Report on Iranian Petroleum and Petroleum Product Exports

A report required by section 4 of the Stop Harboring Iranian Petroleum (SHIP) Act

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Summary

The U.S. Energy Information Administration (EIA) prepared this report to fulfil Section 4 of the Stop Harboring Iranian Petroleum Act, or the SHIP Act, enacted on April 24, 2024 (see Appendix A). The act requires that no later than 120 days from the enactment date and annually thereafter the Administrator of EIA submit a report describing "Iran's growing exports of petroleum and petroleum products" to the appropriate congressional committees. The act details 11 elements to be included in the report, including information on Iran's export and sale of petroleum and petroleum products, Iran's labeling practices of exported petroleum and petroleum products, and companies, ships, and ports involved in the export and sale of Iran's petroleum and petroleum products.

EIA will provide annual supplements to this report every year until termination of the SHIP Act. The unclassified portions of the report are posted on our website. EIA is also required to submit a classified report no later than 120 days from the enactment date and each year thereafter. The classified annex that accompanies this report will address classified data.

This report and information contained in it come with significant caveats. EIA does not collect nor have the legislative authority to collect much of the data asked for in the SHIP Act. As a result, most of the data and information included in the report come from third-party data sources. This report includes data sources that EIA has access to that have a reasonably high confidence in their estimates. When available, we included all sources for a data element to provide a range of estimates. In addition, EIA consulted the intelligence community in the process of developing this report.

Because of challenges with data availability and transparency, nearly all the petroleum and petroleum product data presented in this report are estimates rather than actual data. For example, petroleum products are generally shipped on smaller vessels, which can avoid detection more easily than crude oil cargoes. Iran uses several obfuscation techniques such as turning off its ship identification signals, applying ship-to-ship transfers, or relabeling cargoes as originating from other countries for both crude oil and oil products, which increases the challenge of providing precise export data. In addition, the requested data are typically provided as annual or monthly data series, which are subject to lags in availability and timeliness. Data are subject to change as new information becomes available.

Although price data are available on a real-time or near-real-time basis, actual pricing data pertaining to sales of Iranian crude oil are opaque, requiring estimation methods and proxy variables to derive estimates of revenues. Similarly, the information pertaining to the origination and destination of many shipments of Iranian crude oil and petroleum products rely on third-party data and a number of third-party ship-tracking estimation techniques, all of which are outside of EIA's data collection and scope, and thus add an additional layer of uncertainty.

This report presents data, where available, in the order in which it was requested as part of the SHIP Act and will highlight any caveats or limitations. The data presented begin in 2018, as outlined in the request, and cover a period spanning the most recent data availability at the time of publication.

Data Request

1. An analysis of Iran's exports and sale of petroleum and petroleum products

All of the data and analysis provided regarding Iranian exports and revenues are estimated and based on assumptions given the limited data and visibility into the trade and sales of Iranian volumes of petroleum and petroleum products. Where available, we have highlighted any assumptions and calculations we made creating our estimates, as well as the data sources used. In cases where the data or information are simply not available for EIA to estimate, we have stated our inability to provide the information as requested.

a. An estimate of Iran's petroleum export and sale revenue per year since 2018

We estimate Iranian petroleum export and sale revenues using analysis conducted by EIA. We used the same methodology to calculate these estimates as we used in our OPEC Revenues Fact Sheet, published in June 2023, but with updated pricing and export information based on the most recent data available at the time of this August 2024 report. In the initial OPEC Revenues Fact Sheet analysis, we calculated net export volumes as the difference between Iran's oil production and its oil consumption estimates in the June 2023 edition of our *Short-Term Energy Outlook*. Oil production includes crude oil, condensate, natural gas plant liquids, and other liquids.

For this analysis, we updated the estimates of net exports by using the difference between our internal estimates of Iranian oil production and Iranian oil consumption in our June 2024 *Short-Term Energy Outlook*.

Similar to our analysis of OPEC revenues, we assume the revenues from Iran's crude oil exports are based on the same share of crude oil types produced domestically. On average from 2018 through 2023, we assume about 56% of domestic production is made of Iranian Heavy while 44% is Iranian Light, based on estimates provided by Energy Intelligence[1]; these shares are applied to EIA's net export volumes.

