



COVER BRIEFING

Independent Reports on global oil reserves

Date:	22 May 2026	Priority:	High
Security classification:	Restricted	Tracking number:	BRIEFING-REQ-0033378

Action sought		
	Action sought	Deadline
Hon Nicola Willis Minister of Finance	Agree to forward these reports to your Ministerial Oversight Group colleagues.	25 May 2026
Hon Shane Jones Associate Minister of Finance		25 May 2026

Contact for telephone discussion (if required)			
Name	Position	Telephone	1st contact
Sarah Deblock	Manager, Fuel Supply Policy	Privacy of natural persons	✓
Neel Vanvari	Policy Advisor, Gas and Fuel Policy		

The following departments/agencies have been consulted

Minister's office to complete:

☐ Approved

☐ Declined

☐ Noted

☐ Needs change

☐ Seen

☐ Overtaken by Events

☐ See Minister's Notes

☐ Withdrawn

Comments



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Purpose

To provide you with the reports on global reserves prepared by Robert Brewis and Envisory.

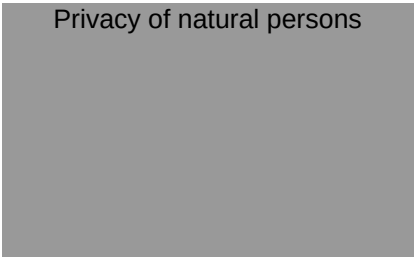
Recommended action

The Ministry of Business, Innovation and Employment recommends that you:

- a **Agree** to forward these reports to your Ministerial Oversight Group colleagues for context alongside the broader upstream supply briefing they will also receive.

Agree / Disagree

Privacy of natural persons



Sarah Deblock
Manager, Fuel Supply Policy
Fuel Response, MBIE

22 / 05 / 2026

Background

1. You requested an independent assessment from Robert Brewis on the issue of global reserves being depleted and what that means for New Zealand. This report is attached.
2. MBIE also commissioned Envisory to respond to the same questions we asked of Robert Brewis, as we have found multiple points of insight helpful to provide a full picture.
3. The reports represent each author's independent view on the set of questions asked, MBIE has not influenced the reports, and they are attached verbatim.
4. We have provided a separate briefing on the upstream supply picture which includes information from a range of sources [Briefing REQ-0033379 refers]. MBIE was compiling this briefing before we commissioned the independent reports, but it has subsequently been informed by them.

Annexes

Annex One: Envisory's report on Global Stock movement analysis and Robert Brewis' commentary on product reserves

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GLOBAL STOCK MOVEMENT ANALYSIS

Prepared for MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT

21 May 2026

Envisory Limited is an energy consultancy specialising in strategic issues affecting the energy sector, including the transition towards low or zero carbon fuels. With a comprehensive knowledge of local and international energy markets, we provide strategic advice, comprehensive analysis, and services across the entire sector.

Envisory prides itself on being able to analyse and interpret the detail, translating the implications into strategic directions for our clients. We provide expertise to a broad range of companies and government departments in New Zealand, Australia, and the Pacific Islands. Envisory has a strong reputation in the sector for producing timely, high quality, value-adding work.

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1.0 Introduction

Global petroleum stocks are performing a critical role in keeping fuel supplied to customers during the closure of the Strait of Hormuz. We are now seeing concerns in the media and by some market commentators that if stocks continue to be drawn down at the same rate as March and April, the buffer above minimum operating levels will soon be exhausted.

This paper analyses the role of stocks in this supply crisis and explains why the draw of stock in March and April should not be used to model forward draw. It analyses what we should now be watching on the stock draw and how prices are likely to respond as stocks get close to minimum operating levels.

2.0 Stock movement in March and April

Stocks have moved exactly as expected in March and April. They have helped mitigate the gap in the crude oil supply to Asian refineries from the strait closure and responded to the price incentive to move crude and products between regions to help mitigate any shortages.

2.1 Stocks covered the immediate loss of crude

Asian refineries were impacted by cargo losses in the second half of March. There was virtually no traffic through the Strait of Hormuz from the beginning of March so Asian refineries lost supply from anywhere between one week into March (India) to three weeks later (North Asia). The refineries were still getting supply from the Middle East from sources that do not traverse the strait as well as normal non-Middle Eastern sources.

