Restraining Russian Oil:
Strategies against the Shadow Fleet

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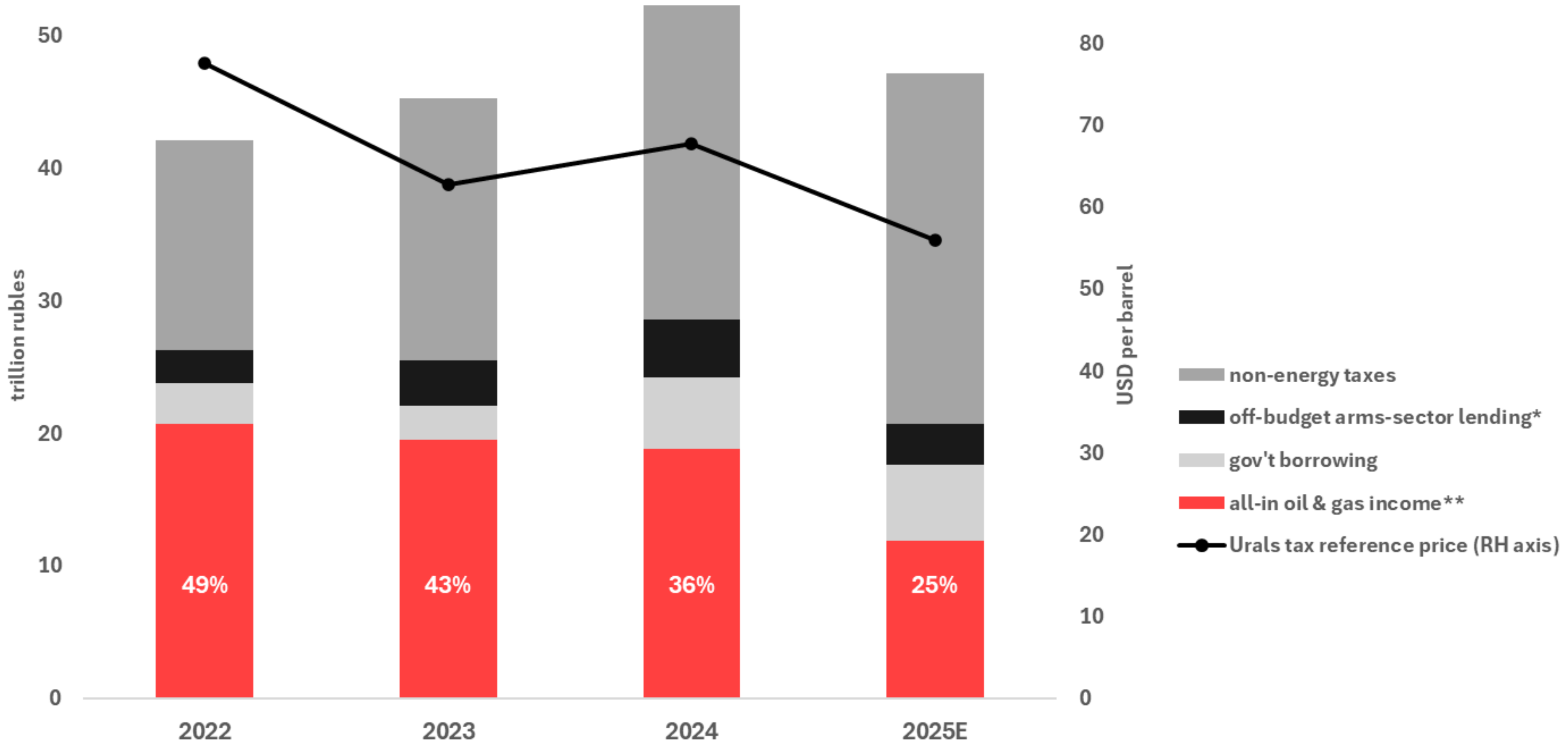
December 16, 2025

Navigating Russia

The energy sector's deteriorating health has sharply eroded its contribution to the Kremlin's war-time finances



Breakdown of state's war-time funding structure
(in 2025 rubles)

* includes soft, state-directed bank loans to the 5 core arms producing sectors
**includes royalties, duties, other corporate taxes, dividends plus net drawdowns from state oil & gas fund, including allocations to non-liquid assets
Source: Ministry of Finance, company financial reports, author analysis (*Navigating Russia*)

