2021

INTERNATIONAL AIRFREIGHT INDICATOR

INFRASTRUCTURE PARTNERSHIPS AUSTRALIA

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Infrastructure Partnerships Australia is an industry think tank and an executive member network, providing research focused on excellence in social and economic infrastructure. We exist to shape public debate and drive reform for the national interest.

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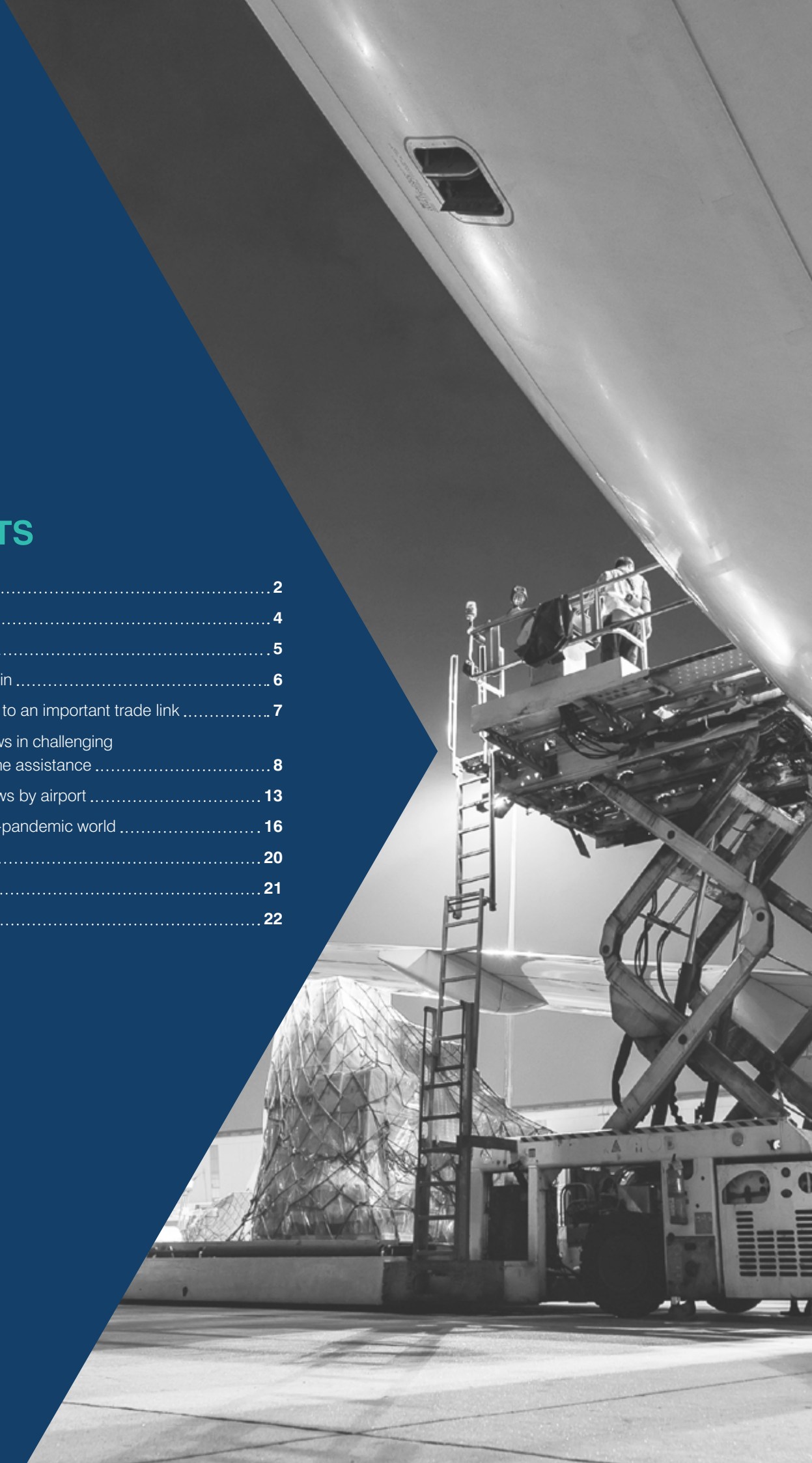


KEY INSIGHTS

A thriving supply chain

For many years, the airfreight supply chain relied on competitively priced and abundant capacity in the cargo hold or 'belly' of passenger flights to transport goods to and from Australia. The regular schedule of flights connecting Australian airports to key markets allowed goods to flow with relative ease.

Between 2016 and 2019, the value of airfreight imports increased by 15 per cent, while exports grew by an impressive 26 per cent.[1] Four out of every five shipments were carried in the belly of passenger flights with the remaining volumes transported by dedicated freighters.[2]

Pandemic disruption to an important trade link

This growth came to a grinding halt in March 2020 as the pandemic, and subsequent border closures, saw the loss of all but a few international commercial passenger flights.

The cost of transporting goods by airfreight increased significantly, with freight rates for some perishables increasing by up to 13 times pre-COVID rates on some routes.[3]

Overall, air freight volumes declined by almost a third in 2020, with exports experiencing the most significant falls.

This reflected the additional challenges faced by exporters of perishables including customs requirements, transportation temperature requirements, and in some cases their lack of suitability to the high-capacity low-frequency dedicated freighter network operating during the year.

Maintaining trade flows in challenging conditions… with some assistance

The Federal Government's International Freight Assistance Mechanism program (IFAM) played a key role in reconnecting air links by providing logistical and administrative support for international freight movements through IFAM flights and grant assistance, and by supporting regional and remote flight connections.

Airfreight users, with the assistance of IFAM, adapted to the new conditions by switching up supply chain modes, for example, trucking goods to airports with airfreight capacity, and by changing production and shipment patterns to suit the schedule of dedicated freighters and 'preighters'.[4] Some airfreight users adopted new packaging technologies or alternative crop variations to allow goods to be transported by sea.

The response by airfreight users and IFAM meant the transportation task remained significant, with over 730,000 tonnes carried in 2020. This equates to approximately 15 fully-loaded Boeing 747-8 freighters each day.[5] Airfreight trade also accounted for almost one-fifth of total trade, as measured by the value of goods transported, underlying its significant economic contribution.

In 2020, the year COVID-19 took hold, the supply chain:

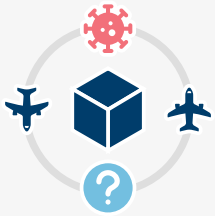
- **helped the movement of 373,000 tonnes of exports**, which consisted predominantly of high-value meat, horticulture, dairy and seafood bound for Asian markets. **This was a decline of over 200,000 tonnes, or 35 per cent compared to 2019,** although it is noted that trade disruptions are likely to have also impacted export volumes
- **transported 360,000 tonnes of imports,** which included mainly electronics and online shopping goods from China, USA, Hong Kong, Singapore and the EU. **This was a decline of 70,000 tonnes or 16 per cent compared to 2019,** and
- played a key role in transporting **significant volumes of personal protective equipment (PPE) to support the pandemic response.**

[1] Source: ABS custom data, Infrastructure Partnerships Australia analysis.
[2] Estimate, measured by overall volume.
[3] Evidence provided directly by IFAM. Rates had returned to around two to 5.2 times pre-COVID rates by April 2021. Austrade collects this information in the course of carrying out the IFAM program, and so cannot guarantee it is accurate or complete. Austrade makes no representations or warranties in respect of this information. Please note that this information has been extracted from a broader dataset and may not be relevant if taken out of context.
[4] A 'preighter' refers to a passenger aircraft used to transport freight only.
[5] As at April 2021 and based on a revenue payload of 130 tonnes per flight (Boeing quotes 137 tonnes) and a SYD-HKG journey.

Adapting to the post-pandemic world

The pandemic exposed vulnerabilities in supply chains, in particular exports, and has raised questions about the long-term outlook and resilience of the supply chain, including:

- **how and when airlines and air routes to and from Australia will be restored following the pandemic, and the implications for freight.** This includes the implications of the trend towards ultra long-haul routes avoiding stopovers in traditional Asian and Middle Eastern hubs, and also the deployment of single-aisle aircraft on flights to and from Asia
- **what the increased reliance on high-capacity dedicated freighters and higher prices for airfreight mean for exporters of perishables,** particularly lower value horticulture, for which this mode may not be suitable, and for air and landside infrastructure
- **whether road transport links to major airports are sufficient, and what is needed to make domestic transhipments work,** if capacity continues to concentrate at Sydney Airport and Melbourne Airport
- **how the relationship between international sea and airfreight evolves** once freight pricing and capacity across both modes find new equilibriums post-COVID
- **how increased adoption of innovations allowing for alternatives to airfreight,** such as packaging technologies allowing goods to survive international sea freight journeys, will impact supply chains, and
- **the role of data in freight markets distorted by border closures and a gradual return to pre-COVID capacity.**



These questions coincide with the opening of Western Sydney International (Nancy-Bird Walton) Airport (WSA) which is likely to play an important role in the airfreight supply chain. While the impact of WSA opening is not yet clear, the airport's proximity to freight precincts in Western Sydney and ability to operate 24/7 means it is well positioned to support airfreight flows. The opening of WSA could improve the efficiency of the supply chain across the country.

Despite the short-term headwinds faced by the supply chain, there is a great opportunity to plan for how airfreight's role in the broader supply chain will evolve over the coming decades, and to find new sources of efficiency, and new markets for our products.

OVERVIEW

In 2020, airfreight accounted for almost $125 billion or one-fifth of the value of Australia's international trade. The supply chain transported 730,000 tonnes of goods, equivalent to 15 fully-loaded 747-8 freighter services, each day.[6] While the weight of goods carried by airfreight is relatively low, accounting for less than one per cent of total trade, the high-value nature of airfreight goods means its economic contribution to Australia is significant.

