PLANET GANGES

THE CRUCIBLE | RESEARCH PAPER

Moving the barrel

The logistics infrastructure behind Gulf oil and gas: how it moves, who owns it, how it earns and where it breaks

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Executive summary

Oil and gas are worth nothing until they reach a buyer, and in the Gulf the job of getting them there falls to one of the largest logistics systems in the world. In 2025 the Gulf exported about 22 million barrels a day of crude oil and refined products, and close to 20 million barrels a day of oil, along with almost a fifth of the world's liquefied natural gas (LNG), passed through a single sea lane, the Strait of Hormuz. Logistics runs through all three parts of the industry. Upstream, it brings rigs, pipe, chemicals and crews to the field and carries oil and gas from the wells to the first plant. In the midstream, it is the whole business: trunk pipelines, storage tanks, export terminals, LNG plants and ships. Downstream, it delivers crude and gas to refineries and chemical plants, fuel to depots and fuel stations, gas to power and water plants and cooking gas to homes.

The state owns almost all of this network through national oil companies, while national shipping companies such as Bahri, ADNOC Logistics & Services and Nakilat carry much of the cargo. Logistics earns in ways that differ from producing oil: pipelines earn fees per barrel, storage earns rent, ships earn hire or freight, and fuel distributors earn a margin on each litre. Much of this income is fixed by long contracts, which is why global investors have paid or agreed to pay about $61 billion since 2019 for a share of Gulf pipeline and gas plant fees, and why Gulf shipping companies earned operating margins of 30 to 61 per cent in 2025.

The network's strength is its scale and the steady money it earns. Its great weakness is that nearly everything leaves through one strait, and only Saudi Arabia and the UAE have pipelines that can carry a meaningful share around it. The war that began on 28 February 2026 showed what that means: oil moving through Hormuz fell from about 20 million barrels a day to about 5 million in the second quarter, supertanker hire rates rose more than tenfold, and war insurance rose from about 0.25 per cent of a ship's value to between 3 and 10 per cent per voyage. The growth now lies in routes and storage outside the strait, new LNG ships, gas grids that replace oil at home and better use of existing assets. For anyone advising this industry, the test at every asset is the same: what limits it, who owns it and carries its risk, how it earns, and what could stop it.

Why this industry is worth understanding

A barrel of oil sitting in a Saudi field is not yet worth anything to anyone. It becomes valuable only when it is lifted, cleaned, moved to the coast, stored, loaded onto a ship, carried across the sea and delivered to a refinery that wants it. Each of those steps needs a physical asset, and each asset needs someone to build it, own it, run it and pay for it. That chain of movement and storage is the logistics infrastructure of the oil and gas industry.

Most of us never see it. We see petrol at the pump or a cooking gas cylinder at the door, not the pipeline, the tank farm, the loading buoy in deep water or the supertanker carrying two million barrels across the Arabian Sea. Yet this is where a large part of the industry's money, effort and risk sits. If one link fails, the oil stops moving, however much of it lies in the ground.

This paper looks at that logistics chain in one region, the Gulf: Saudi Arabia, the United Arab Emirates (UAE), Kuwait, Iraq, Qatar, Bahrain, Oman and Iran. A reader with no background in the industry should come away knowing how oil and gas are moved and stored at each stage, who owns and builds the assets that do it, how each part makes money, and what the network's strengths, weaknesses and openings are.

THE QUESTION THIS PAPER ANSWERS

What logistics infrastructure moves Gulf oil and gas from the field to the user, who owns, builds and earns from it, and how secure is it?

About 22 million b/d	19.9 million b/d	About 112 billion m^3	About $61 billion
Crude oil and refined products exported by seven Gulf states in 2025 (OPEC)	Oil that passed through the Strait of Hormuz in 2025, about a quarter of all oil moved by sea (IEA)	LNG that passed through the strait in 2025, almost a fifth of world LNG trade (IEA)	Paid or agreed by global investors since 2019 for a share of Gulf pipeline and gas plant fees

Every figure in this paper carries its source and year. Flows through the Strait of Hormuz come from the International Energy Agency (IEA) and the US Energy Information Administration (EIA); exports come from the Organization of the Petroleum Exporting Countries (OPEC); company figures are for 2025 unless stated. Where two credible sources give different numbers, both are shown. Figures for 2026 describe the position in mid-October 2026, while the conflict was still under way.

The industry in one picture

Three streams, and what logistics does in each

People in the industry divide the business into three parts. **Upstream** is finding oil and gas and bringing it to the surface. **Midstream** is moving and storing it. **Downstream** is turning it into products and delivering them to users. Logistics is not a fourth part sitting beside these three. It runs through all of them, but it does a different job in each.

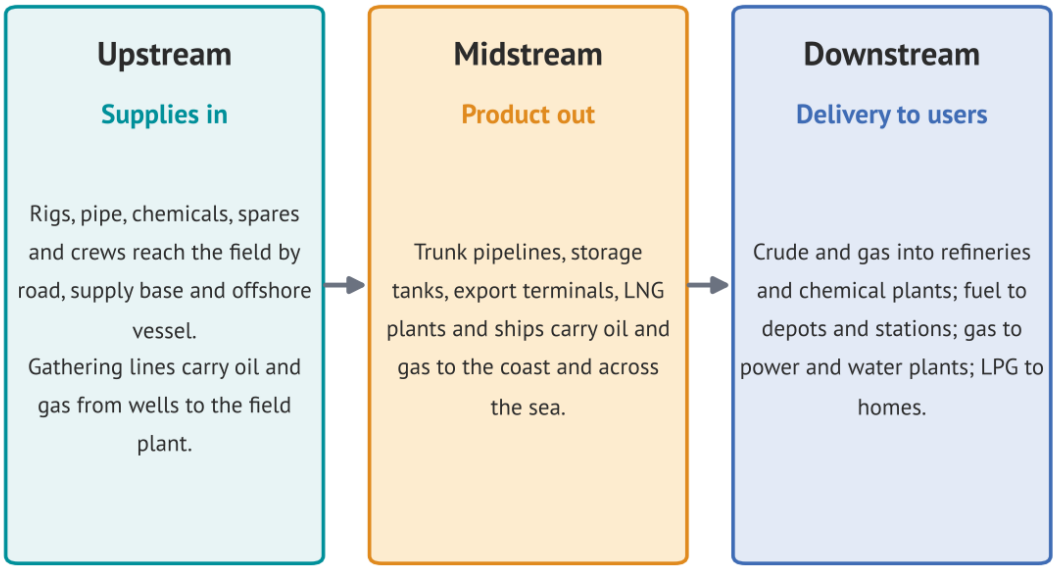


Exhibit 1. Logistics runs through all three streams, doing a different job in each

Source: Author's schematic.

Upstream, logistics brings things in. A field needs drilling rigs, steel pipe, chemicals, spare parts, food, water and people, often in desert or at sea. This is called supply or inbound logistics: supply bases on the coast, warehouses, offshore supply vessels, barges and trucks for heavy loads. The only movement of the product itself is short, through the small pipelines that carry oil and gas from each well to the field plant.

In the midstream, logistics is the whole business. Its task is to carry oil and gas from the field plant to the coast and out to sea, or to users at home. The assets are trunk pipelines, storage tanks, export terminals, plants that turn gas into liquid for shipping, and the ships themselves. When people speak of "oil and gas logistics" without saying more, this is usually what they mean, and it is where most of this paper's attention goes.

Downstream, logistics delivers. Crude and gas have to reach refineries and chemical plants, and finished fuels have to reach the people who use them. The industry calls the first leg, from refinery to depot, **primary distribution**, and the second, from depot to fuel station or factory, **secondary distribution**. In the Gulf, downstream logistics also includes the gas grids that feed power stations and desalination plants, and the cylinders that bring cooking gas to homes.

What has to be moved

"Oil and gas" is a short name for a family of products, and each one needs its own kind of logistics.

Table 1. The products and how each one moves

Product	What it is	How it moves
Crude oil	Oil as it comes out of the ground, after the first cleaning	Pipelines, storage tanks, crude tankers
Natural gas	Mostly methane, as produced from gas fields or with oil	Pipelines only, unless cooled into LNG
Liquefied natural gas (LNG)	Natural gas cooled to about minus 162°C, when it becomes a liquid taking about one six-hundredth of the space	Insulated tanks and specialised LNG carriers
Liquefied petroleum gas (LPG)	Propane and butane, separated from gas or made in refineries	Pressurised or refrigerated tanks, gas carriers, road tankers, cylinders
Refined products	Petrol, diesel, jet fuel, fuel oil	Product pipelines, product tankers, road tankers

Source: Author's summary.

Two patterns shape Gulf logistics. First, most crude oil is exported, so the oil network is built to run from field to coast to ship. Second, most gas is used at home, burned in power plants and desalination plants or used as a raw material for chemicals, so the gas network is built to run from field to city. The big exception is Qatar, which has far more gas than it can use and ships it across the world as LNG.

How a logistics asset comes to life

A pipeline, terminal or LNG plant usually takes five to ten years from idea to first cargo. The owner, nearly always a national oil company, studies the route and the volumes, then hires an engineering firm for the design and an engineering, procurement and construction (EPC) contractor to build it. The cost is paid from the company's own cash, from bank loans and, increasingly, by selling investors a share of the asset's future fees. Once built, the asset runs for 20 to 40 years, so decisions taken today shape the region's logistics for decades. Gulf projects have often run late: the Abu Dhabi Crude Oil Pipeline (ADCOP), ordered in 2006 for completion in 2009, reached full operation only in June 2012.