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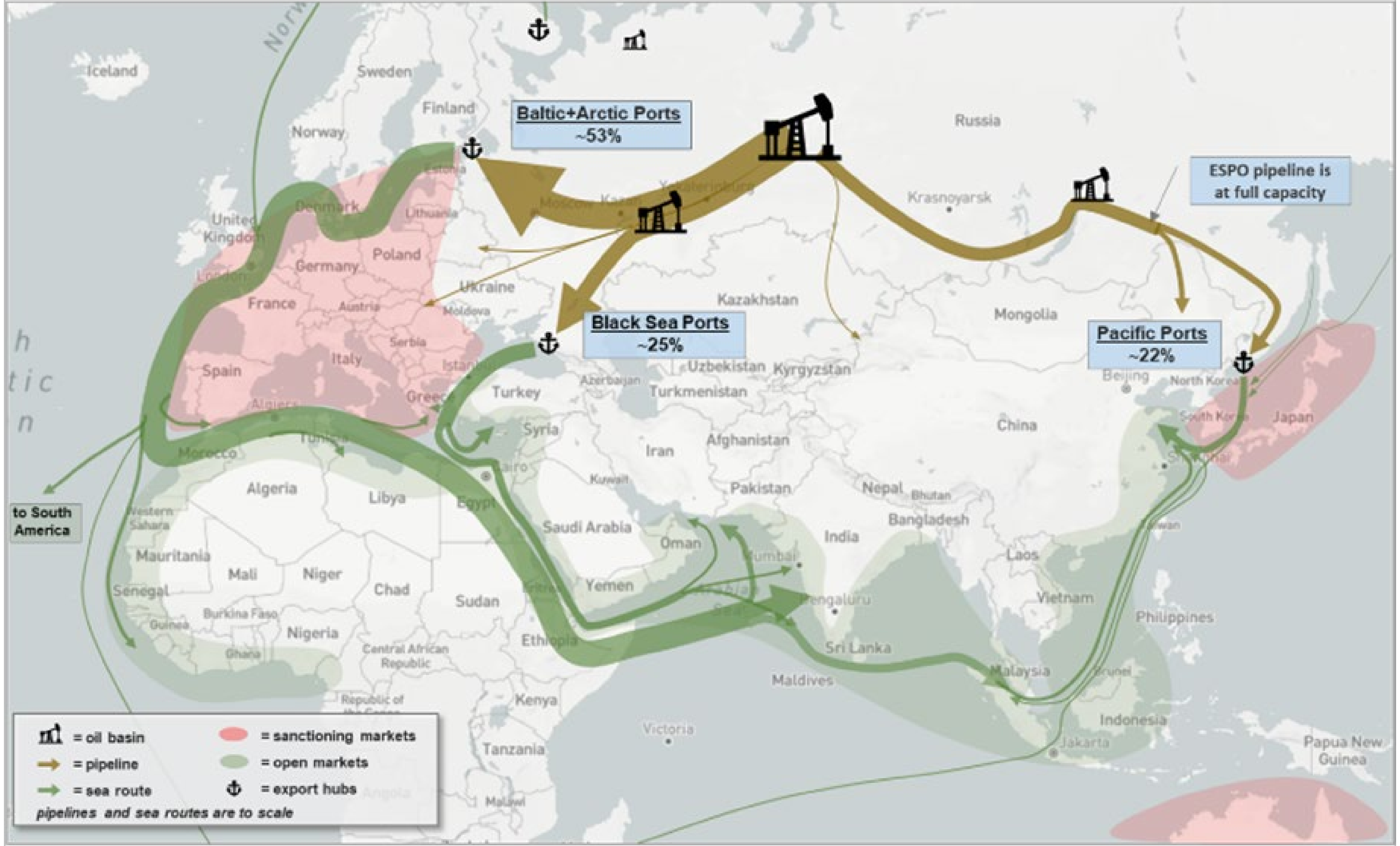
Through October 2025, Russia exported 80% of its oil by sea, with India, China and Turkey as the primary destinations



Sources: author analysis (*Navigating Russia*) of open-source vessel tracking data; Transneft, OpenStreetMap

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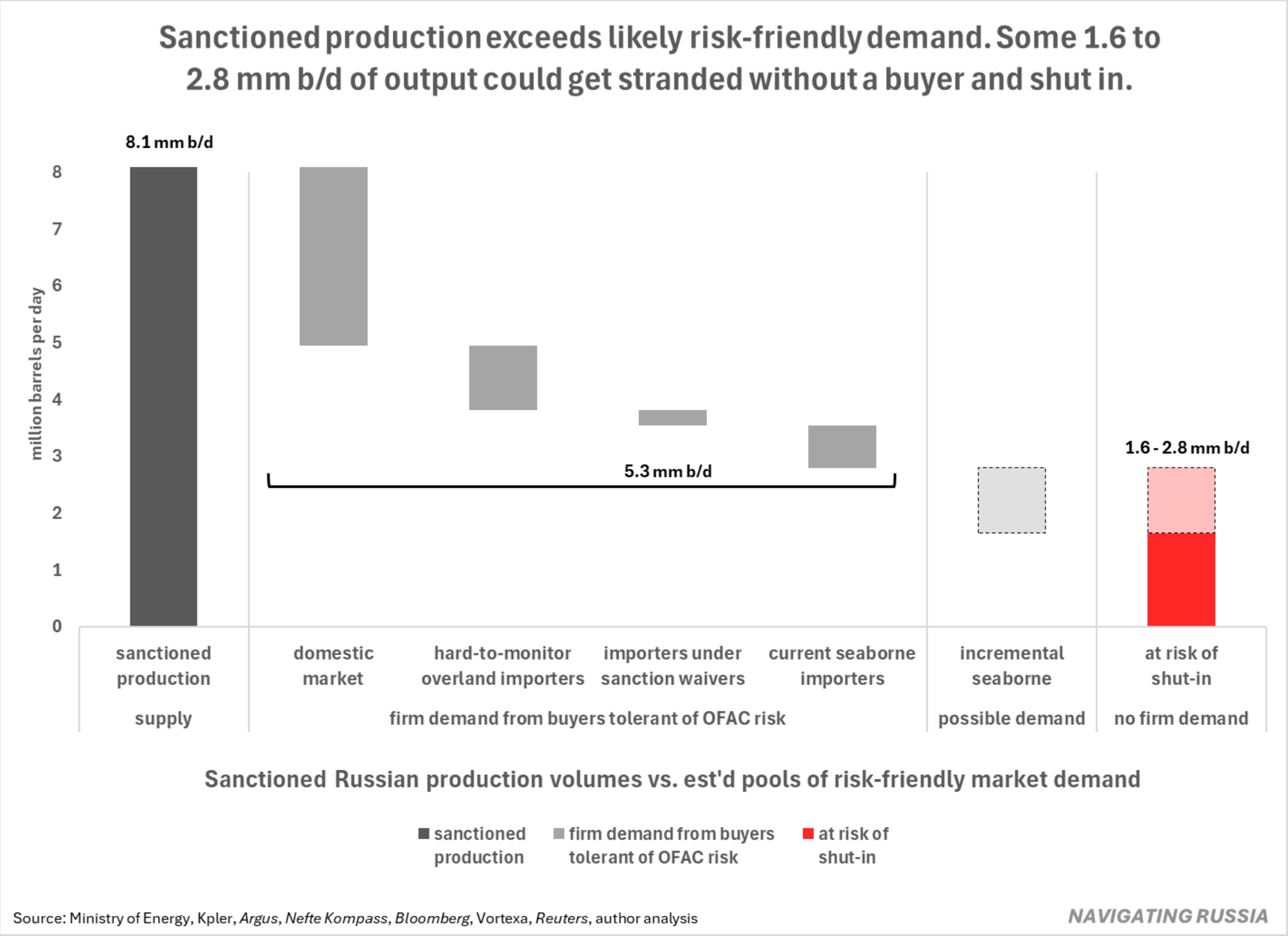

