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Different Facets of Loss to the Oil-Producing Countries and the Shipping Fleet Sector in the Hormuz Crisis

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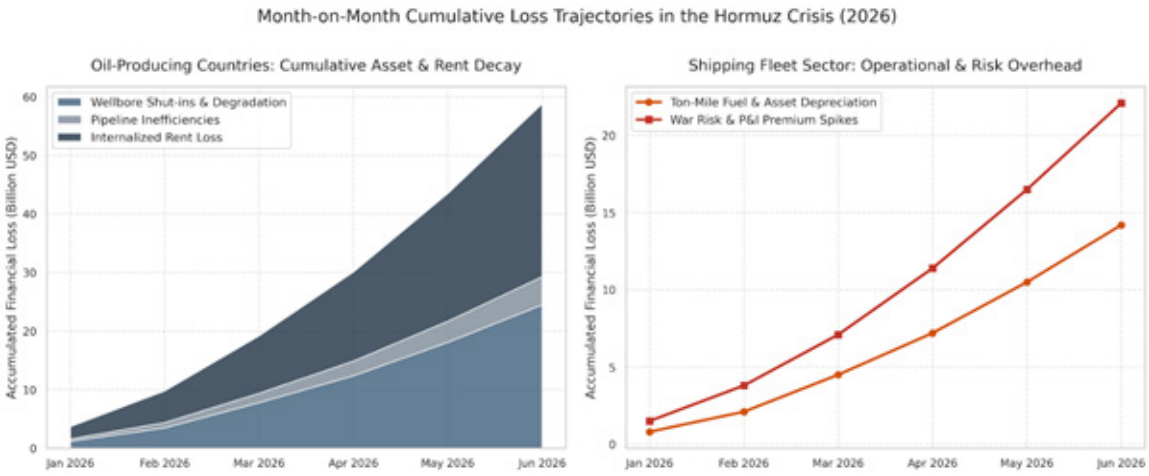
1.0 Introduction: The System Dynamics of the Hormuz Chokepoint

The effective blockade and closure of the Strait of Hormuz—precipitated by the intensification of military hostilities involving Iran, the United States, and Israel—presents an unprecedented supply-side shock to the global industrial economy[1]. At its narrowest sub-segment, the strait spans a mere 21 nautical miles, yet it forms the primary geo-economic artery through which approximately 20 to 21 million barrels per day (mbpd) of liquid hydrocarbons—equivalent to one-fifth of global petroleum consumption—and nearly 25% of global liquefied natural gas (LNG) transit[2,3].

From a systems engineering perspective, a maritime chokepoint behaves as a critical node in a highly constrained logistical network. When this node undergoes sudden closure, the resulting failures are non-linear, cascading across two distinct industrial sectors:

- The sovereign upstream asset holders (the oil-producing Gulf nations)
- The blue-water transport logistics network (the shipping fleet sector)

The structural losses incurred by these two macro-facets are distinct yet interdependent, governed by the physics of maritime transport and the mathematics of tax incidence and global market elasticities.

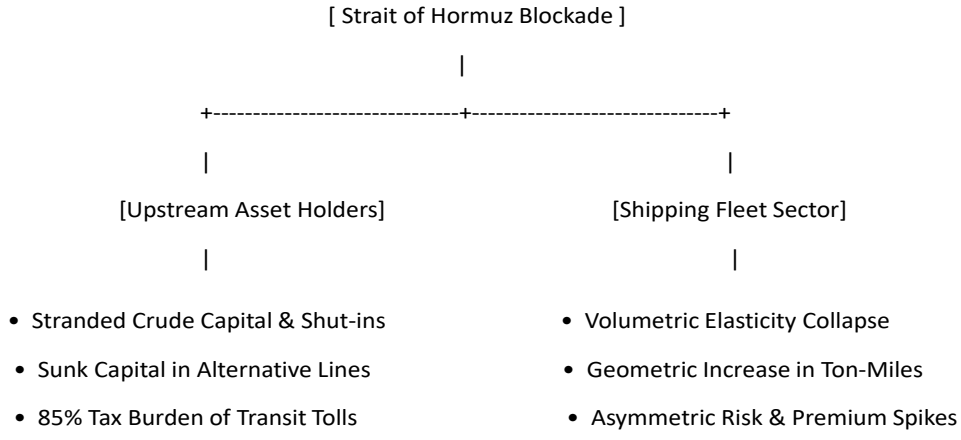


2.0 Structural Facets of Loss to Oil-Producing Countries

The impact of the Hormuz closure on the littoral states of the Persian Gulf—predominantly Saudi Arabia, the United Arab Emirates (UAE), Kuwait, Iraq, Qatar, and Iran itself—is characterized by capital asset strandedness, infrastructural degradation, and severe tax-incidence penalties[3,4].

pipeline systems, notably Saudi Arabia's East–West Crude Oil (Yanbu) Pipeline (7 mbpd capacity) and the UAE's Habshan–Fujairah line (1.8 mbpd capacity)[3]. However, these systems suffer from deep structural vulnerabilities:

- **Capacity Bottlenecks:** The combined bypass capability cannot absorb more than a fraction of the 20 mbpd displaced volume[1,3].