How big the Gulf logistics business is

The best measure of a logistics network is what it moves. In 2025 seven Gulf states together exported about 22 million barrels a day (b/d) of crude oil and refined products, according to OPEC's Annual Statistical Bulletin. Saudi Arabia alone exported about 7.9 million b/d.

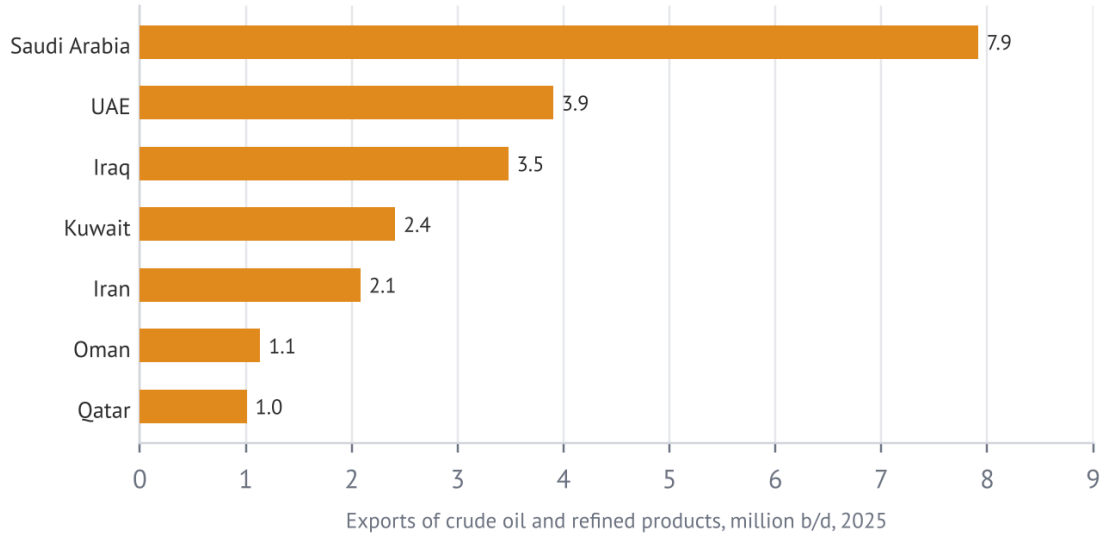


Exhibit 2. Saudi Arabia exports twice as much oil as any other Gulf state

Source: OPEC Annual Statistical Bulletin 2026 (2025 data), as compiled by Visual Capitalist. Crude oil and refined products combined. Bahrain is not shown separately.

According to the IEA, about 3.3 million b/d of the Gulf's 2025 oil exports were refined products, and Gulf producers also shipped about 1.5 million b/d of LPG, almost all of it to Asia. Qatar shipped more than 112 billion cubic metres of LNG, and the UAE about 7 billion. A barrel, the industry's standard unit, holds 159 litres.

The capacity behind these flows is large. Saudi Arabia's East-West pipeline can carry up to 7 million b/d. Fujairah, on the UAE's east coast, holds about 18 million cubic metres of storage tanks (Reuters, March 2026), roughly 113 million barrels. Qatar's Ras Laffan complex had 14 LNG trains with about 77 million tonnes a year of capacity before the war. Bahri, the Saudi shipping company, owned 50 very large crude carriers (VLCCs) at the end of 2025, each able to carry about two million barrels.

Is it growing?

Oil volumes are not growing fast, because OPEC and its partners hold production back by agreement. The building, however, is fast, and almost all of it is about logistics. The UAE is adding a second pipeline to Fujairah, due in 2027. Saudi Arabia is expanding its Master Gas System, with about $25 billion of contracts awarded in 2024 together with the Jafurah gas field (S&P Global). Qatar's shipping company Nakilat had 40 new vessels under construction at the end of 2025. Oman is building large crude storage at Ras Markaz, outside the strait. Since 2026, the main driver of new logistics spending has been the search for routes and storage that do not depend on the Strait of Hormuz.

Where the money is made

Logistics earns in a different way from producing oil. A producer earns the difference between the price of oil and the cost of lifting it. A logistics business earns for a service: a fee for each barrel moved through a pipeline, rent for tank space, hire for a ship, port charges at a terminal, or a margin on each litre of fuel delivered to a station. Many of these earnings are fixed by long contracts, so they move less with the oil price.

Table 2. How each logistics asset earns

Asset	How it earns	Gulf example
Pipeline	A fee per barrel or per unit of gas, often with a guaranteed minimum volume	Aramco Oil Pipelines: fee backed by minimum volumes, 25-year lease
Storage	Fixed monthly rent, plus charges for use	Brooge Petroleum at Fujairah: contracts of one to three years
Terminal and port	Port charges and fuel sales to ships	Fujairah, the world's fourth-largest ship-fuelling port in 2025
Ship	Daily hire (time charter) or a fee per voyage	Nakilat on long time charters; Bahri carrying Aramco's crude under a long-term contract
Offshore logistics	Day rates and multi-year service contracts	ADNOC Logistics & Services: integrated logistics for ADNOC's offshore fields
Fuel distribution	A margin on each litre sold, plus shop and service income	ADNOC Distribution: about 1,010 fuel stations

Source: Aramco (2021); Brooge Energy filing with the US Securities and Exchange Commission (FY2024); FOIZ and S&P Global via Ship & Bunker (2025); Bahri and Nakilat annual reports (2025); ADNOC Logistics & Services and ADNOC Distribution results (2025).

The margins are healthy. In 2025 Asyad Shipping of Oman earned EBITDA (earnings before interest, tax, depreciation and amortisation, a measure of operating cash) equal to 61 per cent of its revenue, Bahri about 50 per cent and ADNOC Logistics & Services about 30 per cent. The pipeline companies owned jointly with investors do not publish their accounts, but their fees are designed to cover costs and pay investors a steady return for 20 years or more.

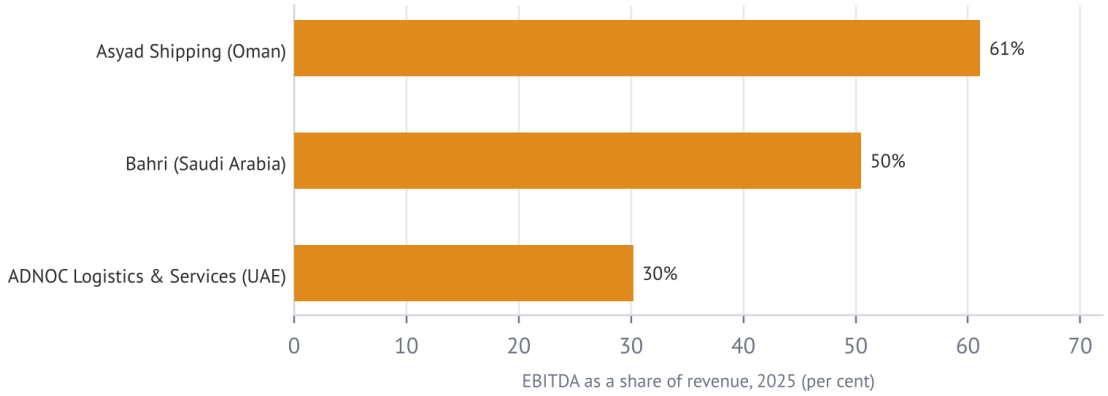


Exhibit 3. Gulf shipping companies earn wide margins

Source: Company results for 2025: Asyad Shipping audited results via Mubasher; Bahri via Zawya; ADNOC Logistics & Services results. Margins are the author's calculation (EBITDA divided by revenue). Nakilat and the Kuwait Oil Tanker Company do not publish full-year EBITDA.

In short. Logistics runs through all three streams: it brings supplies in upstream, carries the product out in the midstream and delivers it to users downstream. It earns fees, rent, hire and margins, much of it fixed by long contracts.

Upstream: bringing supplies in

Plain question: what has to move before a single barrel can be produced, and how does oil and gas leave the well?

What happens

An oilfield is a large, remote worksite that never stops. Before oil can flow, drilling rigs have to be moved into place, thousands of tonnes of steel pipe, cement and drilling chemicals have to arrive, and crews have to be brought in, housed and rotated. Offshore, where a large share of Abu Dhabi's and Qatar's output comes from, every item reaches the platform by boat or helicopter. Once the wells are producing, a mix of oil, gas and water rises up each well and travels through small pipelines to the field plant, where the first cleaning happens.

