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From Connections to Consequences:

Cross-Theater Conflict Coupling and Strategic Capacity in Interconnected Wars

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About This Report

This research report is an independent study published by EPINOVA LLC. It develops **Cross-Theater Conflict Coupling (CTCC)** as a mechanism-based analytical framework for examining how developments in one war may alter the strategic capacity, institutional choices, and operational possibilities of actors engaged in another.

Using the Russia–Ukraine war and the U.S.–Israel–Iran conflict as interconnected empirical settings, the report investigates three principal pathways of cross-war interaction: competition over shared resources and production capacity; the transfer and conversion of military technology, expertise, and operational knowledge; and policy-mediated changes in access, allocation, and strategic expectations.

The central analytical distinction is between the existence of cross-war connections and their demonstrable consequences. Through five conditional theoretical propositions and a six-stage, claim-specific evidence framework (G1–G6), the study distinguishes reported relationships, institutional authorization, physical or knowledge transmission, recipient integration, observable decision or functional consequences, and identifiable feedback effects. Particular attention is given to the difference between nominal resource availability and usable strategic capacity, as well as between observed changes and causally attributable outcomes.

The report also examines the potential consequences of asymmetric war termination. Rather than treating the end of one conflict as an automatic release of resources for another, it develops conditional scenarios and testable hypotheses concerning residual military obligations, production constraints, strategic reallocation, policy expectations, and continuing adversarial adaptation.

The analysis combines publicly available official documents, institutional records, industry data, contemporary reporting, and structured cross-case comparison. Its findings distinguish independently established observations from source-attributed claims, unresolved evidence gaps, and prospective scenarios. **The report does not treat an observed connection as proof of a realized cross-war effect, nor does it present conditional war-termination scenarios as forecasts.**

The research evidence cutoff is **October 26, 2026**. Findings and assessments reflect the information available within that period and remain subject to revision as new evidence becomes accessible.

Keywords: cross-theater conflict coupling; strategic capacity; asymmetric war termination; effective bottlenecks; evidence gates; military-industrial interdependence; recipient-side conversion; energy buffers; Russia–Ukraine; U.S.–Israel–Iran.