Sanctioned production exceeds likely risk-friendly demand. Some 1.6 to 2.8 mm b/d of output could get stranded without a buyer and shut in.
8.1 mm b/d
million barrels per day
0
1
2
3
4
5
6
7
8
5.3 mm b/d
1.6 - 2.8 mm b/d
sanctioned production
domestic market
hard-to-monitor overland importers
importers under sanction waivers
current seaborne importers
incremental seaborne
at risk of shut-in
supply
firm demand from buyers tolerant of OFAC risk
possible demand
no firm demand
Sanctioned Russian production volumes vs. est'd pools of risk-friendly market demand
sanctioned production
firm demand from buyers tolerant of OFAC risk
at risk of shut-in
Source: Ministry of Energy, Kpler, Argus, Nefte Kompass, Bloomberg, Vortexa, Reuters, author analysis
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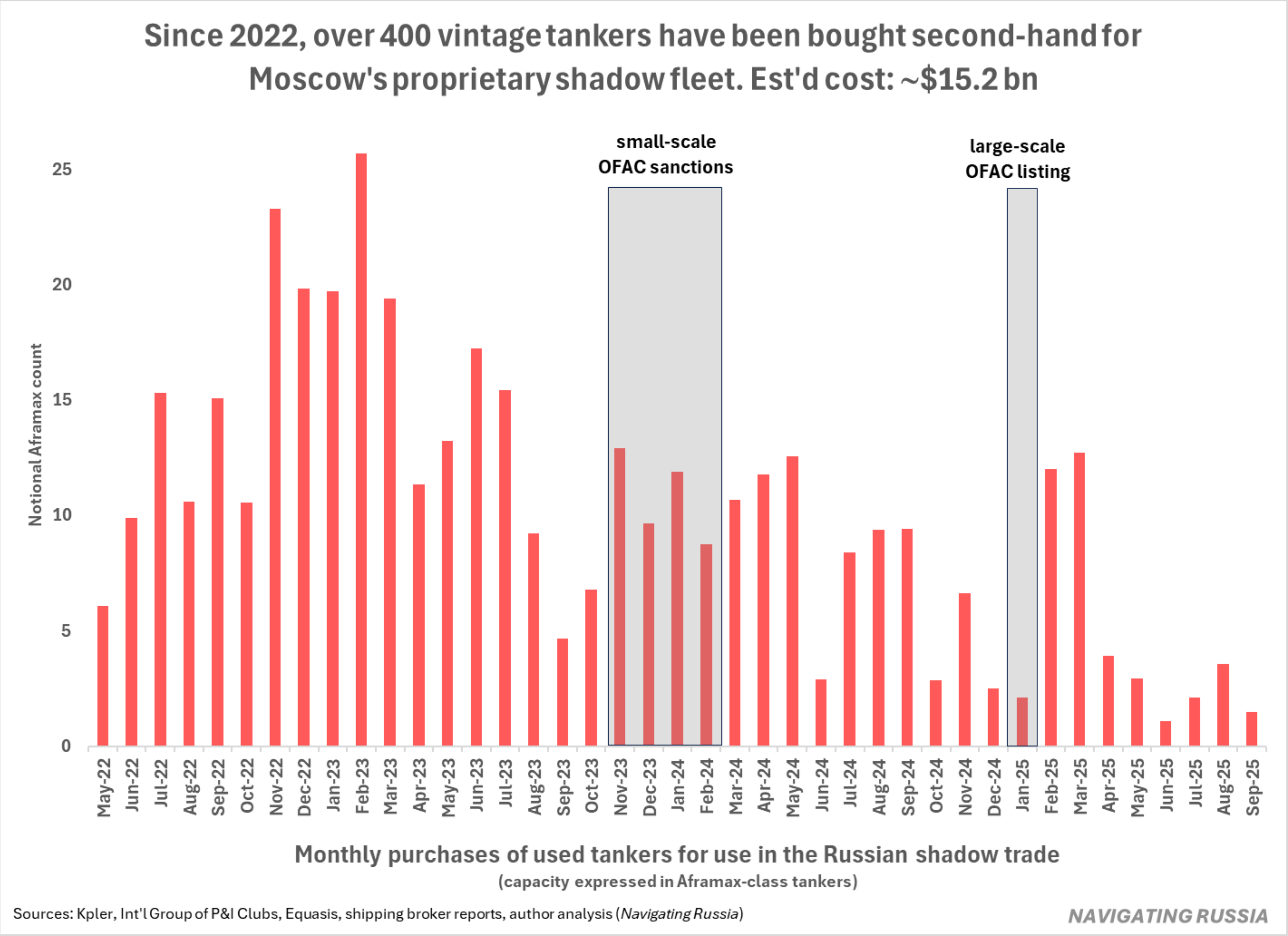

