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Geopolitical Tensions and Oil Supply Disruptions: A Review of Implications for Procurement Costs and Supply Continuity

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Abstract

Between 2022 and 2024 the international oil market absorbed an unusually dense sequence of geopolitical shocks. The Russian invasion of Ukraine triggered the most extensive energy sanctions regime ever applied to a major supplier, including a European Union embargo and a G7 price cap on Russian seaborne crude and products. Attacks on commercial shipping in the Red Sea and the Gulf of Aden diverted tanker traffic around the Cape of Good Hope, direct confrontation between Israel and Iran revived concern over the Strait of Hormuz, United States sanctions on Venezuela were reimposed, a political dispute shut down a large part of Libyan output, and OPEC+ sustained voluntary production cuts. Yet benchmark crude prices remained comparatively stable. This apparent paradox raises a practical question for organisations that buy crude oil and refined products: if headline prices did not spike, where did the costs and risks of geopolitical tension actually fall?

This paper addresses that question through an integrative review of 275 sources spanning energy economics, sanctions research, maritime logistics, supply chain risk management and procurement practice, combining peer-reviewed studies with authoritative institutional evidence. The review examines how conflict, sanctions and trade restrictions affect four procurement outcomes: oil availability, supplier selection, contract pricing and delivery reliability. Evidence was coded thematically against these outcomes and compared iteratively to identify the mechanisms that connect geopolitical events to buyer costs and supply continuity.

The synthesis shows that the dominant effect of geopolitical tension in this period was a reallocation of trade flows rather than an outright shortage of crude. Availability tightened mainly for particular grades, products and delivery windows, and was cushioned by producer spare capacity and consumer stocks. Supplier selection became a compliance-intensive and policy-contingent decision, as sanctions split the market into compliant and parallel pools, expanded due diligence on ownership, vessels and documentation, and exposed buyers to abrupt policy reversals and to the technical cost of switching crude qualities. Contract pricing was driven less by benchmarks than by the components layered on top of them, namely grade differentials, freight, war risk insurance, payment frictions and compliance overhead, so that landed cost rose even when benchmark prices were stable. Delivery reliability deteriorated as rerouting, chokepoint exposure, port congestion, enforcement detentions and threats to energy infrastructure lengthened lead times and, more importantly, made them less predictable.

From this evidence the paper develops a conceptual model in which four groups of geopolitical drivers act through four transmission channels (physical availability, supplier pool reconfiguration, price and risk premia, and logistics and compliance frictions) to shape procurement cost and supply continuity, moderated by buyer capabilities in contract design, inventory buffers, supplier and route diversity, financial hedging and technical flexibility. The findings imply that procurement functions should measure performance on total landed cost and lead time variance rather than invoice price and average transit time, allocate geopolitical risk explicitly in contracts, and pair financial hedges with physical options such as stock and route flexibility. For policymakers, the results point to the value of stockholding, import diversification, clear sanctions guidance and attention to spillovers on third countries, particularly import-dependent developing economies. The review is limited by the recency of the events, the reliance on institutional evidence for the latest developments and the opacity of sanctioned trade, and it outlines an agenda for firm-level and empirical testing of the proposed model.

Keywords: Geopolitical Risk, Oil Supply Disruption, Sanctions, Price Cap, Procurement Cost, Supply Continuity, Supplier Selection, Red Sea, Integrative Review

1. Introduction

Oil remains the single largest source of primary energy in the world economy and the feedstock for transport fuels, petrochemicals, lubricants, and a wide range of industrial inputs. For organisations that buy crude oil or refined products,

whether refiners, airlines, shipping lines, utilities, manufacturers, or public agencies, procurement performance is judged on two outcomes that frequently pull against each other: the total cost of acquiring the product and the continuity of its supply. Both outcomes are acutely exposed to geopolitics because a large share of global production and exportable surplus is concentrated in a small number of states and moves through a handful of maritime chokepoints. Procurement scholarship on the oil and gas sector has long recognised that sourcing decisions in this environment must balance cost optimisation against operational uptime (Okonkwo *et al*., 2018a; Okonkwo *et al*., 2024c).

The years leading up to and including 2024 offered an unusually rich natural experiment. Russia, one of the three largest producers and historically the largest exporter of crude and products combined, became the target of the most extensive energy sanctions regime ever applied to a major supplier. From late 2023 the Houthi movement in Yemen attacked commercial vessels transiting the Bab el-Mandeb strait, causing a large share of tanker and container traffic to divert around the Cape of Good Hope. Direct military exchanges between Israel and Iran in April and October 2024 placed the security of Gulf exports and the Strait of Hormuz back on the risk agenda. At the same time OPEC+ continued to withhold supply through voluntary cuts, the United States allowed a sanctions waiver on Venezuela to lapse, and a political dispute in Libya removed a large part of that country's output for several weeks.

Despite this concentration of events, benchmark crude prices in 2024 were notably less volatile than many observers expected, with Brent averaging roughly USD 80 per barrel over the year according to EIA data. This apparent paradox, many shocks but modest benchmark price effects, is central to the argument of this review. It suggests that the relevant consequences of geopolitical tension for buyers are increasingly found below the headline price: in differentials between grades, in freight and insurance, in the composition of the supplier base, in contract terms, and in the predictability of delivery.

The purpose of this paper is therefore to integrate evidence from several literatures that rarely speak to each other, namely oil market economics, sanctions research, maritime logistics, and supply chain risk management, in order to answer one overarching question: *How do conflict, sanctions, and trade restrictions affect oil availability, supplier selection, contract pricing, and delivery reliability, and what do these effects imply for procurement cost and supply continuity?*

The review makes three contributions. First, it consolidates fragmented evidence on the 2022 to 2024 disruption cycle into a single procurement-oriented account. Second, it proposes a conceptual framework that links geopolitical drivers to procurement outcomes through identifiable transmission channels and moderating capabilities. Third, it derives practical implications and a research agenda that move beyond the long-standing focus on the crude price itself.

2. Methodology

2.1 Review Design

An integrative review was selected because the topic spans heterogeneous forms of evidence, including econometric studies, policy analysis, institutional statistics, industry reporting, and conceptual work in operations and supply management. Integrative reviews are designed to combine such diverse sources in order to generate new frameworks and perspectives rather than to estimate a single pooled effect (Torraco, 2005; Whittemore & Knafl, 2005). The approach follows the five stages proposed by Whittemore and Knafl (2005): problem identification, literature search, data evaluation, data analysis, and presentation, and it adopts the guidance of Snyder (2019) on transparency in review-based research in business disciplines.