The airfreight supply chain, and the industries upon which it relies, remains one of the most impacted parts of our economy. Almost overnight, the pandemic grounded around 90 per cent of international passenger flights, which had carried approximately four in every five airfreight shipments in the prior years.[7] In some cases, the cost of transporting goods by airfreight increased to up to 13 times pre-COVID rates as a result.[8]

Remarkably, total volumes were only one-third lower in 2020 compared to 2019, which can be attributed to several factors. The Federal Government's International Freight Assistance Mechanism (IFAM), which helped reconnect Australia's air links and temporarily restored airfreight services, played a critical role in ensuring Australia remained connected to existing trading markets. Supply chain users also adapted to the conditions by transporting goods to airports where scarce freight capacity existed, and through the increased use of dedicated freighters and 'preighters,' among other initiatives.

Figure 1: Australian international airfreight as a proportion of total trade

Source: ABS custom data, Infrastructure Partnerships Australia analysis

There is a need and opportunity to rethink the airfreight supply chain

The disruption, and the uncertainty around when international aviation networks will return to pre-COVID levels and how they will look, has provided both the need and opportunity to rethink the airfreight supply chain.

Given the ongoing border uncertainties, there is reason to believe there will be growing demand for ultra long-haul services bypassing traditional hubs in Asia and the Middle East. This, together with the expected deployment of single-aisle aircraft[9] on some international routes, raises a number of questions for supply chain participants and policy makers, including:

- how would a greater concentration of passenger flights at major Australian airports, acting as gateways to Europe and the US, impact supply chains?
- which airlines that have ceased services to Australia will resume services, when will this occur, and how will this impact direct connections to some destinations?
- what are the freight capacity implications of ultra long-haul services, pushing the limits of aircraft range capabilities and replacing one-stop services? Will freight be left behind in favour of carrying extra passengers?
- will the increasing use of single-aisle aircraft on routes to Asia result in reduced capacity for airfreight?
- will a reduction in airfreight capacity as a result of fleet composition changes be adequately replaced by dedicated freighter services and is the supply chain prepared to adapt to these changes?

[6] As at April 2021 and based on a revenue payload of 130 tonnes per flight (Boeing quotes 137 tonnes) and SYD-HKG range.

[7] Estimate, measured by overall volume.

[8] Evidence provided directly by IFAM. Rates had returned to around two to 5.2 times pre-COVID rates by April 2021. Austrade collects this information in the course of carrying out the IFAM program, and so cannot guarantee it is accurate or complete. Austrade makes no representations or warranties in respect of this information. Please note that this information has been extracted from a broader dataset and may not be relevant if taken out of context.

[9] As indicated by Qantas in a July 2019 media release: https://www.qantasnewsroom.com.au/media-releases/qantas-group-updates-airbus-order-with-extra-long-range-a321/.

The 2021 Indicator

The 2021 International Airfreight Indicator follows on from the 2019 analysis and continues to provide a granular understanding of Australia's airfreight flows and highlights key trends, challenges and opportunities for the supply chain. By transparently measuring the composition of these trade flows, this analysis provides supply chain participants – airlines, airports and Australians more broadly – access to the information and insights needed to optimise the way we use our infrastructure and maximise our economic opportunities. This is especially critical given the changing aviation and supply chain environment.

This analysis describes airfreight by both the value of goods transported and also by weight. The weight of goods transported provides an indication of the transportation task and infrastructure requirements, while the value of goods transported highlights the economic contribution of the supply chain.

The primary source of data used in this analysis is unpublished import and export statistics from the Australian Bureau of Statistics (ABS). This dataset details airfreight commodity movements by direction of trade, units of trade in both value and volume of goods, and by commodity categories from January 2016 to December 2020. All monetary values described in this analysis are presented in nominal terms. A more detailed description of the dataset is provided in Appendix A.

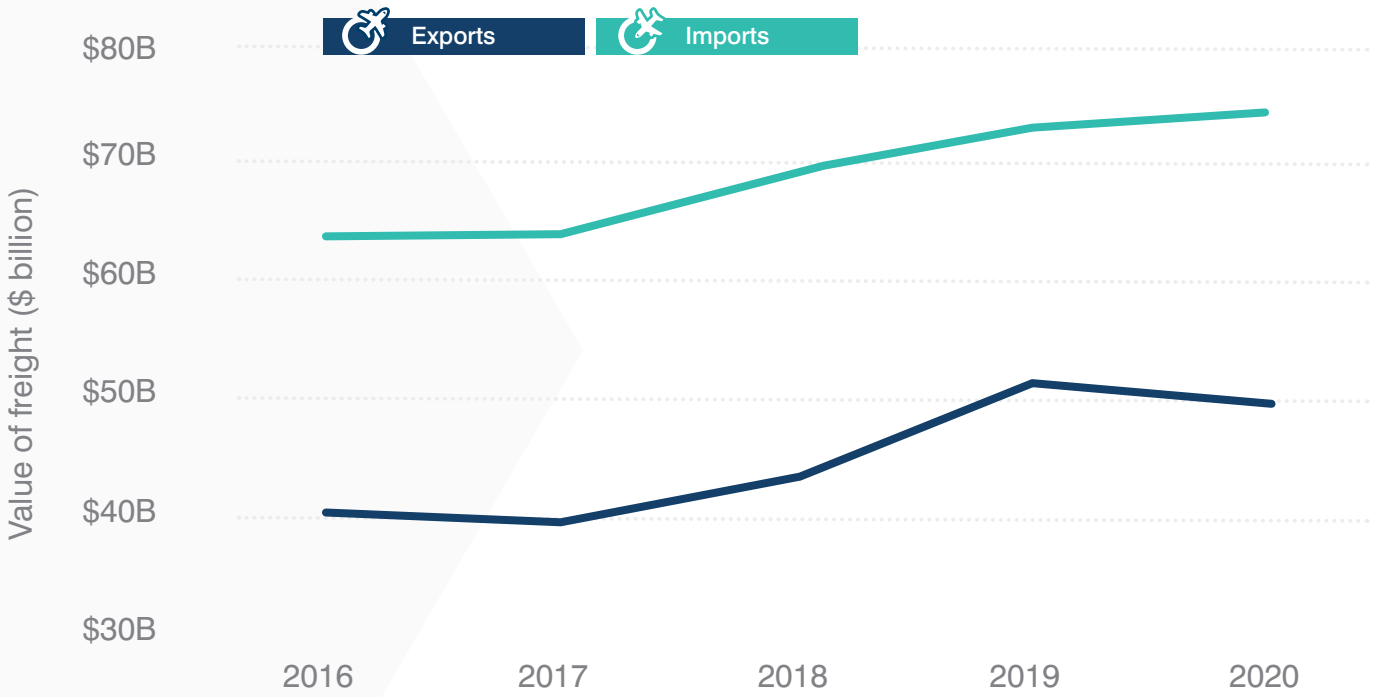
A THRIVING SUPPLY CHAIN

Airfreight grew rapidly before the pandemic

Between 2016 and 2019, the value of airfreighted imports increased by 15 per cent while exports grew by an impressive 26 per cent. This was driven by the growth in online shopping and increasing demand for Australia's high-value perishable exports. Import volumes increased by nine per cent and exports by four per cent over the same period, which indicates airfreight carried higher value goods.

The availability of freight capacity connecting all major Australian airports to key freight markets allowed goods to flow with relative ease. Four out of every five shipments were carried in the belly of passenger flights with the remaining volumes transported by dedicated freighters.

Figure 2: Australian international airfreight by value ($m)



Source: ABS custom data, Infrastructure Partnerships Australia analysis. The value of goods measured on a free on board (fob) basis includes all production and other costs incurred up until the goods are placed on board the international carrier for export. Values are presented in nominal terms. See Appendix A for a more detailed description.

PANDEMIC DISRUPTION TO AN IMPORTANT TRADE LINK

The supply chain faced significant disruption in 2020 with the cancellation of all but a few international flights

Airfreight growth came to a grinding halt with the closure of international borders and the cancellation of almost all international passenger services. Trade lanes to and from key markets including China, Japan and the US were severely disrupted, resulting in a significant spike in airfreight rates for perishable products.[10]

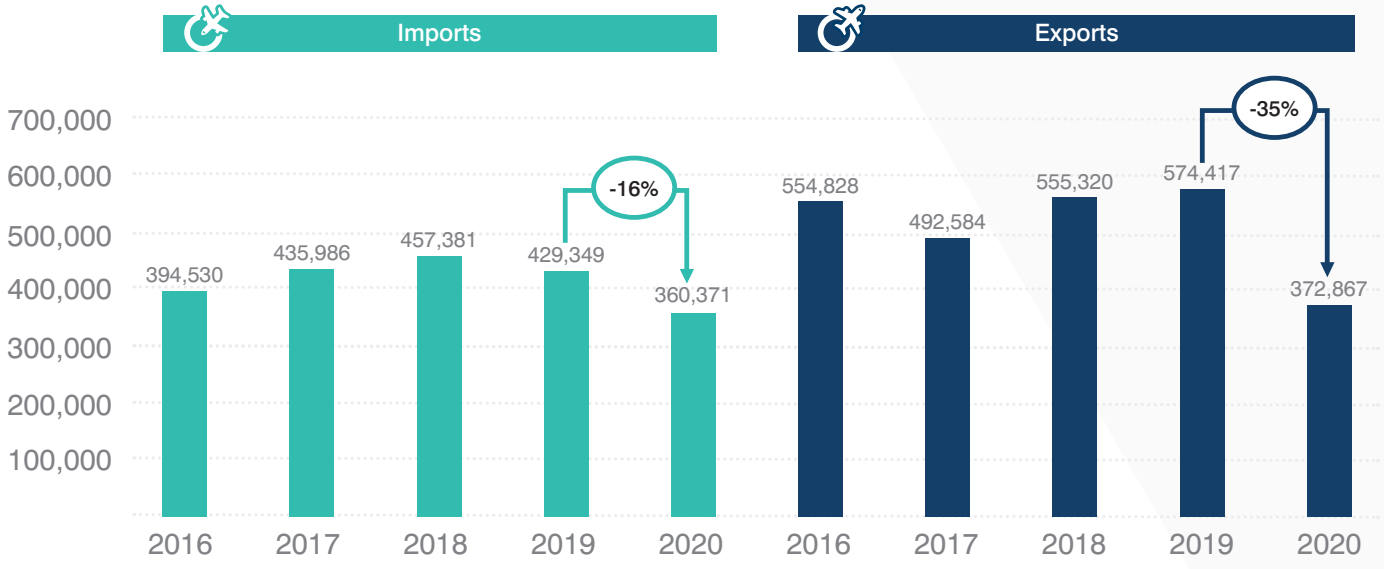
Quotes from airfreight users

> "Last night we drove a truck to Melbourne to catch one of the only flights this week going to Shanghai so we'll be jumping on board any plane that's leaving Australia."
>
> – Lobster exporter from South Australia