Since 2022, over 400 vintage tankers have been bought second-hand for Moscow's proprietary shadow fleet. Est'd cost: ~$15.2 bn
small-scale OFAC sanctions
large-scale OFAC listing
Notional Aframax count
0
5
10
15
20
25
May-22
Jun-22
Jul-22
Aug-22
Sep-22
Oct-22
Nov-22
Dec-22
Jan-23
Feb-23
Mar-23
Apr-23
May-23
Jun-23
Jul-23
Aug-23
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Sep-24
Oct-24
Nov-24
Dec-24
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Mar-25
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May-25
Jun-25
Jul-25
Aug-25
Sep-25
Monthly purchases of used tankers for use in the Russian shadow trade
(capacity expressed in Aframax-class tankers)
Sources: Kpler, Int'l Group of P&I Clubs, Equasis, shipping broker reports, author analysis (*Navigating Russia*)
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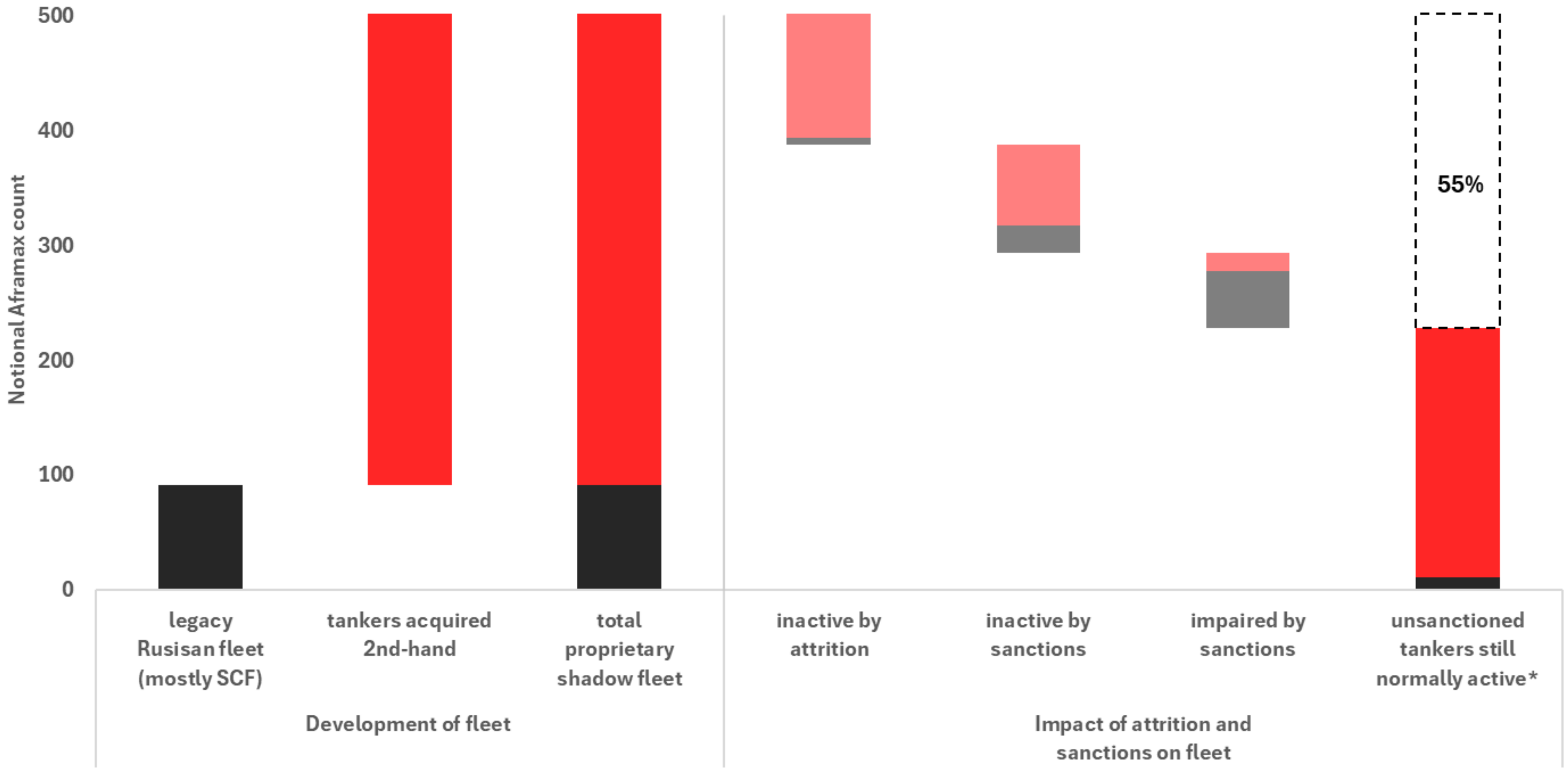
Rise and partial collapse of Russia's shadow fleet: ~55% of fleet tankers have dropped from normal service because of attrition and sanctions