2.2 Search strategy and sources

Peer-reviewed literature was identified through searches of Scopus, Web of Science, and Google Scholar using combinations of the terms "geopolitical risk", "oil supply shock", "sanctions", "price cap", "embargo", "Red Sea", "chokepoint", "supply chain risk", "procurement", "supplier selection", and "energy security". Backward and forward citation tracking was used to locate foundational studies. Because much of the 2023 to 2024 evidence had not yet reached the journal literature at the time of writing, the review also drew on grey literature from authoritative institutions: the IEA Oil Market Report and its medium-term Oil 2024 outlook, the EIA Short-Term Energy Outlook, UNCTAD maritime analyses, and official regulatory texts from the Council of the European Union and the U.S. Department of the Treasury. In addition, seed studies were drawn from a consolidated reference database covering procurement, supply chain management, energy operations, and international relations, and were screened against the same inclusion criteria. These sources add evidence on procurement practice in energy-intensive and emerging-market settings, which is underrepresented in the mainstream journals. In total, the review draws on 275 sources: 125 identified through database and institutional searches and 150 seed studies drawn from the consolidated reference database.

2.3 Inclusion criteria and evaluation

Sources were retained if they (a) addressed the effect of conflict, sanctions, trade restrictions, or producer policy on the availability, price, routing, or contracting of crude oil or refined products, or (b) offered theory on supply risk, supplier selection, or contract design applicable to commodity procurement. Foundational economic studies published before 2022 were retained where they explain transmission mechanisms. Grey literature was retained only from primary institutional publishers. Each source was assessed for relevance, methodological transparency, and the strength of its evidential claims. Given the heterogeneity of designs, no quantitative pooling was attempted; instead evidence was coded thematically against the four outcomes named in the review focus.

2.4 Analysis

Data analysis followed a constant comparison approach. Findings were first extracted into a matrix (summarised in Table 1), grouped by geopolitical driver, then recoded by the mechanism through which each driver affected procurement outcomes. Iterative comparison produced the four transmission channels and the set of moderating capabilities that structure the conceptual model presented in Section 4.

Table 1: Principal geopolitical disruptions affecting oil procurement, 2022 to 2024

Driver	Key events	Primary channel	Procurement effect
Russia-Ukraine war and sanctions	EU crude embargo (Dec 2022) and products embargo (Feb 2023); G7 price cap; Ukrainian strikes on Russian refineries (2024)	Supplier pool reconfiguration; compliance	Loss of Russian barrels for Western buyers; discounted barrels for Asian buyers; longer voyages; attestation burden
Red Sea shipping attacks	Houthi attacks from Nov 2023; diversion via Cape of Good Hope through 2024	Logistics frictions; risk premia	Longer transit, higher freight and war risk cover, less predictable arrival windows
Israel-Iran confrontation	Direct exchanges in Apr and Oct 2024	Price and risk premia	Short-lived benchmark spikes; heightened Hormuz contingency planning
OPEC+ producer policy	Voluntary cuts of about 2.2 mb/d announced Nov 2023 and extended through 2024	Physical availability	Tighter medium-sour supply; firm term prices for affected grades
Venezuela sanctions	General License 44 lapsed Apr 2024	Supplier pool reconfiguration	Narrower access to heavy sour crude for U.S. Gulf Coast buyers
Libya political dispute	Field shutdowns in Aug to Sep 2024	Physical availability	Temporary loss of light sweet supply to Mediterranean refiners

Source: Compiled by the author from IEA (2024a, 2024b), EIA (2024a), UNCTAD (2024), Council of the European Union (2022), and U.S. Department of the Treasury (2022).

3. Literature Synthesis

This section synthesises the literature in two steps. Sections 3.1 to 3.4 set out the theoretical foundations on oil shocks, supply risk, contracting and energy security. Sections 3.5 to 3.8 then synthesise the empirical evidence on the four procurement outcomes examined in this review: oil availability, supplier selection, contract pricing and delivery reliability.

3.1 Oil shocks and geopolitical risk

A long tradition in energy economics distinguishes between the sources of oil price movements. Hamilton (2003) showed that exogenous supply disruptions linked to political events in the Middle East had disproportionate macroeconomic effects. Kilian (2009) argued that "not all oil price shocks are alike", separating flow supply shocks, aggregate demand shocks, and oil-specific precautionary demand shocks driven by fears about future supply. This distinction matters for procurement. A geopolitical event may raise prices not because barrels are lost but because buyers and traders bid up prompt supply and inventories as insurance against a feared loss (Kilian & Murphy, 2014). Baumeister and Kilian (2016) add that the same event can produce very different price paths depending on spare capacity, inventories, and the state of global demand.

Caldara and Iacoviello (2022) operationalised geopolitical risk through a news-based index and showed that elevated geopolitical risk depresses investment and raises the probability of disasters. Their work provides a link between the political events reviewed here and the risk perceptions that drive precautionary behaviour in commodity markets, including procurement decisions such as forward buying and stockpiling.

Subsequent work has refined this picture. Baumeister and Peersman (2013) show that oil demand has become less price elastic, so that a given production shortfall now produces larger price spikes, while Baumeister and Hamilton (2019) and Caldara *et al*. (2019) find that supply disruptions account for a larger share of historical price volatility than earlier estimates implied. Känzig (2021) demonstrates that news about future supply, of the kind generated by OPEC announcements or sanctions decisions, moves prices and inventories immediately, before any barrel is lost. Kilian (2008) and Kilian and Park (2009) emphasise that the consequences of a price change depend on its origin, and comparative studies confirm that effects differ between importing and exporting economies and across countries (Mohaddes & Pesaran, 2017; Wang *et al*., 2013). Uncertainty is costly in its own right: oil price volatility depresses investment and output (Elder & Serletis, 2010; Jo, 2014), and pass-through to domestic inflation is stronger in economies that depend heavily on energy imports (Choi *et al*., 2018).

A growing body of evidence links geopolitical risk directly to energy prices. Long-run analyses show that geopolitical risk mainly affects oil volatility and returns (Antonakakis *et al*., 2017), with actual geopolitical acts carrying stronger effects than threats (Bouoiyour *et al*., 2019). The direction of the effect varies over time, since geopolitical shocks can depress demand as well as constrain supply (Cunado *et al*., 2020), and incorporating geopolitical risk improves forecasts of oil volatility (Liu *et al*., 2019). More recent studies find that geopolitical risk raises oil prices by signalling disruption (Mignon & Saadaoui, 2024), that its effects spill over from oil into equities (Smales, 2021), that it alters connectedness across energy, metal and agricultural commodities (Gong & Xu, 2022), and that geopolitical and energy uncertainty shocks transmit to both global and domestic energy prices across a broad sample of countries (Yilmazkuday, 2024). Taken together, this literature implies that geopolitical tension raises the cost of buying oil through volatility as well as through price levels, which complicates budgeting and contract timing.