The prices used in calculating the EIA estimated sale revenues are the Iranian Crude Oil Official Selling Price (OSP) formulas provided on the NIOC website for both Iranian Heavy and Iranian Light crude oil, and the prices do not include discounts. For example, these prices averaged $83 per barrel (b) for Iranian Heavy in 2023 and $81/b for Iranian Light. For our analysis, given the lack of available data, we assume only these crude oil prices and total oil volumes in calculating estimated revenues. These estimates are provided in Table 1 below.

Table 1. Revenue from Iran's petroleum exports and sales

nominal billion dollars

Data source	2018	2019	2020	2021	2022	2023
EIA estimate[a,b]	$65	$28	$16	$37	$54	$53

[a] The prices used in calculating the EIA estimated sale revenues are the Iranian Crude Oil Official Selling Price formulas provided on the NIOC website for both Iranian Heavy and Iranian Light crude oil. The prices do not include discounts.
[b] We assume only crude oil prices and total oil volumes in calculating estimated revenues.

[1] Energy Intelligence, World Crude Oil Data

b. An estimate of Iran's petroleum export and sale revenue to China per year since 2018

We do not have accurate information on prices Iran charged to Chinese crude oil purchasers, which we understand to be mostly small independent refineries.[2]

c. The amount of petroleum and crude oil barrels exported per year since 2018

The estimated volumes of petroleum product exports are sourced from Facts Global Energy[3] (FGE) (Table 2a).

Table 2a. Petroleum product exports from Iran, 2018–2023

thousand barrels per day

Data source	2018	2019	2020	2021	2022	2023
Facts Global Energy estimate	527	569	608	803	729	916

The estimated volumes of crude oil and condensate exports are sourced from FGE and Vortexa Analytics[4] (Table 2b).

Table 2b. Crude oil and condensate exports from Iran, 2018–2023

thousand barrels per day

Data source	2018	2019	2020	2021	2022	2023
Facts Global Energy estimate	2,033	675	425	825	1,120	1,590
Vortexa Analytics estimate	2,030	704	392	848	989	1,360

d. The amount of petroleum and crude oil barrels exported to China per year since 2018

We do not have data on the total petroleum product export volumes from Iran to China.

For the estimates of crude oil barrels (including condensate) exported from Iran to China, most of the data are provided by Vortexa Analytics, except for an additional estimate for 2023 provided by FGE (Table 3).

The data provided by Vortexa Analytics tracks the destination of export volumes. Although most of these export volumes have destinations listed as China, in many cases the destinations are listed as unknown. For data from 2020 onwards, once U.S. sanctions on Iran's oil exports were fully reapplied, we assume export volumes to "unknown" destinations and as well as southeast Asia countries (specifically Malaysia, Singapore, and Vietnam) are destined for China.[5]

[2] https://www.reuters.com/business/energy/chinas-teapot-refiners-mop-up-swelling-iranian-crude-defying-us-curbs-2023-09-14/

[3] FACTS Global Energy, Iran Oil and Gas Monthly Reports (2018-2024)

[4] Vortexa Analytics tanker tracker (accessed June 2024).

[5] In November 2018, the United States officially reimposed all sanctions that were lifted under the 2015 Iran nuclear deal. After a six-month waiver expired in May 2019, Iran was under complete sanctions on oil exports. Vortexa Analytics confirmed volumes exported during 2020 destined for Malaysia, Singapore, and Vietnam were likely sent to China, which is our assumption for this analysis.

Table 3. Crude oil and condensate exports from Iran to China, 2018–2023

thousand barrels per day

Data source	2018	2019	2020	2021	2022	2023
Facts Global Energy estimate						1,230
Vortexa Analytics estimate	596	308	338	708	838	1,213

e. The amount of petroleum and crude oil barrels exported to countries other than China per year since 2018

We do not have data on estimates of petroleum product volumes exported from Iran to countries other than China.

For crude oil and condensate volumes exported to countries other than China, our values are based on the estimates provided in Sections 1(c) and 1(d) of this report (Table 4). The same assumptions and caveats noted above apply for these estimates. These estimates are simply the difference between the volumes provided in Section 1(c) and 1(d).

Vortexa Analytics confirmed that the volumes to countries other than China listed in Table 4 include shipments to Syria, the United Arab Emirates, Oman, and Venezuela.