The rise and partial collapse of Moscow's proprietary shadow fleet
(total capacity in Aframax tankers)
May 2022 - Nov. 2025

*"Unsanctioned tankers still normally active" = tankers not listed by OFAC and still normally active.
Sources: Kpler, Int'l Group of P&I Clubs, Equasis, author analysis (*Navigating Russia*)

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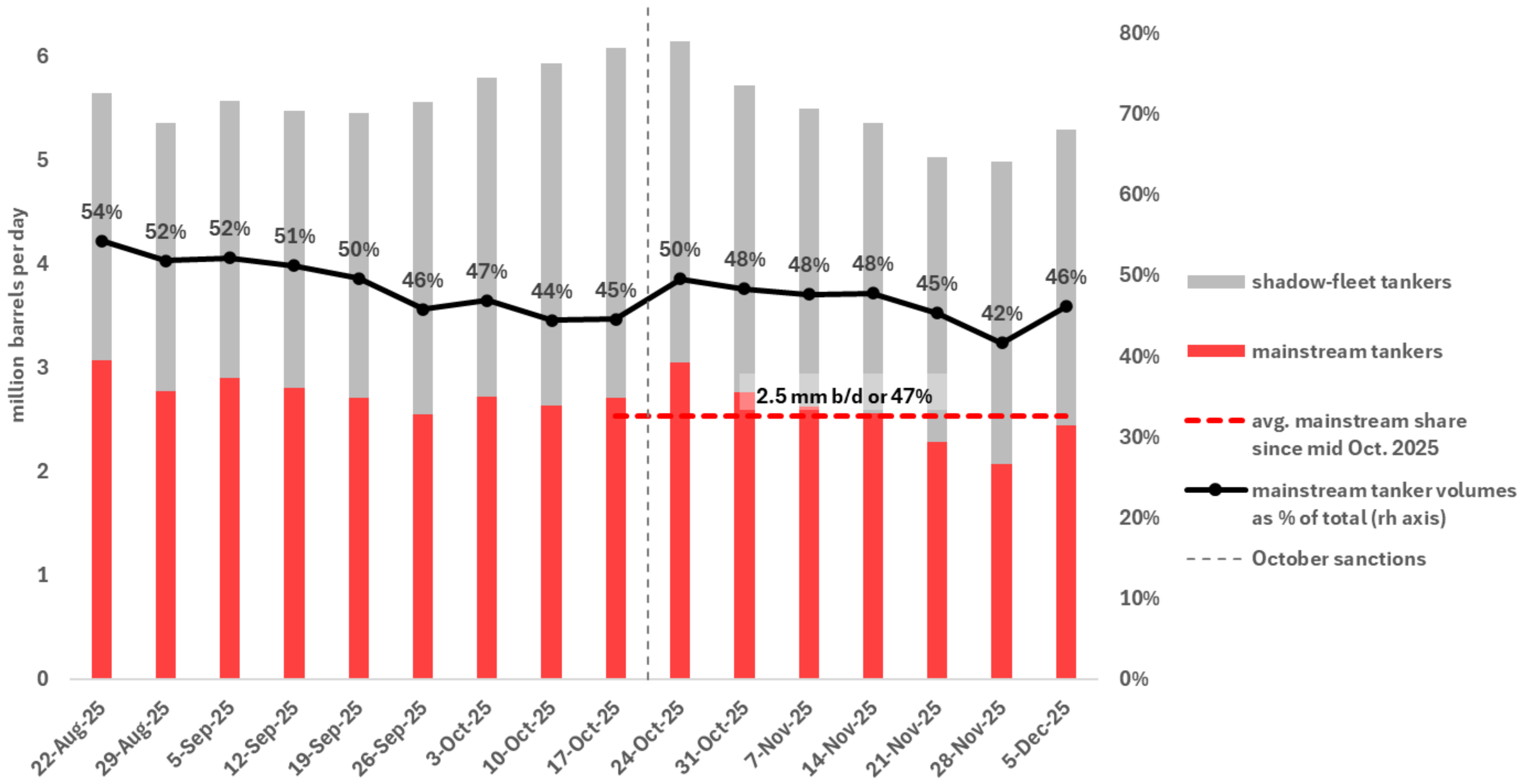
Moscow remains reliant on mainstream tankers. They have lifted ~50% of Russia's exports in 2H 2025 & remain firm so far under the new sanctions.



Mainstream fleet vs. shadow fleet: share of liftings from Russian ports
4 week moving averages of daily export volumes