> "Cathay Pacific cancelled their flights out of Adelaide a while back and that was just as we started seeing some orders coming through...Melbourne went from several direct flights to Hong Kong a day to seven a week so every man and his dog that had produce for Hong Kong was trying to get the space so it was going to the highest bidder really. But we ended up getting a couple of air freight boxes out in the last 10 days."
>
> – Abalone exporter from South Australia

Overall volumes declined by almost 270,000 tonnes, or almost one third, compared to 2019. This is equivalent to a loss of almost six 747-8 freighters of goods each day.[11] The decline has meant imports have returned to 2016 levels while exports have reverted back to volumes transported almost ten years ago.

Figure 3: Airfreight imports and exports by volume (tonnes) and as a proportion of total freight (%)



Source: ABS custom data, Infrastructure Partnerships Australia analysis

[10] Evidence provided by IFAM. Rates had returned to around two to 5.2 times pre-COVID rates by April 2021. Austrade collects this information in the course of carrying out the IFAM program, and so cannot guarantee it is accurate or complete. Austrade makes no representations or warranties in respect of this information. Please note that this information has been extracted from a broader dataset and may not be relevant if taken out of context.

[11] As at April 2021 and based on a revenue payload of 130 tonnes per flight (Boeing quotes 137 tonnes) and SYD-HKG range.

MAINTAINING TRADE FLOWS IN CHALLENGING CONDITIONS...WITH SOME ASSISTANCE

The International Freight Assistance Mechanism program played a key role in supporting trade flows

IFAM was established by the Federal Government in April 2020 as a temporary emergency measure in response to the challenging conditions presented by the early stages of the pandemic. The program focused on rebuilding airfreight connections, enabling the export of high-value and time-sensitive perishables, and import of medical supplies, medicines and equipment to support Australia's health response, as well as other items of national importance.

IFAM played a leading role in maintaining some level of airfreight connectivity by injecting capacity into the market through chartered freight flights and by providing grants to freight forwarders and airlines. The program also supported regional flight connections into domestic hubs.

Since April 2020, IFAM has reconnected nine Australian ports to 58 international destinations.

Figure 4: Summary of the International Freight Assistance Mechanism

	Outbound	Inbound
In-scope commodities	Eligibility for products supported by IFAM is determined by a set of overarching principles rather than by specific commodities. These principles determine eligibility based on Australian-made or produced products that are: • high-value • time-sensitive, and • reliant on airfreight due to perishability. When determining whether a product is reliant on airfreight, IFAM may also consider whether the products: • could not be sent by an alternative to airfreight without losing their essential product characteristics or value • have a limited shelf-life or are required to meet a sudden or immediate need, or • are otherwise in the national interest.	IFAM has prioritised medical supplies, medicines and equipment to support Australia's pandemic health response, as well as items deemed in the national interest. To date, IFAM has supported the movement of: • personal protection equipment (PPE) • pharmaceuticals and consumables • medical equipment and consumables • inputs to health industries, and • imported components essential to the operation of key infrastructure assets, non-medical personal protective equipment and agricultural chemicals.
Nature of support	IFAM has: • supported flights negotiated commercially at rates above pre-COVID rates • provided assistance to freight forwarders (on behalf of their clients) where IFAM supported flights are or were not available or suitable, and • supported regional flight connections to domestic hubs.	IFAM schedule of flights at market rates.
Pricing of IFAM supported flights	More than pre-COVID airfreight rates where exporters had to make a financial contribution to increased freight cost.	Likely to be more than pre-COVID airfreight rates.
Support access	IFAM required Australian exporters to submit an EOI and work with their freight forwarder to access supported flights. Freight forwarders can apply for grants if IFAM-supported flights do not meet exporter needs.	Importers work with freight forwarders to access freight capacity.

Source: IFAM[12]

[12] Further information on the Austrade website: https://www.austrade.gov.au/news/news/international-freight-assistance-mechanism.

Airfreight users adapted to the new conditions

While IFAM reconnected international air trade lanes, airfreight users needed to adapt to the new conditions to ensure goods continued to flow. This included trucking goods to alternative airports where there was capacity, including capacity provided by IFAM. Production and shipping patterns were also changed to align with the schedule of dedicated freighters, which operated less frequently and were more expensive than the pre-pandemic schedule of passenger and freight services.

In some cases, airfreight users also adopted packaging technologies and looked to alternative crop variations to allow for international sea transportation.

The transportation task and economic contribution remained significant despite challenges

The actions of IFAM, airfreight users and other supply chain participants, meant airfreight still carried over 730,000 tonnes of goods in 2020, equating to approximately 15 fully-loaded Boeing 747-8 freighters each day.[13] Freight directionality continued to favour exports, which accounted for 373,000 tonnes compared to 360,000 tonnes of imports.

This trade flow was worth almost $125 billion, or one-fifth of total trade by value, underlining the economic importance of airfreight.

Figure 5: Airfreight imports and exports vs total freight ($)

FOB $'000	2016	2017	2018	2019	2020
Airfreight	104,578,227	104,202,656	113,285,018	124,815,993	124,368,100
Imports	63,874,647	64,409,076	69,644,971	73,509,233	74,501,741
Exports	40,703,580	39,793,580	43,640,048	51,306,760	49,866,359
Total freight	**510,996,148**	**587,717,797**	**646,370,619**	**695,589,503**	**654,558,000**
% of total trade	**20%**	**18%**	**18%**	**18%**	**19%**

Source: ABS custom data, Infrastructure Partnerships Australia analysis

It is noted that the value of airfreight goods transported remained steady in 2020 largely due to the uplift in natural or cultured pearls, precious and semi-precious stones, precious metals, metals clad with precious metal and articles thereof, imitation jewellery, and coin transported. If we exclude this commodity from the analysis, we find the value of exports decreased by 15 per cent with imports seeing a two per cent fall.

Almost two thirds of airfreight exports were high-value perishables bound for Asian markets

Outbound airfreight was dominated by meat, horticulture, seafood, dairy and honey products, which together accounted for nearly 220,000 tonnes, or close to two-thirds of exports in 2020. Almost three-quarters of these perishables were processed through Sydney Airport and Melbourne Airport and the vast majority were bound for China, Singapore, Hong Kong, New Zealand, Qatar and the USA.

The loss of airfreight capacity exposed these supply chains, which saw volume reductions of between 20 and 30 per cent. This was less than the overall decline for exports as IFAM targeted support towards high-value, highly-perishable exports. Infant milk formula,[14] which was not within the scope of supported commodities under IFAM, declined by almost 70 per cent driven by other challenges around supply chain and demand. Interestingly, seafood exports, which had been growing at nine per cent per annum in the three years before the pandemic, showed resilience growing by 34 per cent in 2020 despite the challenges.

[13] As at April 2021 and based on a revenue payload of 130 tonnes per flight (Boeing quotes 137 tonnes) and SYD-HKG range.
[14] Category also includes cereals, flour, starch or milk, and pastry cooks' products.

Melbourne Airport's share of perishable exports remained at 34 per cent, unchanged compared to 2019, while Sydney Airport increased its share by eight percentage points to 35 per cent. This was in part due to the concentration of freight capacity at Sydney Airport in 2020 as the airport continued to draw dedicated freighter services due to its proximity to major distribution centres for high-value imports.

Almost all exports are airfreighted directly to their country of destination without additional handling at an intermediate hub. This reflects the time-sensitive nature of these goods as transhipping via a hub would add time and uncertainty to the supply chain. Speed to market is critical for these goods, which lose value if they are delayed in reaching the market.

Figure 6: Key export flows

Key perishable commodities	Tonnes in 2020	% of total exports	vs 2019	Key destinations	Port of loading (Market share)	Pre-COVID growth (2016-2019)
Meat	80,000	21%	↓ 23%	Qatar, Singapore, the UAE and Hong Kong	MEL 37% SYD 21% BNE 20%	3% p.a.
Fruits and vegetables	68,000	18%	↓ 32%	Singapore, Hong Kong, China, UAE, Malaysia and NZ	SYD 40% MEL 32% BNE 17%	1% p.a.
Seafood	40,000	11%	↑ 34%	China, Taiwan, the US and Vietnam	MEL 39% SYD 38% PER 12%	9% p.a.
Infant milk formula (and other wheat based products)	15,000	4%	↓ 69%	China	SYD 77%	39% p.a.
Dairy and honey	13,000	3%	↓ 23%	China, Singapore, Hong Kong and Malaysia	MEL 48%	4% p.a.
Sub-total - key commodities	**216,000**	**58%**	↓ **28%**	**China, Singapore, Qatar, Hong Kong, UAE, USA, Vietnam and Malaysia**	**SYD 35%** **MEL 34%** **BNE 14%** **PER 13%**	**6% p.a.**
Total exports	**373,000**	**100%**	↓ **35%**		**SYD 46%** **MEL 30%** **BNE 11%** **PER 9%**	**1% p.a.**

Source: ABS custom data, Infrastructure Partnerships Australia analysis

Inbound airfreight was dominated by consumer electronics and other online shopping goods arriving from Asia and the USA

Machinery, mechanical appliances and electronics were the most common inbound commodities, accounting for a combined 120,000 tonnes, or 34 per cent, of the import task in 2020. Most imports originated from China, Hong Kong, the USA, New Zealand and Singapore, and almost 60 per cent were unloaded at Sydney Airport. The concentration of inbound activity at Sydney Airport is a function of its proximity to key distribution centres for these goods.