Refineries responded by immediately securing crude from other sources such as the Americas and the Atlantic Basin, particularly West Africa. This crude had to be built into the delivery schedule from the source location, shipping secured and then undertake a longer than normal voyage to the Asian destinations. Companies moved to secure these cargoes in the first week of March, although they only started to arrive at the refineries in the second half of April.

Therefore, there was a loss of much of the normal crude supply to the Asian refineries for a period of three to four weeks. Over this period refineries ran a balanced approach of cutting production to a level that could be managed from unimpacted crude supply and drawing down commercial stocks.

Over this period actions taken included:

- A collective reduction in Asian refinery throughput to around 60-65% (Asian refineries typically run around 80-85% of capacity when analysed on a regional basis).
- Japanese and Korean Governments relaxing the stock obligations on commercial operators so they could draw down on those stocks.
- Middle Eastern crude held in storage in Japan and Korea being sold into the market (Figure 1).
- A draw down on crude stocks in Asia (as expected) to help cover the supply gap.

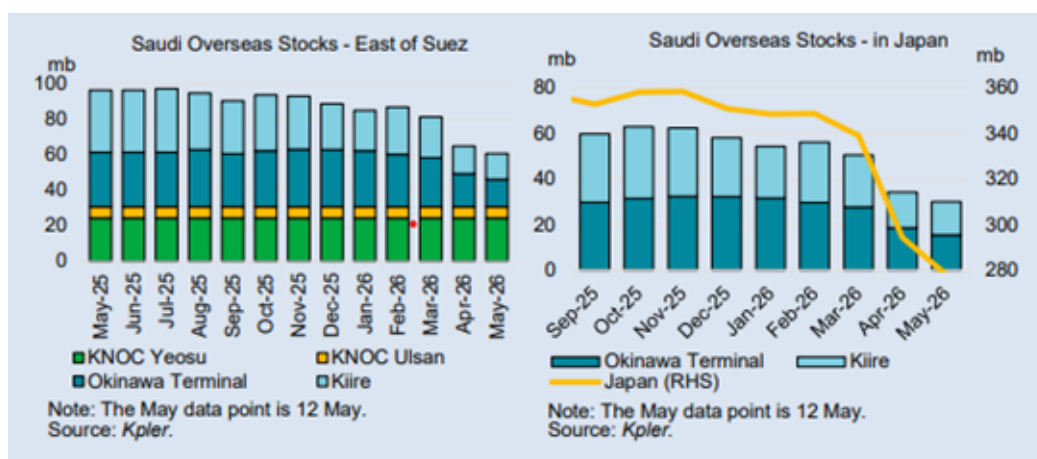
We can illustrate the expected stock draw with a calculation¹.

- Asian normal refinery throughput: ~30-31 mb/day
- Middle Eastern crude exports into Asia: ~19 mb/day (~60% of supply)
- Immediate disruption from Strait closure: ~13 mb/day²

If refineries reduced runs from a normal 80-85% to 60-65% that would have mitigated about 6-8 mb/day. Some of the remaining gap was met by Saudi and UAE increasing alternate supply but there would still have been approximately 4 mb/day gap to be covered by inventory draw. The gap would have been for three to four weeks, so a draw of 84-112 million barrels is expected. This would explain a significant portion (around half) of the globally reported inventory fall over the past two months.

As some Asian countries do not report stocks it is difficult to verify the calculation, although the reported crude draw for OECD Asia Oceania Crude³ in the May IEA Oil Market Report (only shows data to the end of March) is in line with the trend.

Figure 1: Drawdown of Saudi Arabia stocks in Japan and Korea (Source: IEA)



2.2 Product stock movements also covered the disruption

Asian refineries cutting throughput meant that Asia could not supply all its product markets normally. Actions such as China's prompt halting of all refined product exports compounded this issue. Asian consumers either had to rely on existing stocks or seek product from elsewhere to cover any gap in normal supply.

Petrol is a blended product that has higher stock levels through the supply chain. Blending terminals hold significant stocks of intermediate blending components and add to the supply coming from refineries. Jet fuel and diesel do not have a similar stock cushion so are more immediately impacted by reduced refinery throughput.

¹ All calculations based on 2024 data from the 2025 Energy Institute Statistic Review of World Energy.