2.1 Upstream Asset Strandedness and Wellbore Shut-Ins

For landlocked reservoirs dependent on terminal ports within the Persian Gulf (such as Ras Tanura or Al Basrah), the complete cessation of tanker transits (which plummeted from an average of 40 to 120 transits daily down to near-zero within a multi-week span) triggers an immediate upstream volumetric crisis[2,5]. Because oil production is a continuous chemical and thermodynamic process, the lack of downstream off-take causes regional storage configurations to saturate rapidly. Once surface ullage (storage capacity) is exhausted, operators are forced to implement mechanical wellbore shut-ins.

Shutting in producing wells introduces severe risks of reservoir engineering degradation, including irreversible localized pressure drops, bottom-hole water coning, and permanent loss of ultimate sweep efficiency.

2.2 Sunk Capital and Throughput Limitations of Bypass Infrastructure

To circumvent the bottleneck, regional actors have attempted to maximize alternative transcontinental

- **Interdiction Vulnerabilities:** The Yanbu line terminates at the Red Sea, exposing cargo to secondary asymmetric threats and drone interdictions, which historically caused up to 50% of maritime traffic to divert permanently away from the route[3].
- **Capital Strandedness:** The operational redirection of light versus heavy crude slates through systems not optimized for their specific viscosity profiles induces thermal and mechanical stresses on pipeline pumping infrastructure, accelerating capital depreciation.

2.3 Tax Incidence and Rent Extraction Losses

In scenarios where diplomatic or asymmetric frameworks introduce a transit toll or emergency tax over the chokepoint to finance security or alternative access, economic modeling demonstrates that the long-run financial burden falls disproportionately on the producers rather than global consumers[4]. Because the Gulf states represent only a fraction of global capacity, their ability to drive up long-term global prices to match the cost of the disruption is restricted. Empirical tax

incidence analysis indicates that Gulf producers must internalize roughly 85% of the total toll or disruption cost per barrel, resulting in a severe erosion of sovereign resource rents and structural deficits in national capital budgets[4].

3.0 Structural Facets of Loss to the Shipping Fleet Sector

The maritime logistics matrix bears the immediate operational and financial friction of the crisis, characterized by a sudden reduction in global transport capacity and escalating risk-management overheads.

3.1 Fleet Utilization Collapse and Cargo Ton-Mile Distortion

The primary physical loss to the shipping fleet sector is the abrupt disruption of structural vessel utilization. As daily transits through the strait drop toward zero, a significant cohort of Very Large Crude Carriers (VLCCs) and Ultra Large Crude Carriers (ULCCs) are caught inside the Gulf or stranded outside, disrupting fixed charter agreements[2,5].

When maritime transport networks substitute proximate chokepoints with extended alternative routes—such as rerouting African and Middle Eastern flows via the Cape of Good Hope or exploring unproven Arctic passages—the global average voyage haul lengthens considerably[1,5]. Global seaborne trade measured in ton-miles increases non-linearly relative to absolute cargo volume[5].

This geometric expansion in ton-miles stretches the active fleet thin, meaning that while individual vessel spot rates may spike due to artificial scarcity, the aggregate sector suffers from systemic inefficiency, increased fuel/bunkering consumption, and accelerated machinery depreciation.

3.2 Asymmetric Risk Pricing and Hull Insurance Spikes

The geostrategic exposure of shipping routes within range of coastal artillery, anti-ship ballistic missiles, low-cost loitering munitions, and naval mines creates an extreme risk profile[2]. This hostile environment impacts the sector through two main financial channels:

- **Hull and Machinery (H&M) War Risk Premiums:** Marine insurers respond to active kinetic interdictions by expanding Joint War Committee (JWC) Listed Areas and hiking war risk additional premiums. These premiums can escalate from nominal fractions to several percentage points of the vessel's total capital value per transit, rendering standard commercial voyages economically unviable.
- **Protection and Indemnity (P&I) Club Reinsurance Mutuality Strains:** Because P&I clubs pool catastrophic third-party liability risks (such as massive environmental oil spills resulting from kinetic hull breaches), a concentrated series of strikes in a narrow channel threatens to breach standard reinsurance boundaries. The sector faces a contraction in underwriting liquidity, forcing shipowners to bear unhedged liability risks or completely abandon trade lanes[3].