3.2 Supply risk and supplier selection

In purchasing theory, Kraljic (1983) classified items by profit impact and supply risk, placing crude oil and many refined products in the "strategic" or "bottleneck" quadrants where supply security must be managed actively. Later supply chain risk research distinguishes between disruption risks and operational risks (Tang, 2006; Chopra & Sodhi, 2004) and emphasises resilience capabilities such as flexibility, redundancy, visibility, and collaboration (Christopher & Peck, 2004; Sheffi & Rice, 2005). Ivanov and Dolgui (2020) introduced the notion of supply chain viability to describe networks that must adapt structurally, not only recover, when disruptions are prolonged. Sanctions regimes of the kind imposed after 2022 are a clear instance of prolonged, structural disruption. Studies of energy and gas processing supply chains apply these ideas to settings in which disruptions threaten plant uptime and project delivery, proposing risk management and resilience frameworks built on supplier redundancy, visibility, and materials readiness (Agbabiaka *et al*., 2019; Anene, 2021;

Ogunwole *et al*., 2021; Efobi *et al*., 2023).

The broader supply chain risk literature supplies the vocabulary for these effects. Supply risk is the probability that an inbound supply failure prevents the buying firm from meeting demand (Zsidisin, 2003), and disruption risk management involves specifying, assessing and mitigating such failures, typically through diversification and coordination (Kleindorfer & Saad, 2005). The severity of disruption rises with network density, complexity and node criticality (Craighead *et al*., 2007), and its financial consequences are large and persistent (Hendricks & Singhal, 2005). Reviews classify risks into macro and micro categories and catalogue identification, assessment and mitigation methods (Fan & Stevenson, 2018; Ho *et al*., 2015), although the field still lacks consensus definitions (Sodhi *et al*., 2012), and global supply chains are explicitly exposed to political and currency risks (Manuj & Mentzer, 2008). Resilience is framed as a balance between vulnerabilities and capabilities (Pettit *et al*., 2010), built through flexibility, redundancy and collaboration (Tukamuhabwa *et al*., 2015) and understood in terms of absorptive, adaptive and restorative capacities (Hosseini *et al*., 2019). Ripple-effect and viability research shows that disruptions propagate downstream and that the timing of closures and recoveries matters as much as their scale (Dolgui & Ivanov, 2021; Ivanov, 2020). Roscoe *et al.* (2022) show that compounding geopolitical shocks push firms from efficiency logics toward resilience logics, the same shift observed among oil buyers after 2022.

Applied studies in energy and industrial settings translate these concepts into operational models. Digital supply chain governance, automation, and the integration of information systems with supply operations are proposed as means of improving visibility and control in energy and infrastructure sectors (Okonkwo *et al*., 2023a; Okonkwo *et al*., 2024a; Okonkwo *et al*., 2024f), while materials readiness and asset lifecycle visibility link supply performance to maintenance and uptime (Okonkwo *et al*., 2021a; Okonkwo *et al*., 2023b). Predictive vendor risk assessment and resilience-oriented logistics frameworks extend these ideas to settings with volatile supply (Anene & Clement, 2022; Tonoyan *et al*., 2024a), and studies of pharmaceutical supply chains, which face comparable criticality, emphasise shortage early warning, governance of environmental and supply risk, and strategies for mitigating disruption (Awulu *et al*., 2022; Eze *et al*., 2022; Eze *et al*., 2023).

3.3 Contracting under uncertainty

Transaction cost economics explains why buyers choose between spot purchases, term contracts, and vertical integration according to asset specificity and uncertainty (Williamson, 1985). Joskow (1987) demonstrated in fuel markets that longer contracts are associated with relationship-specific investment. In oil procurement, refinery configuration constitutes a significant specific asset because each refinery is optimised for a particular slate of crude qualities. When geopolitics removes a familiar grade, the cost of switching is therefore not only the price differential but also yield losses, blending constraints, and technical adaptation. This insight underpins the treatment of supplier selection in Section 3.6. Applied work on energy and industrial procurement likewise identifies contract negotiation and vendor governance as principal levers for cost reduction where supply markets are concentrated (Okonkwo *et al*., 2019; Akinleye & Adeyoyin, 2022a).

Operations research offers formal support for this view. Combining long-term option contracts with spot purchases allows buyers to balance price risk, availability and expected cost (Martinez-de-Albeniz & Simchi-Levi, 2005), dual sourcing with a reliable backup supplier outperforms single sourcing when the cheaper supplier is disruption-prone (Yu *et al*., 2009), and the best mix of sourcing mitigation, inventory and contingent rerouting depends on the frequency and duration of disruptions (Tomlin, 2006). Purchasing firms respond to commodity price risk through financial hedging, contractual price clauses, forward buying and pass-through (Gaudenzi *et al*., 2018). In the energy sector specifically, systematic review evidence shows that force majeure and related clauses are central to contractual resilience in global energy supply chains (Uchechi *et al*., 2020), and studies of high-value energy service contracts, contract review, and algorithmic contract scoring highlight liability allocation, error reduction and risk retention as determinants of contract outcomes (Anichukwueze *et al*., 2022; Uchechi & Ominyi, 2019; Uzougbo *et al*., 2024). Shared responsibility across jurisdictions further complicates contract governance in global supply chains (Ominyi *et al*., 2021).

3.4 Energy security, sanctions, and regional geopolitics

Energy security has no single accepted definition. Winzer (2012) proposes narrowing it to the continuity of supply relative to demand, Cherp and Jewell (2014) recast it as the low vulnerability of vital energy systems, and Chester (2010) argues that the concept is inherently polysemic. Reviews of indicators conclude that availability, accessibility, affordability and acceptability must be assessed together (Ang *et al*., 2015; Kruyt *et al*., 2009; Sovacool & Mukherjee, 2011). For oil importers, the concentration and political stability of supplying countries is a core determinant of supply security (Cohen *et al*., 2011), and case studies of oil and gas supply to Europe show how instability in producer and transit states threatens energy flows (Urciuoli *et al*., 2014).

The sanctions literature explains why modern energy sanctions target revenue rather than volume. The use of sanctions has grown and shifted from trade toward financial measures while success rates have declined (Felbermayr *et al*., 2020), and their evolution reflects broader shifts in the global political economy (Morgan *et al*., 2023). Sanctions also impose costs on the sanctioning side, as the 2014 measures against Russia demonstrated (Crozet & Hinz, 2020). Embargoes on fossil fuel exports exert limited coercive pressure where the target retains access to financial markets (Konrad & Thum, 2023), and evidence from Iran shows large initial revenue losses that erode as the economy adjusts (Dizaji & van Bergeijk, 2013; Gharehgozli, 2017; Laudati & Pesaran, 2023).