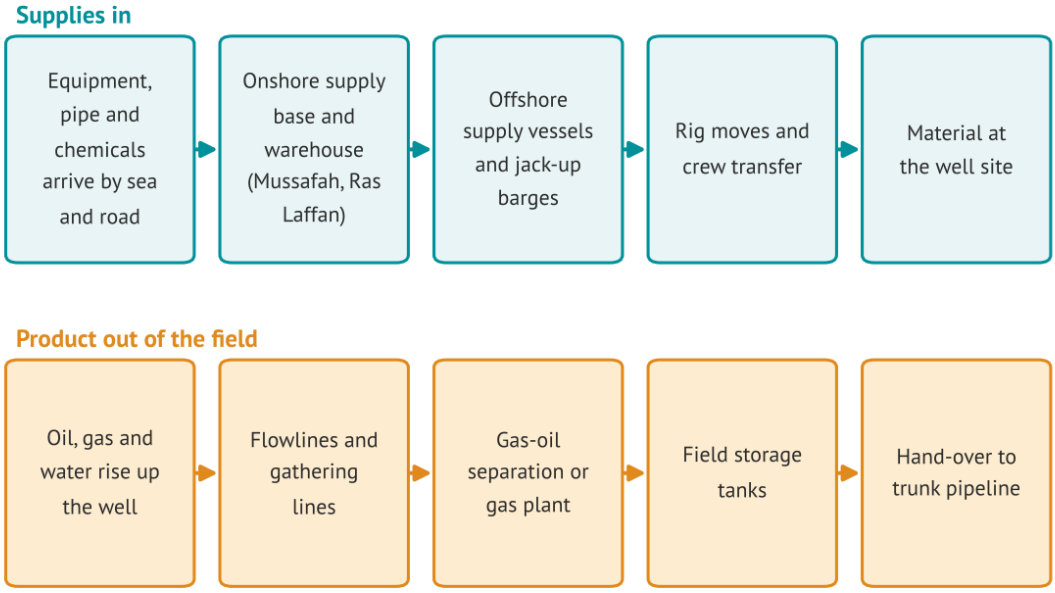


Exhibit 4. Upstream logistics in steps: supplies flow in to the field, and the product makes its first short journey out

Source: Author's schematic, simplified. Supply base examples from ADNOC Logistics & Services and QatarEnergy.

The infrastructure

Supply bases. Coastal bases such as Mussafah in Abu Dhabi and the supply base at Ras Laffan in Qatar hold warehouses, yards for pipe and equipment, and quays for supply vessels. They are the link between the outside world and the field.

Offshore support fleets. Offshore supply vessels carry cargo, fuel and water to platforms. Jack-up barges, which stand on legs on the seabed, serve as work platforms and accommodation for construction and maintenance crews.

Flowlines and gathering lines. Small pipelines carry fluids from each well to a collecting point and then to the field plant. In the oil industry, this network is called the gathering system. It is the first movement of the product itself.

Field storage and hand-over. After the gas-oil separation plant or gas plant, the cleaned oil or gas is held briefly in field tanks before it is handed over to the trunk pipelines of the midstream.

Who owns it, works in it and builds it

The national oil companies own the gathering systems as part of their fields. Supply logistics is often run by a specialist arm of the national group or by contractors. The largest such business in the region is ADNOC Logistics & Services, whose Integrated Logistics division runs supply bases, offshore vessels, jack-up barges and materials management for ADNOC's offshore fields and construction projects. In 2025 the company deployed 19 jack-up barges on hire contracts and added nine offshore supply vessels for construction projects, and it holds a 15-year, $531 million contract to manage logistics. Bahri's marine services arm and a range of regional and international vessel owners serve other national companies.

How money is made

Upstream logistics earns through day rates for vessels and barges, and through multi-year service contracts that bundle vessels, bases, warehousing and cargo handling. The customer is almost always the national oil company or its contractors, so demand follows field development and maintenance work rather than the oil price. ADNOC Logistics & Services' Integrated Logistics division earned revenue of about $2.53 billion in 2025, 11 per cent more than in 2024 and the largest of its three divisions, with EBITDA of $635 million in the first nine months of the year.

The same example shows the risk. In the first quarter of 2026 the division's revenue fell 23 per cent and its EBITDA 17 per cent, because a large island construction project came to an end and barges earned lower day rates. Upstream logistics income is steady while projects run, and drops when they finish.

Key numbers

Table 3. Upstream logistics: key numbers

Measure	Value	Source
ADNOC L&S Integrated Logistics revenue, 2025	About $2.53 billion, up 11%	ADNOC L&S results
Jack-up barges on hire contracts, 2025	19	ADNOC L&S results
Long-term logistics contract	$531 million over 15 years	ADNOC L&S investor presentation
Integrated Logistics revenue, first quarter 2026	$481 million, down 23%	ADNOC L&S results

Source: ADNOC Logistics & Services quarterly and full-year results, 2025 and 2026; investor presentation, September 2025.

What is changing

Gulf producers are drilling more offshore and building more artificial islands, which raises demand for vessels and barges. National companies also want more of this work done locally under their local content programmes. Operators are using cargo and vessel data to fill boats better: ADNOC Logistics & Services reported that stacking cargo containers two high raised the cargo each vessel could carry by up to 40 per cent.

Midstream: moving and storing

Plain question: once oil and gas leave the field, how do they reach the coast and the sea, who owns that journey, and how does it earn?

What happens

The midstream takes cleaned crude and gas from the field plant and gets them to a ship, a refinery or a user at home. Crude travels by trunk pipeline to storage tanks at the coast, then to an export terminal where it is loaded onto a tanker. Gas travels by pipeline to power plants, factories and cities, or, in Qatar and a few other places, to a plant that cools it into LNG for shipping. Gas liquids such as propane and butane are separated and shipped in gas carriers.

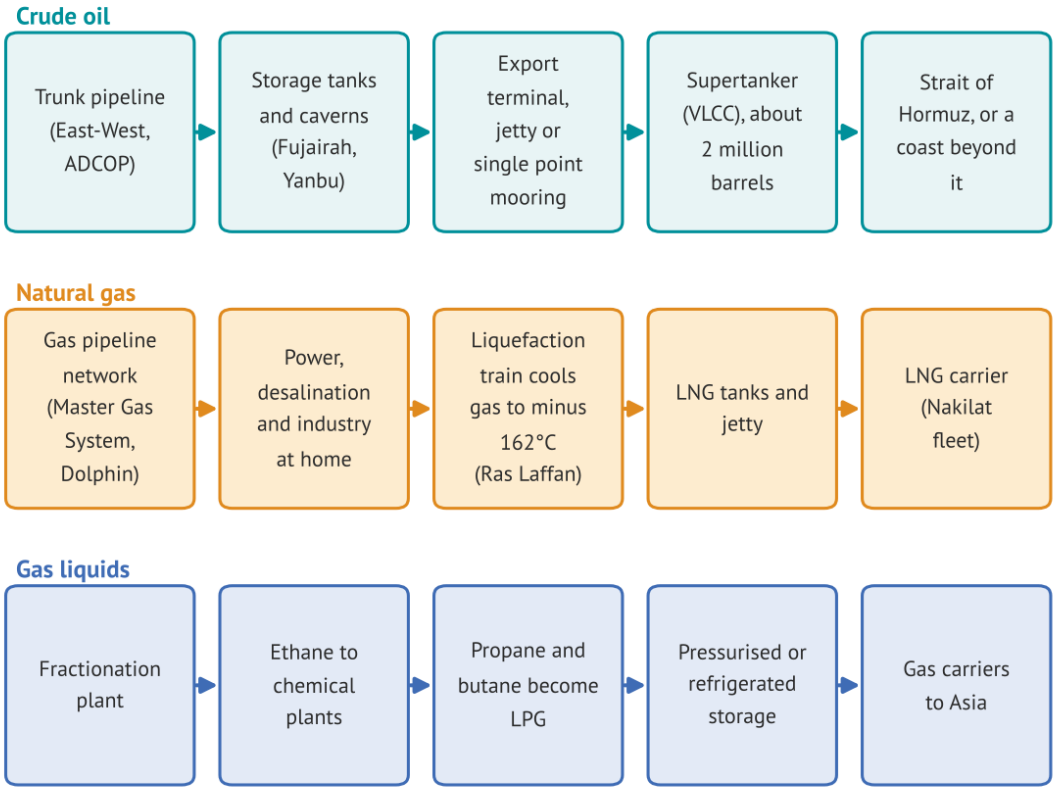


Exhibit 5. Midstream in steps: three paths for crude oil, natural gas and gas liquids

Source: Author's schematic, simplified. Asset examples from US EIA, Argus, IEA and company sources.

Pipelines

Most Gulf oilfields lie close to the Gulf coast, so most trunk lines are short and end at terminals inside the Gulf. Three lines matter more than their length suggests, because they reach a coast beyond the Strait of Hormuz.

The East-West pipeline runs about 1,200 kilometres from Abqaiq in the east of Saudi Arabia to Yanbu on the Red Sea. It was built with a design capacity of about 5 million b/d, and Aramco has since converted gas liquids lines to raise it to 7 million b/d. Before 2026 it carried about 2 million b/d, mostly to Red Sea refineries. In March 2026, with the strait closed, it reached its full 7 million b/d for the first time (Bloomberg).

ADCOP, the Abu Dhabi Crude Oil Pipeline, runs about 380 kilometres from Habshan to Fujairah on the UAE's east coast. It was designed for 1.5 million b/d and has recently been run at 1.7 to 1.8 million b/d (Argus). Before the war the UAE used about 1.1 million b/d of it. A second line of 1.5 million b/d is due in 2027, which would raise the UAE's capacity to Fujairah to about 3.3 million b/d.

Kirkuk-Ceyhan carries Iraqi crude north to Türkiye's Mediterranean coast. It restarted in September 2025 after two and a half years out of use, at under 200,000 b/d, and was carrying about 250,000 b/d in March 2026, partly fed by Basra crude moved north by road.

Kuwait, Qatar and Bahrain have no pipeline around the strait. Iran's Goreh-Jask line, rated at 1 million b/d, is not in real use.

