

Vehicle Brief – International Supply Chain Benchmarking Sectoral Assessment

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Executive Summary

Est. value of freighted goods c.36bn Total transported volume c.1.8Mt	Jobs in Aus C.356k Vehicles imported c.1.1m	 Key issues 1. High value nature of cargo increases risk of carriage 2. Transition to electric vehicles (EVs) is expected to increase total freight task and will require additional care due to the dangerous properties of EV batteries
Supply chain cost C.1-2% of total vehicle value	Vehicle sales in Aus (2019) % of sales	 SUVs Light Commercial Vehicles Passenger vehicles Other

Australia no longer manufactures vehicles. Instead, it imports its SUVs, passenger vehicles, light commercial vehicles and other vehicles from Japan, the U.S. and South Korea, and a small number of other countries.

The vehicle supply chain is expected to face challenges in the transition to electric vehicles. Electric vehicles are heavier than combustion-engine vehicles and include batteries that contain lithium, making them more dangerous and difficult to carry.

Vehicle Supply Chains in Australia

Australia is an import-only vehicle market. c.1.1m vehicles were sold in Australia in 2019. The majority of these were SUVs, with passenger vehicles making up c.29.7% of the market. Electric vehicles made up c.0.6% of all vehicles sold in Australia in 2019.ⁱ Most of Australia's imports come from Japan (including those made by Toyota, Mitsubishi and Mazda), with some imports from Korea (Hyundai and Kia) and the U.S. (Ford).

Distributors (often owned by foreign car manufacturers) import vehicles via sea using two methods. The first method is "roll-on/roll-off", where the vehicle is "rolled on" to the vessel at its port of origin and "rolled off" at the destination port. Vehicles can also be put into containers and shipped within the existing intermodal network. Once in Australia, vehicles can be moved using either a car carrier / tow truck or by rail. Vehicles can also be driven directly to their destination, but this increases the wear on the vehicle and is often not done for new cars.

Australia's largest vehicle port terminal is Port of Melbourne, with Port of Brisbane, Port Kembla, Port of Adelaide and Perth's Fremantle port also being key ports with roll-on/roll-off facilities.

After arriving in Australia, vehicles are sent to around 3,500 motor vehicle retail outlets around the country for retail buyers, and commercial and government fleet buyers.ⁱⁱ

Australia's vehicle supply chain has the following key issues:

- 1. Vehicles are typically high value cargo per unit and susceptible to damage. Particular care must be taken when loading and unloading vehicle carriers to ensure that the vehicles are not damaged during the handling and/or transport.
- 2. A shift to electric vehicles is expected to increase the total weight of vehicle freight. Electric vehicles are considerably heavier than combustion engine vehicles due to the weight of the battery pack inside them. The increase in total weight is expected to increase the total 'tonne kilometres' within the supply chain, with flow on impacts relating to carrier vehicle and infrastructure wear
- Electric vehicles contain lithium batteries. Lithium is a dangerous substance that can explode or catch fire in certain conditions, introducing an additional risk and element of danger into the supply chain.ⁱⁱⁱ

International Supply Chain Comparison

The largest car producers in 2020 were China, the U.S., Japan and Germany. Global automobile production was c.92m vehicles in 2019, including c.67m passenger vehicles (passenger cars exclude commercial vehicles used for the carriage of goods and heavy buses and coaches).^{iv} Leading manufacturers include Japan's Toyota, Germany's Volkswagen and the U.S.'s general motors.

In 2019, there were an estimated c.7.1m electric vehicles in use, suggesting that overall penetration of all sales is low, but is expected to gain traction, with many developed countries beginning to offer subsidies or other concessions for electric vehicles and plans to transition government fleets away from combustion engine vehicles.^v



Benchmarking Outlook

Intl benchmarking considerations	Importance	Supply chain
Size and growth		The automotive industry employs c.356k Australians and moves 1.8Mt of vehicles per year
Freight importance	\bullet	While freight is a relatively limited part of the overall value of a car, it is still significant in absolute terms.
Export importance	N/A	Australia does not manufacture vehicles and has limited vehicle exports as a result
Geographic scope	0	Vehicles are imported into Australia and sold in all regions
Known efficiency / public interest	0	Vehicles are important to Australian households, with c.1.8 vehicles owned per household. Reducing the cost of new car purchases is also expected to become increasingly important as consumers transition to electric vehicles.

There is an opportunity to benchmark the vehicle supply chain due to its significant size and geographic scope. Comparator countries should ideally not manufacture a significant volume of cars, similar to Australia.

Ireland could serve as a comparator country, due to its isolated nature. Like Australia, Ireland used to manufacture cars but now relies entirely on imports. Ireland relies very heavily on road due to short distances travelled, with rail only carrying c.72M tonne kilometres of all types of freight in 2019.^{vi} While it is smaller in the scale of its imports than Australia (c.150k per year and 1.1m per year respectively), the supply chains appear broadly comparable due to the universal roll-on/roll-off and containerised nature of vehicle imports.

New Zealand could also serve as a good comparator country, as it also does not manufacture cars and is geographically isolated from the rest of the world. Cars come in via port in a similar way to Australia (in containers and roll-on / roll-off) and must be moved around the country to dealers and commercial buyers.

References

 $^{\rm vi}$ Statista, Amount of freight transported by rail in Ireland from 2006 to 2019, 2020

ⁱ Budget Direct (article), Electric car sales 2020

ⁱⁱ Australian Competition and Consumer Commission, New Car Retailing Industry – A market study by the ACC, December 2017

ⁱⁱⁱRailFreight.com (article), Bulk of electric cars produced in China, but still not moved by train, April 23, 2021 ^{iv}Statista, Automotive industry worldwide dossier

^vStatista, Estimated number of electric vehicles in use worldwide between 2016 and 2019, by type, October 2020