Regional diplomacy shapes how these global shocks reach individual importers. Work on Nigeria's foreign policy examines climate diplomacy, continental and West African peace integration, engagement with ECOWAS states, and economic interdependence with China (Liadi, 2022a; Liadi, 2022b; Liadi, 2022c; Liadi, 2023b; Liadi, 2023c), as well as soft power, peacekeeping governance, cross-border security cooperation and humanitarian diplomacy in the Sahel (Liadi, 2024a; Liadi, 2024b; Liadi, 2024c; Liadi, 2024d). This literature underlines that regional security conditions, and

not only great-power rivalry, influence the stability of trade routes and the reliability of supply relationships for African buyers.

3.5 Evidence on oil availability

The first and most counter-intuitive finding is that the geopolitical shocks of 2022 to 2024 caused relatively little sustained loss of physical oil from the global market. Sanctions on Russia were deliberately designed to keep Russian barrels flowing while reducing Russia's revenue. The G7 and EU price cap allowed Western shipping, insurance, and financial services to be used for Russian oil only if the cargo was sold at or below the cap, initially set at USD 60 per barrel for crude, with separate caps for premium and discount products (U.S. Department of the Treasury, 2022). The IEA monthly reports through 2023 and 2024 showed Russian export volumes remaining broadly resilient even as destinations changed (IEA, 2024a). Babina *et al*. (2023) similarly found that the main effect of sanctions was on the price Russia received rather than on volumes exported.

Where availability did tighten, the cause was more often producer policy or domestic instability than conflict between states. OPEC+ voluntary cuts withheld a large volume of mainly medium and heavy sour crude through 2024 (IEA, 2024a), while the political crisis in Libya removed a substantial share of that country's light sweet output for several weeks in August and September 2024. Ukrainian drone attacks on Russian refineries in 2024 reduced Russian product output and prompted temporary Russian restrictions on gasoline exports, illustrating that conflict can shift availability from crude to specific products.

The availability effect of the Red Sea crisis was indirect. Barrels were not lost, but the effective supply of tanker capacity contracted because longer voyages absorbed more vessel days (UNCTAD, 2024; Notteboom *et al*., 2024). For buyers this meant that oil existed but could not always be delivered within the expected time or at the expected freight cost. Availability, in procurement terms, therefore needs to be understood as "deliverable availability" rather than global production.

A further qualification concerns spare capacity. The fact that OPEC+ held several million barrels per day of spare capacity in 2024 meant that markets judged most threatened losses to be replaceable, dampening precautionary demand in the sense of Kilian (2009). This buffer is not structural and could be eroded if cuts are unwound, implying that the muted price response of 2024 should not be extrapolated uncritically.

The empirical literature on the Russian case supports this interpretation. The price cap was designed to exploit Western dominance of shipping and insurance so as to reduce Russian revenue while keeping barrels flowing (Johnson *et al*., 2023). The embargo widened the Urals discount to about 32 dollars per barrel by March 2023, roughly half of which reflected longer shipping routes to India (Kilian *et al*., 2024), and enforcement gaps later allowed partial circumvention until vessel sanctions in late 2023 widened the discount again (Johnson & Wolfram, 2024). Trade data confirm a large diversion of Russian oil and gas exports across markets (Steinbach, 2023), and general equilibrium simulations of restrictions on Russian fossil fuel exports point to higher energy prices in sanctioning economies (Chepeliev *et al*., 2022; Mahlstein *et al*., 2022). Network and computable general equilibrium analyses add that the war threatens energy and food supply chains disproportionately for lower-income importers (Cui *et al*., 2023; Zhou *et al*., 2023), while the European response accelerated supply diversification and renewable deployment (Hartvig *et al*., 2024). Where sanctions did remove volume, as with United States measures on Venezuela between 2017 and 2019, production losses at joint ventures were large (Rodríguez, 2022).

Buffers on both the producer and the consumer side explain much of the resilience of availability. OPEC's use of spare capacity has substantially dampened crude price volatility (Pierru *et al*., 2018), although quota compliance varies across members (Parnes, 2019). Strategic petroleum reserves provide a consumer-side buffer, with optimal size and drawdown strategies depending on the price environment and the likelihood of supply emergencies (Wu *et al*., 2012; Xie *et al*., 2017), though emergency drawdowns lower prices only modestly (Kilian & Zhou, 2020).

Availability also depends on the integrity of upstream and midstream assets, which conflict and underinvestment can compromise. Studies of operational integrity in high-risk drilling, occupational and process safety in oil and gas maintenance and offshore pipeline commissioning, emergency readiness in energy facilities, and data-driven risk control in energy infrastructure show that operational failures at production sites can remove supply as effectively as political events (Arumosoye & Obriki, 2023; Nwangwu *et al*., 2018; Obogo *et al*., 2020; Obriki & Arumosoye, 2018; Oduro, 2023). Integrity and maintenance research on offshore pressure vessels, fired heaters, static equipment, FSO turret moorings, crude export equipment, non-intrusive inspection and tandem offloading identifies the engineering conditions under which export capacity is sustained (Obetta & Ninduwezuor-Ehiobu, 2019; Obetta *et al*., 2020; Obetta *et al*., 2021; Obetta *et al*., 2022; Obetta, 2018; Obetta, 2019; Obetta, 2020), while refinery corrosion management and predictive maintenance of energy infrastructure govern the availability of refined products (Adaramola *et al*., 2018; Atta *et al*., 2020). Remote monitoring of pipelines and corridors through UAV, LiDAR and GIS technologies, together with technical due diligence in energy asset acquisitions, further conditions how quickly supply can be restored after disruption (Dagodzo & Ahiaeke Patrick, 2020; Dagodzo & Ahiaeke Patrick, 2021; Nwangwu *et al*., 2023).

3.6 Evidence on supplier selection

Sanctions transformed supplier selection from a primarily commercial decision into a combined commercial, legal, and reputational one. European buyers were required to replace Russian crude and diesel within months, turning to the United States, Norway, the Middle East, West Africa, Brazil, and Guyana. Asian buyers, chiefly India, China, and Türkiye, moved in the opposite direction and substantially increased purchases of discounted Russian crude (IEA, 2024a). The result was a re-segmentation of the world market into a sanctions-compliant pool and a partially parallel pool served by a growing "shadow" or "dark" fleet of older tankers operating outside G7 insurance and classification services.