Table 4. Crude oil and condensate exports from Iran to destinations outside of China, 2018–2023

thousand barrels per day

Data source	2018	2019	2020	2021	2022	2023
Facts Global Energy estimate						360
Vortexa Analytics estimate	1,433	396	54	140	152	148

f. The average price per petroleum and crude oil barrel exported per year since 2018

FGE provided estimates for actual annual average sale prices for crude oil, condensates, and petroleum products based on annual averages of actual sales to all destinations (Table 5). FGE bases their estimates of crude oil prices on average prices for volumes delivered at the average official selling price less a discount applied for all crude oil grades. FGE's estimated crude oil discounts range from $4.20/b to $17.10/b from 2018 to 2023. Other sources, including Reuters and Middle East Economic Survey, have on occasion reported information on Iranian oil discounts, including the $13 discount from Brent crude oil for Iranian Light and $20 discount for Iranian Heavy reported in September 2023.

Some of the countries that Iran exports oil to are paying in other means, such as lines of credit (for example, Syria) or swap agreements (for example, Venezuela).[6,7]

[6] https://www.reuters.com/markets/commodities/venezuela-rushes-mend-iran-relationship-us-sanctions-loom-2024-03-12
[7] https://www.reuters.com/article/world/syria-ratifies-fresh-1-billion-credit-line-from-iran-idUSKCN0PI1RD/

Table 5. Estimated average annual prices for petroleum products and crude oil exported by Iran, 2018–2023

nominal dollars per barrel

Fuel	2018	2019	2020	2021	2022	2023
Crude oil[a,b]	$66	$52	$29	$55	$84	$76
Condensates[a,b]	$66	$52	$30	$56	$86	$79
Products[a,b]	$66	$52	$29	$55	$83	$75

Data source: Facts Global Energy Estimate

[a] These prices are estimated as average discounted prices for volumes delivered to all destinations.

[b] FGE did not explicitly state what discount they assumed.

g. The average price per petroleum and crude oil barrel exported to China per year since 2018

We do not have data on the average price per petroleum and crude oil barrel exported to China. The information in the previous data request item (item 1f) includes average prices for all destinations, which would include China. Given that the majority of all volumes exported were destined for China, prices for all destinations and China specifically are likely largely the same.

2. Iran's labeling practices of exported petroleum and petroleum products

We do not have any source for this information.

3. A description of companies involved in the exporting and sale of Iranian petroleum and petroleum products

We do not have any source for this information.

4. A description of ships involved in the exporting and sale of Iranian petroleum and petroleum products

For the crude oil export volumes provided by Vortexa Analytics, the ship names are listed in Appendix B. Similarly, for petroleum product exports, Appendix C lists the ships used in all petroleum product export volumes, as provided by Vortexa Analytics. Please note this list may not be a complete list of all ships involved in the trade of Iranian crude oil and petroleum products, particularly dark fleet vessels—usually older ships lacking clear details on ownership and insurers, aimed to evade international sanctions and trading restrictions.[8,9] The vessel types listed in Appendix B and Appendix C are defined in Appendix F.

5. A description of ports involved in the exporting and sale of Iranian petroleum and petroleum products

Similar to the previous data request item (item 4), the destination port is included for every shipment contained within the estimated volume of crude oil (Appendix D) and petroleum product exports (Appendix E) provided by Vortexa Analytics. These data do not include any port or description for those

[8] https://www.lloydslistintelligence.com/knowledge-hub/risk-and-compliance/major-dark-fleet-operator-moves-tankers-to-new-company-to-avoid-sanctions

[9] https://www.iranintl.com/en/202407018317

shipments sent to unknown destinations (which are largely assumed to be destined for China). In addition, the data may not be a complete list of all ports involved in the trade of Iranian crude oil and petroleum products.

Appendix A. SHIP Act Section 4

SEC. 4. REPORT ON IRANIAN PETROLEUM AND PETROLEUM PRODUCTS EXPORTS.