Inbound airfreight was relatively resilient, with 360,000 tonnes carried in 2020, a decline of only 16 per cent from 2019. The relatively small decline in volumes can be attributed to the ability of these goods to transition to dedicated freighters.

Airfreight was also crucial to the transportation of PPE from China to support the pandemic response. This was a key objective of IFAM and the increase in this flow is clearly captured by the data, which shows 'non-clothing textiles' increasing by 174 per cent in 2020.

Figure 7: Key import flows

Commodity	Tonnes in 2020	% of imports	vs 2019	Key origins	Key destinations (Market share)	Pre-COVID growth (2016-2019)
Machinery and mechanical appliances	70,000	19%	↓ 19%	China, USA, Hong Kong, Singapore and EU	SYD 48% MEL 18%	5% p.a.
Electronics	50,000	14%	↓ 15%	Hong Kong, China, EU and USA	SYD 51% MEL 18%	3% p.a.
Medical/optical instruments	23,000	6%	↓ 13%	USA, Hong Kong, Singapore and EU	SYD 58% MEL 16%	5% p.a.
Clothing and accessories	27,000	8%	↓ 8%	China, Hong Kong and EU	SYD 52% MEL 31% BNE 12%	2% p.a.
Pharmaceutical products	17,000	5%	↓ 1%	EU and USA	SYD 78% MEL 16%	2% p.a.
Plastics	14,000	4%	↓ 13%	China, US and Hong Kong	SYD 48% MEL 25%	1% p.a.
Textiles other than clothing (incl. PPE)	11,000	3%	↑ 174%	China	SYD 54% MEL 39%	5% p.a.
Fruits and nuts	11,000	3%	↓ 22%	US and New Zealand	SYD 63% MEL 16% PER 12%	-2% p.a.
Seafood	9,000	3%	↓ 9%	New Zealand	SYD 58% MEL 37%	-6% p.a.
Sub-total - key commodities	**231,000**	**64%**	**↓ 12%**	**China, Hong Kong, USA, NZ and Singapore**	**SYD 54%** **MEL 21%**	**3% p.a.**
Total imports	**360,000**	**100%**	**↓ 16%**	**China, Hong Kong, USA, NZ and Singapore**	**SYD 59%** **MEL 26%**	**3% p.a.**

Source: ABS custom data, Infrastructure Partnerships Australia analysis

Exports faced greater challenges adapting

The relatively larger decline in exports reflected the additional challenges faced by perishable exports during the pandemic. Key challenges which make this supply chain less adaptable to the conditions include:

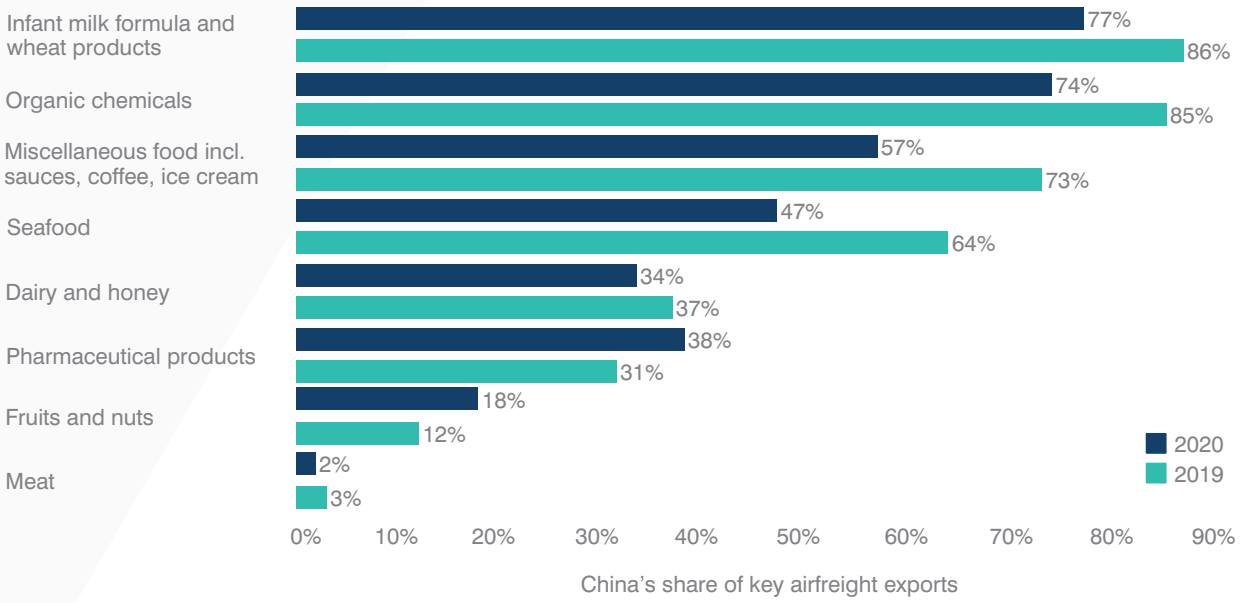
- transportation and customs requirements – perishables are subject to rigorous customs clearances and have specific storage and shipping requirements depending on the type of produce. There are also instances where exporters need to store and ship different fruits and vegetables at different temperatures, which creates additional challenges for shipping in bulk volumes
- volume and frequency requirements – perishables are typically shipped in low volumes but at regular frequencies to maintain freshness and avoid spoilage. These freight patterns are less suited to dedicated freighter operations providing the market with large volumes at less regular frequencies
- justifying the cost of dedicated freighters – in 2020, exports were estimated to be worth $59,000 per tonne on average compared to $145,000 per tonne for imports. The lower value of exports means it is harder to justify dedicated freighters, which are more expensive to access compared to belly capacity on passenger services
- capacity flexibility – perishables require flexibility around shipping dates as harvest days might change. This was not an issue pre-pandemic when passenger services to key export destinations operated frequently, and
- suitability for air transhipment – the loading devices used by some perishable exports are not compatible with narrow bodied aircraft operating domestic routes. This means exports requiring a domestic transhipment require double handling. The additional journey time and increased uncertainty, especially as state border arrangements were uncertain and subject to flux, created additional challenges for time-sensitive perishables not experienced by imports of electronics and other e-commerce goods.

The pandemic challenge was compounded by trade tensions for our exporters

The relatively larger declines in exports also reflect the impact of lockdowns in key export markets across Asia on demand for Australia's produce exports and other trade policy challenges.

China is a major export market for airfreighted goods including seafood, infant milk formula and dairy products. In 2019, prior to the pandemic, China accounted for 136,000 tonnes of airfreight exports equivalent to 24 per cent of total exports. Uncertainty remains over this trade flow in the current geopolitical climate which has seen tariffs applied to Australian beef, wine, and barley.

Figure 8: China's share of key airfreight exports (%) for key commodities



Source: ABS custom data, Infrastructure Partnerships Australia analysis

CHANGE IN FREIGHT FLOWS BY AIRPORT

The pandemic resulted in a greater concentration of airfreight activity at Sydney Airport

In 2020, Sydney Airport captured just over 50 per cent of total airfreight flows, an increase of 10 percentage points from 2019. This included almost two-thirds of total imports and almost half of all exports.

The greater concentration of airfreight flows at Sydney Airport reflects the increased reliance on dedicated freighters and is an example of how the pandemic has changed the supply chain. While this is likely to be a short or medium-term impact, decreasing as passenger networks return to pre-COVID levels, it raises questions around the sufficiency of road capacity between freight origins and Sydney Airport, and also the capacity to process freight near the Airport. The Sydney Gateway project, which will provide a high-capacity connection from Sydney Airport and Port Botany to the new WestConnex St Peters Interchange, will improve these freight movements once completed. The importance of these road links will only grow if capacity does not normalise to pre-pandemic patterns as expected.

Airfreight flows through Sydney Airport continued to be characterised by electronics imports driven by its proximity to key distribution centres. This trade flow plays an important role in determining where outbound capacity for dedicated freighters is positioned and could undergo a reshuffling once Western Sydney Airport opens. Sydney is the only major Australian airport where inbound flows exceed outbound as measured by the volume goods transported.

Melbourne Airport volumes declined by almost a third, but is likely to resume its position as a key export hub

Melbourne Airport's airfreight market share declined from 33 per cent in 2019 to 28 per cent in 2020. Overall volumes declined by 127,000 tonnes, or almost 40 per cent, driven almost entirely by a decline in export volumes.

Melbourne Airport has traditionally been a key export hub, owing to its proximity to meat, fruit, nuts, seafood and dairy production areas, and its substantial network of international passenger services. As discussed above, these high-value food exports suffered disproportionately throughout the pandemic. Anecdotal evidence from the sector also suggests that some food exports, which would have been shipped through Melbourne Airport, were trucked to Sydney instead in 2020, where more freight capacity was available. A return of international passenger networks to pre-COVID levels will likely see a recovery in volumes at Melbourne Airport.

