

# DOWNSTREAM PETROLEUM



# AUSTRALIAN LIQUID FUEL SUPPLY AND DEMAND



## KEY MESSAGES

- The Australian refining industry is a price taker in the Asian region, and there is a direct relationship between Australian and Asian fuel prices.
- Industry profitability is largely determined by supply and demand in the Asian refining market.
- There is currently significant surplus of supply of petroleum products in the Asian region.
- Demand for petroleum products has not been strong enough to absorb the output from new refinery capacity installed in Asia each year for the last decade.
- Asian excess supply capacity has provided a ready source for fuel imports to Australia, including growing petrol imports by independent fuel suppliers.
- Growth in imports reflects the gap between fuel demand and production from Australia's four oil refineries which must compete with imports from Asian refineries.
- Australian refineries typically meet around 65% of petrol demand in Australia and 45% of overall fuels demand.
- In recent years, there have been large investments in maintenance cycles (called 'turnarounds') at Australian refineries, involving the shutdown of some production units for major upgrades and maintenance. Reduced refinery production and a greater reliance on imports is typical during turnarounds, which occur every 4-6 years.
- With a diverse source of supply from both domestic production and imports, the Australian downstream petroleum industry will continue to provide reliable supplies to consumers at competitive market prices.



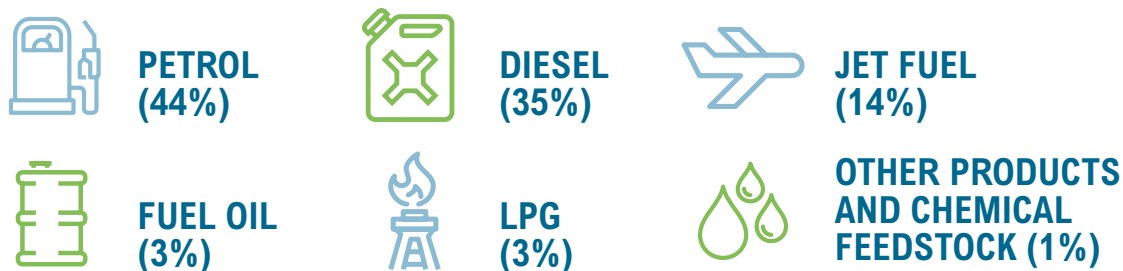
In 2016–17, Australia’s domestic refineries supplied around 43 percent of total petroleum products required by Australia’s major industries and the fuel distribution network of around 7,000 service stations. The reliability of the fuel supply chain is robust given the unique logistic and geographic challenges in Australia.

Australian petroleum refineries are highly capital intensive, technically sophisticated facilities that employ a wide range of highly skilled personnel and provide significant economic and other benefits to key Australian industries.

It also produces a substantial volume of chemical feedstock.

In 2016–17, Australia consumed 58,400 ML (mega litres) of petroleum products - or around 160 ML per day - a 9.1% increase since 2010-11. Australian refineries produced 25,000 ML of petroleum products, of which around 4.7% was exported (excluding LPG).

**The Australian oil refining industry produces a range of petroleum products comprising:**



Net imports from over 20 countries accounted for 57 percent (or 33,400ML) of total consumption, as highlighted in the following chart. A proportion of this imported volume was supplied to northern and north western areas of Australia where it is more economic to supply directly from Asia due to domestic refinery locations and local terminal configuration.

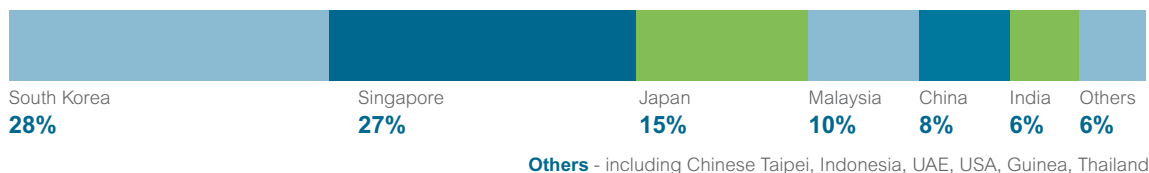
Numerous import terminals are located around Australia providing ready access to the Australian market. The bulk of imported fuel came from refiners and regional suppliers in South Korea, Singapore and Japan, and imports from India are increasing.