(a) In General.—Not later than 120 days after the date of enactment of this Act, and annually thereafter until the date described in subsection (d), the Administrator of the Energy Information Administration shall submit to the appropriate congressional committees a report describing Iran's growing exports of petroleum and petroleum products, that includes the following:

(1) An analysis of Iran's exports and sale of petroleum and petroleum products, including—

(A) an estimate of Iran's petroleum export and sale revenue per year since 2018;

(B) an estimate of Iran's petroleum export and sale revenue to China per year since 2018;

(C) the amount of petroleum and crude oil barrels exported per year since 2018;

(D) the amount of petroleum and crude oil barrels exported to China per year since 2018;

(E) the amount of petroleum and crude oil barrels exported to countries other than China per year since 2018;

(F) the average price per petroleum and crude oil barrel exported per year since 2018; and

(G) the average price per petroleum and crude oil barrel exported to China per year since 2018.

(2) An analysis of Iran's labeling practices of exported petroleum and petroleum products.

(3) A description of companies involved in the exporting and sale of Iranian petroleum and petroleum products.

(4) A description of ships involved in the exporting and sale of Iranian petroleum and petroleum products.

(5) A description of ports involved in the exporting and sale of Iranian petroleum and petroleum products.

(b) Form.—The report required by subsection (a) shall be submitted in unclassified form but may include a classified annex.

(c) Publication.—The unclassified portion of the report required by subsection (a) shall be posted on a publicly available website of the Energy Information Administration.

(d) Termination.—The requirement to submit reports under this section shall be terminated on the date on which the President makes the certification described in section 3(f).

Appendix B. Ships Involved in the Exporting and Sale of Iranian Crude Oil

The vessel types listed in this appendix are defined in Appendix F.

Table B1. Ships involved in the exporting and sale of Iranian crude oil

Company	Ship name	Vessel type
East Asia General Trading		
	DAN	VLCC
	DINO I	VLCC
	DORENA	VLCC
ENOC		
	BLUE NIL	LR1
MAX ENERGY		
	HESTIA	Aframax
MRPL		
	AMOR	VLCC
Naftiran Intertrade Company Limited		
	ANITA	VLCC
	DERYA	VLCC
	HERBY	VLCC
	HERO2	VLCC
	HUGE	VLCC
	MASAL	Suezmax
	SEA STAR III	VLCC
	SERENA	VLCC
	SILVIA I	Suezmax
	SNOW	VLCC
	SOLDIER	VLCC
	SONIA1	Suezmax
Vitol		
	ASTERIX	VLCC
	DIVIT	Aframax
Voliton		
	TURACO	Aframax
Unknown		
	ABUNDANCE III	VLCC
	ABYSS	Aframax
	AFRODITA I	VLCC
	ALANA	Suezmax
	ALISA	LR2
	AMAK	VLCC
	AMBER	VLCC

Company	Ship name	Vessel type
	AMOR	VLCC
	ANASTASIA I	Aframax
	ANITA	VLCC
	ANNA	Aframax
	ARES	Aframax
	ARGO 1	Aframax
	ARMAN 114	VLCC
	ARNICA	Aframax
	AROON	VLCC
	ARTEMIS III	VLCC
	ARTURA	Suezmax
	ASTERIX	VLCC
	ASTRA	MR2
	ATILA	VLCC
	ATLANTIS MZ	Panamax
	AVITAL	VLCC
	AYDEN	VLCC
	BELLA 1	VLCC
	BERG 1	VLCC
	BRAD	Aframax
	BREEZE V	VLCC
	BRIGHT SONIA	Aframax
	CARINA V	VLCC
	CHOLA QUEEN	Aframax
	CIMARRON	LR1
	CRESTED	Aframax
	DAN	VLCC
	DANIEL	VLCC
	DAWN II	Suezmax
	DEEP SEA	VLCC
	DELBIN	Suezmax
	DERYA	VLCC
	DEVON	VLCC
	DIAMOND II	VLCC
	DIMITRA II	VLCC
	DINO I	VLCC
	DIONA	VLCC
	DORE	VLCC
	DORENA	VLCC
	DOVER	VLCC
	DREAM 2	VLCC
	DUNE	VLCC