Gas pipelines carry gas almost entirely within each country. Saudi Arabia's Master Gas System links gas plants to power stations, desalination plants and industrial cities such as Jubail and Yanbu. The UAE's gas grid, run by ADNOC Gas, does the same. The Dolphin pipeline, the region's main cross-border gas line, carried almost 20.5 billion cubic metres of Qatari gas to the UAE and Oman in 2025, with little spare capacity (IEA).

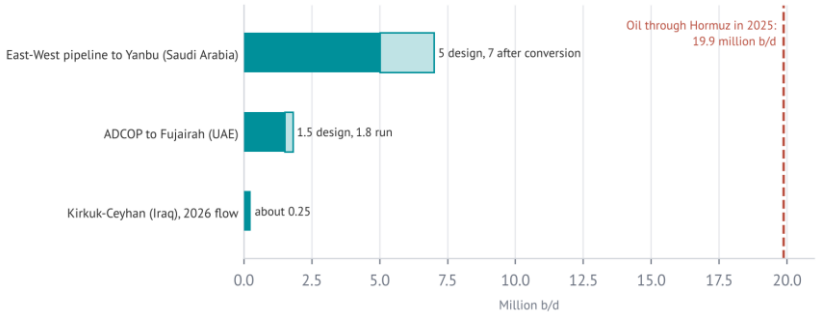


Exhibit 6. The pipelines that avoid the strait can carry only a fraction of what normally passes through it

Source: IEA Strait of Hormuz factsheet (2026); US EIA; Argus (May 2026); The National (March 2026). The Kirkuk-Ceyhan figure is the flow reported in March 2026, not capacity; its rated capacity is reported at about 1.5 million b/d.

Storage

Ships arrive late, refineries stop for maintenance and buyers change orders, so tanks absorb the gaps between production and loading. Storage also lets a producer keep pumping for a while when ships cannot load.

Fujairah is the region's storage and ship-fuelling hub, with about 18 million cubic metres of tanks across the emirate, run by operators that include VTTI, Vopak Horizon, Brooge Petroleum and ADNOC (Reuters, March 2026). ADNOC has also built underground storage in rock caverns at Al Mandous, with about 42 million barrels in three caverns. Fujairah exported more than 1.7 million b/d in 2025 and sold 7.4 million cubic metres of fuel to ships, which made it the world's fourth-largest ship-fuelling port.

Yanbu on the Red Sea has about 22 million barrels of storage and a nominal loading capacity of about 4.5 million b/d (Argus). **Kharg Island**, which handled about 94 per cent of Iran's crude exports before the war, holds about 31 million barrels (Kpler). Oman is building crude storage at **Ras Markaz** near Duqm, outside the strait, with a first phase of 26.7 million barrels and a long-term design of up to 200 million.

Storage cover is short at most Gulf sites. When exports stopped in March 2026, JPMorgan estimated that Saudi Arabia's storage would fill in a little over two months and Iraq's in about a week (Bloomberg). Basra Oil Company reported within days that its storage had reached maximum capacity, and Kuwait cut output because its tanks were filling.

Ports and export terminals

At the coast, crude is loaded at jetties, at offshore platforms called sea islands, or at **single point moorings**, buoys in deep water where the largest tankers load through floating hoses. The main oil terminals are listed below. Several terminal operators do not publish their loading capacities, and the table says so where that is the case.

Table 4. Main Gulf oil and gas export terminals

Terminal	Country	What it handles	Published capacity
Ras Tanura and Ju'aymah	Saudi Arabia	Crude, products, LPG; Aramco's largest export terminals	Not published; Ju'aymah has six single point moorings
Yanbu (Red Sea)	Saudi Arabia	Crude and products via the East-West pipeline	About 4.5 million b/d nominal; about 22 million barrels of storage
Basra Oil Terminal and moorings	Iraq	Almost all of Iraq's crude exports	About 3.5 million b/d, including four single point moorings
Mina al-Ahmadi	Kuwait	Crude and products	Not published
Fujairah	UAE	Crude via ADCOP, products, ship fuel	Exports over 1.7 million b/d in 2025
Kharg Island	Iran	About 94% of Iran's crude exports	About 31 million barrels of storage
Ras Laffan	Qatar	LNG, condensate, LPG	14 LNG trains, about 77 mtpa before the war; about 760,000 m^3 of LNG tanks

Source: Argus (Yanbu, March 2026); S&P Global (Basra, July 2024); Bloomberg via World Oil (Ju'aymah, March 2026); Reuters (Fujairah, March 2026); Kpler (Kharg, March 2026); gCaptain and Global Energy Monitor (Ras Laffan, 2026).

LNG plants belong in the midstream because their job is to prepare gas for shipping. A liquefaction **train** cools gas to about minus 162°C. Its capacity is measured in million tonnes a year (mtpa). Qatar plans to raise its capacity from about 77 mtpa to 142 mtpa by the end of the decade.

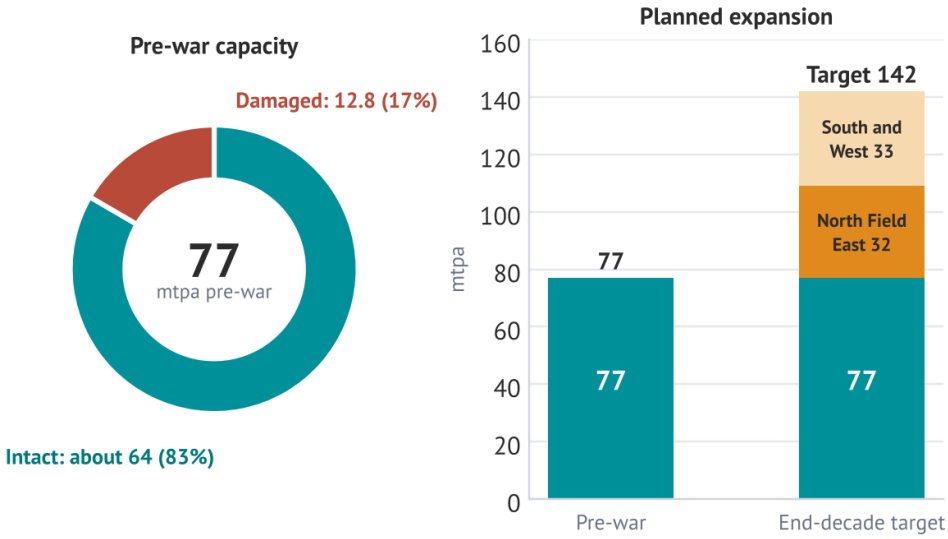


Exhibit 7. Qatar plans to nearly double its LNG capacity, all of it at Ras Laffan

Source: QatarEnergy via Offshore Technology (April 2026); QatarEnergy plans as reported. Intact capacity (77 less 12.8) and the 33 mtpa for South and West (142 less 77 less 32) are the authors' arithmetic.

Ships

Crude moves in tankers sized for the trade. A VLCC carries about two million barrels and is the standard ship from the Gulf to Asia. Smaller tankers carry refined products. LNG moves in insulated LNG carriers, and LPG in gas carriers that keep it under pressure or chilled.

Table 5. National shipping companies of the Gulf, 2025

Company	Country	Fleet	Revenue	EBITDA margin	Net profit
Bahri	Saudi Arabia	104 owned and 9 leased vessels, including 50 VLCCs	SAR 10.35 billion	About 50%	SAR 2.43 billion
ADNOC Logistics & Services	UAE	Tankers, gas carriers, offshore vessels and barges	$5.02 billion	About 30%	$863 million
Nakilat	Qatar	69 LNG carriers, 2 LPG carriers, 1 floating LNG terminal; 40 vessels being built	Not published for the full year	Not published	QAR 1.69 billion
Asyad Shipping	Oman	91 vessels, including 11 being built or bought	RO 336.4 million	About 61%	RO 56.4 million
Kuwait Oil Tanker Company	Kuwait	31 vessels, including 11 VLCCs	Not published	Not published	Not published

Source: Bahri Annual Report 2025; ADNOC Logistics & Services results (February 2026); Nakilat Fact Sheet and Annual Report 2025; Asyad Shipping audited results 2025 via Mubasher; Kuwait Oil Tanker Company website. EBITDA margins are the author's calculation from the reported figures.

The single sea exit

Nearly every terminal inside the Gulf shares one way out: the Strait of Hormuz, between Iran and Oman. In 2025, 19.9 million b/d of oil passed through it, 15.0 million b/d of crude and 4.9 million b/d of products, about a quarter of all oil moved by sea (IEA). About 80 per cent of it went to Asia. In 2024, China, India, Japan and South Korea took 69 per cent of the crude that passed the strait (EIA). The strait also carried just over 112 billion cubic metres of LNG, almost a fifth of world LNG trade, including 93 per cent of Qatar's LNG exports and 96 per cent of the UAE's.