Three implications for supplier selection emerge from the literature. First, eligibility criteria have widened. In addition to price, quality, and reliability, buyers must assess ownership structures, beneficial owners, vessel histories,

and the attestation chain required under the price cap. This broadening mirrors frameworks for regulatory-compliant procurement in high-risk energy environments and for supplier risk assessment in cross-border sourcing, which treat legal eligibility and documentary traceability as gate criteria rather than secondary considerations (Okonkwo *et al*., 2021b; Akin-Oluyomi *et al*., 2023b; Jones & Ominyi, 2023). End-to-end visibility across vessels, intermediaries, and documents is therefore a precondition for compliant sourcing (Nnabueze *et al*., 2021). The burden falls particularly on traders and on buyers who purchase on a delivered basis, where the origin of the molecule can be obscured by blending and ship-to-ship transfers. Second, crude quality constraints limit substitution. Refineries designed around Urals or Venezuelan heavy crude cannot costlessly switch to light sweet alternatives, so supplier exclusion carries a technical cost that a narrow price comparison omits (Joskow, 1987; Williamson, 1985). Third, supplier concentration risk increased for some buyers even as diversity rose globally. India, for example, made Russian crude the largest single share of its imports, gaining a cost advantage but also exposure to further sanctions tightening, payment problems, and enforcement action against specific vessels and traders.

The Venezuelan case reinforces the point that supplier eligibility is now policy-contingent. The October 2023 easing under General License 44 briefly reopened access, but the licence lapsed in April 2024 and buyers again had to rely on specific authorisations. Procurement teams that had begun to rebuild Venezuelan supply relationships faced abrupt reversal, an example of what Ivanov and Dolgui (2020) describe as the need for structural adaptability rather than recovery to a prior state. Supplier relationship management approaches that maintain collaborative ties with incumbent suppliers while qualifying alternatives in advance help buyers absorb such reversals (Ike *et al*., 2021; Akinleye & Adeyoyin, 2022b).

Data-driven supplier evaluation offers tools for this expanded selection problem. Geospatially informed vendor evaluation and ERP-based procurement processes, together with predictive geospatial analytics for location and market-entry decisions (Ahiaeke Patrick *et al*., 2020; Ahiaeke Patrick *et al*., 2021; Tonoyan *et al*., 2022a), data-driven procurement risk management in multinational enterprises (Bello *et al*., 2023), and big data, business intelligence and visualisation in strategic procurement (Akinleye *et al*., 2023; Babatope *et al*., 2023) allow buyers to score suppliers against multiple criteria, including location and route exposure. Process automation and integrated digital platforms improve transparency in procurement (Akinleye & Adeyoyin, 2021; Okoruwa *et al*., 2024), while cross-border supplier relationship management and supplier sustainability metrics extend selection criteria to governance and environmental performance (Akin-Oluyomi *et al*., 2023d; Akin-Oluyomi *et al*., 2024). Predictive lifecycle approaches developed for customer relationships can likewise be adapted to anticipate the attrition or failure of suppliers before it disrupts supply (Ogundairo & Ayivi-Donkor, 2023a). Studies of sustainable and green procurement show that such criteria need not conflict with cost efficiency (Akin-Oluyomi *et al*., 2023a; Akinleye, 2024; Efobi *et al*., 2022a; Okojie *et al*., 2020), and predictive analytics for demand forecasting improves the planning on which supplier allocation rests (Akin-Oluyomi *et al*., 2023c; Tonoyan *et al*., 2021a). Supply chain governance models for network-wide compliance, supply chain leadership that aligns logistics decisions with enterprise strategy, and analytics frameworks that reduce bottlenecks apply equally to buyers coordinating diverse oil suppliers (Akin-Oluyomi & Akhigbe, 2022; Akin-Oluyomi & Akhigbe, 2023a; Akin-Oluyomi & Akhigbe, 2023b). Within the oil sector, uncertainty and risk remain underrepresented in planning models for refining and distribution (Lima *et al*., 2016), and risk-based trade and import compliance models show how non-compliant goods can be screened at the border (Aneke & Adesemoye, 2021).

3.7 Evidence on contract pricing

The review finds that geopolitical tension in 2024 affected contract pricing less through the benchmark itself than through the components layered on top of it. Four components stand out.

- **Grade differentials:** Sanctions created wide and volatile discounts for Russian Urals relative to Brent, peaking in early 2023 and narrowing as enforcement weakened and the shadow fleet expanded (Babina *et al*., 2023). OPEC+ cuts, by contrast, tightened medium sour grades, raising their value relative to light sweet crude.
- **Freight:** Diversion around the Cape of Good Hope lengthened Asia to Europe voyages by roughly ten to fourteen days and raised tanker tonne-miles, lifting freight rates for affected routes (UNCTAD, 2024; Notteboom *et al*., 2024). For products such as diesel and jet fuel moving from the Middle East and India to Europe, freight became a material share of landed cost.
- **Insurance:** War risk premiums for Red Sea transits rose sharply, and some underwriters withdrew cover for vessels with links to the United States, the United Kingdom, or Israel. Insurance thus became both a price variable and an availability constraint on shipping.
- **Risk premia in benchmarks:** Episodes such as the April and October 2024 Israel-Iran exchanges produced short-lived benchmark spikes that faded once physical flows proved uninterrupted, consistent with precautionary demand theory (Kilian, 2009; Caldara & Iacoviello, 2022).

These effects have direct consequences for contract design. Pricing formulas that reference a benchmark plus a fixed differential transfer differential risk to whichever party fixed the premium. Free on board (FOB) contracts transfer freight and insurance risk to the buyer, whereas delivered (CIF or DES) contracts transfer them to the seller, who will price that risk into the offer. Several reports reviewed indicate that sellers increasingly sought freight escalation clauses, wider laycan windows, and force majeure or sanctions clauses that permit termination if a counterparty or route becomes restricted. Buyers, conversely, sought price review mechanisms and the right to reject cargoes that cannot be documented as compliant. The literature thus points to a shift in negotiation from price level towards the allocation of geopolitical risk among parties. This is consistent with quantitative risk allocation models for long-term contracts, which assign each risk to the party best able to control or price it (Ike *et al*., 2024).

A related finding is that buyers' cost savings from discounted sanctioned crude were partly offset by hidden costs. Longer voyages, higher shadow fleet freight, payment in alternative currencies, banking frictions, and compliance

overhead reduced the effective discount. Total cost of ownership is therefore a more appropriate metric than invoice price when comparing compliant and non-compliant sources. Comparative evidence from the United Kingdom, Nigeria, and other emerging economies likewise shows that procurement cost outcomes depend heavily on logistics, currency, and institutional factors outside the quoted unit price (Akokodaripon *et al*., 2023).