Company	Ship name	Vessel type
	ELINE	VLCC
	ELIZABET	VLCC
	ELOISE	Aframax
	ELVA	VLCC
	ESCAPADE	Aframax
	ETERNAL FORTUNE	VLCC
	ETERNAL SUCCESS	VLCC
	FELICITY	VLCC
	FENG TAI	VLCC
	FIONA	VLCC
	FIONA II	VLCC
	FORTUNE	MR1
	FT ISLAND	VLCC
	G STAR	VLCC
	GOLDEN EAGLE	Aframax
	GOLROO	MR1
	HALTI	VLCC
	HAPPINESS I	VLCC
	HASNA	VLCC
	HAWK	VLCC
	HELM	VLCC
	HENNA	VLCC
	HERA	LR3
	HERBY	VLCC
	HERO2	VLCC
	HESTIA	Aframax
	HILDA 1	VLCC
	HORNET	VLCC
	HUGE	VLCC
	INDA	Aframax
	INGRID	Aframax
	INTERSTELLAR	LR1
	IONA	Suezmax
	ISHTAR	VLCC
	IVY	VLCC
	JAKA TARUB	LR1
	JASMINE	MR2
	JAYA	VLCC
	KAPOK	Suezmax
	KOHANA	VLCC
	LA PEARL	Suezmax
	LELIA	Aframax

Company	Ship name	Vessel type
	LEONID	LR1
	LEONOR	VLCC
	LEXIE	VLCC
	LISA	VLCC
	LOTUS	Suezmax
	LUNA PRIME	VLCC
	LYDIA II	VLCC
	M.T HEDY	VLCC
	MARTINA	Aframax
	MASAL	Suezmax
	MEHLE	Suezmax
	MEMPHIS	Suezmax
	MISTRAL 1	Aframax
	MOLECULE	Panamax
	MS ENOLA	VLCC
	MUR	VLCC
	NAROON	VLCC
	NASHA	VLCC
	NAVARZ	VLCC
	NEREIDES	VLCC
	NESS	VLCC
	NIERUS	VLCC
	OCTANS	VLCC
	OLIA	Aframax
	ORBIT I	Suezmax
	OTARIA	Aframax
	PABLO	Aframax
	PARINE	Panamax
	PENTA I	VLCC
	PHOENIX I	Aframax
	PIONEER SAM	Panamax
	POMPEI II	Aframax
	PRADA	LR2
	PROGRESS V	VLCC
	RAMONA I	Suezmax
	REX 1	Suezmax
	RHEA	Aframax
	RIALTO	MR2
	RIMA	Suezmax
	RIQUEZA	VLCC
	ROBON	Aframax
	ROMINA	Suezmax

Company	Ship name	Vessel type
	ROZA	VLCC
	SALINA	Suezmax
	SAM121	Suezmax
	SAMSUN	Aframax
	SANAN	Suezmax
	SARAK	Suezmax
	SCORPIUS	VLCC
	SEA CLIFF	VLCC
	SEA STAR III	VLCC
	SERENA	VLCC
	SERENE 1	VLCC
	SEVDA	Suezmax
	SEVIN	Suezmax
	SHANAYE QUEEN	Aframax
	SHANNON II	VLCC
	SHARP OCEAN	VLCC
	SILVIA I	Suezmax
	SINOPA	Suezmax
	SIRVAN SABOU	Aframax
	SNOW	VLCC
	SOBAR	Suezmax
	SOLAN	Suezmax
	SOLANA	VLCC
	SPIRIT OF CASPER	Suezmax
	STARK1	Suezmax
	STARLA	VLCC
	STELLAR ORACLE	VLCC
	STREAM	VLCC
	SUPER EVER	LR1
	TABARK	MR2
	TASCA	VLCC
	TESLA	LR2
	TIFANI	VLCC
	TINA 5	VLCC
	TITAN	VLCC
	TIYARA	Aframax
	TONIL	LR1
	TREND	Suezmax
	TRICIA II	VLCC
	TULJA KALYANI	VLCC
	URANUS	VLCC
	URGANE I	Aframax

Company	Ship name	Vessel type
	VENTURA	Aframax
	VERGIOS	Aframax
	VERONICA	Aframax
	VETER	VLCC
	VIGOR	VLCC
	VIRGO	VLCC
	VORAS	VLCC
	WEN YAO	VLCC
	XIDI	VLCC
	ITAUGUA	VLCC
	M SOPHIA	VLCC
	GLOBAL HARVEST	VLCC
	LIA	Suezmax
	IZUMO	Suezmax
	OXIS	VLCC
	BARON	MR2
	GAGAN	Aframax
	DIVIT	Aframax
	URI	VLCC
	MIA	Suezmax
	MENG XIN	Aframax
	STAR FOREST	VLCC
	BESTLA	VLCC
	SONIA1	Suezmax
	GOODWIN	VLCC
	BERTHA	VLCC
	LALIQUE	Aframax
	OLYMPICS	Suezmax
	ATILAN	Suezmax
	SERANO 2	Aframax
	FORTUNE GALAXY	Aframax
	YALE	VLCC
	ARINA	LR3
	ARKIII	Aframax
	EVELYN	Panamax
	MR NAUTILUS	MR2
	CARNATIC	VLCC
	SALVIA	VLCC
	SIRI	VLCC