Table of Contents

Executive Summary 01

Key Findings 03

1. Introduction 04

1.1. The Puzzle of Interconnected but Distinct Wars 04

1.2. Argument and Contribution 04

1.3. Empirical Strategy and Structure 05

2. Literature and the Explanatory Gap 06

2.1. Network Interdependence and Institutional Control 06

2.2. Defense-Industrial Competition and Allocation 06

2.3. Technology Transfer, Learning and War-System Reconstitution 06

2.4. Causal Mechanisms, Negative Cases and Temporal Attribution 07

3. Analytical Framework: From Cross-Theater Connections to War-System Consequences 08

3.1. Cross-Theater Interdependence and the Problem of Realized Influence 08

3.2. Defining the War System and the Unit of Analysis 08

3.3. Transmission Pathways and Conversion 09

3.4. From Transmission to War-System Consequences 10

3.5. Relationship to War-System Reconstitution 11

3.6. Pathways, Propositions, and Testable Consequences 11

4. Research Design and Evidence Strategy 13

4.1. Research Strategy 13

4.2. Case Selection and Comparative Logic 13

4.3. Identification Gates, Source Independence, and Evolving Counterfactuals 14

4.4. Six Claim-Specific Evidence Gates and Attribution Standard 16

4.5. Documentary Tests and Evidentiary Stages 18

4.6. Prewar Constraints, Batch Identity, and Trade-Direction Controls 18

4.7. Strategic Non-Disclosure and Observational Equivalence 20

5. Resource Competition and Allocation: The PAC-3 MSE Case 21

5.1. The Empirical Problem 21

5.2. Industrial Capacity, Production Commitments, and Temporal Constraints 21

5.3. Evidence of Cross-Theater Delivery Pressure 23

5.4. Ukraine's Dependence on the PURL Channel 25

5.5. Distinguishing Three Causal Explanations 27

5.6. Identification of Effects on the Ukraine War System 30

Table of Contents

5.7. Implications for Cross-Theater Conflict Coupling 31

6. Adaptive Transfer and Industrial Conversion: The Shahed–Geran Case 33

6.1. The Empirical Problem: Historical Conversion and Contemporary Return Flows 33

6.2. Iranian Technology and the Localization of Russian Production 33

6.3. Russian Industrial Absorption and Battlefield-Driven Adaptation 34

6.4. The Emergence of Distinct Russian Variants 35

6.5. Iran's Reported Demand for Advanced Russian Gerans 36

6.6. The Gulf Debris Lead and the Limits of Reciprocal Attribution 37

6.7. Distinguishing Drone Cooperation from Other Military-Technical Programs 38

6.8. Production, Domestic Demand, and the Problem of Exportable Surplus 39

6.9. Causal Assessment and Competing Explanations 39

6.10. Implications for Cross-Theater Conflict Coupling 40

7. Knowledge Transfer and Recipient-Side Conversion: Ukrainian Counter-Drone Assistance to Gulf States 42

7.1. The Empirical Problem: Transferring Wartime Experience Across Theaters 42

7.2. Deployment of Ukrainian Specialists 42

7.3. The Object of Transfer: Equipment, Expertise, and Defensive Organization 43

7.4. Institutionalization Through Defense Cooperation 44

7.5. Reported Operational Employment and the Limits of Performance Attribution 45

7.6. Recipient Absorption and Threat-Specific Compatibility 47

7.7. Reciprocal Support and the Possibility of Resource Return 49

7.8. Opportunity Costs and the Source War System 50

7.9. Causal Assessment and Alternative Explanations 50

7.10. Implications for Cross-Theater Conflict Coupling 52

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire 53

8.1. The Empirical Problem: Policy Control Before Material Transfer 53

8.2. The Pre-Agreement Baseline: Energy Pressure Before October 53

8.3. U.S. Authorization and the Boundaries of Legal Access 55

8.4. Russian Supply Commitments and Material Feasibility 58

8.5. Military Assistance as a Conditional Policy Interface 60

8.6. The Proposed Energy Ceasefire: Negotiability and Operational Control 63

8.7. Conditional Commitments and the Timing of Strategic Benefits 65

Table of Contents

8.8. Competing Explanations and Causal Identification 65

8.9. Implications for Cross-Theater Conflict Coupling 67

8.10. International Energy Buffers and Recipient Accounting 68

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects **71**

9.1. From Connection to Consequence 72

9.2. Different Constraint Structures: Material Resources and Knowledge 73

9.3. Policy Authority and Strategic Optionality 73

9.4. Asynchronous Transmission and Conversion 74

9.5. Strategic Allocation, Substitution, and Effective Bottlenecks 75

9.6. Endogenous Rewiring and Adversarial Response 77

9.7. Cross-Case Propositions and Observable Implications 77

9.8. Identification, Rival Explanations, and Scope 79

9.9. Theoretical Contribution and Boundary of the Claim 81

9.10. Asymmetric Termination: Capacity, NATO Contingencies, and Sectoral Restraint 82

10. Policy Consequences and Decisive Empirical Tests **93**

11. Conclusion **95**

References **97**

Author, Institutional Affiliation, and Disclaimer **110**

Version History and Citation Recommendation **111**

Executive Summary

Contemporary wars increasingly depend on interconnected defense industries, logistical networks, energy resources, sanctions regimes, and transferable military technologies and operational knowledge. These shared systems create opportunities for cross-war interaction, but the existence of a connection does not necessarily establish that developments in one conflict have produced identifiable strategic consequences in another.

This research report develops **Cross-Theater Conflict Coupling (CTCC)** as a mechanism-based framework for analyzing how separate wars interact through shared constraints, institutional decisions, resource transmission, and recipient-side capability conversion. Its central objective is to distinguish the existence of cross-war connections from the processes through which those connections become operationally and strategically consequential.

The study develops five conditional theoretical propositions (P1–P5) and applies six claim-specific evidence gates (G1–G6). Combining process tracing, evolving counterfactuals, and structured cross-case comparison, the framework distinguishes institutional authorization from actual delivery, technological ancestry from new transfers, recipient integration from observable functional consequences, and strategic feedback from coincidental or independently generated changes.

The empirical analysis focuses on interactions between the Russia–Ukraine war and the U.S.–Israel–Iran conflict. It examines military-industrial competition, cross-border technological learning, operational expertise, energy supply, and policy-mediated resource access. These mechanisms are investigated through cases involving Patriot interceptor procurement, Shahed–Geran industrial development, Ukrainian counter-drone cooperation with Middle Eastern partners, Russian diesel exports and sanctions conditionality, and international strategic petroleum reserves.