Source: Kpler, International Group of P&I Clubs, Equasis, author analysis

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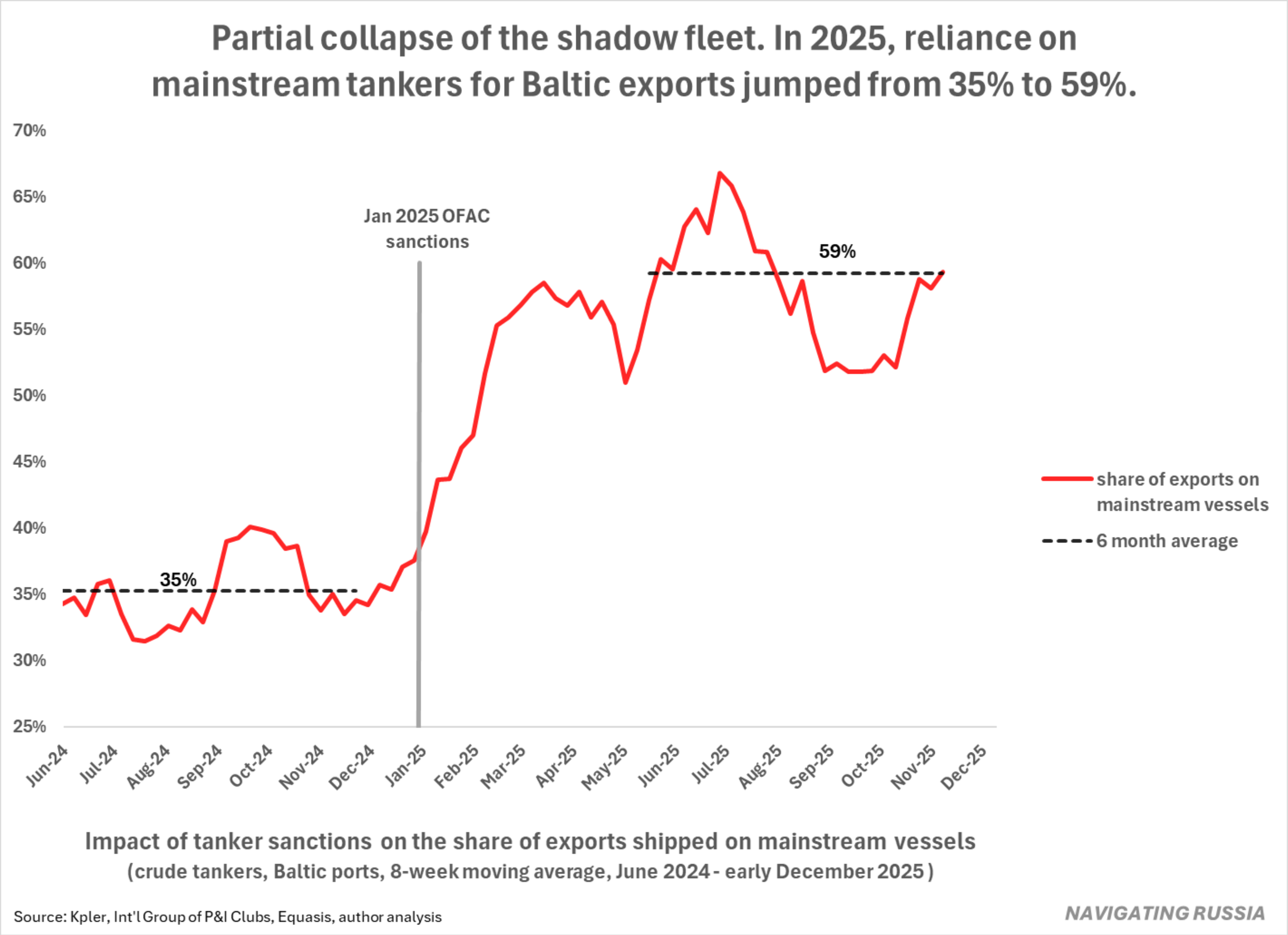
Partial collapse of the shadow fleet. In 2025, reliance on mainstream tankers for Baltic exports jumped from 35% to 59%.
70%
65%
60%
55%
50%
45%
40%
35%
30%
25%
Jan 2025 OFAC sanctions
59%
35%
Jun-24
Jul-24
Aug-24
Sep-24
Oct-24
Nov-24
Dec-24
Jan-25
Feb-25
Mar-25
Apr-25
May-25
Jun-25
Jul-25
Aug-25
Sep-25
Oct-25
Nov-25
Dec-25
share of exports on mainstream vessels
6 month average
Impact of tanker sanctions on the share of exports shipped on mainstream vessels
(crude tankers, Baltic ports, 8-week moving average, June 2024 - early December 2025)
Source: Kpler, Int'l Group of P&I Clubs, Equasis, author analysis
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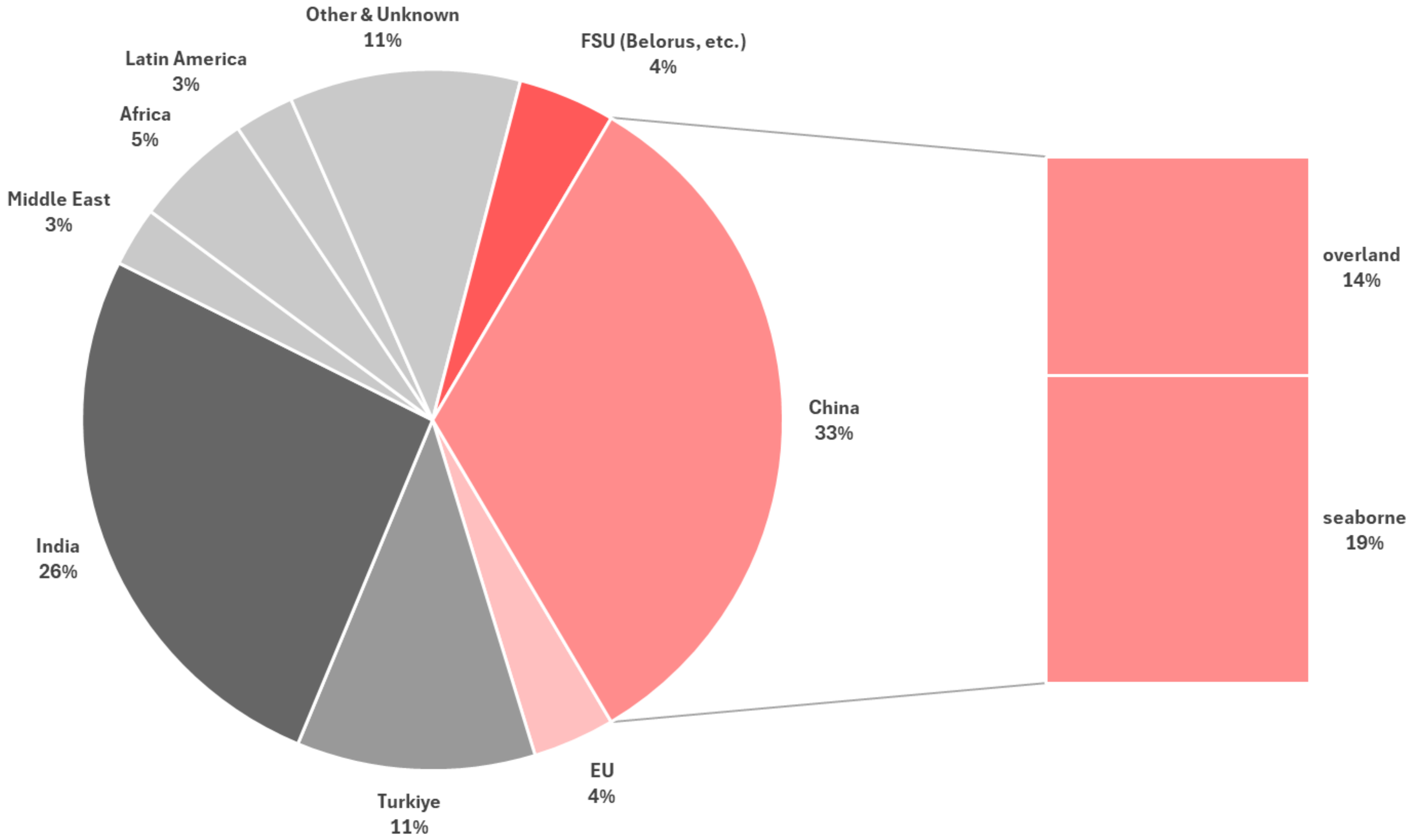
India is Russia's largest buyer of seaborne exports, followed by China and Turkey



