



LAB45 MONOGRAPH · THEORETICAL STUDY · OCTOBER 2026

The Diesel Cage

Refining Power, Latent Capability, and the Militarization of Middle Distillates in Unstable Multipolarity

A structural realist study of why the 2026 diesel shock moved the binding constraint on power from the wellhead to the refinery, and what that means for import-dependent middle powers

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Executive Summary

This monograph starts from a single anomaly. On 17 August 2026 the US diesel crack spread crossed US\$100 per barrel for the first time, while crude oil traded far below its spring peak. Why did the decisive price signal of a year of great-power conflict appear in a refined product rather than in crude? The answer proposed here is the *Diesel Cage*: a structural condition in which refining capacity, not oil in the ground, is the binding material constraint on military and economic power.

Building on John Mearsheimer's account of the iron cage of international anarchy and Kenneth Waltz's logic of self-help, the study treats conversion capacity as a third component of latent power alongside wealth and population. It derives three hypotheses, formalizes a convex relationship between lost distillate capacity and the crack spread, and proposes a Diesel Vulnerability Index. Evidence from Ukraine's strike campaign, the Persian Gulf war, and Indonesia's fuel position supports the argument. An exposure board scoring the United States, China, Russia and Indonesia across five squares of the supply chain shows the same result in relational form: Indonesia's largest deficit is in technology and conversion. The policy implication is direct: resilience must be measured in distillate, not crude.

Working Hypotheses

WH

Conversion as latent power

In unstable multipolarity, the strategic value of energy shifts from extraction to conversion.

H1

Strike logic

States at war target an adversary's conversion capacity in preference to its extraction capacity.

H2

Self-help spiral

States answer refinery attacks with export bans, hoarding and uneconomic domestic refining.

H3

Structural exposure

Importers of refined product bear disproportionate costs of other states' wars.

Introduction: The Puzzle of 2026

In August 2026 crude was available and diesel was scarce. That gap between a fuel and its own feedstock is the puzzle this monograph sets out to explain.

WTI crude closed at US\$84.77 a barrel on 11 August 2026, far below its 7 April peak of US\$114.58. Six days later, the premium of ultra-low sulfur diesel futures over that same crude reached an intraday record of US\$102.20 a barrel. Under normal conditions the spread sits between US\$15 and US\$30. A four- to six-fold dislocation between a fuel and its feedstock is not a market fluctuation. It signals that the binding constraint on the global energy system had moved downstream, from the wellhead to the refinery.

The standard frame for energy and security does not explain this. For half a century strategists have equated energy security with crude supply: the 1973 embargo, the Carter Doctrine, strategic petroleum reserves and the geopolitics of the Strait of Hormuz all treat oil as one undifferentiated commodity. Yet US distillate inventories fell to 107.1 million barrels in early August, the lowest for that time of year since 1996, even as American refiners ran at 96.2 percent utilization.

US retail diesel broke away from its range in March 2026

Weekly US retail diesel price, US\$ per gallon, August 2025 to August 2026

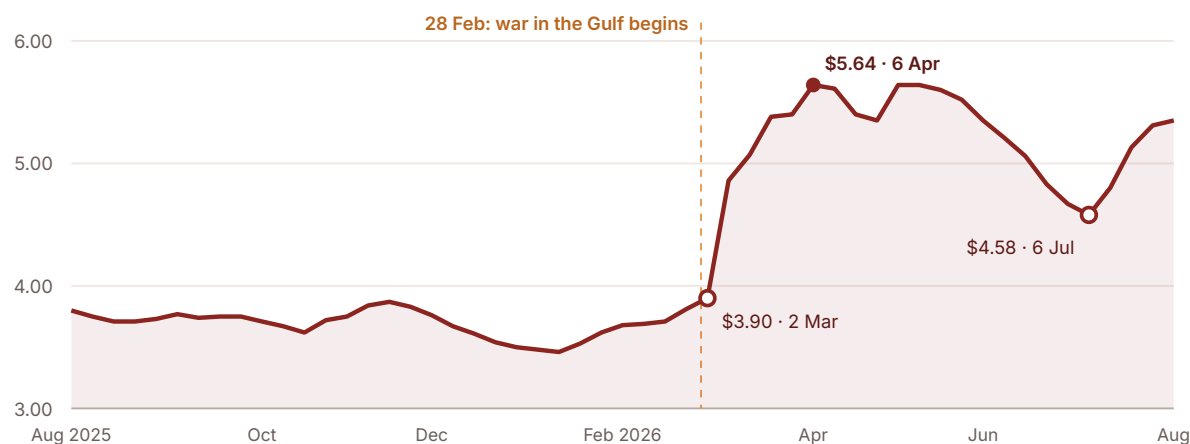


Figure 1. US on-highway diesel, weekly average. Diesel rose about a dollar a gallon in two weeks of March 2026, too fast and too large to come from crude prices alone. Data: US Energy Information Administration.

This monograph argues that the 2026 shock reveals a structural condition called the *Diesel Cage*. Mearsheimer describes international anarchy as an iron cage: the absence of a central authority forces states into security competition regardless of their intentions. The Diesel Cage applies that logic to the material base of power. Modern militaries, logistics systems and food chains run on middle distillates. The capacity to convert crude into distillate is concentrated, slow to build and physically exposed. Under anarchy, that concentration turns refineries into components of latent power and therefore into targets.

Research Questions

1. Why did the decisive price signal of the 2026 wars appear in a refined product rather than in crude oil?
2. Does conversion capacity belong among the ingredients of latent power, and how does anarchy shape the way states treat it?
3. How exposed are import-dependent middle powers such as Indonesia, and what would an exit from the cage require?

The argument proceeds in thirteen chapters. Chapter 2 builds the theory from latent power and self-help. Chapter 3 states three hypotheses, and Chapter 4 formalizes them in a convexity model and a vulnerability index. Chapter 5 presents the Diesel Cage scheme. Chapters 6 to 8 test the argument against three cases, and Chapter 9 extends it to tanker freight, the second bar of the cage. Chapter 10 scores the whole supply chain on an exposure board, first for the United States, China and Russia and then for Indonesia. Chapter 11 answers the liberal objection, and Chapters 12 and 13 draw policy implications and a research agenda.

From the Iron Cage to the Diesel Cage

Latent power has always been measured by wealth and population. A force structure that burns fuel faster than munitions needs a third term: the capacity to convert crude into distillate.