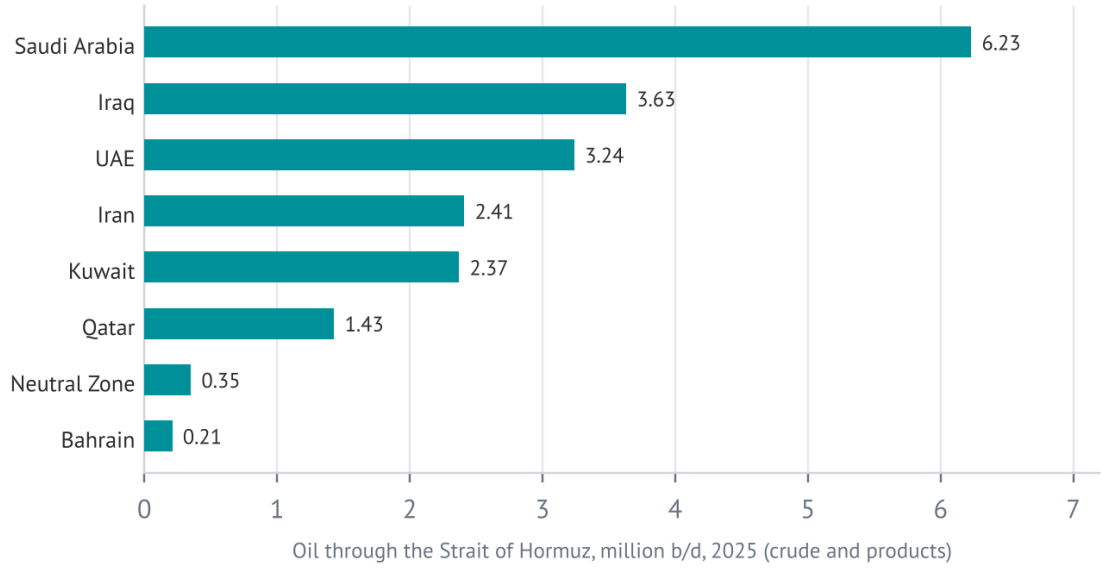


Exhibit 8. Every Gulf producer depends on the Strait of Hormuz, Saudi Arabia most of all in volume

Source: IEA, Strait of Hormuz factsheet, February 2026 (Kpler data). Crude oil and refined products, 2025. The Neutral Zone is shared by Saudi Arabia and Kuwait.

How much of this could go around the strait? The IEA estimated in early 2026 that the bypass pipelines could carry an extra 3.5 to 5.5 million b/d, while the EIA had put unused bypass capacity at about 2.6 million b/d in 2025. Either way, only a fraction of the normal flow has another route. A second chokepoint, Bab el-Mandeb at the southern end of the Red Sea, matters for cargoes loaded at Yanbu and heading to Asia or Europe through the Suez Canal.

Who owns it, works in it and builds it

The owners. The national oil companies own almost all pipelines, export terminals and LNG trains. Foreign partners hold equity in some LNG trains: ExxonMobil, for example, owns 34 per cent of Qatar's Train 4 and 30 per cent of Train 6. Commercial firms such as Vopak, VTTI and Brooge own storage at Fujairah.

The investors. Since 2019, global infrastructure investors have bought minority shares in the right to charge fees on Gulf pipelines and gas plants, while the national companies keep control of the assets. They include GIP and BlackRock, EIG, KKR, Brookfield and Blackstone, and Abu Dhabi's Lunate.

The shipping companies. National shipping companies own most of the fleets that carry Gulf oil and gas, and they work closely with their national oil companies. Bahri's largest contract covers all of Aramco's crude exports sold on a delivered basis, and Nakilat's ships carry Qatar's LNG on long time charters.

The builders. Pipelines, terminals and LNG plants are built by specialist contractors from Asia, Europe and the US. China's CPECC built ADCOP, and Technip Energies and Chiyoda won the main contract for Qatar's North Field East LNG expansion in 2021. Most new LNG carriers are built in South Korean and Chinese shipyards.

How money is made

Inside a national oil company, a pipeline or terminal earns nothing on its own; it is a cost of getting oil to market. The midstream earns separately only when someone pays to use it.

Pipeline fees and investor deals. In a **lease and leaseback** deal, the national oil company sets up a company that holds the right to charge a fee on everything flowing through a network for 20 to 25 years. It sells a minority share of that company to investors for cash, keeps running the pipelines itself, and pays the fee on the volumes it sends. A **minimum volume commitment** guarantees the investors a floor of income even when flows fall. ADNOC's gas pipeline deal used a fee subject to a floor and a cap instead.

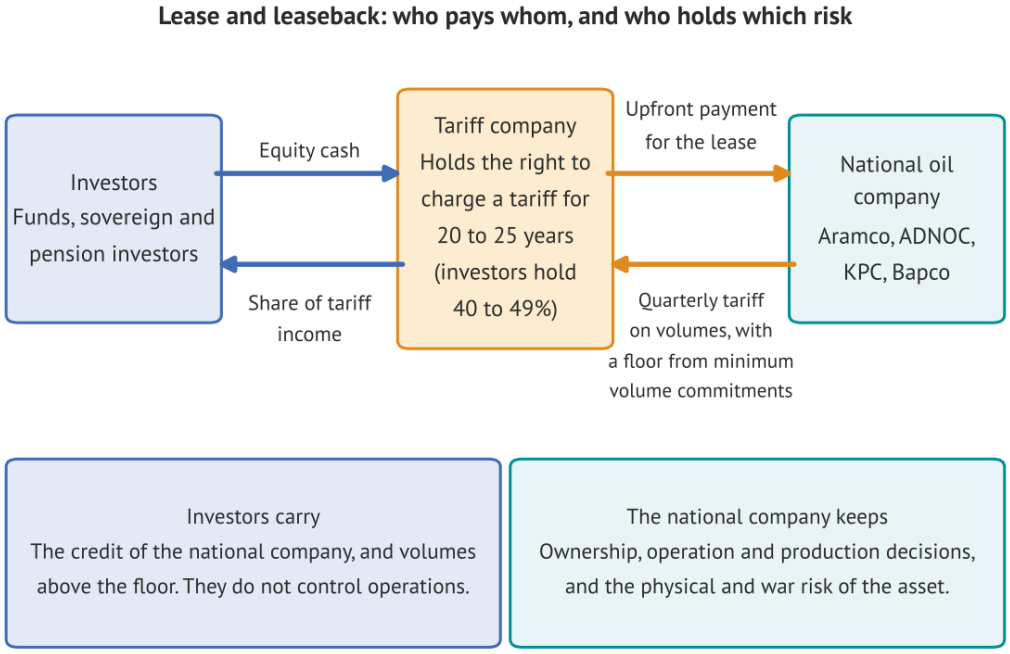


Exhibit 9. How a pipeline fee deal works: investors pay cash for a share of the fees, the national company keeps control and the risk

Source: Author's schematic based on the Aramco, ADNOC and KPC deal announcements (2019 to 2026). Terms of the minimum volume clauses are not public.

Table 6. Gulf pipeline and gas plant fee deals, 2019 to 2026

Deal	Year	Cash to the national company	Share sold	Lease
ADNOC Oil Pipelines (KKR, BlackRock)	2019	$4.0 billion	40%	23 years
ADNOC Gas Pipelines (GIP-led group)	2020	$10.1 billion	49%	20 years
Aramco Oil Pipelines (EIG-led group)	2021	$12.4 billion	49%	25 years
Aramco Gas Pipelines (BlackRock, Hassana)	2021 to 2022	$15.5 billion	49%	20 years
Saudi Bahrain Pipeline Company (BlackRock fund)	2024	Not disclosed	Minority	Not disclosed
Jafurah gas plant (GIP-led group)	2025	$11.0 billion	49%	20 years
Kuwait Oil Company pipelines (Blackstone, Brookfield, KKR)	2026	$7.85 billion expected at completion	49%	20.5 years
Total cash disclosed		**About $60.9 billion**		

Source: Company announcements by ADNOC (2019, 2020), Aramco (2021, 2025), EIG (2021), Bapco Energies via World Pipelines (2024) and Kuwait Petroleum Corporation via Asharq Al-Awsat and Offshore Technology (2026); Gulf News and S&P Global. The total is the author's sum of cash paid or expected. The Kuwaiti deal was still awaiting completion in mid-October 2026; without it, cash paid comes to about $53 billion. Using ADNOC's $20.7 billion headline value for its gas pipelines instead of the cash it received would give a higher total. The Jafurah deal covers a gas processing plant rather than pipelines. None of the deals discloses its fee levels or minimum volumes.

Storage rent. Storage companies earn a fixed monthly fee for tank space, usually on contracts of one to three years, plus charges for moving oil in and out. Brooge Petroleum's filings describe exactly this model at Fujairah.

Shipping. Ships earn in two main ways. Under a **voyage charter**, the cargo owner pays a fee for one trip, usually quoted on a standard scale called **Worldscale**. Under a **time charter**, the charterer pays a daily

rate for a period of months or years. Large shippers also sign a **contract of affreightment**, which commits a shipping company to carry a set volume over several years. The contract fixes a narrow window in which the ship must arrive to load, called the **laycan**, and a set time to load and unload, usually 72 hours in total. If loading or unloading takes longer, the charterer pays the shipowner **demurrage**, a daily charge for the delay.

The benchmark for Gulf crude freight is the Baltic Exchange route TD3C, a 270,000-tonne cargo from the Gulf to China. Before the war, in January 2026, it earned a VLCC owner about $112,000 a day.

Key numbers

Table 7. Midstream logistics: key numbers

Measure	Value	Source
Oil through the Strait of Hormuz, 2025	19.9 million b/d	IEA
LNG through the strait, 2025	About 112 billion m³, almost 20% of world trade	IEA
East-West pipeline capacity	7 million b/d (5 million b/d design)	Aramco via Bloomberg; EIA
ADCOP capacity	1.5 million b/d design, run at 1.7 to 1.8	Argus
Fujairah storage	About 18 million m³	Reuters
Bahri VLCC fleet, end-2025	50	Bahri Annual Report
Nakilat LNG carriers, 2025	69, with 40 vessels being built	Nakilat
Investor money for fee rights, 2019 to 2026	About $61 billion including Kuwait	Company announcements

Source: As listed in the table.