The report also extends CTCC to the conditional consequences of asymmetric war termination. It examines whether reductions in military operations, changes in territorial control, negotiated restrictions, or selective ceasefire arrangements can alter strategic capacity across interconnected conflicts. Rather than assuming that the termination of one war automatically releases resources for another, the analysis incorporates continuing military obligations, production constraints, institutional dependencies, and adversarial adaptation.

Across these domains, the evidence reveals different stages of transmission and conversion, with important gaps between reported connections, realized transfers, operational effects, and causally attributable strategic consequences. Accordingly, the report avoids treating policy announcements, nominal resource availability, technology transfers, or reductions in combat activity as sufficient evidence of realized cross-war effects.

The central conclusion is that cross-theater conflict coupling is conditional, dynamic, and institutionally mediated. Its consequences depend not only on the existence of shared resources or transferable capabilities, but also on the constraints governing their allocation, the capacity of recipients to convert them into usable functions, and the changing strategic obligations of the actors involved.

Executive Summary

The report provides a theoretical and empirical foundation for identifying, comparing, and eventually testing these mechanisms. Its assessments are based on publicly available evidence through **October 26, 2026**, and distinguish established observations from unresolved causal relationships and prospective scenarios.

Key Findings

- **Cross-War Connections Do Not Automatically Produce Strategic Consequences.** Shared resources, technologies, and institutions create potential cross-war exposure, but identifiable transmission, recipient conversion, and causal consequences require separate evidence.
- **Shared Military-Industrial Constraints Can Transmit Strategic Pressure.** Competing PAC-3 requirements and Ukraine's dependence on PURL illustrate potential resource bottlenecks. However, reported procurement and delivery pressures do not establish quantified Iran-war-induced diversion of Ukraine-bound interceptors.
- **Technology and Knowledge Transfers Depend on Recipient Conversion.** Historical Shahed–Geran industrial cooperation demonstrates successful technological absorption, but new reciprocal transfers in 2026 remain unverified. Ukrainian counter-drone deployments and reported Sky Map activities establish selected transmission stages, not independently measured operational gains.
- **Policy Authorization and Material Delivery Are Distinct Mechanisms.** Russian diesel arrangements demonstrate how regulatory decisions and credible expectations may affect strategic choices before physical transfers occur. Reported production recovery and tanker movements do not establish completed U.S. imports, additional Russian fiscal resources, or military benefits.
- **Strategic Capacity Depends on Stocks, Production, Institutions, and Time.** International petroleum releases and national inventory adjustments demonstrate that authorized resources, physical deliveries, and usable capacity are not interchangeable. Ownership structures, logistical constraints, production timelines, and recipient requirements determine whether resources become strategically available.
- **War Termination Reconfigures Constraints Rather Than Automatically Releasing Power.** Reduced fighting may lower immediate consumption while creating or preserving occupation, reconstruction, replenishment, and deterrence obligations. Any resulting cross-war capacity dividend depends on net releasable resources, institutional decisions, and continuing adversarial adaptation.

1. Introduction

1.1. The Puzzle of Interconnected but Distinct Wars

Modern wars depend on military and civilian systems that extend beyond their immediate battlefields. A conflict can increase demand for shared weapons, stimulate the adaptation of technologies developed abroad, or encourage governments to reconsider the rules governing access to fuel and military assistance. These connections invite broad claims that distant wars have become mutually reinforcing or that one automatically diminishes the resources available to another. Yet such conclusions move too quickly from the existence of a relationship to an observed consequence.

The Russia–Ukraine war and the 2026 U.S.–Israel–Iran conflict illustrate this problem. Wartime consumption in the Middle East has generated pressures on U.S. and European air-defense procurement; Iran and Russia maintain a historically documented drone-production relationship; Ukrainian specialists have assisted states responding to aerial threats in the Gulf; and negotiations over Russian diesel have brought energy access, refinery attacks, and military assistance into the same diplomatic discussion. These interactions differ in the objects transmitted, the institutions controlling them, and the extent to which recipients have turned access into usable capacity.

The fundamental question is therefore not whether these wars are connected. It is under what conditions a war-conditioned change crosses an institutional or technical boundary and becomes a consequential change in another war system. A supplier's finite capacity, a request for a weapon, an expert visit, or the issuance of a sanctions license may each be observable. None alone establishes an altered battlefield outcome. The analytic challenge is to distinguish pathways that become effective from relationships whose downstream effects remain latent, delayed, or unverified.