Studies of the Russia-Ukraine war document the scale of these price effects. Escalation raised volatility across energy, metal and agricultural markets (Fang & Shao, 2022), increased gasoline prices most in crude-import-dependent countries (Meng & Yu, 2023), and turned oil into a net transmitter of shocks to other asset classes (Adekoya *et al*., 2022). Geopolitical risk exerted its strongest effects on oil and gas prices in the middle of the price distribution (Khurshid *et al*., 2024), and war news raised European gas prices far more than those in other regions, reflecting market segmentation (Aizenman *et al*., 2024).

Freight economics explains why the logistics component of landed cost became so prominent. Tanker freight rates are linked to crude spot and futures prices and to inventories (Poulakidas & Joutz, 2009), crude supply shocks have significant effects on tanker markets (Shi *et al*., 2013), and the two markets transmit shocks in both directions (Chen *et al*., 2024). Available tanker capacity near loading regions explains weekly rate movements (Regli & Nomikos, 2019), geopolitical risk shocks raise freight rates immediately (Drobetz *et al*., 2021), and oil price uncertainty alters the relation between oil and tanker returns (Pouliasis, 2024). Because freight markets move between volatility regimes, regime-switching hedging can reduce freight risk (Alizadeh *et al*., 2015). Higher shipping costs are followed by persistent increases in import and consumer prices (Carrière-Swallow *et al*., 2023). Evidence from piracy in the Gulf of Aden shows how security threats raise costs through insurance premiums, security expenses and longer routes, reduce trade volumes, and induce rerouting (Bendall, 2010; Fu *et al*., 2010; Sandkamp *et al*., 2022).

Financial and compliance processes add further cost layers. Correspondent banking risk in cross-border payments, risk scoring for trade payment transactions, distributed ledger interoperability, smart contracts for supplier payments and dispute resolution, and regulatory adaptation of payment products all bear on the cost and speed of settling oil cargoes under sanctions (Adesuyi *et al*., 2023a; Adesuyi *et al*., 2024; Akomolafe *et al*., 2022; Akomolafe *et al*., 2024; Okafor *et al*., 2024; Olaogun *et al*., 2023). Strategic finance in cross-border partnerships, machine learning in insurance underwriting, and risk-based compliance models for emerging economies inform how buyers price and absorb these risks (Akomolafe & Agu, 2019; Akomolafe *et al*., 2023; Isiekwu *et al*., 2021; Oluwo *et al*., 2024). Predictive budgeting using market signals, data-led cost governance, variance analytics, working capital and cash flow optimisation and regulatory scenario analysis provide the financial planning tools needed when input costs are volatile (Adesuyi *et al*., 2022; Adesuyi *et al*., 2023b; Akinola *et al*., 2020; Aliliele *et al*., 2024; Oduleye & Medon, 2023; Tonoyan *et al*., 2021b), and quantitative pricing and valuation models help buyers judge whether premiums for secure supply are justified by the value of the assets they protect (Tonoyan *et al*., 2023). On the regulatory side, studies of automated risk assessment for upstream regulatory deliverables, upstream licensing and statutory bidding, real-time compliance pipelines, anti-money laundering and anti-bribery regimes, greenhouse gas disclosure obligations for energy enterprises, and cross-border regulatory clearance show that compliance is now a material cost of energy transactions (Ominyi & Anichukwueze, 2020; Ominyi & Anichukwueze, 2021; Ominyi & Anichukwueze, 2022; Ominyi *et al*., 2020; Uchechi & Ominyi, 2020; Uchechi *et al*., 2019; Uchechi *et al*., 2022). Trade facilitation research on legal barriers to import and export participation in Nigeria, market access under free trade agreements, artificial intelligence in customs administration and digital trade regulation adds the border dimension of these costs (Jones & Ominyi, 2020; Jones & Ominyi, 2022; Jones & Ominyi, 2024a; Jones & Ominyi, 2024b).

3.8 Evidence on delivery reliability

Delivery reliability emerged as the outcome most visibly degraded by geopolitical tension in 2024. The Red Sea crisis is the clearest case. Rerouting increased not only average lead time but also its variance, because voyage plans were changed at short notice in response to new attacks, naval escort availability, or insurance decisions (Notteboom *et al*., 2024). UNCTAD (2024) documented that the Red Sea disruption coincided with drought-related restrictions at the Panama Canal and continued constraints on Black Sea trade, so that several major routes were simultaneously impaired. Port-side delays compound voyage uncertainty, since demurrage and berth congestion already erode delivery performance in many emerging-economy ports under normal conditions (Okonkwo *et al*., 2020).

Sanctions also affect reliability. The shadow fleet is older, frequently underinsured, and more likely to suffer breakdowns or detentions. Enforcement actions against designated vessels in 2023 and 2024 left cargoes stranded or delayed while ownership and compliance were resolved. Payment frictions, including the rejection of transactions by correspondent banks, caused further delays, and foreign exchange exposure in multi-currency settlement added a treasury dimension to these frictions (Dada *et al*., 2021). For buyers relying on these channels the cost discount came with a measurable reliability penalty.

At the infrastructure level, conflict exposed the vulnerability of refining and export assets. Drone attacks on Russian refineries and ports, and the persistent threat to Gulf export infrastructure and the Strait of Hormuz, demonstrated that reliability risk is concentrated at nodes and chokepoints rather than spread evenly across the supply network, a pattern long recognised in energy security analysis (Gholz & Press, 2010). Engineering studies of crude export systems show how the availability of single points such as offshore loading buoys determines whether production actually reaches buyers (Obetta & Ninduwezuor-Ehiobu, 2018). Procurement plans built on average transit times without contingency for node failure therefore understate continuity risk.

Research on maritime chokepoints quantifies this concentration. In 2023 about 20.9 million barrels per day passed through the Strait of Hormuz and roughly 8.6 million through the Bab el-Mandeb (EIA, 2024b). Modelling of eleven chokepoints shows that a prolonged closure of one shifts traffic to linked alternatives (Pratson, 2023), and piracy incidents in Hormuz have been followed by declines

in tanker transits (Shepard & Pratson, 2020). Houthi attacks from November 2023 sharply reduced traffic through the Gulf of Aden and the Suez Canal (Rodríguez Díaz *et al*., 2024), exposing the dependence of trade networks on a few passages (Haralambides, 2024). Port-level studies add that maritime trade is concentrated in a small set of ports (Verschuur *et al*., 2022), that port closures typically last days to weeks with little substitution (Verschuur *et al*., 2020), and that congestion can lengthen delays even when volumes fall (Komaromi *et al*., 2022).