The export-focused airfreight supply chains at Brisbane and Perth Airports experienced declines

Both Brisbane and Perth Airport play key roles in the export supply chain accounting for one-fifth of export volumes prior to the pandemic. Key commodities included meat, fruit, nuts and seafood.

Brisbane Airport's market share stood at 10 per cent in 2020, a decline of two percentage points. Brisbane Airport processed 70,000 tonnes of airfreight in 2020, including 27,000 tonnes of imports and 43,000 tonnes of exports.

Perth Airport held an eight per cent market share of airfreight in 2020, a one percentage point decline compared to 2019. 2020 saw 57,00 tonnes of freight processed through Perth Airport, including 22,000 tonnes of imports and 35,000 tonnes of exports.

Figure 9 below shows the impact of the pandemic of airfreight movements at Australia's four busiest airports. A full dataset of movements by airport is provided in Appendix B. It should be noted that these figures do not include the 390,000 tonnes of domestic airfreight, including transhipments,[15] handled by these airports in 2020.[16]

Figure 9: International airfreight volumes by airport

		Sydney Airport	Melbourne Airport	Brisbane Airport	Perth Airport
Key trade flows in 2020 (by volume)		• Machinery and electronics imports • Diverse mix of exports led by fruit, meat and seafood	• Meat, seafood, fruits and nuts, dairy and vegetable exports • Machinery imports	• Meat, fruits and nuts, and vegetable exports • Machinery imports	• Meat, fruits and nuts, and seafood exports • Machinery imports
Market share	Imports	59%	26%	8%	6%
		↑ 10ppt vs 2019	↓ 2ppt vs 2019	↓ 4ppt vs 2019	↓ 2ppt vs 2019
	Exports	46%	30%	11%	9%
		↑ 9ppt vs 2019	↓ 7ppt vs 2019	↓ 1ppt vs 2019	↓ Steady vs 2019
	Total	52%	28%	10%	8%
		↑ 10ppt vs 2019	↓ 5ppt vs 2019	↓ 2ppt vs 2019	↓ 1ppt vs 2019
Freight task	Imports	211,000 tonnes	94,000 tonnes	27,000 tonnes	22,000 tonnes
		No change vs 2019	↓ 26,000 tonnes	↓ 22,000 tonnes	↓ 11,000 tonnes
	Exports	172,000 tonnes	111,000 tonnes	43,000 tonnes	35,000 tonnes
		↓ 38,000 tonnes	↓ 101,000 tonnes	↓ 28,000 tonnes	↓ 19,000 tonnes
	Total	383,000 tonnes	205,000 tonnes	70,000 tonnes	57,000 tonnes
		↓ 38,000 tonnes	↓ 127,000 tonnes	↓ 51,000 tonnes	↓ 30,000 tonnes
	✈ = 50kt	✈✈✈✈✈✈✈	✈✈✈	✈✈	✈

Source: ABS custom data, Infrastructure Partnerships Australia analysis

[15] Transhipments are freight moved from one aircraft to another while in transit to its final destination.

[16] BITRE, 2021, Australian Domestic Airline Activity: https://www.bitre.gov.au/publications/ongoing/domestic_airline_activity-time_series.

The role of regional airports is poorly understood

Infrastructure Partnerships Australia notes the lack of data showing the role regional airports play in the supply chain, particularly with transhipments. According to the Bureau of Infrastructure and Transport Research Economics (BITRE), non-capital city airports only accounted approximately 6,000 tonnes of goods,[17] which is less than one per cent of imports and exports. Infrastructure Partnerships Australia understands this figure does not capture airfreight that has been carried domestically to a capital city airport for export, or imports transhipped from capital city airports to regional airports.

Further data covering regional airports and transhipments would provide substantial benefits. Improving this database could provide a more complete picture of the airfreight supply chain, and inform planning for future developments of transportation needs, as well as the opportunities to expand domestic industries to capitalise on available export airfreight capacity.

[17] BITRE

ADAPTING TO THE POST-PANDEMIC WORLD

Questions around the long-term outlook and resilience of the airfreight supply chain remain

While 'workarounds' have allowed goods to continue to flow, they might not be suited to all commodities, and come with drawbacks including increased supply chain costs and transportation time.

Questions around the long-term outlook and resilience of the supply chain remain and will persist should uncertainty around the normalisation of supply chains continue. Figure 10 describes some of the ways in which supply chain users have adapted to the pandemic challenges, their short to medium-term impact and the long-term questions they raise. These are based on consultations with airfreight operators and users.

Figure 10: Supply chain workaround and long-term questions

Workaround		Short/medium-term impact	Long-term questions
Accessing the modified airfreight supply chain	**Trucking goods to Sydney and Melbourne**	• Increased supply chain costs • Freight availability and reliability challenges	• Are the increased supply chain costs sustainable? • Is there sufficient road infrastructure to support this movement in an efficient manner? • Is there sufficient airside infrastructure to support a higher concentration of freight volumes at our major airports? • Will Sydney continue to be home to the lion's share of freight capacity, in particular dedicated freighter capacity, given it is the base for high value imports warehousing?
	Greater use of dedicated freighters	• Increased supply chain costs	• What needs to change for dedicated freighter operations to better suit perishable exports given their preference to be transported in smaller volumes but at more regular intervals? • What are the infrastructure implications of an increased mix of dedicated freighters compared to belly capacity? • Are these services, which are largely concentrated in Sydney and Melbourne, accessible by all supply chain users? • Is there sufficient airside infrastructure to process transhipments from other Australian airports?
Seeking alternatives to airfreight	**Crop varieties that can survive sea freight**	• Product line changeover costs • R&D costs • Customer acceptance	• How will increased adoption of sea freight impact airfreight supply chains?
	Packaging technologies allowing for sea freight	• Increased costs • Inconvenience of adjusting to sea freight supply chain	• How will increased adoption of sea freight impact airfreight supply chains? • How much outbound airfreight capacity would be freed up if these technologies became widely adopted?

For some lower value commodities, including horticultural goods such as carrots and onions, the rise in prices through COVID has made export by airfreight unviable. If pre-COVID prices do not return – which appears likely – this may have widespread impacts for domestic producers and local horticultural markets.

Australian policy-makers' capacity to shape future freight flows is limited

As a geographically isolated nation, Australia is highly dependent on passenger and freight market factors outside the control of our policy-makers. Which airlines and air routes return – and when – will largely be determined by a range of commercial considerations and global market forces. Similarly, plans for long-haul flights avoiding stopovers in traditional Asian and Middle Eastern hubs, and the deployment of single-aisle aircraft on flights to and from Asia are decisions to be made between airlines and airports, rather than governments or even freight operators.

It is unclear how and when the concentration of airfreight flows through Sydney Airport will dissipate following the pandemic. While major airports are likely to see a return of airfreight as international routes reopen, the market is unlikely to return to its pre-pandemic form given changes in prices and sources of demand for imports and exports. The lasting impacts of the pandemic are likely to be most pronounced for smaller airports, particularly if international services take longer to reopen than for major airports.

This uncertainty extends to the relationship between international sea and airfreight markets. Though these have historically worked in complement rather than competition to each other, the pandemic has introduced overlaps in terms of commodities and destinations through necessity. This may have created opportunities for trade to and from Australia through new channels, but how the relationship between international sea and airfreight markets will evolve post-COVID is unclear.

However, these changes will have significant knock-on implications for Australia's economic recovery. This creates a disconnect between planning for Australia's economic recovery, particularly in relation to commodities that have historically been reliant on direct airfreight connections to open or sustain trade flows to regional and global markets.

These questions coincide with opening of Western Sydney Airport

Western Sydney International (Nancy-Bird Walton) Airport (WSA) is scheduled to open in 2026, providing a new international airport for the Sydney catchment. While the impact of WSA on the supply chain is not yet clear, the airport's proximity to freight precincts in Western Sydney, the future Western Sydney Aerotropolis and Agribusiness Precinct, and its ability to operate 24/7 means it is well positioned to support airfreight flows. The latter is especially advantageous to overnight domestic freight movements while also providing operational flexibility for international freight. The airport will also be connected to Sydney's motorway network upon completion of the M12 Motorway with connections to regional NSW to be further enhanced by the proposed Outer Sydney Orbital project.

WSA's role will likely depend on the stickiness of trade flows to incumbent airports, in particular Sydney Airport. The Airport's role may also depend on sufficient domestic services to tranship imported goods arriving on dedicated freighters and passenger aircraft.

The first stage of the proposed Western Sydney International Cargo Precinct is expected to provide 75,000 square metres of freight terminals, with the capacity to process 220,000 tonnes of freight each year.

The future role of regional airports could also alter the structure of the supply chain

A number of studies have identified the potential to grow airfreighted perishable exports from Northern Australia. Infrastructure Australia's Northern Australia Audit noted the possibility for significant development in irrigated agriculture around the Burdekin, Flinders and Gilbert Rivers generating significant volumes of perishable and chilled exports.

However, this export industry faces infrastructure constraints as airports in northern Australia do not have refrigerated container capabilities. These infrastructure gaps are not helped by the absence of sufficiently rich freight data for regional Australia, which planners need to identify supply chain opportunities and inform infrastructure investments. This is particularly critical in northern Australia, where the proximity of producers to Asian markets provides opportunities for growth, which improved access to airfreight data could help unlock.

The potential for these industries to develop and the role of regional airports to grow will increase as the economy recalibrates following the pandemic and resources dedicated to maintaining existing trade lanes can be re-focused. The successful development of northern Australia, at scale, could see airfreight volumes drawn in this direction.

The challenging conditions have created a greater need to improve data transparency across the supply chain

As it stands, multiple pain points still exist in the airfreight sector due to a lack of data transparency across the supply chain and differences in digital capabilities. The lack of a unified, single source of data, creates efficiency, productivity and supply chain visibility challenges. This challenge may be exacerbated by the pandemic if a hub and spoke model supply chain emerges where capacity is concentrated into major ports creating the need for more transhipments and more supply chain coordination. Gaps in the data capability of the supply chain are difficult to close if the industry continues to be driven by a focus on short-term costs.