Data source: Vortexa Analytics

Appendix C. Ships Involved in the Exporting and Sale of Iranian Petroleum and Petroleum Products

The vessel types listed in this appendix are defined in Appendix F.

Table C1. Ships involved in the exporting and sale of Iranian petroleum and petroleum products

Company	Ship name	Vessel type
Coral		
	WORLD PROGRESS	MR2
Max Energy		
	HESTIA	Aframax
Vitol		
	PARINE	Panamax
	ROAD	Aframax
Unknown		
	A JEWEL	VLCC
	ABYSS	Aframax
	ADDRESS GAS	VLGC
	AFRA ROSSI	LR2
	AKOYA GAS	MGC
	AL DIAB II	Coaster
	AL JABER X	Coastal
	ALBEDO	Aframax
	ANNA	Aframax
	APOLLO OCEAN	VLGC
	AQUARIS	Aframax
	ARGO 1	Aframax
	ARNICA	Aframax
	ARTEMIS GAS	VLGC
	ASTRA	MR2
	ATHE NOVA	Coastal
	ATLANTIS MZ	Panamax
	BERENICE PRIDE	LR1
	BOREY G	LR2
	BRAD	Aframax
	BRAVA LAKE	Aframax
	BRIGHT GOLD	MR2
	CALYPSO 7	VLGC
	CALYPSO GAS	Coasters
	CAPTAIN NIKOLAS	VLGC
	CAROL	Coasters
	CASPIA	Flexi
	CLAVEL	MR2

Company	Ship name	Vessel type
	CLIO	Aframax
	COURAGE 7	Coastal
	CRESTED	Aframax
	DANICA	Aframax
	DANUTA I	VLGC
	DELICE	Flexi
	DEVREZ	MR2
	DIANA	VLGC
	DOUBLE IN	VLGC
	DOWNY	VLCC
	DRAVIN	Handysize
	EAGLE PRIDE	MGC
	ECHO STAR	VLGC
	ELIN	Coasters
	ELISE	LR1
	ELOISE	Aframax
	ETERNAL 8	LR2
	EURO VIKING	Flexi
	FABINO GAS	VLGC
	FADAK 6000	Coastal
	FALCON	MGC
	FAUSTA	LR2
	FAXON	MR1
	FEDRA	MR2
	FOREST	MR1
	FORTUNA	VLGC
	FORTUNE	MR1
	FORTUNE GAS	MGC
	G JADES	Coaster
	G SPRING	Coaster
	G YMM	MGC
	GAGAN	Aframax
	GALA ROSE	MR2
	GALVIN	VLGC
	GAS ATHENA	Coaster
	GAS CONCEPT	VLGC
	GAS COURAGE	VLGC
	GAS GLOBAL	VLGC
	GAS LAGOON	VLGC
	GAS LEADER	VLGC
	GAS MARTA	VLGC
	GAS MARYAM	MGC

Company	Ship name	Vessel type
	GAS NELLY	VLGC
	GAS OLYMPIA	VLGC
	GAS SPIRIT I	VLGC
	GAS STRENGTH	VLGC
	GAS SUCCESS	Coaster
	GAS VISION	VLGC
	GAS ZEUS	Coaster
	GLOBAL LIBERTY	VLGC
	GLOBAL VIVIAN	VLGC
	GODAVARI GAS	VLGC
	GREAT SAIL	Handysize
	HARMONY	Intermediate
	HELM	VLGC
	HEMERA	Coastal
	HENG YUAN	MR1
	HERITAGE	VLGC
	HESTIA	Aframax
	HH GLORY	VLGC
	INDIRA	Intermediate
	JAKA TARUB	LR1
	JAMES II	Suezmax
	JEWELS	Coaster
	JOEL	Aframax
	KAILASH	Coastal
	KAISA I	Coaster
	KOHANA	VLCC
	L PRIMO GAS	VLGC
	LIETO	Aframax
	LISBON	Flexi
	LOANNA	MR2
	LPG FSM	Coaster
	LR1 CHARM	LR1
	LUNIS	Coastal
	M.T FORTUNE GALAXY	Aframax
	MARBEL	MR2
	MATISA	MR2
	MEGA PRINCESS	Coastal
	MENG XIN	Aframax
	MERAKI	Aframax
	MIROVA DYNAMIC	Aframax
	MISSONI	Aframax
	MISTRAL 1	Aframax