Digital and cyber dimensions increasingly shape reliability. Predictive analytics for demand forecasting and inventory, digital twins that reduce procurement errors and turnaround time, blockchain for logistics, and machine learning risk dashboards can shorten the time needed to detect and respond to disruption (Aifuwa *et al*., 2020; Akinlade *et al*., 2024; Ekwunife *et al*., 2024; Filani *et al*., 2022), and reviews of procurement strategy, ERP adoption and logistics performance link information systems to delivery outcomes (Okonkwo *et al*., 2024d). Embedding economic evaluation directly into enterprise data pipelines allows the value of such systems to be measured continuously (Ogundairo & Ayivi-Donkor, 2023b), although supply chain AI often fails to deliver because of weak adoption by users rather than technical limits (Ogundairo & Ayivi-Donkor, 2024a). Workflow redesign and Lean Six Sigma in fulfilment networks reduce logistics bottlenecks (Efobi *et al*., 2022b; Nwangwu *et al*., 2024a; Nwangwu *et al*., 2024b). At the same time, geopolitical conflict now extends into cyberspace. Studies of operational technology security in electric utilities, IT and OT convergence in energy networks, threat detection in industrial control systems, adversarial machine learning, zero trust architecture, vulnerability governance and blockchain-secured SCADA data exchange show that energy infrastructure is exposed to digital attack (Adebayo *et al*., 2022; Adebayo *et al*., 2023; Adegbite *et al*., 2020; Adegbite *et al*., 2022; Adegbite *et al*., 2023; Adegbite *et al*., 2024; Ahmed *et al*., 2021; Shittu *et al*., 2022), and secure access control together with IT risk management embedded in supply chain digital transformation is needed to protect procurement systems themselves (Mbonu *et al*., 2020; Shittu & Nabil, 2023).

Table 2: Synthesis of effects on procurement cost and supply continuity

Outcome	Main mechanisms identified	Effect on cost	Effect on continuity
Oil availability	Producer cuts, domestic instability, refinery attacks; little net crude loss from sanctions	Firmer prices for specific grades and products	Grade-specific gaps rather than general shortage
Supplier selection	Sanctions eligibility, attestation, shadow fleet, quality constraints	Compliance overhead; switching and yield costs	Concentration risk; policy reversal risk
Contract pricing	Differentials, freight, insurance, transient risk premia	Landed cost rises even when benchmark is stable	Risk allocation clauses determine who absorbs shocks
Delivery reliability	Rerouting, chokepoint risk, enforcement detentions, payment frictions	Higher inventory and working capital needs	Longer and more variable lead times

Source: Author's synthesis of the reviewed literature.

4. Conceptual Model

Synthesis of the reviewed evidence produced the conceptual model shown in Fig 1. Four groups of geopolitical drivers, armed conflict, sanctions and price caps, trade restrictions and export bans, and producer policy, act on procurement through four transmission channels. Physical availability refers to the volumes actually removed from or withheld from the market. Supplier pool reconfiguration captures the legal or reputational exclusion of suppliers and the emergence of new trading intermediaries. Price and risk premia include movements in benchmarks, grade differentials, and forward curve structure. Logistics and compliance frictions encompass longer routes, freight and insurance costs, port and chokepoint risk, and the documentary burden of proving sanctions compliance. These channels determine two procurement outcomes: procurement cost, understood as total landed cost rather than invoice price alone, and supply continuity, understood as the reliability and predictability of delivery. Buyer-side capabilities moderate the strength of every link.

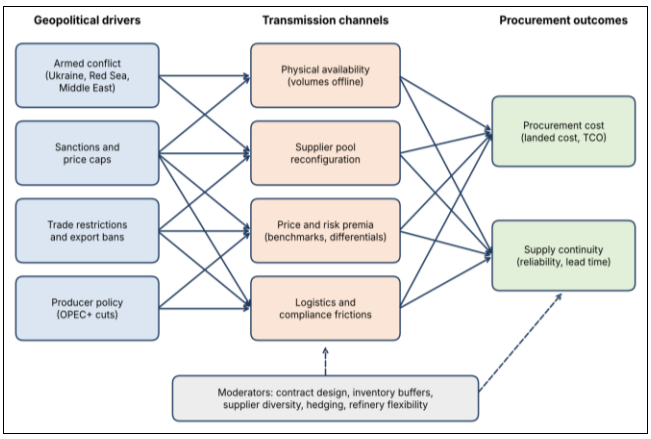

Fig 1: Conceptual model linking geopolitical drivers to procurement cost and supply continuity

5. Discussion

5.1 From price risk to network risk

The central insight of this review is that geopolitical tension now acts on oil procurement primarily as network risk rather than price risk. Benchmark prices in 2024 were cushioned by OPEC+ spare capacity, robust non-OPEC supply growth from the Americas, and softening demand growth in China, all highlighted by the IEA (2024b). Yet buyers experienced real cost and continuity pressure through the routing, contracting, and compliance channels. This finding cautions against procurement strategies that rely chiefly on financial hedging of benchmark prices. Hedges on Brent or WTI do not protect against widening freight, insurance, differentials, or delivery failures, which were the dominant sources of exposure in this period.

5.2 Moderating capabilities

The literature identifies five buyer capabilities that moderate the transmission of geopolitical shocks:

- **Contract design:** Balancing term and spot purchases, choosing delivery terms deliberately, and including sanctions, force majeure, freight adjustment, and price review clauses (Okonkwo *et al*., 2019).
- **Inventory buffers:** Holding commercial or strategic stocks sized to the variance, not merely the mean, of lead time, consistent with resilience theory and with

inventory availability models for energy facilities (Sheffi & Rice, 2005; Okonkwo *et al*., 2018b).

- **Supplier and route diversity:** Qualifying alternative suppliers and routes in advance, including those that avoid key chokepoints (Christopher & Peck, 2004).
- **Financial hedging:** Protecting against benchmark spikes while recognising its limits for non-benchmark cost components.
- **Technical flexibility:** Refinery or end-use flexibility that widens the range of acceptable crude qualities and so enlarges the effective supplier pool.

These capabilities carry costs of their own, such as working capital tied up in stock or a premium paid for compliant supply, which means the optimal level of resilience is a strategic choice rather than a free good. Kraljic's (1983) insight that strategic items justify investment in supply management is strongly reinforced by the 2022 to 2024 experience.