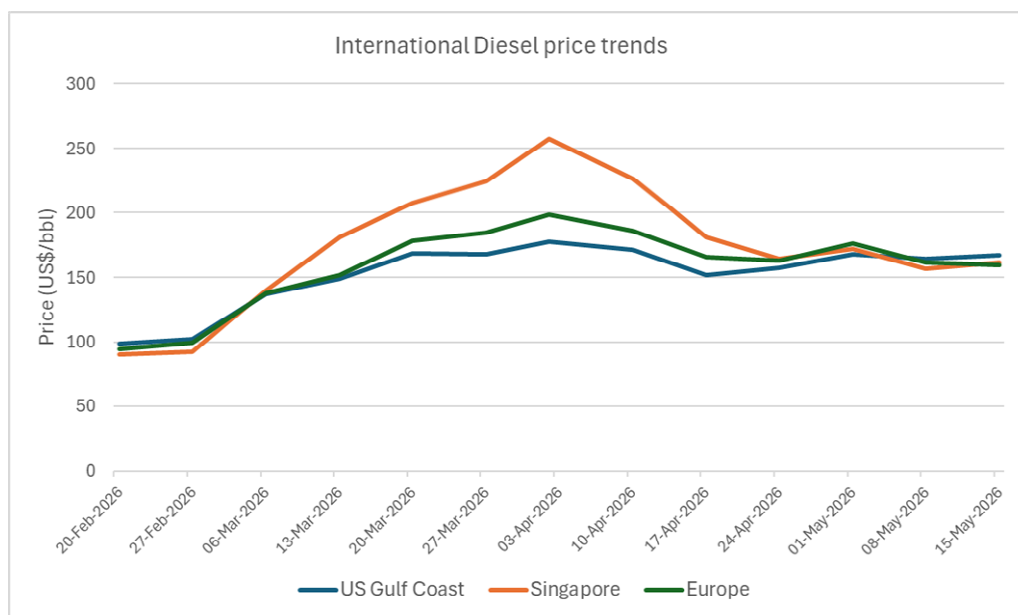
² Some of this would have been mitigated in a shorter timeframe by use of pipelines in Saudi Arabia and UAE to load more crude from locations outside the Persian Gulf.

³ This includes Australian, Japan, Korea and New Zealand although in total these countries represent less than 20% of Asian refinery capacity so will only be a portion of the stock draw.

This was reflected in product prices where prices in Asia went much higher than other regions in late March and first half of April (i.e. exact correlation with the crude supply gap). This is shown in Figure 2. Asian prices went higher than needed to encourage the flow; this reflected a market where there was a real risk of no supply - customers will pay up in that case.

The change saw normal export locations (e.g. India) revert to supplying product into Asia (rather than exporting to Europe) along with direct imports from the United States.

Figure 2: Regional diesel price trend analysis



These flows are no longer needed in the same volume as Asian refineries have been able to increase throughputs from mid-April. The Asian premium to other markets disappeared from late April meaning there is no longer any incentive to move products into Asia.

3.0 Future stock movement

The massive disruption to Asian refineries has largely been resolved by the end of April. This is reflected in the premium for prompt physical crude reducing to more typical levels as well as regional product pricing returning to more normal relativities (illustrated for diesel in Figure 2).

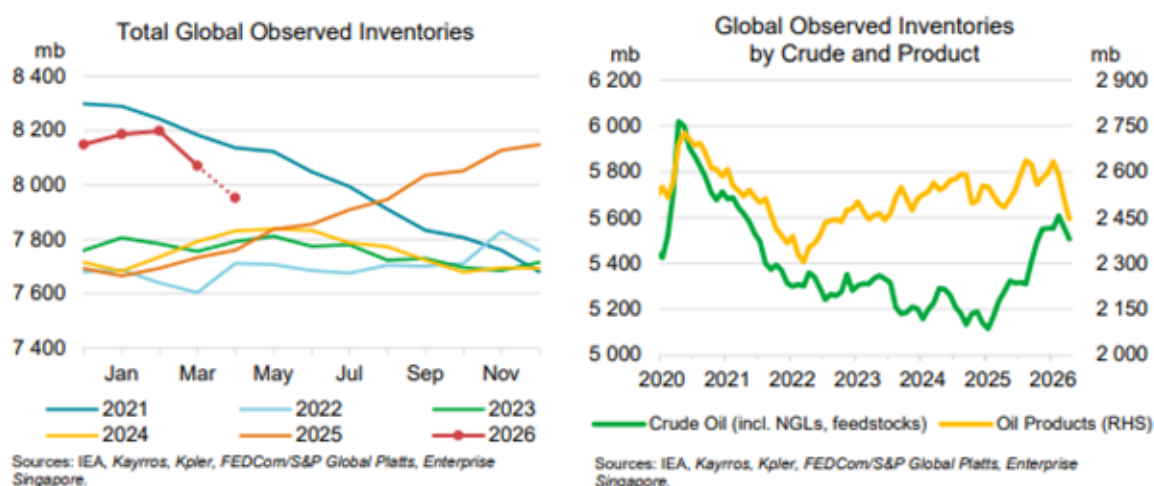
However, the Strait of Hormuz is still closed so the world is still short of crude oil. There are some workarounds that continue to chip away at the shortage (e.g. Iran/Iraq moving more crude by land, Saudi Arabia/UAE looking for quick ways to expand overland pipeline capacity) but the main lever to balance demand with supply is high prices reducing demand.