While Australia has its own indigenous crude oil production, this has been declining and around 79 percent was exported in 2016–17. These crudes are largely unsuitable for Australian refineries to manage their product slate, while the locations of Australian refineries also contribute to the quantity of exports. Crude oils required to meet the product demand mix in Australian refineries were imported from over 16 countries, but mainly from the Asia-Pacific region (64 % percent) including New Zealand and PNG. The remaining third of crude oil imports was sourced from Africa (18%), the Middle East (16 %) and others (2%).

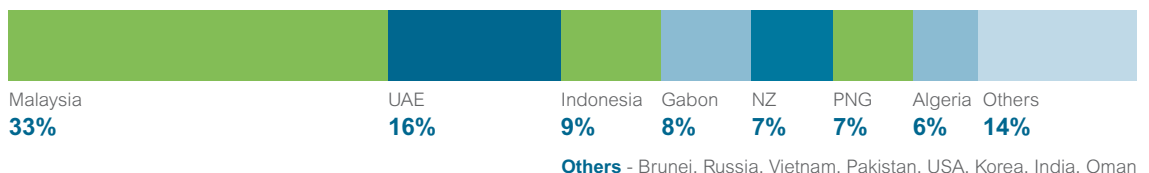
## REFINERIES AND MAJOR FUEL IMPORT TERMINALS



## IMPORTS OF PETROLEUM PRODUCTS 2016-17



## IMPORTS OF CRUDE OIL 2016-17



Source: Australian Petroleum Statistics

## AUSTRALIAN FUEL PRICES **Since 2000-01:**

Australian refineries operate in a global market and compete directly with imports coming into Australia. Locally produced petroleum products must therefore be priced to be competitive with imports (i.e. import parity pricing) from the Asian region.

There is no tariff protection and all seaboard capitals have terminal facilities through which around 45 per cent of domestic fuel demand is typically imported.

Profitability of the Australian refining industry is therefore largely determined by product prices in Asia, and its viability depends on our competitiveness against imports from refiners in Asia. While there have been recent and planned increases in Australian refinery capacity, future growth in Asian imports is still expected to meet demand growth, providing additional supply diversity.