Latent power and the missing term of conversion

Mearsheimer distinguishes military power from latent power, the socioeconomic ingredients from which armies are built, and operationalizes latent power mainly through wealth and population. That suited an age in which industrial output could be redirected to war production over months or years. It is less adequate for a force structure that consumes fuel faster than it consumes munitions.

A modern combined-arms force is a distillate-burning machine. Tanks, trucks, generators, naval auxiliaries and most of the logistics tail run on diesel or closely related middle distillates; jet fuel comes from the same fraction of the barrel. Wealth can buy crude, but crude cannot move a brigade. Between the two sits a narrow industrial step, refining, that is capital-intensive, takes years to build and is concentrated in a small number of large plants.

Latent power gains a third term

Wealth and population are necessary; without secure conversion, neither becomes mobilized power

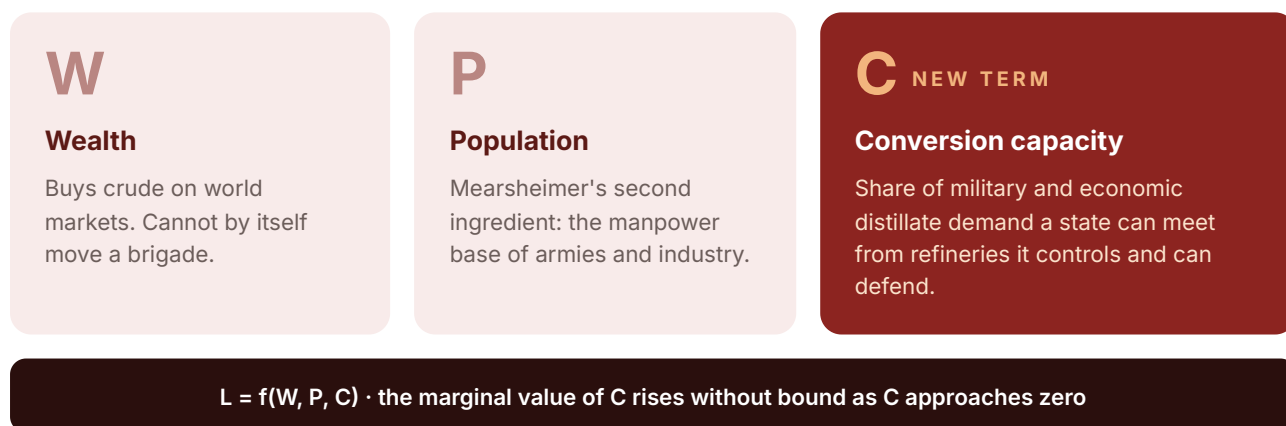


Figure 2. Latent power with conversion capacity as a third term. Conceptual model by the author, extending Mearsheimer (2001).

Formally, latent power L is a function of wealth W , population P and conversion capacity C :

$$L = f(W, P, C), \quad \partial L / \partial C > 0, \quad \partial L / \partial C \rightarrow \infty \text{ as } C \rightarrow 0$$

The second condition carries the argument. When conversion capacity is ample, its marginal value is small and it disappears into the background of economic analysis. As it approaches zero, its marginal value rises without bound: a wealthy, populous state with no secure distillate supply cannot sustain mobilized power. This is why conversion capacity was invisible for most of the post-Cold War period and became decisive in 2026.

Self-help and the refusal of dependence

Waltz supplies the behavioral mechanism. Under anarchy, states cannot rely on others for the means of their survival, so they worry about relative gains and avoid dependence on others for critical goods. Globalized refining violated that logic. Over three decades refining concentrated in large export hubs on the US Gulf Coast, in the Persian Gulf, in Russia, India and Singapore, because scale lowered cost. Efficiency created a dependence that structural realism predicts states will eventually treat as a vulnerability.

The Diesel Cage is the moment that vulnerability becomes salient. Once refineries are struck and exports banned, every state reads the same lesson: product markets are not neutral, and supply from a rival or a war zone cannot be assumed. The response self-help predicts is not cooperation but internalization: reserves, domestic capacity, substitution and export restrictions.

Analytical rule

Structure sets how much conversion a state must secure. **Concentration** decides where it can be taken away. **Self-help** decides how states respond. The organizing principle stays Waltzian; the mechanism works through the refinery.

CHAPTER 03

Three Hypotheses

If conversion capacity is latent power, belligerents should strike it, everyone should hoard it, and those without it should pay for other states' wars.

Hypothesis	Mechanism	Observable implication	2026 evidence
H1 · Strike logic	Refineries are scarce, high-value and slow to replace, so attacks on them yield a favorable cost-exchange ratio.	Belligerents target conversion before extraction.	Ukraine hit a Russian refinery every ~3 days; Iran hit >50% of Middle East refineries.
H2 · Self-help spiral	States answer attacks and bans by restricting exports, hoarding product and internalizing refining at a loss.	Export caps and bans spread to non-belligerents.	Russian export bans; China, Thailand and South Korea capped fuel exports.
H3 · Structural exposure	Product shocks pass through prices importers cannot influence and supply they cannot command.	Importers of product suffer more than importers of crude.	Fuel costs up to 2× in parts of Asia; Pakistan raised pump prices ~20%.

Table 1. Hypotheses, mechanisms and the 2026 evidence assessed in Chapters 6–8.

A Model of the Cage: Convexity and Vulnerability

The Diesel Cage has a precise price signature. The crack spread is a convex function of lost conversion capacity, so each additional loss is worth more than the last.