What is changing

The 2026 war tested every link. The war that began on 28 February 2026 closed the strait to most traffic. Oil moving through Hormuz fell from about 20.7 million b/d in the last quarter of 2025 to 14.6 million in the first quarter of 2026 and about 4.9 million in the second (EIA). Global oil supply fell by 10.1 million b/d in March, which the IEA called the largest disruption in history. Iraq's seaborne exports from Basra fell from between 3.3 and 3.6 million b/d in February (Reuters and S&P Global give different figures) to about 870,000 b/d in June (S&P Global).

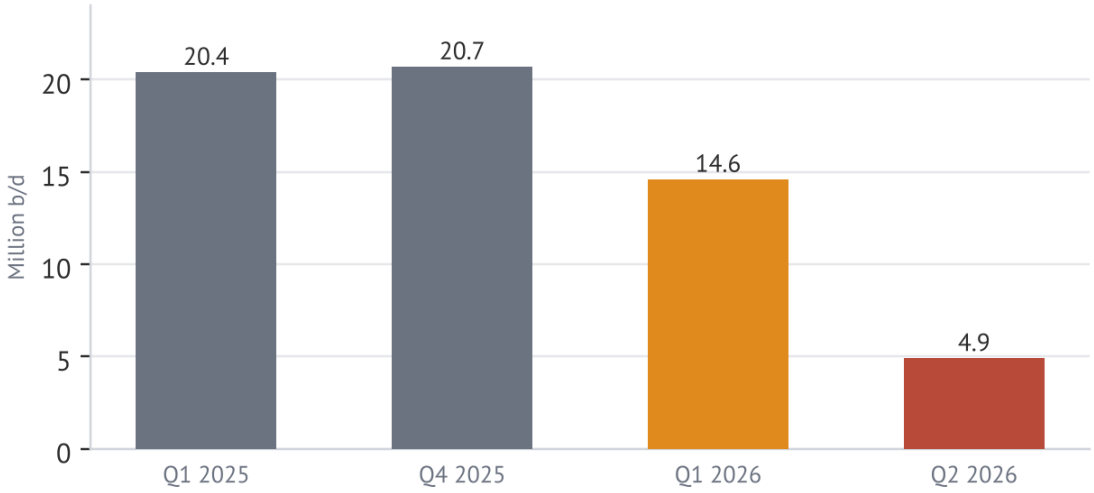


Exhibit 10. Oil through the strait fell by three quarters in the second quarter of 2026

Source: US EIA, Global Energy Security Data, as reported by the Institute for Energy Research (Q1 2025 to Q1 2026) and Energy Factbook (Q2 2026, August 2026 release). EIA's August release puts Q4 2025 at 21.6 million b/d. EIA warns that ship-tracking data has been less reliable since February 2026.

The bypass routes did what they were built for, up to their limits. Exports through routes outside the strait rose to about 7.2 million b/d in March, against under 4 million before the war (IEA). Yanbu loaded above 4 million b/d from June and reached about 4.7 million b/d in July, close to its maximum. Fujairah's exports rose to about 1.6 million b/d. But the bypasses became targets in turn. The East-West pipeline was shut after drone strikes in mid-September 2026 and restarted on 22 September at a low rate. Fujairah's terminals were hit by debris and drones in March and May.

LNG suffered more, because it has no pipeline around the strait. QatarEnergy halted all production at Ras Laffan on 2 March. Two trains with 12.8 mtpa of capacity, about 17 per cent of Qatar's exports, were damaged in March, and QatarEnergy's chief executive said in September that their repair would take about three years.

Freight and insurance rose to records. Supertanker hire on the Gulf to China route rose from about $112,000 a day in January 2026 to about $206,000 on the eve of the war, more than $1 million a day in mid-September and about $1.41 million in mid-October (Baltic Exchange). These prints reflect the price of risk on the few ships willing to enter the Gulf, and futures for the last quarter of 2026 were priced far lower, at about $181,000 a day in early June (Lloyd's List). War insurance, about 0.25 per cent of a ship's value per voyage before the war, ran at 3 to 10 per cent per voyage through the middle of 2026 (Marsh via The National). On a $100 million tanker that is $3 million to $10 million for a single trip.

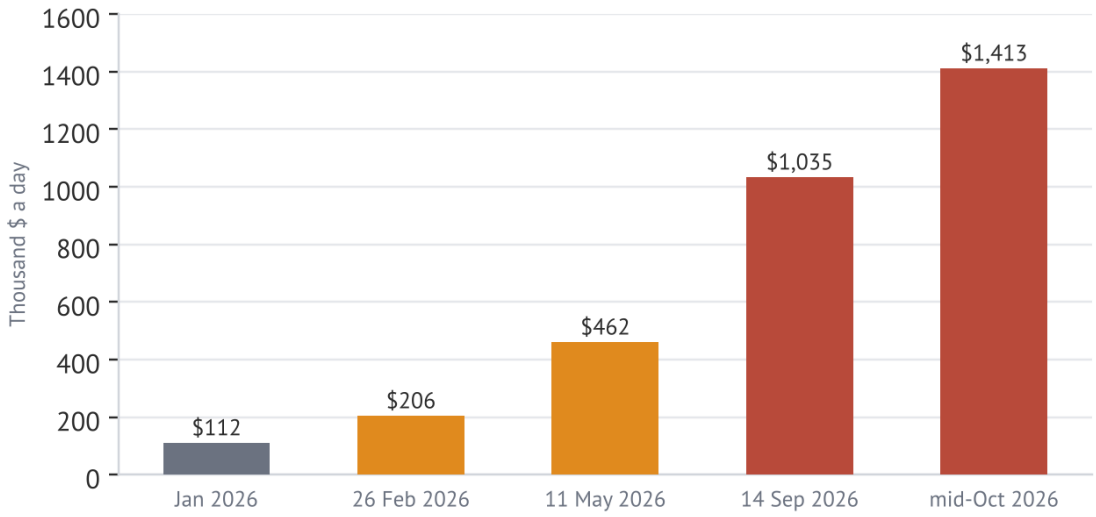


Exhibit 11. Supertanker hire on the Gulf to China route rose more than tenfold during the 2026 war

Source: Baltic Exchange TD3C time-charter equivalent earnings, as published by the Baltic Exchange (January) and reported by LSEG via Reuters (26 February, TD3 route), Fairway ETA (May), Seatrade Maritime and Xinde Marine News (September) and Cyprus Shipping News (October).

Shipowners gained while producers lost. Bahri's net profit in the first half of 2026 was SAR 4.90 billion, about twice its profit for the whole of 2025, as rates soared. Nakilat, whose ships are on long time charters, earned almost exactly the same in the first half of 2026 as a year earlier.

The response is more routes and more storage outside the strait. The UAE fast-tracked its second Fujairah pipeline for 2027. Iraq signed a study agreement in July 2026 for pipelines from Basra to Haditha and on to the Mediterranean, and agreed a one-year deal with Türkiye in August that reportedly guarantees at least 750,000 b/d through Kirkuk-Ceyhan. Oman is pressing ahead with storage at Ras Markaz. In mid-October 2026, traffic through the strait was recovering but attacks continued: Lloyd's List Intelligence counted about 124 transits in one week, and two cargo ships were sunk near the strait on 13 and 14 October.

In short. The midstream is the heart of Gulf logistics: pipelines, tanks, terminals, LNG plants and ships, nearly all leading to one strait. It earns steady fees, rent and hire, which investors pay billions to share. The 2026 war showed that routes around the strait are worth far more than their cost in normal times.

Downstream: delivering to users

Plain question: how do crude and gas reach the plants that use them, and how do fuels and cooking gas reach people at home?

What happens

Downstream logistics has two jobs. The first is to bring crude oil and gas into refineries, chemical plants, power stations and desalination plants. The second is to carry finished products out to the people who use them: petrol and diesel to fuel stations, jet fuel to airports, fuel oil to ships and power plants, and LPG to homes and businesses.

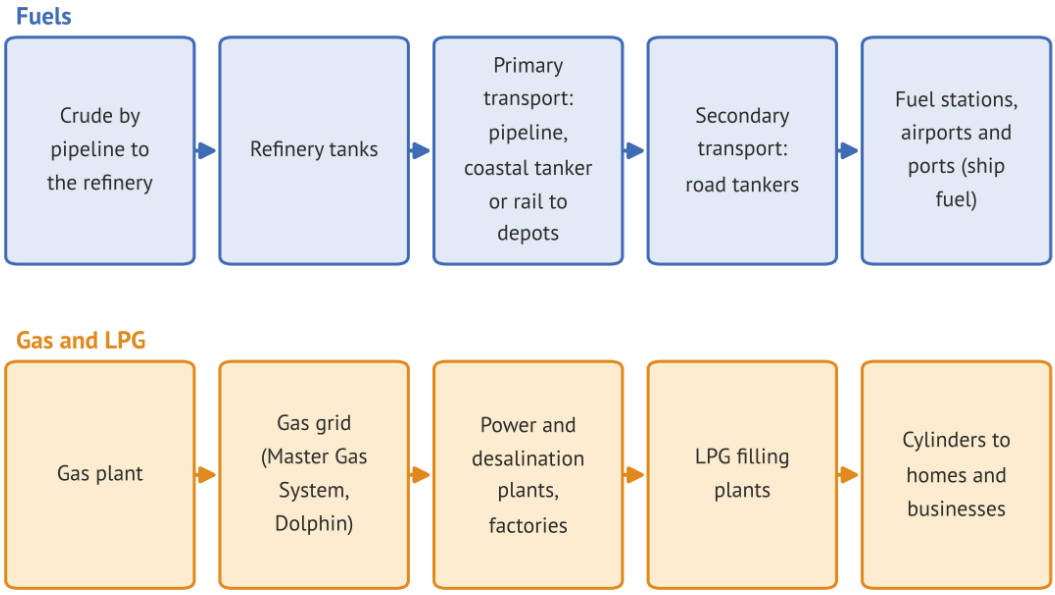


Exhibit 12. Downstream logistics in steps: from refinery and gas plant to fuel stations, power plants and homes

Source: Author's schematic, simplified.