Company	Ship name	Vessel type
	MOLECULE	Panamax
	NAROON	VLCC
	NAVIS	Coaster
	NEBULAX	MR2
	NEREUS 1	VLGC
	NEWFUSION	LR1
	NEXO	VLGC
	NIBA	VLGC
	NIKA RUBY	Panamax
	NORTH GIANT	MR2
	NUS	VLGC
	NV AQUAMARINE	VLGC
	OLIA	Aframax
	OTARIA	Aframax
	OWENS	VLGC
	PARINE	Panamax
	PARVATI	VLGC
	PAWAN PUTRA	VLGC
	PHOENIX I	Aframax
	PIONEER SAM	Panamax
	POLARIS1	MR2
	POMPEI II	Aframax
	PONTUS	Coastal
	PVT DOLPHIN	MR2
	RANI	Aframax
	RAYYAN GAS	Handysize
	RHEA	Aframax
	ROAD	Aframax
	ROANA	Aframax
	SANAN	Suezmax
	SEA HERMES	VLGC
	SEA OPERA	VLGC
	SEA STAR III	VLCC
	SEAGULL	Aframax
	SERANO 2	Aframax
	SERENITY GAS	Coasters
	SETA	MR2
	SHANAYE QUEEN	Aframax
	SIA	VLGC
	SILVIA I	Suezmax
	SINCERE 02	MR2
	SOLINA GAS	VLGC

Company	Ship name	Vessel type
	SONA	VLGC
	ST.CUDI	MGC
	ST.OSLO	MGC
	ST.RAMAN	MGC
	SUNSEA	Flexi
	SUPER EVER	LR1
	TASCA	VLCC
	TEESTA	Flexi
	TEMIRO	MR2
	THE GAS AMELIA	VLGC
	TOMSON GAS	Coaster
	TOWER RISE	VLGC
	TRIS GAS	VLGC
	TULIP	VLGC
	TUNG	VLGC
	TURACO	Aframax
	ULLSWATER	Coaster
	URGANE I	Aframax
	VALANO	VLGC
	VELA GAS	VLGC
	VENUS 7	VLGC
	VERGIOS	Aframax
	VIOLET1	MR1
	WEALTHY STAR	MR1
	WORLD COURAGE	MR2
	XAVIA	VLGC
	YONG TAI	LR1
	YU I	MGC
	ZENITH FAITH	Coastal

Data source: Vortexa Analytics

Appendix D. Ports Involved in the Exporting and Sale of Iranian Crude Oil

Table D1. Ports involved in the exporting and sale of Iranian crude oil

Country	Port city
China	
	Bayuquan, Yingkou
	Dalian
	Dongjiakou
	Dongying
	Gulei, Zhangpu
	Huangze Mountain Island
	Huizhou
	Jinghai
	Jinzhou
	Laizhou
	Lianyungang
	Longkou
	Ningbo (Beilun)
	Qingdao
	Rizhao—Lanshan Area
	Shanghai
	Tianjin
	Yangpu
	Yantai
	Zhanjiang
	Zhoushan
	Huanghua
Syria	
	Banias
United Arab Emirates	
	Fujairah
	Hamriyah
	Jebel Ali
	Sharjah
Venezuela	
	Amuay Bay
	El Palito
	Jose Terminal
	Punta Cardon

Data source: Vortexa Analytics

Appendix E. Ports Involved in the Exporting and Sale of Iranian Petroleum Products