The crack spread explodes as spare capacity runs out

Illustrative shape of $K(\Delta)$; only the two marked prices are observed

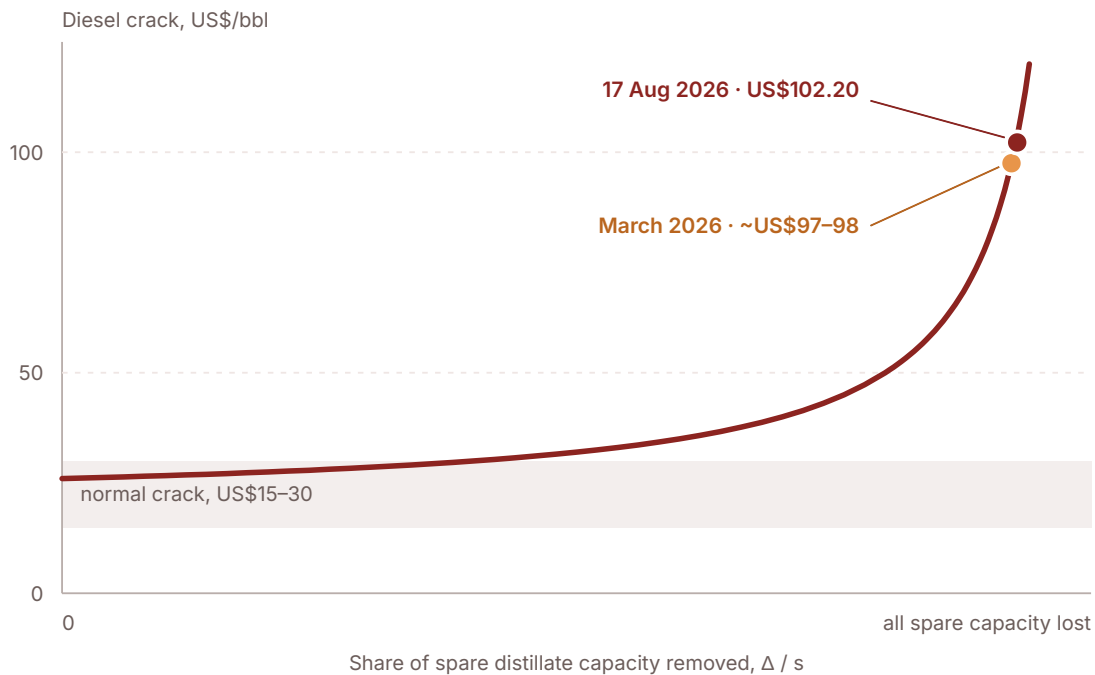


Figure 3. Convexity of the crack spread in lost conversion capacity. Curve shape from the model by the author; marked prices from Reuters via DieselNet and 24/7 Wall St.

Let s be global spare distillate capacity as a share of demand, and Δ the share removed by attack, export bans or rerouting. With K_0 the normal crack spread and γ a scaling parameter for short-run demand inelasticity, the crack spread is:

$$K(\Delta) = K_0 + \gamma / (s - \Delta), \quad 0 \leq \Delta < s$$

Three properties follow. Small losses barely move the spread while spare capacity is ample. As Δ approaches s , the spread rises without bound, because the last barrels of diesel are bid against inelastic demand from freight, farming and militaries. And the same physical loss produces very different price effects depending on how much spare capacity remains. The 2026 sequence fits this shape: the crack set a record near US\$97–98 in mid-March, then broke US\$100 in August when fresh attacks on Gulf refineries landed on a market already short of Russian product and entering peak agricultural demand. August's shock did not need to be larger than March's. It only had to arrive when $s - \Delta$ was smaller.

The strategic implication is that an attacker's leverage is greatest late, not early. Strikes on refining compound: each additional loss pushes the market further along the curve. This is the formal core of H1.

Diesel Vulnerability Index (DVI)

$$DVI_i = (m_i \cdot h_i \cdot \mu_i)^{1/3} \cdot (1 - \sigma_i)$$

m is net distillate imports as a share of consumption, h the Herfindahl-Hirschman index of supplier concentration, μ the share of military and freight energy met by middle distillates, and σ days of distillate stocks divided by 90, capped at 1. The geometric mean reflects interaction rather than substitution; the stock term buys time but does not remove exposure. A value near 1 means a state is fully inside the cage. All four terms need calibration from IEA and national data. Chapter 9 adds a fifth term for freight exposure.

The index operationalizes H3 and connects to the Node Criticality Index of complex structural realism: refineries a state depends on but does not control are, in effect, critical nodes in someone else's territory.

The Diesel Cage Scheme

Two wars, one target. The scheme links the events and data of 2026 to the parties they touched, and shows where the pressure gathered: in the global distillate market.