Stocks will continue to fall to cover the gap between supply and demand. This will be at a slower rate than March/April as there is no 'hole' to cover while supply chains adjust. There is also no ability to 'restore' that stock used to cover the 'hole' while the strait remains closed. The system will be operating at lower stock levels until one to three months following the strait opening.

3.1 How low can stocks go?

This is a difficult question, but commonly asked, particularly in light of the trend chart in the May IEA Oil Market Report showing global observed inventories (Figure 3) falling rapidly in March and April. We don't expect the forward decline to be at the same rate (as we covered in Section 2.0) although stocks will continue to decline as long as the strait remains closed and demand is higher than the available supply.

Figure 3: Global stock trends (IEA May Oil Market Report)



Philosophy of minimum stocks

There are stock buffers throughout the global supply system including through systems like New Zealand's minimum stock obligation. These stocks collectively could provide many days of supply although during a crisis there is reluctance to use them in case the situation gets worse and they are needed later. Conversely, there is even a drive to build stocks for 'extra security'. This is no different than consumers rushing to fill vehicles when they heard the strait was closed. If they suspect stockouts are possible, they prepare. This has also happened at a global level where countries (including Australia and New Zealand) are building stocks of critical products to provide extra security in case the supply situation deteriorates.

There will be a reluctance to access these security stocks while there is a risk the situation could get worse (this is a real possibility) so minimum stock assumptions need to account for this.

Global minimum stock calculation

Global stocks are falling but remain above recent trends as they started 2026 at a high level (as shown in Figure 3). Trends show the market is comfortable operating in the 7,600-7,800 mb range which is around 200 mb below the IEA's predicted April month end position.

In theory an IEA release of strategic stocks should allow the stocks to go below the typical trend, as these are not part of operating stocks. In practice we only think that will apply to about **Free and frank**

Analysis of the New Zealand supply chain is useful for this exercise. New Zealand carries around 50 days stock in its direct supply chain taking account of loading, shipping, discharge and stock in country. **Free and frank opinions**

This is likely similar on a global scale - inventories could probably be drawn down around 10% after accounting for release of strategic stocks, however we don't think this will happen as the market will be concerned about low stocks (and using stock safety barriers) so prices will rise to mitigate demand well before these levels are reached. We think a 5% reduction is more feasible (Table 1) although still unlikely.

Table 1: Global minimum stock analysis

Minimum global stock analysis	Million barrels (mb)
Typical stock range	7,600 - 7,800
With IEA release impact	7,300 - 7,500
With another 5% reduction	6,900 - 7,100

These would be record low inventory levels although that is not surprising given this is the largest ever oil market disruption. Our view is inventories will not get to these low levels as the price will increase and cause the demand destruction needed to slow the stock decline to a more manageable level. The higher the price the greater the incentive to find some way to resolve the issue (either by increased bypass of the strait or some means of resolution to the conflict).

3.2 Why the headlines?

Total stocks reported by the IEA are still above the typical levels held for the past five years. So why are the headlines saying the worst is still to come if the Strait of Hormuz does not open soon.

These articles have been triggered by the initial rate of decline and showing that if that decline continues, we will quickly fall below typical operating levels and the risk of disruption increases. That would be true if this trend were to continue, but we have already demonstrated the rate of decline from May will likely be lower than March/April. It also does not seem to account for releases from government stockpiles such as the SPR, which reduces global inventories without impacting operational stocks through the system.

Our view is most of these articles are reflecting a Euro/US centric view that the situation will get worse (in terms of price) if the Strait does not open. This is not necessarily true for Asian prices which have already been impacted by the threat of real shortages in late March/early April.