Table E1. Ports involved in the exporting and sale of Iranian petroleum products

Country	Port city
Bangladesh	
	Chittagong
	Mongla
China	
	Bayuquan, Yingkou
	Changshu
	Chaozhou
	Dalian
	Dongguan, Humen
	Dongjiakou
	Dongying
	Fangcheng
	Gulei, Zhangpu
	Huangze Mountain Island
	Jiangyin
	Jiangyin, Fuzhou
	Jingjiang
	Lianyungang
	Longkou
	Nanjing
	Nansha
	Nantong
	Ningbo (Beilun)
	Pinghu, Jiaxing
	Qingdao
	Qinzhou
	Quanzhou
	Rizhao—Lanshan Area
	Shanghai
	Shantou
	Shuidong, Maoming
	Taicang
	Taixing
	Tianjin
	Yizheng
	Zhangjiagang

Country	Port city
	Zhanjiang
	Zhapu
	Zhoushan
	Zhuhai
Egypt	
	Suez
Eritrea	
	Massawa
India	
	Haldia
	Hazira (Magdalla)
	Jaigarh
	Kakinada
	Kandla
	Karwar
	Mormugoa
	Mumbai
	Mundra
	New Mangalore
	Paradip
	Pipavav
	Tuticorin
	Vizag (Visakhapatnam)
Indonesia	
	Banyuwangi (Tg Wangi)
	Gresik (Surabaya), Java
	Karimun (Offshore)
Iran	
	Assaluyeh
	Bandar Bushehr
	Bandar Khomeini, Bandar Mahshahr
	Chabahar
	Kharg Island
	Kish
	Lavan
	Shahid Rajaee Port (Bandar Abbas)
	Sirri Island
Iraq	
	Khor Al Zubair
Malaysia	
	Kemaman (Tanjung Sulong)
	Kuantan (Tanjung Gelang)

Country	Port city
	Pasir Gudang, Johor
	Pengerang
	Port Klang
	Tanjung Langsat
Maldives	
	Male
Myanmar	
	Yangon
Oman	
	Mina Al Fahal, Muscat
	Sohar
Pakistan	
	Gwadar
	Muhammad Bin Qasim
Philippines	
	Manila
Singapore	
	Singapore
South Africa	
	Saldanha Bay
South Korea	
	Yeosu (Yosu), Gwangyang
Sri Lanka	
	Hambantota
Sudan	
	Port Sudan
Syria	
	Banias
Taiwan	
	Taichung
Tanzania	
	Dar Es Salaam
Thailand	
	Bang Pakong
Türkiye	
	Bandirma, Balikesir
	Mersin
	Tutunciftlik
United Arab Emirates	
	Dubai
	Fujairah
	Hamriyah

Country	Port city
	Jebel Ali
	Mina Saqr
	Sharjah
Vietnam	
	Dung Quat
	Haiphong
Yemen	
	Aden
	Nishtun

Data source: Vortexa Analytics

Appendix F. Vessel Definitions for Iranian Shipment of Crude Oil and Petroleum Products

The global crude oil and refined product tanker fleet is typically classified using the Average Freight Rate Assessment (AFRA) system that was first established by Royal Dutch Shell many years ago and is now overseen by an independent group of shipping brokers.

The AFRA system classifies tanker vessels according to deadweight tons—a measure of a ship's capacity to carry cargo. The approximate capacity of a ship in barrels is determined using an estimated 90% of a ship's deadweight tonnage, which is multiplied by a barrel-per-metric-ton conversion factor specific to each type of petroleum product and crude oil because liquid fuel densities vary by type and grade.

In this report, we use vessel class definitions as provided by Vortexa Analytics tanker tracking data.

Table F1. Oil tanker class definitions

Vessel class	Deadweight tonnage
Coastal	<9,999
Specialized—Intermediate	10,000–17,999
Specialized—Flexi	18,000–24,999
Handysize	25,000–39,999
MR1	25,000–39,999
Handymax	40,000–54,999
MR2	40,000–54,999
Panamax	55,000–79,999
LR1	55,000–79,999
Aframax	80,000–119,999
LR2	80,000–119,999
Suezmax	120,000–199,999
LR3	120,000–199,999
VLCC	200,000–450,000

Data source: Vortexa Analytics

Table F2. Liquefied petroleum gas vessel class definitions

Vessel class	Capacity cubic meters
SGC—Coasters	<14,999
SGC—Handysize	15,000–24,999
MGC	25,000–49,999
LGC	50,000–69,999
VLGC	70,000–120,000
VLEC	70,000–120,000

Data source: Vortexa Analytics