Land and airside infrastructure continue to present challenges

Before the pandemic, notable landside challenges included congestion around airports impacting drop off and pick up of goods and inadequate connections between airports and key distribution centres. The supply chain also faced encroachment challenges resulting in a strong need to protect lands around airports for industrial uses to keep supply chain costs competitive.

Typical airside infrastructure challenges include the ability to handle large volumes efficiently, specialised storage capacity – that is, cold storage, processing transhipments efficiently, and potential delays arising from the customs clearance process.

A growing freight task emphasises the need to ensure existing industrial zoned employment lands around airports, ports and intermodal facilities are protected from rezoning to residential. This is particularly important for the lands around Sydney Airport in the near to medium-term, especially given the concentration of demand through this airport during the pandemic and its proximity to both Port Botany and the Sydney CBD. This has been highlighted as an important consideration by the NSW Productivity Commission,[18] as well as NSW Ports[19] and Sydney Airport.[20] Other major airports are also likely to face growing constraints and competition for lands due to further urban densification and concentration of freight demand.

While some of these challenges are less pronounced with the reduction in aviation activity, they should not be disregarded and may need to be reanalysed if the supply chain has undergone permanent changes from the pandemic. For instance, the land and airside infrastructure implications of an increased reliance on dedicated freighters operating at major airports are unclear.

Embedding airfreight into broader freight network planning will be critical

The importance of the supply chain combined with its susceptibility to external shocks, which was brought to the fore during the pandemic, highlights the need for airfreight to be embedded into overall freight network planning.

This is being advanced through the National Freight and Supply Chain Strategy released in 2019. The Strategy presented a national approach, agreed among jurisdictions, to Australia's multimodal freight supply chains for the next 20 years. The Strategy is being implemented with the airfreight supply addressed across initiatives of varying scale including the development of WSA, which is likely to play a key role in the supply chain.

Freight infrastructure currently being planned or under development, including Inland Rail, Moorebank Intermodal Terminal and the future Victorian Intermodal Terminal, should also consider the role of airfreight and connections to this mode.

Future freight planning should maintain a focus on airfreight supply chain efficiency and resilience, as well as identifying opportunities to open new export industries.

[18] NSW Productivity Commission, 2021, White Paper: Rebooting the Economy: https://www.productivity.nsw.gov.au/sites/default/files/2021-06/Productivity%20Commission%20White%20Paper%202021.pdf.

[19] NSW Ports, 2021, The Importance of Industrial Lands to Greater Sydney's Future: https://www.nswports.com.au/importance-industrial-lands-greater-sydneys-future.

[20] Sydney Airport, 2020, Submission to NSW Productivity Commission Green Paper: https://www.productivity.nsw.gov.au/sites/default/files/2021-04/Sydney_Airport%5B1%5D.pdf.

DEFINITIONS

Commodity as described in this analysis	Harmonized System (HS) Classification
Clothing and accessories	Articles of apparel and clothing accessories, not knitted or crocheted articles of apparel and clothing accessories, knitted or crocheted
Electronics	Electrical machinery and equipment and parts thereof; Sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles (a) Electrical machinery and equipment and parts thereof; Sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles (a)
Fruits and nuts	Edible fruit and nuts; peel of citrus fruit or melons
Infant milk formula and wheat products	Preparations of cereals, flour, starch or milk; pastrycooks products (a)
Machinery and mechanical appliances	Nuclear reactors, boilers, machinery and mechanical appliances; Parts thereof (a)
Meat	Meat and edible meat offal
Medical/optical/visual instruments	Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus; Parts and accessories thereof
Pharmaceutical products	Pharmaceutical products
Plastics	Plastics and articles thereof (a)
Seafood	Fish and crustaceans, molluscs and other aquatic invertebrates
Textiles other than clothing (incl. PPE)	Textile articles other than clothing or industrial; Worn clothing and other worn textile articles; Rags
Vegetables	Edible vegetables and certain roots and tubers (a)

Source: ABS.

(a) Includes commodities where the coverage of the code changed on 1 July 1996 as a result of changes to the international Harmonized System.

APPENDIX A – WHAT IS MEASURED

Data source and description

The primary source of data used for this analysis is unpublished import and export statistics from the Australian Bureau of Statistics (ABS), which detail commodity movements by air, direction of trade (imports and exports), units of trade (value and volume) and commodity definition from January 2016 to December 2020.

International trade in and out of Australia is recorded using the Harmonized System (HS) for the classification of products. At the international level, the HS for classifying goods is a six-digit code system. The HS comprises approximately 5,300 article/product descriptions that appear as headings and subheadings, arranged in 99 chapters, grouped in 21 sections.

The analysis used focuses on the mass tonnes and Free on Board (FOB) values. The value of goods measured on an FOB basis includes all production and other costs incurred up until the goods are placed on board the international carrier for export. FOB values exclude international insurance and transport costs. They include the value of the outside packaging in which the product is wrapped, but do not include the value of the international freight containers used for transporting the goods. FOB values are presented in nominal terms.

ABS reported airfreight movements are subject to confidentiality of import and export commodities, either at the commodity level and/or the port level. As such, the reported value or volume measures relying upon these statistics will tend to be underestimated. Furthermore, as the list of commodities is subject to confidentiality change over time, shifts in the value and volume over time may be subject to changes in the confidentiality list.

Exclusion of ‘ship stores’ from exports data

Airfreight classified as ‘Ship stores’ has been excluded from this analysis. This includes fuel carried and used by the aircraft. Ship stores also includes all consumable goods such as food, water and beverages intended for consumption on board an aircraft or ship, and any goods taken on board to be sold.

APPENDIX B – DETAILED AIRFREIGHT DATA

Source: ABS custom data, Infrastructure Partnerships Australia analysis

B.1. AUSTRALIAN AIRPORTS

Exports (tonnes, top 10 in 2020)

	Tonnes					As a % of total exports						
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2020 vs 2019	2016-19 CAGR
Sydney	248,439	179,828	212,180	210,512	172,309	45%	37%	38%	37%	46%	-18%	-5%
Melbourne	164,571	166,515	177,982	212,396	110,933	30%	34%	32%	37%	30%	-48%	9%
Brisbane	66,298	69,984	77,585	71,179	42,764	12%	14%	14%	12%	11%	-40%	2%
Perth	52,934	54,092	64,505	53,426	34,908	10%	11%	12%	9%	9%	-35%	0%
Adelaide	14,579	15,872	17,716	16,153	6,954	3%	3%	3%	3%	2%	-57%	3%
Other	4,474	4,427	2,974	3,470	2,175	1%	1%	1%	1%	1%	-37%	-8%
Total	554,828	492,584	555,320	574,417	372,867	100%	100%	100%	100%	100%	-35%	1%

Imports (tonnes, top 10 in 2020)

	Tonnes					As a % of total exports						
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2020 vs 2019	2016-19 CAGR
Sydney	200,642	213,133	223,939	210,661	211,035	51%	49%	49%	49%	59%	0%	2%
Melbourne	112,754	128,069	132,772	119,722	93,911	29%	29%	29%	28%	26%	-22%	2%
Brisbane	39,327	47,392	51,781	49,640	27,345	10%	11%	11%	12%	8%	-45%	8%
Perth	29,179	32,744	34,621	33,017	21,755	7%	8%	8%	8%	6%	-34%	4%
Adelaide	7,823	10,227	9,907	10,132	4,399	2%	2%	2%	2%	1%	-57%	9%
Other	1,416	1,836	1,395	579	512	0%	0%	0%	0%	0%	-12%	-26%
Sydney	200,642	213,133	223,939	210,661	211,035	51%	49%	49%	49%	59%	0%	2%
Total	394,530	435,986	457,381	429,349	360,371	100%	100%	100%	100%	100%	-16%	3%

B.2. EXPORT DESTINATIONS AND IMPORT ORIGINS

Exports (tonnes, top 10 in 2020)

	Tonnes					As a % of total exports						
Port of Discharge	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2020 vs 2019	2016-19 CAGR
Singapore	71,657	67,265	67,191	61,162	45,838	13%	14%	12%	11%	12%	-25%	-5%
Hong Kong	61,665	54,976	49,269	50,109	39,423	11%	11%	9%	9%	11%	-21%	-7%
Auckland	42,225	42,029	50,647	42,988	37,526	8%	9%	9%	7%	10%	-13%	1%
Doha	14,456	17,898	23,868	22,639	24,942	3%	4%	4%	4%	7%	10%	16%
Guangzhou (incl. Huangpu)	35,572	31,327	45,822	36,469	19,366	6%	6%	8%	6%	5%	-47%	1%
Shanghai	12,464	27,369	20,131	19,714	18,494	2%	6%	4%	3%	5%	-6%	17%
Dubai	36,747	28,600	28,758	29,265	16,886	7%	6%	5%	5%	5%	-42%	-7%
China – Other ports	24,595	30,015	33,560	30,551	16,493	4%	6%	6%	5%	4%	-46%	7%
Kuala Lumpur	15,256	12,213	13,796	19,808	13,629	3%	2%	2%	3%	4%	-31%	9%
Los Angeles	9,209	11,125	10,881	12,113	11,926	2%	2%	2%	2%	3%	-2%	10%
Other	230,984	169,769	211,396	249,598	128,343	42%	34%	38%	43%	34%	-49%	3%
Total	554,828	492,584	555,320	574,417	372,867	100%	100%	100%	100%	100%	-35%	1%
	Tonnes					As a % of total exports						
Destination country	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2020 vs 2019	2016-19 CAGR
China (excludes SARs and Taiwan)	93,538	124,438	152,107	135,900	76,234	17%	25%	27%	24%	20%	-44%	13%
Singapore	61,045	57,528	58,107	51,607	40,907	11%	12%	10%	9%	11%	-21%	-5%
New Zealand	46,859	46,327	54,517	45,953	39,765	8%	9%	10%	8%	11%	-13%	-1%
Hong Kong (SAR of China)	58,591	49,758	42,783	39,517	31,953	11%	10%	8%	7%	9%	-19%	-12%
Qatar	18,550	18,462	24,287	22,859	22,693	3%	4%	4%	4%	6%	-1%	7%
United States of America	21,893	20,976	22,621	21,890	21,375	4%	4%	4%	4%	6%	-2%	0%
United Arab Emirates	35,054	32,298	32,155	30,173	19,069	6%	7%	6%	5%	5%	-37%	-5%
Malaysia	14,803	11,923	14,439	15,743	12,093	3%	2%	3%	3%	3%	-23%	2%
Vietnam	13,423	12,175	9,256	9,955	11,256	2%	2%	2%	2%	3%	13%	-9%
Japan	15,801	12,846	12,633	14,144	10,761	3%	3%	2%	2%	3%	-24%	-4%
Other	175,271	105,853	132,416	186,677	86,762	32%	21%	24%	32%	23%	-54%	2%
Total	554,828	492,584	555,320	574,417	372,867	100%	100%	100%	100%	100%	-35%	1%