Source: Ministry of Energy, IEA, Kpler, *Nefte Kompass*, *Reuters*, author analysis.

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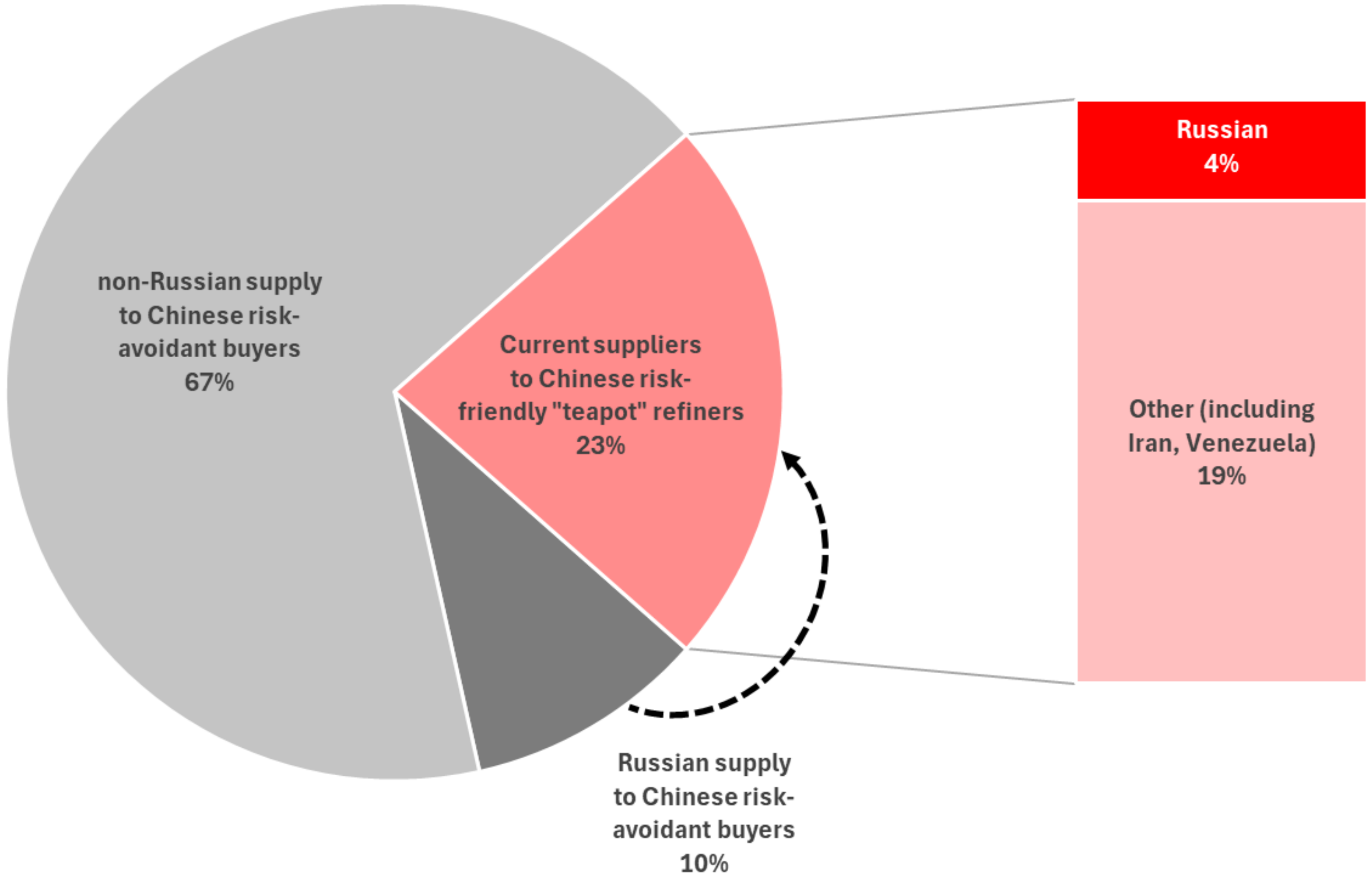
To help prevent seaborne deliveries to China from falling, Russia needs to displace around half of Iran & Venezuela's sales to risk-friendly, "teapot" refiners