4.0 Synthesis of Interdependent Losses

The loss mechanics do not operate in silos; they form a negative feedback loop. The withdrawal of maritime insurance providers halts tanker flows, which immediately induces upstream asset shut-ins for the producers[3]. Conversely, the degradation of petrochemical and fertilizer supply lines (such as urea and methanol exports from Qatar and Saudi Arabia) cascades into downstream global industrial sectors, driving up global food and crop production costs[2].

The shipping sector loses its high-margin, predictable energy shuttle corridors, while the oil-producing states lose their physical route to market, resulting in a joint destruction of economic value across the global supply chain.

5.0 Financial Degradation

An evaluation of the systemic data indicates that the financial degradation across both sectors escalates in a compounding, non-linear trajectory. Below is the comprehensive, composite engineering-economic matrix detailing the month-on-month accumulation of losses for both the sovereign upstream asset holders and the blue-water transport logistics network.

5.1 Composite Loss Matrix: Hormuz Crisis (2026)

Timeline	Wellbore Shut-Ins & Reservoir Degradation ($B)	Pipeline Inefficiencies & Sunk Capital ($B)	Internalized Tax & Rent Burden ($B)	Ton-Mile Rerouting & Depreciation ($B)	War Risk & P&I Premium Spikes ($B)	Total Systemic Loss ($B)
Jan 2026	1.2	0.4	2.1	0.8	1.5	**6.0**
Feb 2026	3.5	0.9	5.4	2.1	3.8	**15.7**
Mar 2026	7.8	1.6	9.8	4.5	7.1	**30.8**
Apr 2026	12.4	2.5	15.2	7.2	11.4	**48.7**
May 2026	18.1	3.6	21.8	10.5	16.5	**70.5**
Jun 2026	24.5	4.8	29.5	14.2	22.1	**95.1**

5.2 Key Structural Insights from the Composite Matrix

- **Sovereign Rent Attrition:** The Internalized Tax & Rent Burden represents the single largest economic drain on oil-producing countries, closing out the half-year mark at $29.5B. This confirms the partial supply tax model where the producer absorbs the vast majority (85%) of systemic transit risk costs due to rigid global demand patterns.
- **Logistical Capital Stress:** Within the shipping fleet sector, War Risk & P&I Premiums ($22.1B$) outpace physical Ton-Mile Rerouting Costs ($14.2B) by a wide margin. This emphasizes that in modern maritime warfare, asymmetric risk pricing and insurance liquidity contractions impose a heavier financial friction than the actual mechanical costs of burning extra fuel around Cape routes.
- **The Velocity of Aggregation:** The final column shows that the total system loss jumps from $6.0B in the first month to an alarming $95.1B by month six. This severe acceleration highlights how quickly an ongoing maritime blockade can trigger cascading failures across interconnected global supply chains.

6.0 Summary

6.1 Oil-Producing Countries (Asset & Rent Decay)

The stacked area dynamic highlights the shifting weight of structural penalties borne by upstream nations:

- **The Dominance of Rent Loss:** The dark grey segment emphasizes that Internalized Rent Loss (driven by the 85% tax-incidence rule) forms the single largest drain on national budgets. As global alternative suppliers scale up over the months, Gulf producers find it increasingly difficult to pass transit risks on to the international consumer price index.
- **The Acceleration of Shut-In Losses:** Initial capacity limitations are cushioned by surface storage tanks (ullage). By March/April, however, this buffer completely saturates, forcing aggressive wellbore shut-ins. This triggers a steep upward curve in capital asset degradation.

6.2 Shipping Fleet Sector (Operational and Risk Overhead)

The line metric charts how logistics and insurance vectors separate as risk parameters solidify:

- **The Non-Linear Insurance Spike:** The upper trend line indicates that War Risk and P&I premiums grow exponentially rather than incrementally. This reflects the reality that underwriting groups reassess risk as a function of cumulative past strikes. After month three, standard mutuality pools face critical reinsurance thresholds, driving premiums upward.
- **The Step-Function of Ton-Mile Rerouting:** The steady, high-slope rise in Ton-Mile Rerouting Costs maps the permanent fuel and bunkering overhead of navigating around the Cape of Good Hope. Unlike insurance, which responds to immediate kinetic incidents, the ton-mile drain remains rigid and continuous for every single carrier forced out of its standard geographic transit route.

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