Imports (tonnes, top 10 in 2020)

	Tonnes					As a % of total exports						
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2020 vs 2019	2016-19 CAGR
Shanghai	26,483	29,554	29,078	26,450	29,818	7%	7%	6%	6%	8%	13%	0%
All Ports-Hong Kong	27,353	27,604	26,371	24,368	24,007	7%	6%	6%	6%	7%	-1%	-4%
Auckland	24,289	26,579	24,065	23,183	22,249	6%	6%	5%	5%	6%	-4%	-2%
Los Angeles	20,041	22,504	22,383	21,433	20,874	5%	5%	5%	5%	6%	-3%	2%
Chicago	15,463	20,242	24,821	21,722	19,775	4%	5%	5%	5%	5%	-9%	12%
USA – Other ports	20,204	20,382	22,954	20,502	19,706	5%	5%	5%	5%	5%	-4%	0%
Singapore	20,646	19,096	21,189	21,787	14,657	5%	4%	5%	5%	4%	-33%	2%
Frankfurt	12,243	13,197	15,337	14,509	13,187	3%	3%	3%	3%	4%	-9%	6%
Amsterdam	8,813	10,148	11,646	11,069	11,951	2%	2%	3%	3%	3%	8%	8%
China – Other ports	9,262	13,276	15,832	15,009	11,110	2%	3%	3%	3%	3%	-26%	17%
Other	209,732	233,402	243,704	229,317	173,038	53%	54%	53%	53%	48%	-25%	3%
Total	394,530	435,986	457,381	429,349	360,371	100%	100%	100%	100%	100%	-16%	3%

B.3. ALL AUSTRALIAN AIRPORTS

Exports (tonnes, top 10 in 2020)

	Tonnes					As a % of total exports						
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2020 vs 2019	2016-19 CAGR
Meat and edible meat offal	95,291	96,726	113,075	104,163	79,821	17%	20%	20%	18%	21%	-23%	3%
Edible fruit and nuts	64,511	60,186	64,756	71,030	48,364	12%	12%	12%	12%	13%	-32%	3%
Seafood	23,488	33,968	30,056	30,184	40,393	4%	7%	5%	5%	11%	34%	9%
Edible vegetables	30,901	28,958	30,527	28,138	19,253	6%	6%	5%	5%	5%	-32%	-3%
Miscellaneous foods	66,512	73,704	50,324	30,239	18,312	12%	15%	9%	5%	5%	-39%	-23%
Machinery/ mechanical appliances	21,596	21,961	20,748	20,259	14,917	4%	4%	4%	4%	4%	-26%	-2%
Wheat/milk based products	17,448	23,312	42,278	46,837	14,616	3%	5%	8%	8%	4%	-69%	39%
Not classified	88,428	33,841	29,533	85,430	14,581	16%	7%	5%	15%	4%	-83%	-1%
Pharmaceutical products	7,177	7,961	7,504	15,722	14,425	1%	2%	1%	3%	4%	-8%	30%
Dairy produce, eggs, honey and other edible products of animal origin	15,620	15,700	16,791	17,380	13,363	3%	3%	3%	3%	4%	-23%	4%
Other	123,856	96,269	149,730	125,036	94,823	22%	20%	27%	22%	25%	-24%	0%
Total	554,828	492,584	555,320	574,417	372,867	100%	100%	100%	100%	100%	-35%	1%

Imports (tonnes, top 10 in 2020)

	Tonnes					As a % of total exports						
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2020 vs 2019	2016-19 CAGR
Machinery/mechanical appliances	74,030	84,106	90,114	86,379	69,913	19%	19%	20%	20%	19%	-19%	5%
Electrical machinery and equipment	53,903	58,336	62,263	58,370	49,711	14%	13%	14%	14%	14%	-15%	3%
Optical, photographic, cinematographic, medical or surgical instruments	23,061	23,558	26,793	26,502	23,024	6%	5%	6%	6%	6%	-13%	5%
Apparel and clothing accessories	29,485	32,708	34,608	30,793	27,336	7%	8%	8%	7%	8%	-11%	1%
Pharmaceutical products	15,858	16,607	17,685	16,735	16,649	4%	4%	4%	4%	5%	-1%	2%
Plastics	15,140	17,805	17,516	15,757	13,671	4%	4%	4%	4%	4%	-13%	1%
Textile articles other than clothing or industrial	3,547	3,611	4,113	4,076	11,178	1%	1%	1%	1%	3%	174%	5%
Edible fruit and nuts	14,409	16,580	14,809	13,572	10,618	4%	4%	3%	3%	3%	-22%	-2%
Seafood	12,217	11,754	11,404	10,223	9,351	3%	3%	2%	2%	3%	-9%	-6%
Other	152,882	170,920	178,077	166,941	128,920	39%	39%	39%	39%	36%	-23%	3%
Total	394,530	435,986	457,381	429,349	360,371	100%	100%	100%	100%	100%	-16%	3%

B.4. SYDNEY AIRPORT

Exports (tonnes, top 10 in 2020)

	Tonnes					As a % of total SYD exports						
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2020 vs 2019	2016-19 CAGR
Edible fruit and nuts	19,483	21,268	22,305	25,135	19,253	8%	12%	11%	12%	11%	-23%	9%
Meat and edible meat offal	10,227	9,100	14,189	12,889	16,728	4%	5%	7%	6%	10%	30%	8%
Seafood	1,196	1,723	2,027	2,937	15,397	0%	1%	1%	1%	9%	424%	35%
Miscellaneous foods	35,339	38,680	29,602	19,456	13,633	14%	22%	14%	9%	8%	-30%	-18%
Wheat based or milk products	14,604	15,383	23,497	28,006	11,219	6%	9%	11%	13%	7%	-60%	24%
Machinery/mechanical appliances	11,289	11,013	9,666	8,893	8,498	5%	6%	5%	4%	5%	-4%	-8%
Special transactions not classified	73,881	18,448	16,091	35,898	8,396	30%	10%	8%	17%	5%	-77%	-21%
Pharmaceutical products	3,607	3,801	3,444	5,530	8,339	1%	2%	2%	3%	5%	51%	15%
Edible vegetables	7,015	7,163	7,970	6,802	7,694	3%	4%	4%	3%	4%	13%	-1%
Organic chemicals	4,144	2,016	14,845	11,396	6,830	2%	1%	7%	5%	4%	-40%	40%
Other	67,653	51,234	68,545	53,570	56,322	27%	28%	32%	25%	33%	5%	-7%
Total	248,439	179,828	212,180	210,512	172,309	100%	100%	100%	100%	100%	-18%	-5%

Imports (tonnes, top 10 in 2020)

	Tonnes					As a % of total SYD exports						
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2020 vs 2019	2016-19 CAGR
Machinery/mechanical appliances	33,715	36,802	39,974	34,257	33,524	17%	17%	18%	16%	16%	-2%	1%
Electrical machinery and equip.	32,845	33,212	35,477	25,152	25,392	16%	16%	16%	12%	12%	1%	-9%
Confidential items	5,488	5,058	3,820	17,006	18,167	3%	2%	2%	8%	9%	7%	46%
Optical, photographic, cinematographic, medical or surgical instruments	13,630	13,993	15,632	14,697	13,430	7%	7%	7%	7%	6%	-9%	3%
Pharmaceutical products	12,540	12,676	13,615	13,014	13,014	6%	6%	6%	6%	6%	0%	1%
Apparel and clothing accessories	8,189	8,536	8,853	7,821	8,776	4%	4%	4%	4%	4%	12%	-2%
Edible fruit and nuts	7,093	8,698	7,477	6,910	6,672	4%	4%	3%	3%	3%	-3%	-1%
Plastics	6,101	7,083	7,628	6,747	6,603	3%	3%	3%	3%	3%	-2%	3%
Textile articles other than clothing	1,526	1,594	1,840	1,856	6,000	1%	1%	1%	1%	3%	223%	7%
Essential oils, perfumes, cosmetics	4,962	5,662	7,168	6,946	5,714	2%	3%	3%	3%	3%	-18%	12%
Other	74,554	79,819	82,455	76,254	73,743	37%	37%	37%	36%	35%	-3%	1%
Total	200,642	213,133	223,939	210,661	211,035	100%	100%	100%	100%	100%	0%	2%

B.5. MELBOURNE AIRPORT

Exports (tonnes, top 10 in 2020)