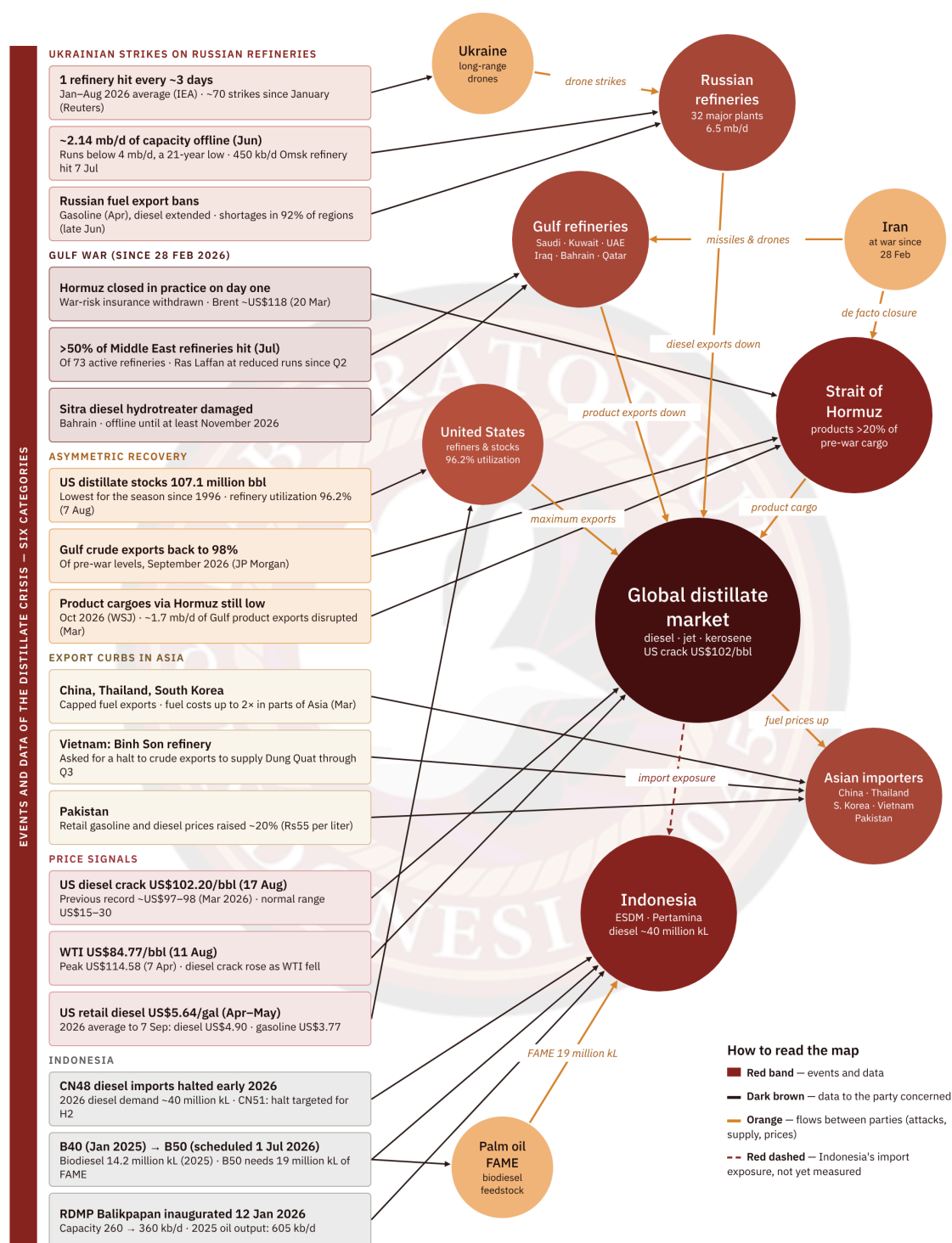


Figure 4. The Diesel Cage scheme: chain exposure in the 2026 distillate crisis. Events and data (left) are linked to the parties they affect (right); circle size and color show how many lines meet at each party. Compiled by the author from IEA, Reuters, EIA, JP Morgan, WSJ and Indonesian government sources.

Case One: Ukraine and the Conversion Strike

Ukraine did not deny Russia oil. It denied Russia the ability to turn oil into fuel and revenue.

Both wars aimed at the conversion stage of the chain

Top: stages of the oil-to-fuel chain. Middle: where the 2026 strikes landed. Bottom: what followed



Figure 5. Where the 2026 strikes landed on the oil-to-fuel chain. Compiled by the author from IEA, Reuters, Energy Intelligence and Polymerupdate.

Russia's 32 major refineries hold about 6.5 million barrels per day of nameplate capacity, making it the world's third-largest producer of refined products after the United States and China. Ukraine had struck the sector since 2022, but in 2025–26 the campaign changed in scale, range and effect. According to the IEA, a Russian refinery was successfully hit on average once every three days in the first eight months of 2026.

The targeting pattern matches the strike logic. On 7 July Ukraine hit the 450,000 barrel-per-day Omsk refinery, Russia's largest, about 2,500 kilometers from the border; the Moscow refinery, damaged in June, is reportedly offline until early 2027. By late August only four major refineries, all in Eastern Siberia or farther east, remained untouched. Reuters calculations found that half of the six refineries producing about half of Russia's diesel had cut or halted output. Roughly a third of primary capacity, about 2.14 million barrels per day, was offline by June, and refinery runs fell below 4 million barrels per day, a 21-year low.

The choice of target is the theoretical point. Crude production and pipeline pumping stations are dispersed and hardened. A refinery's distillation and hydrotreating units are concentrated, complex and slow to repair. Analysts at the Baker Institute observed the resulting asymmetry: Russian crude exports held steady while product exports fell.

Russia's response confirms H2. Moscow banned gasoline exports in April, extended a diesel export ban into the autumn, relaxed domestic fuel standards and reportedly began importing diesel. Shortages still reached 92 percent of Russian regions by late June. The world's second-largest diesel exporter turned inward, tightening the market for everyone else. The externality confirms H3: in August the US president publicly urged Ukraine to stop targeting Russian diesel infrastructure because the strikes were feeding a global shortage. A campaign between two belligerents imposed costs on the world's largest economy, which had no say in it.

Case Two: The Persian Gulf and the Recovery That Was Not

The crude crisis did not last. The refining crisis did. That divergence is the most important evidence for the Diesel Cage.

The war that began with US and Israeli strikes on Iran on 28 February 2026 started as a classic chokepoint crisis. Within the first day the Strait of Hormuz closed in practice, not by blockade but because insurers withdrew war-risk cover and owners pulled crews. Iran then struck energy infrastructure across six Gulf states at once, and Brent rose to about US\$118 a barrel by 20 March.

First, the war hit the distillate end of the barrel hardest. Goldman Sachs analysts noted that nearly 60 percent of Persian Gulf crude exports are medium and heavy grades best suited to diesel and jet fuel, with few alternative suppliers; roughly 1.7 million barrels per day of Gulf product exports were disrupted in the first week. Second, Iran targeted conversion. By late July its missiles and drones had struck more than half of the region's operational refineries, and Bahrain's Sitra refinery lost its diesel hydrotreater until at least November. The choice of a hydrotreater, the unit that makes road diesel, is the strike logic of H1 at its most precise.

Third, crude recovered while product did not. JP Morgan estimated Middle East crude exports in September at 98 percent of pre-war levels, yet the IEA reported that refinery attacks and shipping disruption had collapsed regional product output, against 3.3 million barrels per day of product exports in 2025. In early October, crude flows through Hormuz were back to about three-quarters of pre-war levels, but product shipments remained sharply depressed, with refineries in Saudi Arabia, Kuwait, the UAE and Iraq still offline. Before the war, products made up more than a fifth of Hormuz cargoes.

The self-help response, as H2 predicts

China, Thailand and South Korea capped fuel exports. Vietnam's Binh Son refinery asked its government to halt crude exports and reserve supply for domestic refining. Pakistan raised retail diesel and gasoline prices by about 20 percent. Each measure was rational on its own. Together they removed more product from the market at the moment it was scarcest, pushing the system further along the convex curve.

The two cases then combined. The August record came when fresh strikes on Gulf refineries landed on a market already short of Russian diesel and entering peak agricultural demand. Neither war alone produced a US\$100 crack. Two belligerent dyads, each targeting conversion, did so jointly, and the bill landed on third parties.

Case Three: Indonesia and the Partial Exit

Indonesia was already pursuing the self-help response before the shock arrived. Its case shows both the value of an exit and the bars that remain.

For two decades Indonesia was a textbook price-taker on refined product: a net oil importer with a large archipelagic logistics system running on diesel, historically reliant on regional product hubs, above all Singapore, for imported fuel. By the logic of the Diesel Vulnerability Index, it should have entered 2026 with high values on m , h and μ . It took two paths at once.

The first was **substitution**. The B40 biodiesel mandate took effect on 1 January 2025. Biodiesel consumption reached 14.2 million kiloliters in 2025, and the government raised the mandate to B50, scheduled to take effect on 1 July 2026 and expected to cut fossil diesel use by about 4 million kiloliters a year. Palm-based FAME is, in effect, domestic conversion capacity grown on plantations rather than built in a refinery. The second was **internalization**. President Prabowo inaugurated the Balikpapan Refinery Development Master Plan on 12 January 2026, raising the plant's capacity from 260,000 to 360,000 barrels per day. The energy minister said Indonesia had stopped importing low-grade (CN 48) diesel from the start of 2026, against national diesel demand of about 40 million kiloliters, with higher-grade (CN 51) imports to end in the second half of the year.