Diesel prices are currently around US\$160-170/bbl in all global markets (Figure 2). US and European prices do not need to rise much further for them to be at new peak levels since the strait closure. A price increase is likely if the Strait remains closed, so commentators are correct in saying it is going to get worse. However, an increase of US\$30-50/bbl on global markets will still leave Asian prices well below their peak. Therefore, for Asia it may get worse than current price levels but there is a long way to go before it gets as bad as early April. It also does not mean stockouts, rather more pain at the pump and the impact on the economy through rising diesel prices.

3.3 How high would prices need to go to suppress demand to the level needed?

This is a question we cannot answer with any authority as it depends on global fuel elasticities. We do think it will be a gradual process - as reported stocks keep dropping, prices will rise and if the

stocks start to drop below typical levels prices will rise further. Some of that price rise could be alleviated by further releases of strategic stocks (or reductions of stock obligations) although there may be reluctance to do this while there is a risk of escalation that may make things worse.

Ultimately it is only a permanent and complete opening for secure passage through the Strait of Hormuz that will resolve the supply issue and bring prices back down to more normal levels. It will still take months to realign supply chains and rebuild stock levels, but if there is confidence in that supply, then the market will get comfortable about using supply buffers for short term coverage.

3.4 Impact on different products

Jet fuel and diesel remain the products under most pressure as these have the most constrained supply (this has been the case for the past 20 years). This is compounded by the loss of Middle Eastern crude which typically has higher yields of jet fuel and diesel than other crudes.

Like crude, product stocks saw a sharp decline in March (right hand chart in Figure 3). This is expected given the disruption to the market. Again, the stock movements seen are predictable - US product stocks are down because they are generating profit by exporting while still having sufficient stocks to keep their market supplied. Much of these product exports were only needed in March/April and it is now record volumes of crude (new export records set in second half of April) that the US is exporting (yet their crude stocks are still in the top half of the normal range at the end of April).

Therefore, while headlines highlight low stocks for some products (US gasoline being close to minimum of the normal range was one), this is expected given the incentive to make money from exports. It is not an indication of an ongoing trend (our price charts show the strong incentive for those exports has largely disappeared) and there is now the ability for US refiners to begin rebuilding those product stocks.

The product that shows most concern in the IEA stock charts for OECD members is fuel oil. There are normally significant exports from the Middle East which have been disrupted. Fuel oil is mainly used for marine fuel and power generation. This is a watch point although most ships can run diesel should there be actual disruption to fuel oil supplies (fuel oil is normally a lot cheaper than diesel so again prices would move substantially if there was a real risk of stock outs). Power generators also have other options although one of the main ones (LNG) is also impacted by the Strait closure.

4.0 Specific country questions

This section briefly covers market and stock movements in specific major countries.

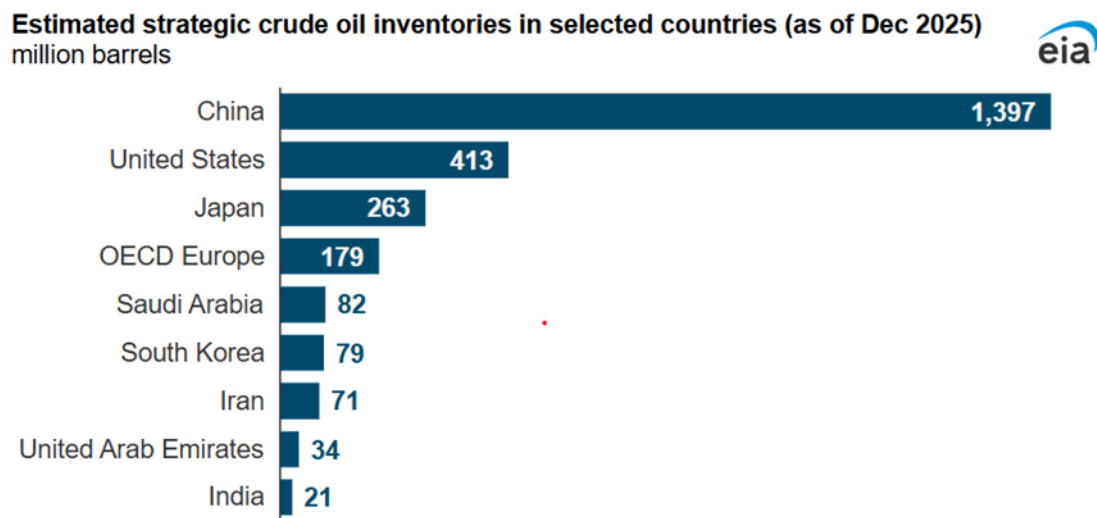
4.1 China

China has a reported 1.4 billion barrels of strategic crude oil reserves held by both the government (~400 mb) and industry (~1,000 mb). The US Energy Information administration (EIA) show that this far exceeds other countries strategic reserves (Figure 4). China has been very strategic in the way it has built reserves, adding to reserves when prices were lower and avoiding purchase during high price periods.