	Tonnes					As a % of total MEL exports						
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2020 vs 2019	2016-19 CAGR
Meat and edible meat offal	42,269	40,927	44,237	40,535	29,230	26%	25%	25%	19%	26%	-28%	-1%
Seafood	8,211	18,238	15,355	14,055	15,642	5%	11%	9%	7%	14%	11%	20%
Edible fruit and nuts	21,008	16,522	19,546	22,327	15,179	13%	10%	11%	11%	14%	-32%	2%
Dairy produce. Eggs, honey, foods of animal origin	9,394	9,151	9,150	10,837	6,472	6%	5%	5%	5%	6%	-40%	5%
Edible vegetables	11,107	9,300	10,113	10,281	6,335	7%	6%	6%	5%	6%	-38%	-3%
Pharmaceutical products	2,413	2,992	2,504	8,518	4,877	1%	2%	1%	4%	4%	-43%	52%
Albuminoidal substances; modified starches; glues; enzymes	95	143	154	2,844	3,860	0%	0%	0%	1%	3%	36%	210%
Miscellaneous foods	21,571	23,467	16,024	8,546	3,824	13%	14%	9%	4%	3%	-55%	-27%
Special transactions not classified	9,410	9,811	8,986	45,906	3,115	6%	6%	5%	22%	3%	-93%	70%
Machinery and mechanical appliances	4,569	5,318	4,779	4,546	2,908	3%	3%	3%	2%	3%	-36%	0%
Other	34,523	30,647	47,134	44,001	19,491	21%	18%	26%	21%	18%	-56%	8%
Total	164,571	166,515	177,982	212,396	110,933	100%	100%	100%	100%	100%	-48%	9%

Imports (tonnes, top 10 in 2020)

	Tonnes					As a % of total MEL exports						
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2020 vs 2019	2016-19 CAGR
Machinery/mechanical appliances	17,257	18,965	20,981	17,252	12,675	15%	15%	16%	14%	13%	-27%	0%
Combined confidential items	3,178	3,550	3,047	9,546	9,869	3%	3%	2%	8%	11%	3%	44%
Electrical machinery and equipment	12,618	14,340	14,933	11,280	8,884	11%	11%	11%	9%	9%	-21%	-4%
Apparel and clothing accessories	10,964	12,046	13,119	10,727	8,513	10%	9%	10%	9%	9%	-21%	-1%
Textile articles other than clothing	1,168	1,130	1,160	1,244	4,376	1%	1%	1%	1%	5%	252%	2%
Optical, photographic, cinematographic, medical or surgical instruments	5,784	5,745	6,057	5,386	3,704	5%	4%	5%	4%	4%	-31%	-2%
Seafood	4,349	4,190	4,071	3,790	3,456	4%	3%	3%	3%	4%	-9%	-4%
Plastics	4,338	5,447	5,320	5,125	3,424	4%	4%	4%	4%	4%	-33%	6%
Live trees and other plants, cut flowers	4,228	4,591	4,893	4,009	3,129	4%	4%	4%	3%	3%	-22%	-2%
Other	48,871	58,063	59,193	51,363	35,882	43%	45%	45%	43%	38%	-30%	2%
Total	112,754	128,069	132,772	119,722	93,911	100%	100%	100%	100%	100%	-22%	2%

B.6. BRISBANE AIRPORT

Exports (tonnes, top 10 in 2020)

	Tonnes					As a % of total BNE exports						
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2020 vs 2019	2016-19 CAGR
Meat and edible meat offal	15,470	18,085	22,390	22,385	15,690	23%	26%	29%	31%	37%	-30%	13%
Edible fruit and nuts	14,862	13,785	15,445	13,694	7,907	22%	20%	20%	19%	18%	-42%	-3%
Edible vegetables	9,789	9,616	9,603	7,601	3,484	15%	14%	12%	11%	8%	-54%	-8%
Seafood	2,847	2,661	1,889	1,988	2,360	4%	4%	2%	3%	6%	19%	-11%
Not classified	2,890	2,643	2,716	2,066	2,086	4%	4%	4%	3%	5%	1%	-11%
Machinery/mechanical appliances	2,500	2,390	2,722	2,756	1,405	4%	3%	4%	4%	3%	-49%	3%
Wheat based products	829	1,326	2,892	3,208	891	1%	2%	4%	5%	2%	-72%	57%
Articles of iron or steel	781	711	1,622	1,234	871	1%	1%	2%	2%	2%	-29%	16%
Organic chemicals	295	187	2,924	3,225	731	0%	0%	4%	5%	2%	-77%	122%
Electrical machinery and equipment	875	1,110	1,376	1,180	604	1%	2%	2%	2%	1%	-49%	10%
Other	15,158	17,471	14,006	11,842	6,735	23%	25%	18%	17%	16%	-43%	-8%
Total	66,298	69,984	77,585	71,179	42,764	100%	100%	100%	100%	100%	-40%	2%

Imports (tonnes, top 10 in 2020)

	Tonnes					As a % of total BNE exports						
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2020 vs 2019	2016-19 CAGR
Machinery/mechanical appliances	8,369	10,605	11,371	9,753	5,457	21%	22%	22%	20%	20%	-44%	5%
Not classified	1,381	2,203	2,009	4,767	3,412	4%	5%	4%	10%	12%	-28%	51%
Electrical machinery and equipment	3,421	4,378	5,290	4,308	2,043	9%	9%	10%	9%	7%	-53%	8%
Articles of apparel and clothing accessories, not knitted or crocheted	1,574	2,041	2,203	2,554	1,849	4%	4%	4%	5%	7%	-28%	18%
Articles of apparel and clothing accessories, knitted or crocheted	1,410	2,091	2,075	1,863	1,371	4%	4%	4%	4%	5%	-26%	10%
Optical, photographic, cinematographic, medical or surgical instruments	1,464	1,737	2,390	2,026	1,234	4%	4%	5%	4%	5%	-39%	11%
Edible fruit and nuts	2,524	2,269	2,457	1,916	979	6%	5%	5%	4%	4%	-49%	-9%
Plastics and articles thereof	1,567	2,401	2,394	2,158	832	4%	5%	5%	4%	3%	-61%	11%
Vehicles and parts	1,330	1,637	1,979	1,663	828	3%	3%	4%	3%	3%	-50%	8%
Pharmaceutical products	1,000	819	961	823	743	3%	2%	2%	2%	3%	-10%	-6%
Other	15,286	17,213	18,651	17,809	8,594	39%	36%	36%	36%	31%	-52%	5%
Total	39,327	47,392	51,781	49,640	27,345	100%	100%	100%	100%	100%	-45%	8%

B.7 PERTH AIRPORT

Exports (tonnes, top 10 in 2020)

	Tonnes					As a % of total PER exports						
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2020 vs 2019	2016-19 CAGR
Meat and edible meat offal	22,429	22,353	24,504	20,945	15,513	42%	41%	38%	39%	44%	-26%	-2%
Edible fruit and nuts	6,904	7,359	6,356	8,556	5,037	13%	14%	10%	16%	14%	-41%	7%
Seafood	6,591	7,039	7,168	7,082	4,872	12%	13%	11%	13%	14%	-31%	2%
Machinery/mechanical appliances	2,267	2,694	2,803	2,300	1,199	4%	5%	4%	4%	3%	-48%	0%
Live animals	1,553	933	656	943	1,112	3%	2%	1%	2%	3%	18%	-15%
Edible vegetables	1,649	1,460	1,294	1,323	809	3%	3%	2%	2%	2%	-39%	-7%
Not classified	1,300	1,615	1,064	790	781	2%	3%	2%	1%	2%	-1%	-15%
Precious stones and metals	781	533	657	670	742	1%	1%	1%	1%	2%	11%	-5%
Articles of iron or steel	634	399	413	1,409	714	1%	1%	1%	3%	2%	-49%	31%
Wheat based products	272	1,037	2,434	2,412	592	1%	2%	4%	5%	2%	-75%	107%
Other	8,554	8,670	17,154	6,996	3,537	16%	16%	27%	13%	10%	-49%	-6%
Total	52,934	54,092	64,505	53,426	34,908	100%	100%	100%	100%	100%	-35%	0%

Imports (tonnes, top 10 in 2020)

	Tonnes					As a % of total PER exports						
	2016	2017	2018	2019	2020	2016	2017	2018	2019	2020	2020 vs 2019	2016-19 CAGR
Machinery/mechanical appliances	8,070	9,609	10,568	9,370	5,466	28%	29%	31%	28%	25%	-42%	5%
Not classified	1,387	2,078	1,504	4,604	4,078	5%	6%	4%	14%	19%	-11%	49%
Electrical machinery and equipment	2,408	2,750	3,053	2,231	1,500	8%	8%	9%	7%	7%	-33%	-3%
Live trees and other plants, cut flowers	1,531	1,501	1,566	1,476	1,397	5%	5%	5%	4%	6%	-5%	-1%
Edible fruit and nuts	1,899	1,705	1,810	1,640	1,263	7%	5%	5%	5%	6%	-23%	-5%
Articles of iron or steel	2,046	2,250	2,448	1,666	748	7%	7%	7%	5%	3%	-55%	-7%
Apparel and clothing accessories, not knitted or crocheted	644	714	657	943	695	2%	2%	2%	3%	3%	-26%	14%
Optical, photographic, cinematographic, medical or surgical instruments	912	1,063	1,328	921	613	3%	3%	4%	3%	3%	-33%	0%
Mineral fuels, mineral oils and products	48	112	103	108	566	0%	0%	0%	0%	3%	422%	31%
Miscellaneous chemical products	194	481	239	359	461	1%	1%	1%	1%	2%	28%	23%
Other	10,040	10,481	11,345	9,698	4,969	34%	32%	33%	29%	23%	-49%	-1%
Total	29,179	32,744	34,621	33,017	21,755	100%	100%	100%	100%	100%	-34%	4%

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