Self-help relocates vulnerability rather than abolishing it

EXITS

= lower dependence on foreign conversion

- B40 (Jan 2025) → B50 (scheduled Jul 2026)
- Biodiesel 14.2 million kL in 2025
- RDMP Balikpapan 260 → 360 kb/d
- CN 48 diesel imports halted early 2026
- CN 51 imports targeted to end in H2

BARS THAT REMAIN

= where the cage has moved

- The fossil half of B50 rests on crude imports
- Jet and military-specification fuels
- Palm feedstock: B50 needs 19 million kL FAME
- Value concentrated in Balikpapan, Cilacap
- Domestic plants as strike targets

Under anarchy there is no permanent exit from the cage, only a choice of which bars to live behind

Figure 6. Indonesia's partial exit from the Diesel Cage. Compiled by the author from S&P Global, Jakarta Globe and GridOto; B50 start and the end of CN 51 imports are not yet confirmed.

Indonesia lowered its m on diesel at the moment the cage closed. By H3, a state that reduced its dependence on foreign conversion before the shock should have been less exposed than neighbors such as Pakistan and Vietnam that remained dependent. How much protection Indonesia actually gained is an empirical question a calibrated DVI should answer. The bars that remain matter as much: B50 still means half the diesel pool is petroleum refined from crude that Indonesia increasingly imports, with domestic output of about 605,000 barrels per day in 2025. Biodiesel does not substitute for jet fuel or, without further testing, for military-specification fuels, so TNI's most

strategic platforms may sit outside the exit. And internalization concentrates value in a few large plants that Case One shows are exactly what an adversary with long-range strike capability would target.

CHAPTER 09

Freight as the Second Bar

By October 2026 the cage had a second bar. The chokepoint now sits in carriage as well as conversion: there are not enough tankers to move the barrels that need moving.

Freight went from a rounding error to half the cargo

US Gulf to China crude freight and tanker values, October 2026

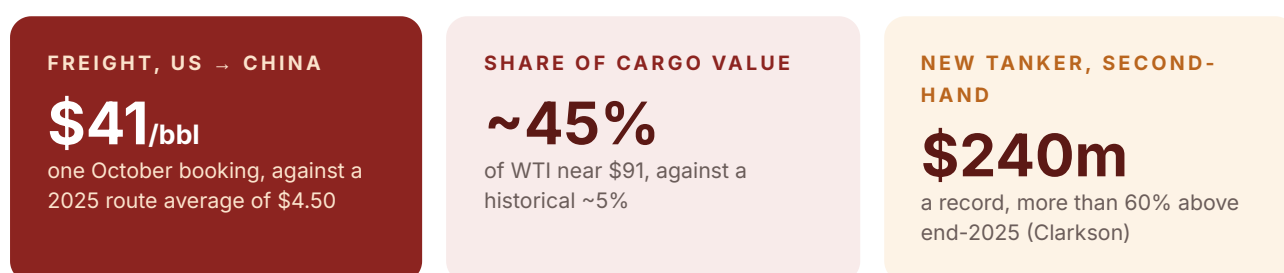


Figure 7. The 2026 freight squeeze. A single fixture at \$41 is the top of a volatile range, not an average. Data: Gibson, SSY and Clarkson via Bloomberg, 9 October 2026.

A supertanker voyage from the US Gulf to China now costs about US\$80 million, more than a Falcon 9 launch. Brokers put inflation-adjusted rates at their highest since supertankers entered service in the 1960s, above the tanker wars of the 1980s. The cause is a fleet stretched by the Iran war: ship-to-ship shuttles out of Hormuz add about a week per voyage, tankers that sailed empty when Hormuz closed must now reposition, Iranian attacks put hulls into repair, and Houthi risk sends ships around Africa. Gulf flows have recovered to about 80 percent of pre-war levels, but the ships to carry them have not.

Freight feeds back into conversion

The quoted US crack spread, diesel futures minus WTI, hides this shock. A refiner in Asia pays crude plus freight, so freight comes straight out of its margin. RBC estimates that Repsol's margin fell from about US\$36 a barrel in the third quarter to about US\$15 in October, partly because of tanker costs. If freight keeps rising, importing refiners cut runs. That removes conversion capacity with no strike at all: Δ in the convexity model rises on its own, and the market climbs the curve by itself. The 2026 shock can therefore move from wartime destruction to market self-amplification. It also refines Chapter 1: crude stayed contained at the wellhead, but delivered crude for importers did not.

The self-help response has reached shipping, as H2 predicts. Iraq, the UAE and Kuwait are buying tankers, producers are locking in long-term charters, and cargoes are split onto smaller Suezmax ships, whose earnings now exceed US\$680,000 a day. Distance has become a price: West African sellers discount crude to reach Chinese refiners 10,000 miles away.

Extended Diesel Vulnerability Index (DVI⁺)

$$DVI_i^+ = (m_i \cdot h_i \cdot \mu_i \cdot \varphi_i)^{1/4} \cdot (1 - \sigma_i), \quad \varphi_i = F_i / (F_i + T_i)$$

F is the ton-miles a state's crude and product imports require each year: imported volume times voyage distance. T is the ton-miles its owned and long-term-chartered tankers can carry. A state that carries none of its own imports has $\varphi = 1$; one whose controlled fleet matches its import task has $\varphi = 0.5$; it falls further only as controlled tonnage exceeds the task. The freight term enters the geometric mean, so freight exposure compounds dependence on foreign refining rather than adding to it.

Indonesia: the exit that freight does not cover

B50 and RDMP Balikpapan cut imports of finished diesel. They do not cut freight exposure on the fossil half of the pool, because Balikpapan's added 100,000 barrels per day must still be fed with crude, much of it imported. In this market, tanker capacity under Indonesian control becomes a strategic asset in the realist sense, alongside refineries and reserves.

Policy measure: Pertamina-controlled crude tonnage

Secure owned and long-term-chartered crude tonnage through Pertamina International Shipping, sized to the crude import task of Balikpapan and the other domestic refineries, so that T covers a defined share of F . Long charters bought at the top of the market are costly; the case for them rests on supply security, not price, and the share should be set by the government against the DVI⁺. The measure joins the Plan quadrant in Chapter 12.