The crude supply balance in 2025 did not make much sense (supply exceeded calculated demand) unless a large stock build was assumed for China and most market commentators reported this

happened. The crude oil price was under US\$75/bbl for most of 2025 and prices below that level is where China looked to buy strategic stock; as a result, large stock builds were reported for China.⁴

Figure 4: Estimate strategic crude oil reserves (EIA)



Data source: U.S. Energy Information Administration, *Short-Term Energy Outlook* (STEO), March 2026

Note: Other estimates derived from the International Energy Agency, China National Bureau of Statistics, Vortexa Analytics, Kayrros, Kpler, Argus Media, and Global Trade Tracker.

Since the Strait of Hormuz closure, China is reported to have dropped its crude oil imports by 3.6 mb/day⁵. This is a significant reduction which is helping balance oil markets. China can manage such a move as they have reduced refinery runs (initially banning product exports although this has since been partially relaxed), consumption is down due to increased prices and they can draw down stocks. Strategically drawing stocks when prices are high and building them when prices are low is a very sensible strategy. Based on reported inventories, China can continue to do this for many months so is not dependent on the strait opening immediately.

4.2 Russia

Russia is a large oil producer although its consumption is less than 4% of global demand. Since the Ukraine invasion, Russia has been subject to many sanctions to reduce the value of its petroleum exports. This was not a complete ban as it was thought that would be too much disruption to global markets. The sanctions required major adjustment to global supply chains which resulted in elevated prices in 2022.

Russian crude kept flowing and within Asia this primarily went to China and India (these countries have been by far the largest purchasers of Russian crude since 2022). Tightening sanctions early in 2026 saw India reduce Russian crude purchases as refineries that ran Russian crude could no longer export product to Europe (largest export market for India product). This was having an impact on Russia with its crude stocks at sea reportedly building in late 2025/early 2026 (this was on the shadow fleet so difficult to know accurately).

⁴ China does not report its stocks so most commentary on China's stock levels is from derived data.

⁵ <https://www.cnn.com/2026/05/15/china-us-oil-iran-war-strait-hormuz-trump-xi.html>

The Strait of Hormuz closure has resulted in Russian sanctions being relaxed, initially for the stock held on the water and then more widely. India took Russian crude as an immediate replacement for Middle Eastern crude (returning to the situation of 6 months earlier) and China continued to buy. It is not clear how widespread purchase of Russian crude is now, although it now appears to be largely unimpeded by sanctions compared to the beginning of the year. This has helped mitigate the loss of crude from the Persian Gulf.

4.3 United States

The United States is the world's largest oil market having nearly 20% of total consumption. The US holds 1.2-1.3 billion barrels of commercial stock (~ 400 mb crude; 850 mb product) along with around 400 mb crude oil (prior to March/April stock releases) in its strategic reserve. The US administration approved a 172 mb release from the reserve as part of the IEA action following the Strait of Hormuz closure. This release is still in progress.

The United States only officially lifted a 40-ban on crude oil exports in December 2015. This was in response to surging production from the shale oil fields. Initially products exports rose (these have continued) although once the refineries were at capacity direct crude exports were needed. The United States has now been a net exporter for 6 to 7 years although it still imports crude (largely from Canada) as part of its balance. More recently (2026) it has restarted importing Venezuelan crude which is heavy in quality and suits many US refineries. This has allowed it to increase crude exports which reached record levels of over 5 mb/day in April 2026.

5.0 Summary

Markets have adjusted to the massive disruption caused by the Strait of Hormuz closure and stocks have been a key tool to maintain unbroken supply to customers. By the end of April markets had adjusted supply chains and global prices returned to more normal relativities, although still very high as the closure continues.

Global stock levels are sharply down in March and April which is expected due to the disruption. We show that these should not continue to decline at the same rate although will still reduce if demand is higher than available supply.

Prices will rise if more demand destruction is needed to balance supply - this will be in all markets not like the peak seen in Asia in early April. We expect this to be a gradual process although for Europe and the United States this may result in prices higher than they have seen up to this point in the crisis.