Est'd import breakdown between risk-avoidant and risk-friendly Chinese refiners (Pre-October 2025)

Source: Kpler, Vortexa, Bloomberg, Reuters, S&P Global, author analysis

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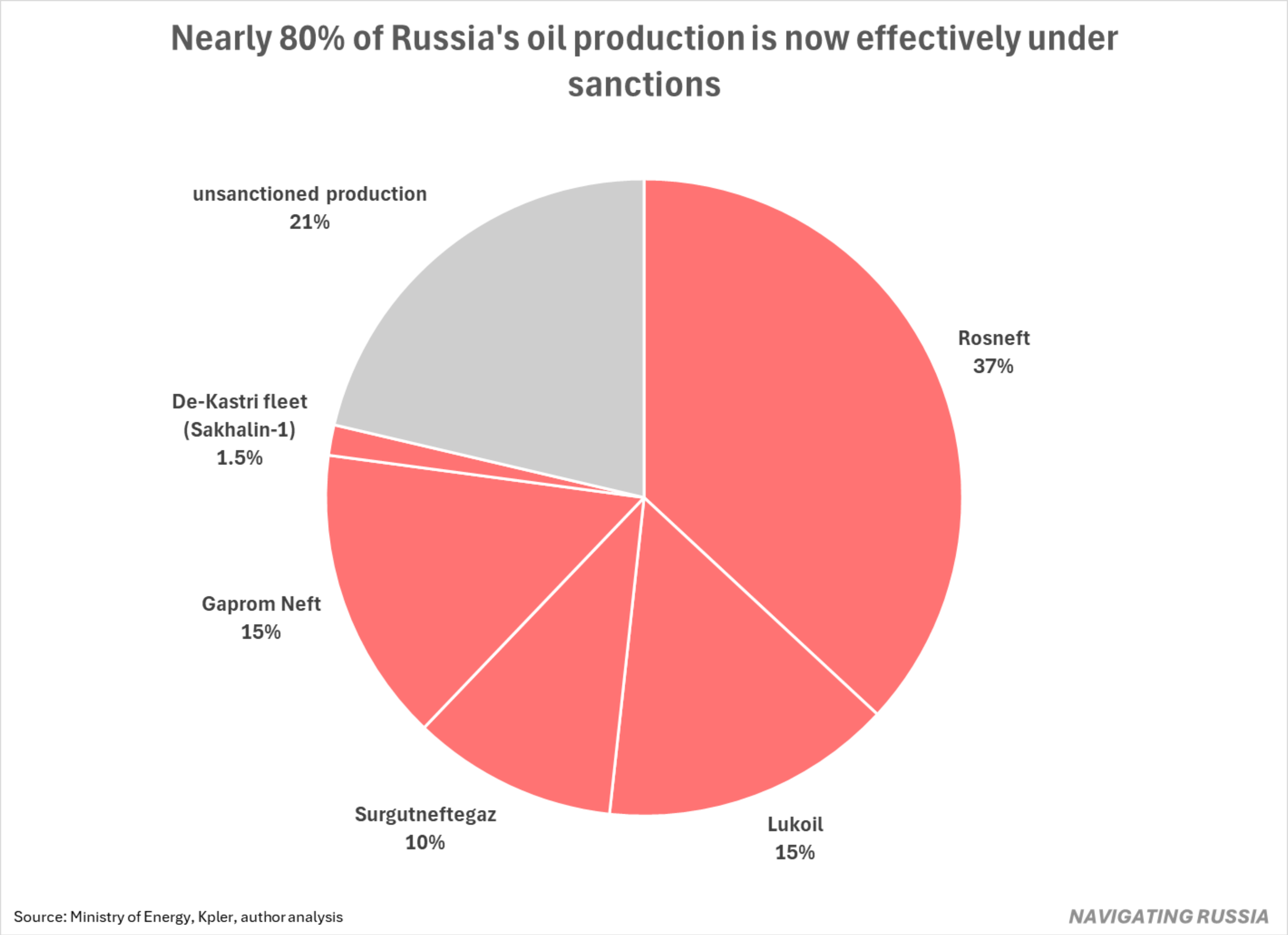
Nearly 80% of Russia's oil production is now effectively under sanctions
unsanctioned production 21%
Rosneft 37%
De-Kastri fleet (Sakhalin-1) 1.5%
Gaprom Neft 15%
Surgutneftegaz 10%
Lukoil 15%
Source: Ministry of Energy, Kpler, author analysis
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