1.2. Argument and Contribution

This study develops cross-theater conflict coupling (CTCC), analyzed operationally at the war-system level, as a mechanism-based framework for tracing that distinction. It identifies the originating war-related change, the shared or controlled interface through which an effect might travel, the implementation of a relevant transfer or condition, recipient-side conversion, and changes in strategic choice or war-sustaining functions. Each stage is an evidentiary question rather than a guaranteed step. Competing explanations, including pre-existing cooperation, common external shocks, domestic adaptation, and independent policy shifts, must be evaluated before a resulting effect is attributed to the source war.

The argument has three connected elements. First, the effective constraint differs by pathway: finished munitions are physically rivalrous, some military knowledge is reproducible but difficult to absorb, and policy authorization changes institutional access without itself producing material deliveries. Second, actors may respond to credible commitments or threats before the promised resource arrives, so perceived and objectively feasible strategic options must be distinguished. Third, effects are dynamic because production, shipment, learning, repair, and adversarial adjustment unfold at different rates. A transmission that initially fails may later become effective; one that improves a recipient's capabilities may not yield a sustained net operational benefit.

1. Introduction

The proposed contribution is not a new general theory of supply chains, coercion, or military learning. Scholarship on weaponized interdependence, defense-industrial cooperation, and process tracing already offers essential building blocks (Farrell & Newman, 2019; Simón, 2026; George & Bennett, 2005; Collier, 2011). CTCC seeks to connect those building blocks in a source-war-specific, object-level and time-sensitive causal design capable of distinguishing transmission, conversion, strategic choice and operational consequence. Its added explanatory value remains a proposition to be tested rather than a demonstrated superiority over existing theories.

1.3. Empirical Strategy and Structure

The study uses structured, focused comparison and within-case process tracing. Three principal cases examine competition for PAC-3 MSE interceptors, the historical localization and later adaptation of Iranian-origin Shahed technologies in Russia, and the deployment of Ukrainian counter-drone expertise to Gulf partners. A supplementary policy case examines Russian diesel arrangements, U.S. regulatory authorization, and proposed restraints on energy-infrastructure attacks. The cases are selected to vary the nature of the transmitted object and the visibility of downstream implementation, not to provide four uniformly successful examples.

The evidence cutoff for the integrated report is October 26, 2026 (U.S. Eastern Time). Earlier audits and subseries ending on October 13 remain dated historical subsets rather than the report-wide cutoff. The cases were selected to vary transmission objects and proof stages, including incomplete and negative pathways. Forward implementation dates, announced purchases and requested political settlements are treated as plans, attributed reports or scenarios unless subsequent observation establishes their execution.

2. Literature and the Explanatory Gap

2.1. Network Interdependence and Institutional Control

Interdependence scholarship explains why access to distributed commercial, technological and institutional networks can create strategic vulnerabilities and opportunities. Farrell and Newman (2019) demonstrate that states able to exercise jurisdiction over central network nodes can develop distinctive coercive capabilities. This approach helps identify the importance of chokepoints and the authorities that govern access to them. It does not, without additional recipient-level observations, establish whether an altered permission or threatened restriction has produced a change in the operational capacity of a separate war system.

The difference between control and effect is central to the present study. A sanctions administrator may change legal permissions in one jurisdiction while independent statutory prohibitions, third-country restrictions, market decisions and physical transport constraints persist. Similarly, a common procurement authority may influence the timing of assistance without changing industrial output. Understanding an interface's political control is necessary, but it is only one part of identifying its operational consequences.

2.2. Defense-Industrial Competition and Allocation

Research on cross-theater defense-industrial cooperation highlights the converging demands, production limitations and coordination problems faced by states and allies confronting geographically separate security challenges. Simón (2026), for example, examines how common standards and selective industrial integration can support defense production at scale across distinct theaters. That literature provides important concepts for evaluating the capacity of shared suppliers, the complementarity of manufacturing stages and the limits of substitution.

A further causal question concerns the distribution of actual shortages. An increase in wartime demand need not reduce every other recipient's deliveries. Stocks, contracts, component bottlenecks, production expansion, competing priorities and distinct defensive missions condition whether displacement occurs. Nor is a change in the delivery expectations of a supporting third country equivalent to a measured loss of usable capacity among forces fighting another war. The case analysis therefore follows variant-specific commitments and physical implementation whenever the evidence permits.