Robert Brewis' commentary on product reserves

What role do global reserves play in the global oil market? What are the types of reserves and where are they stored?

Strategic Petroleum Reserves (SPR) refer to the crude oil stocks held by the IEA member countries who are required to hold emergency oil stocks equivalent to at least 90 days of their net oil imports. In total this is roughly 1.2 billion barrels of public reserves, together with 600 million barrels of oil held by industry under government obligation.

The biggest holders are China (360 million barrels government held + 1.4B barrels including commercial stocks), US (400m barrels government held Dec 2025 + 400m of commercial inventory) and Japan (260m barrels).

EIA do publish a weekly stockholding in the US broken down into five regions:

PADD1 – East Coast

PADD2 – Midwest

PADD3 – Gulf Coast (important for exports)

PADD4 – Rocky Mountains

PADD5 – West Coast

Generally, stocks in any other countries are not published.

Diesel has a small SPR but Jet Fuel and Gasoline have little to none. In the case of Jet Fuel, stocks are held by refiners, airlines, and distributors. Free and frank opinions

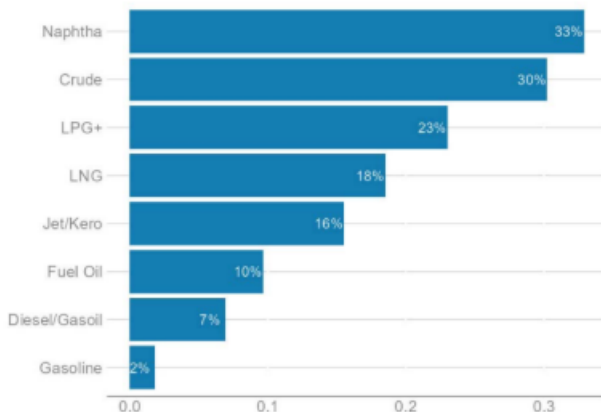
What issues does the current rate of drawdown pose for global oil supply? Is there a particular issue emerging for a fuel type or for a region?

In normal times around 100 to 140 vessels including 50 to 55 tankers carrying oil, liquefied Natural Gas, fertilisers, petrochemical feedstocks and refined oil products passed through the Straits of Hormuz each day. Since early March that flow has reduced to a trickle. Recent estimates suggests that some 1900 to 2,000 vessels including between 100 and 200 tankers are stranded in the Gulf.

As of March 2026, approximately 30 countries released 400m barrels of crude to stabilize the markets disrupted by the Iran conflict. In contrast to the energy crises of the 1970s the shortages now developing are not focused on crude oil but on oil products which are created through the refining process.

Exports via Strait of Hormuz- 2025

Relative to global imports outside Middle East Gulf, by product (%)



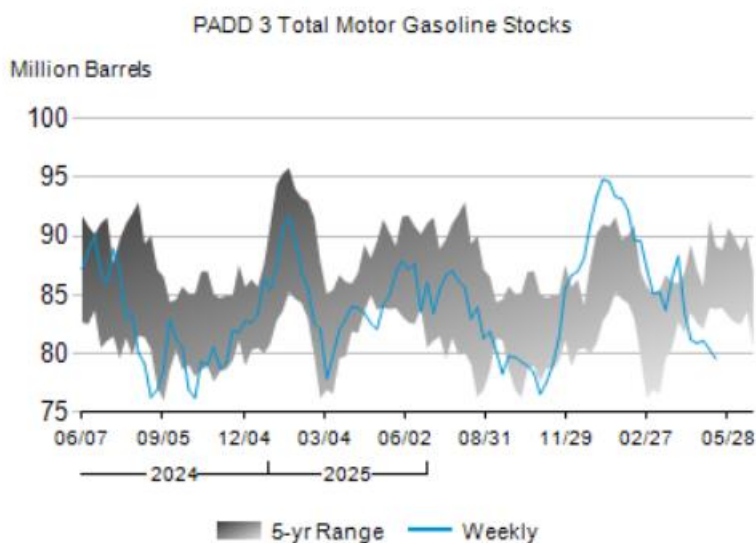
Source: Vortexa, Morgan Stanley Research

The main shortages are in jet fuel, gasoline (via naphtha) and diesel. Europe imported 60 per cent of its jet fuel needs from the Gulf region prior to the conflict (UK is particularly reliant). The shortage of jet fuel and diesel is global, and this has resulted in an escalation in prices and time spreads as countries compete for supply.