CHAPTER 10

The Exposure Board: Great Powers and Indonesia

Conversion and carriage are two squares of a longer chain. Scoring the whole chain shows who can squeeze whom, and where Indonesia's cage actually sits.

The cases so far follow one link at a time. Structural realism asks a wider question: how is the capacity to hurt and be hurt distributed across the system? Waltz's distribution of capabilities is relative, and in an energy crisis capability is relational. A state's position depends on what it can deny others and what others can deny it. This chapter therefore scores the energy supply chain as a board of five squares: raw materials; technology and conversion; freight; capital markets; and consumers and buyers.

On each square a player receives two ordinal scores from 1 (minimal) to 5 (decisive). *Leverage* is the ability to deny or price what another player needs at that stage. *Exposure* is the reverse: the degree to which others can deny or price it. Exposure follows Keohane and Nye's vulnerability, leverage is the capacity to impose it, and the net position, the sum of leverage minus the sum of exposure, is a crude measure of where a player stands in the relational distribution of power. The scores are the author's judgements from the 2025–2026 evidence, as of 12 October 2026. They compare players with each other and are not measured quantities; calibrating them is added to the research agenda in Chapter 13.

The great-power board: US × China × Russia

Washington holds the sea lanes and the money, Beijing the factories and the checkout

Energy Rivalry Board: leverage (L) and exposure (E), 1–5, and net position per square, as of 12 October 2026

	Raw materials	Technology & conversion	Freight	Capital markets	Consumers & buyers
United States Net +8 · L 21 · E 13	Supplier of last resort; rare-earth dependent +1 L 4 · E 3	Refines at the limit; buys clean tech from China +1 L 4 · E 3	Controls sea lanes; blockades Iran +3 L 5 · E 2	Sanctions set the price of rivals' oil +3 L 5 · E 2	Europe buys American; voters pay more 0 L 3 · E 3
China Net +2 · L 20 · E 18	Owns the minerals; imports the oil -1 L 4 · E 5	Factory of the energy transition +2 L 5 · E 3	Builds the ships; cannot guard the route -2 L 3 · E 5	Pays outside the dollar, still fears it 0 L 3 · E 3	The checkout every exporter needs +3 L 5 · E 2
Russia Net -14 · L 8 · E 22	Barrels in the ground, few ways out +1 L 3 · E 2	Conversion under drone fire -4 L 1 · E 5	A shadow fleet under fire -3 L 2 · E 5	Locked out of the dollar system -4 L 1 · E 5	Two buyers set the price -4 L 1 · E 5

Figure 9. The Energy Rivalry Board. Green tint: net leverage; red tint: net exposure; red outline: a chokepoint for that player. Compiled by the author from IEA, EIA, Reuters, Bloomberg, Energy Intelligence, Clarkson's, S&P Global and Kpler.

The United States ends at +8 (leverage 21, exposure 13). Its decisive squares are freight and capital. The naval blockade of Iranian ports from 13 April 2026 decides which barrels sail, and sanctions on Rosneft and Lukoil cover about 70 percent of Russian export volumes and widened the Urals discount to about US\$23.51. Its weak square is critical minerals, where China mined about 69 percent of the world's rare earths in 2025 and processes up to 90 percent. Even the supplier of last resort pays at the pump: retail diesel rose by about 54 percent in a year, the H3 externality turned back on an exporter.

China ends at +2 (20, 18). It holds technology, with about 85 percent of solar PV and 80 percent of battery manufacturing capacity, and it holds the checkout. Russia supplied a record 29.2 percent of its crude imports in June 2026, and Beijing's price offer has stalled Power of Siberia 2. Its chokepoints are raw materials and freight: seaborne crude imports fell to 7.14 million barrels per day in August, 37 percent below the pre-war average. That is the second bar of Chapter 9 seen from the largest importer.

Russia ends at -14 (8, 22). It is exposed on four of five squares, and its worst is the one this monograph predicts. About 2.14 million barrels per day of refining was offline in June 2026 after a strike roughly every three days. The board thus restates H1 in relational form. The belligerent that

lost the conversion square also lost freight, capital and buyers, because a state that cannot refine, ship, finance or choose its customers sells at the price others set.

The Indonesian board: eight counterparties

For a middle power the same board must be read from the other side. Indonesia does not compete for primacy; it is squeezed by, and squeezes, several counterparties at once. Figure 10 scores Indonesia against the three great powers and five other counterparties that weigh on its energy chain: the Gulf exporters, the Singapore–Malaysia refining hub, Japan–Korea, India and the African suppliers.

Indonesia is exposed to five of eight counterparties, each on a different square

Indonesia Exposure Board: Indonesia's leverage (L) over and exposure (E) to each counterparty, 1–5, as of 12 October 2026

	Raw materials	Technology & conversion	Freight	Capital markets	Consumers & buyers
United States Net -7 · L 10 · E 17	LPG lifeline; nickel lever -1 L 3 · E 4	US refineries fill the gap -2 L 1 · E 3	Buying American: longest haul -2 L 2 · E 4	Dollar bonds bind Pertamina -3 L 1 · E 4	Pledge bought a 19% tariff +1 L 3 · E 2
China Net -6 · L 12 · E 18	Ore and coal China needs +1 L 4 · E 3	China owns the conversion -4 L 1 · E 5	Its crude crosses our waters +2 L 4 · E 2	Chinese capital downstream -3 L 1 · E 4	A quarter of all exports -2 L 2 · E 4
Russia Net -4 · L 7 · E 11	Hedge barrel, not supply line 0 L 1 · E 1	Tuban 300 kb/d stuck pre-FID -1 L 1 · E 2	Shadow tankers, refused berth -2 L 1 · E 3	Sanctions risk via Lemigas -3 L 1 · E 4	A new buyer Moscow courts +2 L 3 · E 1
Gulf States Net -7 · L 8 · E 15	Crude and LPG behind Hormuz -3 L 1 · E 4	Refineries built for Arab Light -2 L 1 · E 3	Hormuz is the bar -4 L 1 · E 5	Gulf money looking east +1 L 2 · E 1	A buyer that is leaving +1 L 3 · E 2
Singapore–Malaysia Net -5 · L 10 · E 15	Products inherit Gulf risk -1 L 1 · E 2	Indonesia's offshore refinery -4 L 1 · E 5	Co-guardians of the strait +1 L 4 · E 3	Singapore: top investor -2 L 1 · E 3	Hub refiners need our tenders +1 L 3 · E 2
Japan–Korea Net +3 · L 12 · E 9	LNG Tokyo and Seoul rely on +3 L 4 · E 1	Inpex operates Abadi -1 L 1 · E 2	Their crude, our waters +3 L 4 · E 1	Patient capital, modest share -1 L 1 · E 2	Over half of LNG exports -1 L 2 · E 3
African suppliers Net +3 · L 10 · E 7	Hormuz-free barrels +1 L 3 · E 2	Crude only, no conversion ties 0 L 1 · E 1	Long route that skips Hormuz -1 L 1 · E 2	Pertamina as investor +1 L 2 · E 1	Sellers courting Asian buyers +2 L 3 · E 1
India Net 0 · L 8 · E 8	India's leading coal supplier +1 L 3 · E 2	Little exchange 0 L 1 · E 1	Separate sea lanes 0 L 1 · E 1	Minor investor 0 L 1 · E 1	Coal buyer turning domestic -1 L 2 · E 3