Performance measurement and project governance support these capabilities. Real-time KPI tracking, performance dashboards, lifecycle performance models and predictive financial risk detection help procurement functions monitor cost and continuity indicators continuously (Adelanwa *et al*., 2023a; Adelanwa *et al*., 2023b; Ezeako *et al*., 2024; Tonoyan *et al*., 2024b), and algorithmic process optimisation and predictive cost models quantify the cost of resilience measures (Tonoyan *et al*., 2022b; Tonoyan *et al*., 2022c). Governance lessons from multinational infrastructure projects and from solar deployments in emerging markets apply to the management of new supply routes, storage and import terminals (Amayo *et al*., 2023; Amayo *et al*., 2024a; Amayo *et al*., 2024b).

5.3 Distributional and regional differences

Effects were unevenly distributed. European buyers bore the largest adjustment costs in 2022 and 2023 as they replaced Russian supply, then faced the brunt of Red Sea diversion costs for imports from the East in 2024. Asian buyers gained access to discounted Russian crude but assumed compliance and enforcement risk. Import-dependent developing economies, including many in Africa, faced higher landed costs for refined products without the purchasing power to secure discounted barrels or the balance sheets to hold large stocks. Producing countries with domestic refining shortfalls, such as Nigeria before the ramp-up of new domestic capacity, were exposed to product price increases despite being crude exporters. Liadze *et al*. (2023) and Mbah and Wasum (2022) note that the wider economic costs of the war were felt most sharply by economies with limited fiscal room, a pattern mirrored in fuel procurement. Liadi (2023a) further argues that heavy reliance on petroleum as an instrument of external influence leaves producer economies exposed to the same market and political shocks, strengthening the case for economic diversification.

Evidence from African economies supports this concern. For Nigeria, oil price changes have historically affected industrial production indirectly through the real exchange rate (Ayadi, 2005), and removing fuel import subsidies would raise output but harm poor households without targeted transfers (Siddig *et al*., 2014). In sub-Saharan oil-importing countries, oil price increases and decreases affect sectors asymmetrically (Akinlo, 2024), and energy security in West Africa depends on governance, affordability and region-specific investment (Ofosu-Peasah *et al*., 2021). Distributed energy options such as hybrid solar-diesel microgrids, solar power for small manufacturers in Nigeria and lessons from large-scale solar integration offer partial hedges against imported fuel risk for these buyers (Ijiga *et al*., 2023b; Sunday & Omoegun, 2018; Yeboah & Ike, 2020).

6. Implications

6.1 Implications for practice

Several practical implications follow. Procurement functions should measure performance on total landed cost and on lead time variance, not invoice price and average lead time. Supplier qualification should incorporate sanctions screening, vessel due diligence, and scenario analysis of policy reversals (Filani *et al*., 2023). Contracts should allocate geopolitical risk explicitly rather than relying on generic force majeure language. Category strategies should pair financial hedges with physical measures such as stock and route optionality. Finally, procurement and risk teams should monitor geopolitical risk indicators, such as the Caldara and Iacoviello (2022) index, chokepoint transit data, and sanctions enforcement announcements, as leading indicators for sourcing decisions. Digital supply chain systems that integrate procurement planning, inventory visibility, and logistics data can support these practices by detecting disruption earlier and sustaining operational continuity (Okonkwo *et al*., 2024b; Okonkwo *et al*., 2024e).

6.2 Implications for policy

The findings also carry implications for policy. Governments that import oil, particularly in developing economies, can reduce exposure by maintaining strategic or commercial stockholding obligations sized to realistic disruption scenarios, diversifying import sources and routes, and investing in domestic refining and storage capacity so that product supply is less dependent on distant chokepoints. Regulators and trade authorities can lower compliance costs for legitimate buyers by publishing clear guidance on sanctions and price cap requirements and by supporting reliable documentation of cargo origin. Sanctioning governments, in turn, need to weigh the revenue objectives of measures such as price caps against their spillover effects on freight, insurance and the energy costs of third countries, and to coordinate enforcement so that compliant buyers are not placed at a disadvantage. Finally, energy and industrial policy that diversifies the fuel mix strengthens supply continuity over the long run.

7. Limitations

This review has limitations. Much of the 2024 evidence is drawn from institutional and grey literature because peer-reviewed analyses of recent events lag behind the events themselves. The integrative method does not produce pooled effect sizes, and the framework is conceptual rather than empirically tested. The opacity of sanctioned trade, including shadow fleet operations and undisclosed pricing, also limits the precision of any assessment of real discounts and reliability penalties.

8. Future Research

Future research could pursue several directions. First, firm-level studies could measure how sanctions and rerouting affected the total landed cost and lead time variance experienced by specific buyers. Second, empirical work

could test whether contract clauses adopted after 2022 actually reduced the cost of disruptions. Third, research is needed on the procurement experience of import-dependent developing economies, which is underrepresented in the literature. Fourth, the interaction between energy transition policy and geopolitical supply risk deserves attention, since declining long-run demand may reduce upstream investment, which already depends on disciplined capital budgeting under price uncertainty (Nwangwu *et al*., 2021), and thereby shrink the spare capacity that buffered the market in 2024. Finally, scholars could link news-based geopolitical risk measures to procurement decisions such as forward buying and stockpiling, testing the behavioural mechanisms implied by precautionary demand theory.

The energy transition deserves particular attention. Renewables reduce some fossil supply risks but create new geopolitical tensions over critical materials and cybersecurity (Vakulchuk *et al*., 2020), and climate policy places fossil assets in developing producer countries at risk of stranding (Ansari & Holz, 2020). Research on carbon utilisation strategies that sustain output from mature oil fields suggests one pathway through which supply can be stabilised during the transition (Ijiga *et al*., 2023a). Future reviews could also integrate automated ESG reporting into procurement decisions, since sustainability criteria will increasingly interact with supply security (Abioye *et al*., 2023). A further avenue concerns autonomous procurement agents, whose arrival is expected to change how buyers search, negotiate and contract, and which therefore warrants study of how such agents behave during geopolitical disruptions (Ogundairo & Ayivi-Donkor, 2024b).

9. Conclusion

Geopolitical tensions between 2022 and 2024 reshaped the global oil supply system less by removing oil from the market than by redrawing who can buy from whom, by which route, under what terms, and at what risk. Conflict, sanctions, and trade restrictions affected availability mainly at the level of particular grades, products, and delivery windows; they transformed supplier selection into a compliance-intensive and policy-contingent decision; they raised contract costs through differentials, freight, and insurance rather than through sustained benchmark increases; and they degraded delivery reliability by lengthening and destabilising lead times. For procurement, the lesson is that cost and continuity can no longer be managed through price hedging and spot purchasing alone. Organisations that combine deliberate contract design, diversified and pre-qualified suppliers and routes, adequate inventory buffers, and technical flexibility are best placed to contain both the cost and the continuity consequences of an increasingly fragmented geopolitical environment.

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