 2023, but continued to experience "supply chain" issues. The 737MAX-8 had been re-certificated in late 2020 by both EASA and the FAA, and Boeing had plans to increase production of the type to 38 a month (from 31) and deliver 400-450 units in 2023. But then in April 2023, Spirit AeroSystems (one of Boeing's suppliers) owned up to quality control issues: the problem apparently involved the installation of two fittings that join the aft fuselage made by Spirit to the vertical tail, which were not attached correctly to the structure of the fuselage before

Aviation Strategy

AIRBUS ORDERS 2023

	Customer	A220	A320	A330	A350	A350F	Total	
Asia/Pacific	Air India		210		40		250	
	Air Niugini	6					6	
	Cathay Pacific		32			6	38	
	Eva Air		15		18		33	
	Indigo		500				500	
	Korean Air		20				20	
	Philippine Airlines				9		9	
	Qantas Airways	9			12		21	
	Asia/Pacific Total	15	777		79	6	877	38%
	Air France – KLM				50		50	
Europe	AirBaltic	30					30	
	Azerbaijan Airlines		12				12	
	Condor			3			3	
	easyJet		157				157	
	IAG		26		1		27	
	Icelandair		13				13	
	Jet2 Plc		12				12	
	Lufthansa	40			15		55	
	Pegasus		36				36	
	Turkish Airlines		150		79	5	234	
	Uzbekistan Airways		12				12	
	Wizz Air		75				75	
	Europe Total	70	493	3	145	5	716	31%
MEAF	Air Algerie			5	2		7	
	Air Mauritius				1		1	
	Egyptair				10		10	
	Emirates				15		15	
	Qatar		50		23		73	
	MEAF Total		50	5	51		106	5%
N Am	Delta	38		1			39	
	United		60				60	
	North America Total	38	60	1			99	5%
S Am	Azul			4			4	
	LATAM		13				13	
	South America Total		13	4			17	1%
Lessors	Air Lease Corporation			1			1	
	Avolon		100	20			120	
	BOC Aviation		7				7	
	DAE Capital		1				1	
	Flynas		30				30	
	SMBC Aviation Capital		60				60	
	Lessors Total		198	21			219	9%
	Undisclosed	18	242	2	10	4	276	
	Private Customer	1	2	1			4	
	Airbus Defence And Space			5			5	
	Gross Orders	142	1,835	42	285	15	2,319	
	Changes/Cancellations	-1	-146	-37	-19		-203	
	Net Orders	141	1,689	5	266	15	2,116	
	Backlog	600	7,197	180	571	50	8,598	

BOEING DELIVERIES 2023

	737	747	767	777	787	Total	
Asia/Pacific	14			9	26	49	10%
Europe	70			1	20	91	19%
Latin America	15				2	17	3%
MEAF	19		1	2	15	37	8%
North America	211	1	17	11	7	247	51%
Lessors	42			3	1	46	9%
Commercial deliveries	371	1	18	26	71	487	
Government	15		14		2	31	
Unidentified	10					10	
Total	396	1	32	26	73	528	

it was sent to Boeing. The company noted that the problem could have dated back to 2019.

In the end Seattle delivered only 396 737s (including nine 737-800NGs) during the year. The inventory of built, but not yet delivered 737s stood at 175 (including 35 MAX-7 and MAX-10) at the end of December, down from 250 at the end of 2022. Of these, 85 are due to be delivered to Chinese customers which Boeing hopes to be able to do during 2024.

Boeing had expected to increase production to around 52 737 MAX jets per month by 2025 (the same

rate it had achieved in 2018), and had planned to open a new 737 MAX production line in Everett in the second half of 2024. That was before the recent 737MAX-9 problem, and the FAA has put a block on those ambitions. As quoted in the *Financial Times*, Michael Whitaker, head of the FAA said: "Let me be clear: this won't be back to business as usual for Boeing. We will not agree to any request from Boeing for an expansion in production or approve additional production lines for the 737 MAX until we are satisfied that the quality control issues uncovered during this process are resolved."

And it has still to get the MAX-10 certificated (now possibly not until 2025).

Separately on the 787 programme — of which deliveries had been halted by the FAA between May 2021 and July 2022 over certification issues — deliveries were once again stopped in Feb 2023 (but resumed a month later) after Boeing notified the FAA that it had "discovered an analysis error by our supplier related to the 787 forward pressure bulkhead." It delivered 73 787s in 2023, roughly as planned, with a production rate of four a month. It expects to build production to 10 a month by 2025.

The remaining deliveries were freighters (and tankers): 18 767-300Fs, 14 767-2Cs, 26 777Fs; and, with the closure of the 747 programme, the last 747-8F (to Atlas Air).

In contrast Airbus delivered 735 aircraft in 2023, up 11% from the 661 delivered in the prior year, but still 15% below its peak in 2018. It too had supply chain issues, and was not quite able to build production rates as planned, particularly of the key A320 family of aircraft which it has been rolling out at the rate of 45 units a month since late 2021. The company delivered 571 of the type in 2023, equivalent to a production rate of 48 per month — well below the pre-pandemic peak of 60 a month. Airbus is working with its supply chain to increase A320 production to 75 aircraft per month in 2026 which might let it then attain the milestone of being the first OEM to deliver 1,000 aircraft in a year. Even at that rate, it would take eight years to clear its backlog.

AIRBUS DELIVERIES 2023

Region	A220	A320	A330	A350	Total	
Asia/Pacific	1	128	3	34	166	23%
Europe	24	152	5	21	202	28%
Latin America		29			29	4%
MEAF	3	40		6	49	7%
North America	29	78	10		117	16%
Lessors	11	142	11	3	167	23%
Commercial Deliveries	68	569	29	64	730	
Airbus Defence and Space			3		3	
Private		2			2	
Total	68	571	32	64	735	

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