## CHANGING AUSTRALIAN DEMAND FOR PETROLEUM PRODUCTS

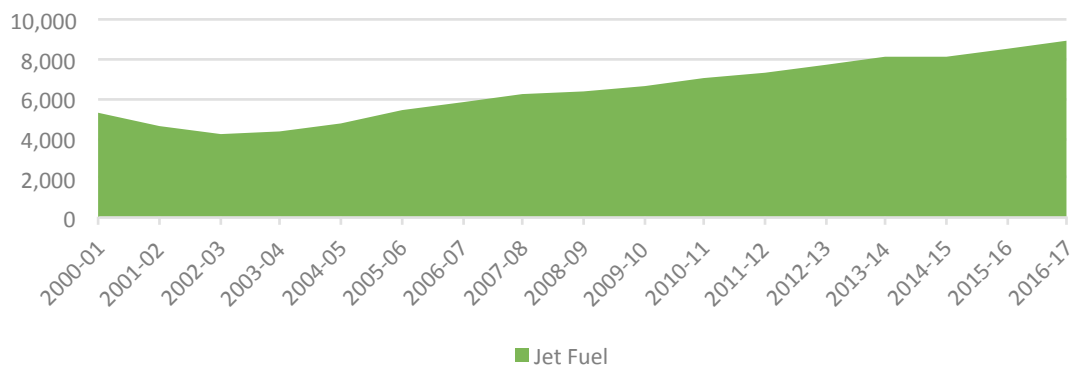
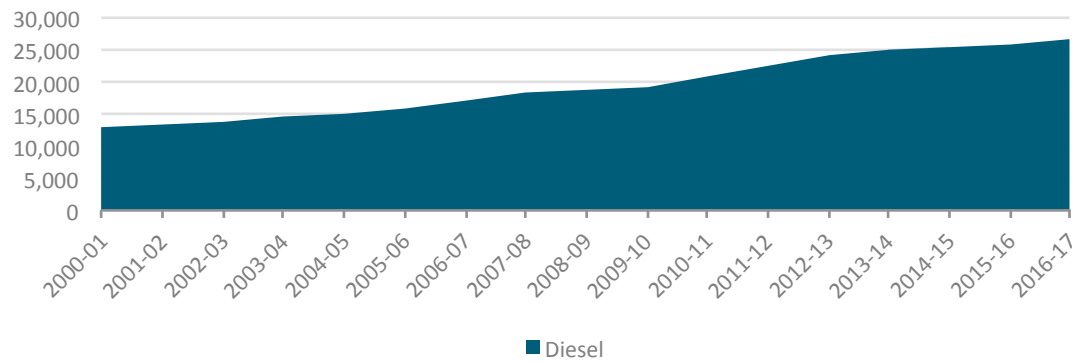
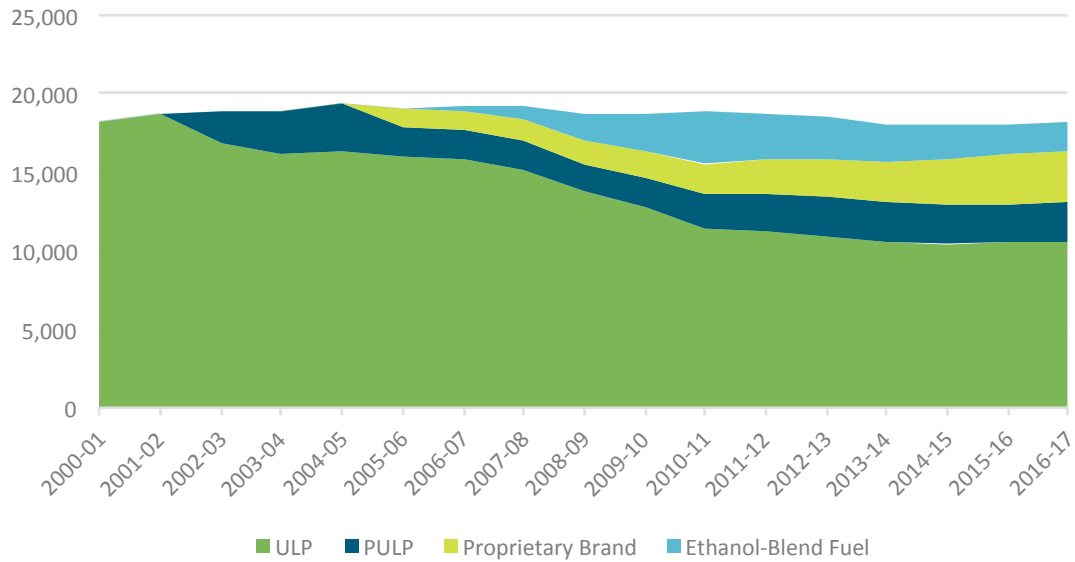
Over the past decade, Australian use of petroleum products has increased by around 2 percent per year.

Petrol, diesel and jet fuel use now comprise 92 percent of the total petroleum product demand.

- Diesel use has increased by around 105 percent due largely to growth in mining industry activities in Australia and growth in sales of vehicles with new generation diesel technology engines.
- Jet fuel use has increased by around 68% due to growth in air travel for business and leisure.
- Petrol use remained flat as vehicle fuel efficiency has continued to improve. Use of regular unleaded petrol (ULP) has declined by more than 40 percent as consumers chose new vehicles that recommend the use of higher octane fuels. The demand for ethanol blend petrol peaked at 18% of petrol use in 2010-11, largely as a consumer preference response to the ethanol fuel mandate in NSW, but has subsequently declined to less than 11% of total petrol use.

Petroleum product use varies across the Australian states and territories, reflecting a range of factors. This includes the main economic activities and resources in jurisdictions, their population base and dispersion, the age and structure of vehicle fleets, and their infrastructure capacity and performance (eg. airports). For example, there is higher diesel use in the mining States of WA, NT and QLD, higher jet fuel use in major airport centres, and higher use of premium gasoline in NSW as a result of consumer preferences and the government's ethanol mandate policy.

## AUSTRALIAN USE OF MAIN PETROLEUM PRODUCTS: 2000-01 to 2016-17, ML



## CHANGING AUSTRALIAN TRENDS IN PASSENGER TRANSPORT

### The Passenger Transport Task

Passenger transport in Australia is changing with population growth and developments in public transport and city planning. Consumer preferences and new vehicle technologies are also playing a role in these trends and will continue to do so.

In Australia's metropolitan centres, total travel has increased vastly over time, reflecting the significant underlying population growth in capital cities. Australia's major cities continue to sprawl outwards leading to longer average trip times. This has resulted in a major increase in the total annual transport task in vehicle kilometers travelled (vkt).