The infrastructure

Feed lines to plants. Refineries and chemical plants are fed by dedicated pipelines from fields or trunk lines. The East-West pipeline, for example, supplies Aramco's refineries on the Red Sea coast, and in March 2026 about 2 million b/d of its flow went to refineries (Bloomberg). The 112-kilometre Saudi Bahrain pipeline brings Saudi crude to Bahrain's Sitra refinery, which has little crude of its own.

Gas grids. Gas for power, water and industry moves through national grids: Saudi Arabia's Master Gas System, the UAE's gas network and the Dolphin pipeline from Qatar. These grids are vital because Gulf cities run on gas-fired power and on drinking water made from seawater in desalination plants.

Fuel distribution networks. Refineries send products to depots by product pipeline, coastal tanker or rail, and from depots road tankers carry fuel to stations, airports, factories and ports. ADNOC Distribution, the UAE's largest fuel retailer, ran about 1,010 fuel stations at the end of 2025, after adding 119 during the year, including stations in Saudi Arabia.

LPG networks. LPG is bottled at filling plants and delivered in cylinders to homes, restaurants and small industries, or piped to residential areas in newer developments.

Ship fuel. Ports such as Fujairah sell fuel to passing ships, a trade called bunkering. It is a downstream logistics business in its own right.

How much stays at home

The Gulf uses a large share of its own oil and gas, and all of it has to be delivered. In 2024 Saudi Arabia used about 3.4 million b/d of oil at home against crude production of about 9 million b/d, much of it burned in power plants in summer (OPEC). Most Gulf gas never leaves the country in which it is produced.

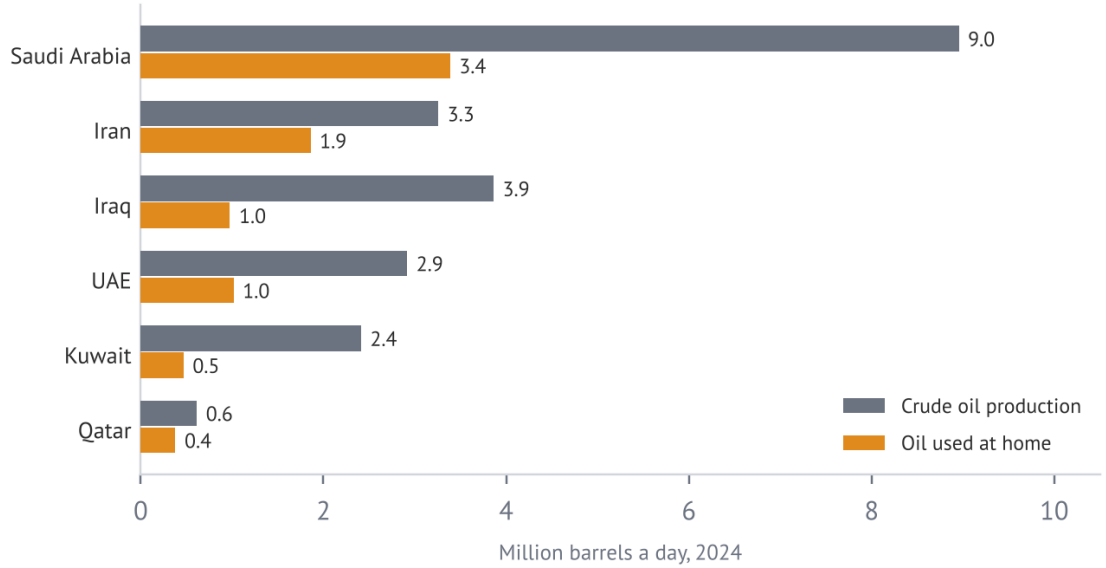


Exhibit 13. Gulf producers use a large share of their own oil at home

Source: OPEC Annual Statistical Bulletin (2024 data). Oil used at home includes crude burned directly and refined products consumed.

This home market shapes logistics. Every time a gas pipeline replaces oil in a power plant, crude is freed for export, and the gas grid takes over a job the oil network used to do. Saudi Arabia's Jafurah gas field is planned to supply up to 2 billion cubic feet a day of sales gas by 2030, much of it for the domestic grid (Aramco).

Who owns it, works in it and builds it

National oil companies and their subsidiaries own the feed lines, gas grids and most depots. Fuel retailing is more mixed. ADNOC Distribution is listed on the Abu Dhabi stock exchange, Saudi Arabia has several private fuel retailers, and other Gulf countries rely mainly on state retailers. Road tanker fleets are run partly by these companies and partly by private transport firms. Bunkering at Fujairah involves both national companies and international fuel traders.

How money is made

Downstream logistics earns mainly through margins on volume. A fuel retailer earns a margin on each litre, often set or capped by the government, plus income from shops, car washes and services. Gas grids earn either as a cost inside the national company or through fees, as with the investor-owned gas pipelines described in the midstream. Bunkering earns a margin on each tonne of ship fuel sold.

ADNOC Distribution is the clearest public example. In 2025 it earned EBITDA of about $1.17 billion, up 11 per cent, and a net profit of about $761 million, up 15 per cent, and sold about 11.7 billion litres of fuel in the first nine months of the year. About 73 per cent of its EBITDA came from fuel stations, 19 per cent from corporate customers and 8 per cent from aviation fuel.

Key numbers

Table 8. Downstream logistics: key numbers

Measure	Value	Source
ADNOC Distribution fuel stations, end-2025	About 1,010	ADNOC Distribution
ADNOC Distribution EBITDA and net profit, 2025	About $1.17 billion and $761 million	ADNOC Distribution
Fujairah ship fuel sales, 2025	7.4 million m^3, fourth in the world	FOIZ and S&P Global
Dolphin pipeline gas to the UAE and Oman, 2025	Almost 20.5 billion m^3	IEA
Oil used at home in Saudi Arabia, 2024	About 3.4 million b/d	OPEC

Source: As listed in the table.

What is changing

More gas, less oil at home. New gas fields and grid expansions in Saudi Arabia and the UAE will move more of the home market from oil to gas, changing what the downstream network carries.

War pressure on home supply. The 2026 war showed how closely export logistics and home supply are linked. Iraq's plan to send Kirkuk crude abroad through Türkiye risked depriving refineries and power plants in northern Iraq of feedstock (The National). Fujairah's ship fuel sales fell to about 230,000 cubic metres a month from July to September 2026, roughly a third of the 2025 monthly average, as fewer ships called at the port.

Growth beyond borders. Gulf fuel retailers are expanding into neighbouring markets, as ADNOC Distribution has done in Saudi Arabia, and are adding electric vehicle charging at their stations.

In short. Downstream logistics carries crude and gas into plants, and fuel, gas and LPG to users. It earns margins on volume, and its biggest shift is the move from oil to gas in Gulf power plants.

Strengths, weaknesses, opportunities and threats

The outlook behind the judgement

Pipelines, terminals and ships are built to run for 20 to 40 years, so the volumes they will carry decide whether they pay off. Those volumes depend on long-term oil and gas demand, on OPEC and its partners' production limits, and, since 2026, on how safe the Strait of Hormuz is. The International Energy Agency expects world oil demand to peak around 2030 under the policies governments have announced, while OPEC expects it to keep rising to 2050. For LNG, the IEA expects a large wave of new supply by 2030, much of it from the United States and Qatar. Whatever the demand path, the war has changed how owners, buyers and lenders value spare routes, storage and security.

Strengths

Scale. The Gulf exports about 22 million b/d of oil and almost a fifth of the world's LNG through a network built for these volumes, which keeps the cost of moving each barrel low in normal times. Carrying a barrel from the Gulf to China in a VLCC cost about $2 in mid-2025, and about $5 on the eve of the war, when tension was already high (MEES, as reported).

Steady, contracted earnings. Pipeline fees, storage rent and long time charters give the network predictable income, which is why investors have paid or agreed to pay about $61 billion for pipeline and gas plant fee rights since 2019, and why ADNOC Logistics & Services earns more than 60 per cent of its revenue from long-term and recurring contracts.

Strong national fleets. Bahri, ADNOC Logistics & Services, Nakilat, Asyad and the Kuwait Oil Tanker Company give the region its own ships, so its exports do not depend entirely on foreign shipowners.

Two working bypass routes. The East-West pipeline and ADCOP kept a large share of Saudi and UAE exports moving in 2026 when the strait was closed.