Figure 10. The Indonesia Exposure Board. Red outline: a chokepoint for Indonesia; green outline: an Indonesian lever. Compiled by the author from BPS, ESDM, C4ADS, EIA via Malay Mail, Katadata, S&P Global, Petromindo, Ecofin and The Jakarta Post.

Indonesia's net position is -23 (leverage 77, exposure 100). It is negative against the United States (-7), the Gulf States (-7), China (-6), Singapore–Malaysia (-5) and Russia (-4), level with India, and positive only against Japan–Korea (+3) and the African suppliers (+3). The pattern matters more than the total, because each power holds a different square.

US

The gas cylinder and the bonds. The United States supplied about 69 percent of LPG imports in early 2026, when imports covered 84 percent of LPG demand. Pertamina's US-law bonds carry commitments that reach purchases of sanctioned Russian crude. Indonesia's card is nickel outside Chinese control, and a US\$15 billion energy purchase pledge that helped secure a 19 percent tariff.

CN

The factories and the checkout. Chinese firms control about 75 percent of Indonesian nickel refining capacity, and China took 25.6 percent of Indonesia's exports in the first half of 2026. Indonesia's card is geography: China accounted for 7.9 million barrels per day of the crude that crossed Malacca in the first half of 2025, 48 percent of the strait's crude flow.

RU

An option, not a dependence. Russia committed up to 150 million barrels, but by mid-2026 only two cargoes had arrived, the second routed through Lemigas rather than Pertamina to keep them off the bond covenants. Exposure is low in barrels and high in sanctions risk.

GCC

The Hormuz double hop. About 20 percent of crude imports came from the Middle East through Hormuz, where traffic fell to about 23 vessels a day in late August against more than 110 before the war. Singapore and Malaysia supplied about 60 percent of Indonesia's 37.75 million tonnes of product imports in 2025, refined largely from Gulf crude. One closure hits both crude and products.

+

The hedges. Japan and Korea take over half of Indonesia's LNG exports and depend on sea lanes through Indonesian waters. African suppliers offer Hormuz-free crude, part of it from Pertamina's own fields in Algeria, Gabon and Angola.

Where Indonesia's cage sits

Summing the board by square rather than by counterparty gives the decisive result. Indonesia's net position is positive on raw materials and on its role as a buyer, roughly balanced on freight, negative on capital, and deeply negative on technology and conversion.

Square	Indonesia's leverage	Indonesia's exposure	Net	Reading
Raw materials	20	19	+1	Ore, coal and LNG offset imported crude and LPG
Technology & conversion	8	22	-14	The Diesel Cage: foreign smelters, hub refineries, US product
Freight	18	21	-3	Malacca leverage against Hormuz and long-haul exposure
Capital markets	10	20	-10	Chinese and Singaporean capital; dollar covenants
Consumers & buyers	21	18	+3	Purchase pledges and tenders as bargaining chips

The board thus confirms the central claim from an independent direction. Indonesia's largest deficit is not in resources, where it is a significant supplier, but in conversion: nickel refined in Chinese-controlled smelters, fuel refined in Singapore and Malaysia, and gasoline refined in the United States. The cage is a conversion cage first, and the second-largest deficit, capital, is what finances other states' conversion on Indonesian soil.

Reading the board through structural realism

A middle power exposed to several powers on different squares cannot balance against all of them, and aligning with one would surrender the counterweights the others provide. The board's prescription is hedging by square. Use leverage where Indonesia holds it: sea lanes, ore, LNG and purchase pledges. Buy down exposure where the cage sits, through domestic conversion, tanker tonnage and diversified capital. And treat Japan-Korea and Africa as hedges rather than alignments. This is Bebas-Aktif expressed in supply-chain terms.

Two cautions apply. First, ordinal scores compress very different magnitudes, and the board records positions as of one date in a war that is still moving. Second, Indonesia's levers are mostly held, not played. Finance Minister Purbaya's April 2026 suggestion of a Malacca transit levy was rejected by Singapore within days, and the three littoral states reaffirmed transit passage under UNCLOS in August. Indonesia's sea-lane card is a deterrent whose value depends on not using it.

CHAPTER 11

Counterarguments: Markets, Capacity, and Economics

The liberal objection correctly describes the crude market and incorrectly generalizes it to the product market.

The strongest objection comes from scholars who argue that energy markets absorb disruption better than security analysts assume. Eugene Gholz and Daryl Press showed that oil markets historically adjusted to supply shocks through rerouting, inventories and spare capacity. Emily Meierding argues that states rarely fight for oil because seizing and holding it is harder than buying it. On this view, the 2026 spread is a temporary dislocation, not a structural cage.

The 2026 evidence partly supports this view, and that is the point. The market did adjust for crude. What it could not do was adjust for refined product, because every adjustment mechanism Gholz and Press identify depends on slack. Crude has spare production capacity, strategic reserves and alternative routes. Refining in 2026 had none in sufficient quantity: US refiners were already at 96 percent, global refineries were stretched to capacity, and strategic reserves held crude rather than diesel.

Sensitivity versus vulnerability

In Keohane and Nye's terms, a state is *sensitive* when external changes raise its costs and *vulnerable* when it cannot change policy to escape those costs within a reasonable time. Crude dependence in 2026 produced sensitivity. Product dependence produced vulnerability, because conversion capacity cannot be built or bought quickly. The Diesel Cage is a vulnerability relationship in exactly their sense.