The servicing of this passenger transport task is dominated by private motor vehicles, which account for around 90 per cent of the motorised vkm task within our capital cities. Over the last decade or so, however, there has been a rise in passenger numbers across many Australian urban public transport systems, particularly as a result of expansions to transport infrastructure and services.

In terms of passenger vehicles, consumer preferences and utility remains the strong driver of private transport trends.

### AUSTRALIAN CONSUMERS CONTINUE TO HAVE A VERY STRONG PREFERENCE FOR SPORTS UTILITY VEHICLES (SUVS), WHICH ACCOUNT FOR AROUND 40% OF TOTAL NEW PASSENGER VEHICLE SALES

There also continues to be steady growth in sales of new diesel passenger vehicles, albeit off a low base.

### Electric Vehicles

A more recent development in passenger transport has been the interest and growth in Electric Vehicles (EVs), particularly Hybrid vehicles, which have grown rapidly from a very low base in recent years.

Ambitious targets, government policy and very significant subsidies including purchase incentives, have lowered vehicle costs and reduced consumer barriers. Lower battery costs and improvements in battery density over recent years have also played a role, together with growth in the EV portfolios of OEMs.

While the sector has developed at a rapid pace, the impact on the total vehicle population is still hardly noticeable in most countries.

**In 2016, it has been estimated that the worldwide number of EVs on the road passed the 2 million mark (61% of them are battery electric vehicles or BEVs and 39% plug-in hybrids electric vehicles or PHEVs).**

This represents a market share of less than 1% compared with the total number of passenger vehicles on the road worldwide of around 1 billion. However, in some markets the market share is significantly higher (Norway 24%), and in recent years China has passed the United States as the main market for EVs worldwide.

In Australia, of the 1 million new vehicles typically sold each year, EV sales have been around a thousand vehicles a year in recent years (0.1% of total vehicle sales) and EV sales slowed dramatically in 2016 (around 220 new vehicles). As a result, EVs represent a very small share of the 14 million passenger vehicle fleet in Australia with an average vehicle age of 10 years. Australian motorists have also typically favoured hybrids over pure electric vehicles (BEVs) due to range anxiety.

The extent of the future EV contribution to the passenger transit task, in Australia and globally, is not clear. There are wide ranging forecasts of future EV uptake, but all research and modelling suggests they will be more common globally by 2040.

Future EV uptake is complex and critically dependant on a wide range of factors.

For example, including:

- **Vehicles** – vehicle mix, technology, performance, production, costs and existing fleet turnover,
- **Batteries** - production capacity, storage/density, reliability, cost and disposal,
- **Key input markets and pricing** – lithium and electricity market developments and pricing,
- **Distribution Network** – availability of recharge infrastructure and network and related costs, and
- **Consumer demand and preferences** – demand, convenience, vehicle/transport preferences.

A competitive free market with a predictable regulatory framework that does not pick winners will best serve consumers, suppliers, investors, and local communities in developing economic prosperity, energy security, and environmental protection.

A key fact that needs to be understood is the emissions profile for EVs from non renewable power which is considerably greater than for conventional vehicles.

Accelerating the EV uptake, beyond current market and technical constraints, needs to be carefully considered and managed,

particularly given linkages and dependences to other energy sectors (electricity) and to key input markets (batteries/lithium).

AIP believes that alternative energy sources and vehicles will have a place in a diversified Australian passenger transport market, as long as they are available at a competitive price, reliably supplied, acceptable to consumers, and produced sustainably.



A market based policy framework will best facilitate the uptake of electrified passenger vehicles on reliable, sustainable and competitive market terms. It will also encourage a lower emissions energy supply and use that avoids market distortions, increased energy prices and lower transport fuel security.

**The development of robust, efficient and commercial markets for all transport fuels and vehicles will be best supported by:**

- policy and investment stability,
- a level playing field for competing transport fuels/vehicles and market participants, and
- the minimum level of efficient and well-targeted government regulation.

**AIP believes that government policy in support of a higher uptake of electric vehicles (eg. for purported environmental benefits) needs to be:**

- based on a demonstrated market failure,
- based on sound science,
- cognisant of other policy settings, and
- transparent, with clear and credible objectives.

This policy framework reflects fundamental industry drivers, including the long lead times required for industry investment and the significant capital employed by the fuels and passenger vehicle industries.





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