Weaknesses and dependencies

One sea exit. In 2025, 19.9 million b/d of oil and about 112 billion cubic metres of LNG left the Gulf through one strait. Kuwait, Qatar and Bahrain have no other route, and Iraq's alternative is small. This is the single largest weakness of the network.

Short storage cover. Most producers can store only days or weeks of output. In March 2026, Iraq's storage was estimated to fill in about a week and Saudi Arabia's in a little over two months.

A few critical nodes. A handful of sites, such as Ras Tanura, Basra, Fujairah, Yanbu, Kharg and Ras Laffan, handle a large share of all loadings. One successful strike can stop a large share of a country's exports.

Bypass routes that can also be hit. Yanbu sits on the Red Sea, close to the Bab el-Mandeb strait, and Fujairah is within reach of the same weapons as the Gulf. Both were attacked in 2026.

A handful of buyers. China, India, Japan and South Korea took 69 per cent of the crude passing Hormuz in 2024 (EIA). The network is built to serve one region.

Imported equipment and skills. Pipes, pumps, compressors, LNG carriers and specialist services come mainly from Asia, Europe and the US, and the 2026 shortage of equipment slowed repairs.

Little published data. Pipeline fees, terminal capacities and storage levels are rarely published, which makes Gulf logistics assets harder to benchmark and price.

Opportunities

Routes and storage outside the strait. The UAE's second Fujairah pipeline, Iraq's planned lines to the Mediterranean, and Oman's storage at Ras Markaz and Duqm all reduce dependence on Hormuz. Each creates work for pipeline builders, storage operators and terminal owners.

More LNG ships. Qatar's planned expansion to 142 mtpa needs a large new fleet; Nakilat alone had 40 vessels under construction at the end of 2025.

Gas grids at home. Expanding gas grids to replace oil in power plants frees crude for export and creates steady business for pipeline builders and operators.

More investor money. Kuwait joined the lease and leaseback model in 2026, and more storage, terminals and gas networks could follow, releasing cash for new routes.

Better use of existing assets. Digital tracking, better scheduling and data on ships and cargo can raise the use of terminals, vessels and tanks without building new ones. ADNOC Logistics & Services raised cargo capacity per supply vessel by up to 40 per cent through better loading.

Local capability. National local content programmes are building regional shipyards, workshops and logistics services, which creates business for local firms and for foreign firms willing to build there.

Threats

Further attacks. Terminals, pipelines and ships were all hit in 2026, and attacks on ships near the strait continued in October.

Insurance and freight costs. War insurance at 3 to 10 per cent of a ship's value per voyage, and freight at record levels, raise the cost of every Gulf barrel delivered and push buyers towards other suppliers.

Demand below expectations. If oil demand peaks around 2030, some new export capacity may run below plan for decades.

Competition for buyers. New LNG from the United States and other producers will compete with Qatar for the same Asian and European buyers.

Sanctions and politics. Sanctions restrict Iran's shipping, and agreements with neighbours, such as Iraq's with Türkiye, decide whether alternative routes can be used.

> **In short.** The Gulf's logistics network is large, well funded and earns steady money, but almost everything leaves through one strait, storage is short, and a few sites carry most of the load. The best opportunities lie in routes and storage outside the strait, new LNG ships, gas grids at home and better use of existing assets.

From a consulting point of view

Where clients feel the pressure

Each part of the logistics chain brings its own problems to a consultant's desk:

- **Upstream:** keeping vessels, barges and supply bases busy as projects start and finish, and meeting local content targets.
- **Midstream:** finding the real bottleneck in a pipeline, terminal or fleet, deciding how much storage and how many routes are enough, managing freight and insurance costs, and judging whether to sell fee rights to investors and on what terms.
- **Downstream:** planning gas grids that replace oil at home, running fuel distribution efficiently, and expanding into new markets.
- **Across the chain:** planning for disruption, building local capability, and getting reliable data on assets that publish little.

Five questions for any logistics asset

1. **What limits it?** A route is only as big as its smallest part. The pipeline may be large, but the terminal, the storage, the ships or the insurance may set the real limit.
2. **Who owns it, who runs it, and who carries the risk if it is damaged?** In a lease and leaseback deal these can be three different parties.
3. **How does it make money?** Fees, rent, hire, freight or margin, how much of that income is fixed by contract, and how its EBITDA margin compares with similar assets.
4. **Which capacity figure is being used?** A design rating, a tested rate and what the asset has actually carried can differ a great deal. The East-West pipeline was designed for 5 million b/d, rated at 7 million and carried about 2 million before 2026.
5. **What could stop it, and what is the backup?** A war, a sanction, a missing spare part, a full tank or a ship that cannot get insurance.

Measures that matter

Utilisation is how much an asset carries divided by how much it can carry. Spare capacity looks wasteful in normal times and becomes precious in a crisis.

Cost per barrel moved adds pipeline fees, storage, port charges, freight and insurance, and shows where money is made and where it leaks.

Days of storage is storage capacity divided by daily output or exports, and tells you how long a producer can keep pumping when ships cannot load.

Turnaround time is how long a ship spends at a terminal from arrival to departure. Shorter turnaround means more cargoes from the same berth.

Demurrage is what is paid when ships wait beyond the agreed loading time. Rising demurrage is an early sign of a bottleneck.

Where the trusted numbers come from

The EIA's analysis of world oil transit chokepoints and the IEA's Strait of Hormuz factsheet and monthly Oil Market Report track flows through the strait and the bypass routes. OPEC's Annual Statistical Bulletin gives exports by country. Company annual reports and stock exchange filings, such as those of Bahri, ADNOC Logistics & Services, Nakilat, Asyad and ADNOC Distribution, are the most reliable source on fleets and earnings. The Baltic Exchange publishes the freight benchmarks. Ship-tracking firms such as Kpler, Vortexa and Lloyd's List Intelligence report cargo movements, though their data is less reliable when ships switch off their tracking signals, as many did in 2026.

Bringing it together

The question at the start of this paper was what logistics infrastructure moves Gulf oil and gas from the field to the user, who owns, builds and earns from it, and how secure it is.

The answer is a chain that runs through all three parts of the industry. Upstream, supply bases, offshore vessels and barges bring in what the fields need, and gathering lines carry oil and gas to the first plant. In the midstream, pipelines, storage tanks, export terminals, LNG plants and ships carry the product to the coast and across the sea, nearly all of it through the Strait of Hormuz. Downstream, feed lines, gas grids, depots, road tankers and LPG cylinders deliver crude and gas to plants and fuel to users.

The state owns almost all of it, national shipping companies carry much of it, contractors from around the world build it, and global investors now own a share of its fees. It earns through fees, rent, hire and margins, much of it fixed by long contracts, which makes it steadier than producing oil. Its great weakness is the single exit, short storage and a few critical sites, as the 2026 war showed when flows through the strait fell to about a quarter of normal. Its future lies in routes and storage outside the strait, new LNG ships, gas grids at home and better use of what already exists. For anyone trying to understand or advise this industry, the starting point is the same: follow the oil and the gas through the network, and at each link ask what limits it, who owns it, how it earns and what could stop it.

Glossary

Barrel. The standard unit of oil volume, equal to 159 litres. Volumes are often given in barrels a day (b/d).

Bunkering. Selling fuel to ships.

Bypass route. A pipeline that lets oil reach a coast outside the Strait of Hormuz, such as the East-West pipeline or ADCOP.

Contract of affreightment. An agreement to carry a set volume of cargo over a period, leaving the shipping company to choose which ships to use.

Demurrage. A daily charge paid to a shipowner when loading or unloading takes longer than agreed.

EBITDA. Earnings before interest, tax, depreciation and amortisation; a measure of the cash a business makes from its operations. The EBITDA margin is EBITDA as a share of revenue.

EPC contractor. A company hired to handle engineering, procurement and construction of a project.

Gathering lines. Small pipelines that carry oil, gas and water from wells to a field plant.

Jack-up barge. A floating platform that stands on legs on the seabed, used for offshore work and accommodation.

Laycan. The window of days within which a ship must arrive to load.

Lease and leaseback. A deal in which a national oil company sells investors a share of the right to charge fees on its pipelines or plants, while keeping ownership and control.

LNG. Liquefied natural gas: natural gas cooled to about minus 162°C so that it can be shipped.

LPG. Liquefied petroleum gas: propane and butane, used as cooking gas and as a chemical raw material.

Minimum volume commitment. A promise to pay fees on at least a set volume, whatever actually flows.

mtpa. Million tonnes a year, the unit for LNG plant capacity.

Offshore supply vessel. A ship that carries cargo, fuel and water to offshore platforms.

Primary and secondary distribution. Moving fuel from a refinery to a depot (primary) and from a depot to a station or customer (secondary).

Single point mooring. A buoy in deep water where large tankers load or unload through floating hoses.

Strait of Hormuz. The narrow sea lane between Iran and Oman through which nearly all Gulf oil and LNG exports pass.

Time charter and voyage charter. Hiring a ship for a period at a daily rate (time charter) or for a single trip at an agreed fee (voyage charter).

TD3C. The Baltic Exchange benchmark for a 270,000-tonne crude cargo from the Gulf to China.

Train. A production line in an LNG plant that cools gas into liquid.

Utilisation. How much an asset carries as a share of what it can carry.

VLCC. Very large crude carrier, a tanker that carries about two million barrels.

War risk insurance. Insurance cover for ships against war damage, charged per voyage as a share of the ship's value.

Worldscale. A standard scale used to quote tanker freight rates for each voyage.

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