A second objection holds that high margins will draw in new capacity and dissolve the cage. They will, eventually. But a refinery takes years to build, and the 2026 campaigns show that new capacity is itself a target. As cheap long-range strike systems diffuse, the cost of attacking conversion falls faster than the cost of building it. A third objection is that this is economics rather than security. It is not, because the same distillates that move freight move armies; in two major conflicts, belligerents on both sides deliberately treated refining as a military asset.

Policy Implications for Indonesia

Resilience must be measured in distillate, not crude. Reserves, budgets and plans built around barrels of crude address the shock that did not bind in 2026 and miss the one that did.

Act first on distillate stocks, B50 checks and refinery defense

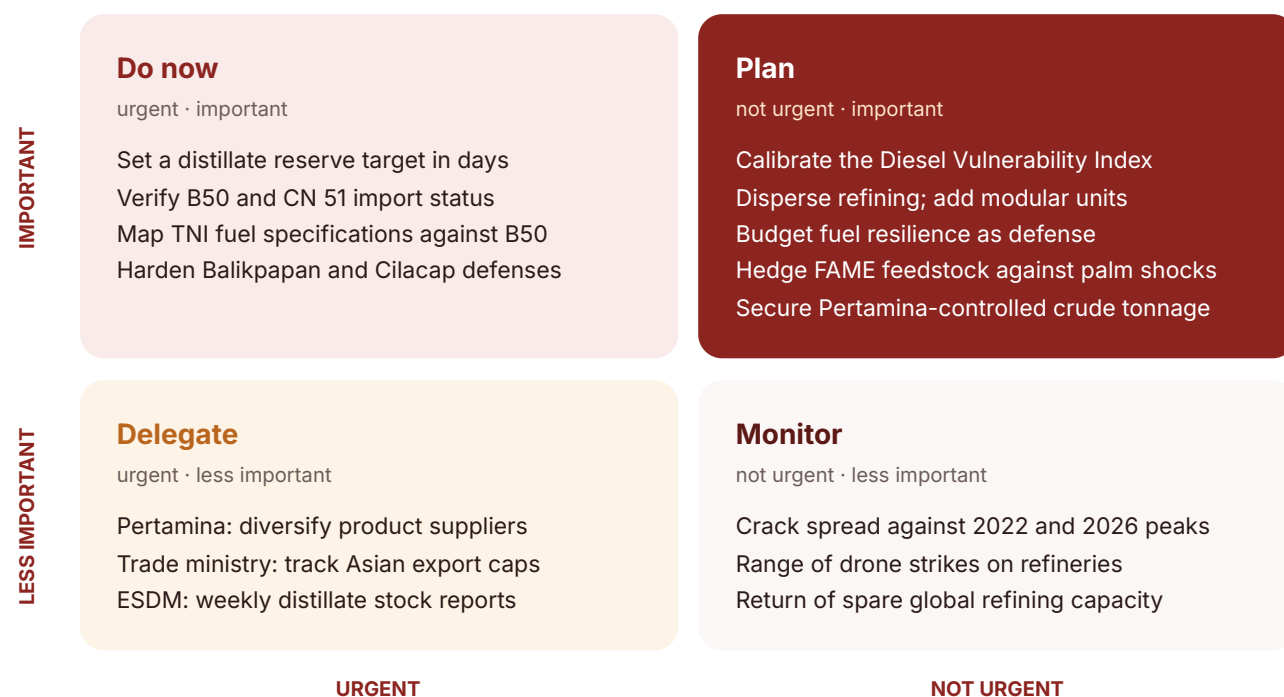


Figure 8. Fifteen measures sorted by urgency and importance, following the Eisenhower matrix of the LAB45 Monograph method. Compiled by the author.

The urgent and important quadrant is short because it targets the two gaps the Indonesia case exposed: the unverified reach of the B50 exit and the military platforms it may not cover. The planning quadrant holds the structural work: measuring exposure, dispersing conversion capacity so that no single strike removes it, treating fuel resilience as a line in the defense budget rather than an energy-ministry concern, and, after Chapter 9, putting crude carriage under Indonesian control. Chapter 10 adds a rule for all of these measures: hedge by square, holding Indonesia's levers in reserve while buying down exposure where the cage sits, in conversion and capital.

Reading the Diesel Cage through Bebas-Aktif

This is autonomy in its most material form. **Bebas** means no other state can dictate Indonesia's fuel supply in a crisis; **aktif** means Indonesia builds the reserves, dispersal and substitution that keep its forces and its economy moving when others' refineries burn. A state that cannot fuel its own forces cannot stay free of others' wars.

Conclusion and Research Agenda

The material base of power moved downstream in 2026. Conversion capacity belongs in the definition of latent power.

The US\$100 diesel crack of August 2026 marks the moment the binding constraint on power moved from the wellhead to the refinery. For fifty years energy security meant access to crude. In 2026 crude was available and the system still broke, because two wars targeted the step that turns crude into the fuel that armies, farms and freight actually burn.

Mearsheimer's iron cage explains why states compete for security whatever they intend. The Diesel Cage specifies one of the materials the cage is now made of. Conversion capacity is small when plentiful and decisive when scarce; its concentration makes it a target, and its absence makes a state a price-taker on other states' wars. Belligerents in both major conflicts of 2026 chose conversion over extraction as their target (H1). Exporters and importers alike responded with caps, bans and internalization (H2). And the costs fell hardest on states dependent on others' refineries (H3), while Indonesia's prior move toward biodiesel and domestic refining shows both the value of self-help and its limits. By October the cage had a second bar: tanker capacity, as concentrated and as slow to build as refining. Scored across the whole supply chain, the exposure board places Indonesia at a net -23 and locates its deepest deficit exactly where this study predicts, in technology and conversion.

The core message is simple. *A tank half full of someone else's diesel is not strategic autonomy.*

Further research agenda

No.	Question	Proposed approach
1	Calibrating the Diesel Vulnerability Index	Measure m , h , μ and σ for ASEAN states and other middle powers from IEA and national product-trade and stock data.
2	Estimating crack-spread convexity	Fit $K(\Delta)$ to the 2022 and 2026 episodes using refinery outage and spare-capacity data.
3	Conversion capacity as latent power	Test whether adding C improves on wealth and population as a predictor of sustained military power.
4	The cost-exchange of refinery strikes	Compare attack costs with repair time and lost product value across the Russian and Gulf campaigns.
5	The freight threshold for refinery run cuts	Estimate the freight share of cargo value at which importing refiners cut runs, using Asian margin and fixture data.
6	Calibrating the exposure board	Replace ordinal leverage and exposure scores with trade-share, ownership and concentration measures, and track them over time for Indonesia and other middle powers.

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