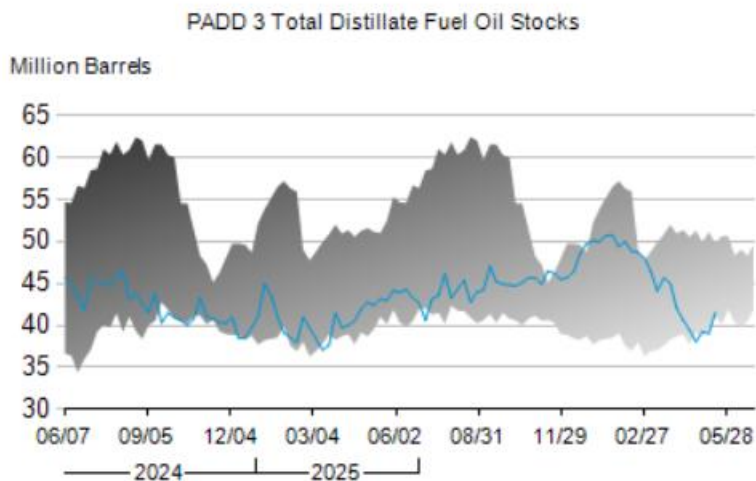
In the last two months there has been a big drawdown of stocks –some 400- 500 million barrels. This drawdown will only happen once and will need to be replenished over the coming months, if that is possible.

How is this likely to play out, and what does this mean for New Zealand?

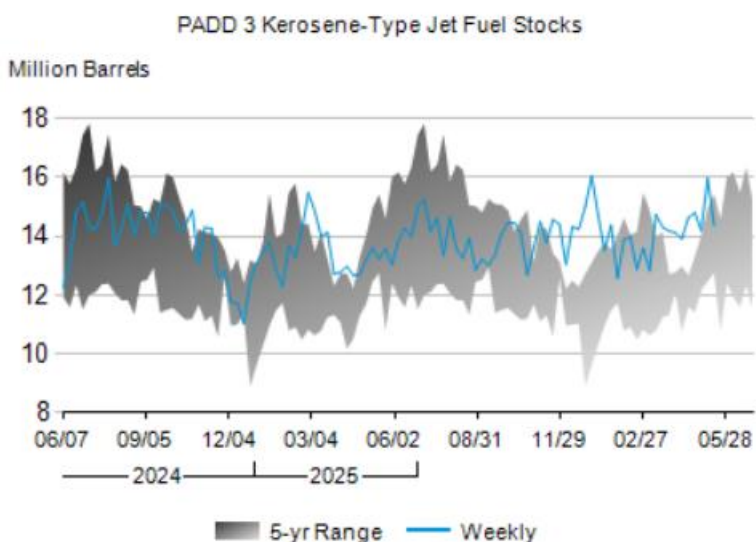
Due to the extremely short supply of naphtha, reformat and alkylates the key driver is gasoline as we head into the strong demand months. The US refiners have been maximising jet fuel yield, but this may change if gasoline enters short supply. Current levels of PADD3 gasoline are at a 5 year low for this time of year.



Diesel stocks are low and it is critical that they begin to build by the end of summer. In Asia Diesel is priced above Jet Fuel which is likely to switch in June as Jet clears to the West.



Given Europe would normally buy 60% of its jet fuel from the Arabian Gulf, the lack of exports from this region is critical to global balances as it enters its peak flying season. Recently the US has exported to Europe to help with their demand. EIA stocks are on the high side, but exports are large and on water stocks are at 5-year lows.



Is there a 'floor' or 'minimum level' for global reserves, how much longer will the reserves last for to maintain current supply levels?

The reserves are a buffer created for the situation we are faced with today and this is the reason they have been released and drawn down.

What is the future outlook for global reserves if the conflict prolongs?

The longer the conflict lasts the more likely that reserves will be drawn down and not replaced.

What are the indicators that the reserves are getting close to a 'minimum level'? How would the system respond?

The price of the products and the steepness of time spreads are the best indication of product tightness globally. Time spreads are exceptionally steep and indicate a lack of stocks in all refined products.

What are the key factors that New Zealand needs to look out for?

Free and frank opinions

What is the role of Russian, Chinese and US Reserves in the global supply picture?

Free and frank opinions

What are the particular implications of these issues for the three different fuel types?

Free and frank opinions