2.3. Technology Transfer, Learning and War-System Reconstitution

Military cooperation can transfer finished weapons, technical knowledge, designs, personnel and organizational routines. These inputs differ in whether their use consumes a scarce physical stock and in the conditions required for them to become operationally useful. The C4ADS investigation of Iranian–Russian Shahed cooperation documents arrangements for localization of productive know-how (Al-Ghusbi & Rousseau, 2025). Analysis of the evolving Geran family further shows the importance of iterative wartime modification rather than one-time technology acquisition (Bondar & Errera, 2026).

2. Literature and the Explanatory Gap

These findings motivate a distinction between an imported artifact, a sustained domestic production capability and a later adaptation developed under battlefield pressure. They do not establish that a technologically improved system was subsequently transferred in the reverse direction. Nor does the deployment of specialists demonstrate that their advice was absorbed by the recipient and produced a net defensive advantage. The receiving system's equipment, workforce, command arrangements, production interfaces and operational environment condition conversion.

War-system reconstitution concerns how a belligerent preserves or restores functions through control, rewiring and regeneration under disruption. CTCC is narrower: it examines when changes originating in another war alter the feasible external inputs or constraints on those internal processes. This separation is important because not every delivered resource regenerates capability and not every policy threat immediately removes existing capacity.

2.4. Causal Mechanisms, Negative Cases and Temporal Attribution

Structured, focused comparison provides a common set of questions across heterogeneous episodes, while process tracing allows the analyst to examine diagnostic observations within each episode (George & Bennett, 2005; Collier, 2011). These methods are particularly suited to claims whose mechanisms involve several decisions and conversions across different organizations, where an announcement or reported intention is often more visible than a final operational outcome.

For cross-theater influence, a demanding test must identify a source-war-conditioned change and distinguish it from relationships that were already present. It must then track the relevant interface, implementation, recipient adjustment and functional outcome while evaluating alternatives. Cases in which an announced shipment does not arrive, an industry shock is fully buffered, or a transferred method is not adopted are therefore analytically valuable. They reveal where a proposed mechanism fails or remains unobserved rather than simply being discarded as inconvenient exceptions.

The explanatory gap addressed here is the lack of an integrated, evidence-graded account linking changes in one war to the conversion processes and function-specific consequences of another. CTCC proposes such a framework, but its credibility depends on discriminating it from established theories and on refusing to treat correlation, latent interdependence, or unverified future commitments as demonstrated causal effects.

3. Analytical Framework: From Cross-Theater Connections to War-System Consequences

3.1. Cross-Theater Interdependence and the Problem of Realized Influence

Contemporary wars do not operate within self-contained military systems. Their continuation depends on industrial production, replenishment, transportation, technical knowledge, financial arrangements, and institutional decisions that may extend far beyond the immediate battlefield. States engaged in different conflicts can therefore rely on overlapping suppliers, encounter competing demands for the same capabilities, or acquire technologies and practices developed through operations elsewhere.

The existence of these connections, however, does not establish that developments in one war have altered the conduct or sustainability of another. A common supplier may serve multiple conflicts without reallocating resources between them. A technology may cross national borders without being incorporated into operational practice. A government may relax a trade restriction without enabling a corresponding material flow. These distinctions are essential because cross-theater interdependence can generate exposure, opportunities, and constraints without necessarily producing realized effects.

Existing scholarship provides important foundations for this analysis. Research on complex and weaponized interdependence explains how network positions and institutional authority shape the capacity to control consequential flows (Farrell & Newman, 2019). Studies of cross-theater defense cooperation examine the production, standardization, and industrial coordination required to sustain military power across geographically distinct theaters (Simón, 2026). Research on military assistance and adaptation likewise emphasizes that external inputs do not automatically translate into usable capabilities.

Building on these insights, this report treats cross-theater conflict coupling as a specific analytical problem: under what conditions do developments associated with one war change the resources, operational capabilities, institutional constraints, or strategic choices available to actors sustaining another?

The focus is not the existence of interdependence itself, but the relationship between war-conditioned changes, identifiable transmission pathways, and consequences for the receiving war system.

3.2. Defining the War System and the Unit of Analysis

A war system is understood here as the set of military, industrial, logistical, informational, financial, and institutional functions required to conduct and sustain a particular conflict. It includes not only the forces directly engaged in combat but also external actors and infrastructures insofar as their activities demonstrably affect the availability or use of war-sustaining capabilities.

This functional definition does not imply that all supporting states participate in the same war, share command arrangements, or pursue identical political objectives. Their relationship to the conflict must be established rather than assumed.

3. Analytical Framework: From Cross-Theater Connections to War-System Consequences

The primary unit of analysis is the cross-war transmission episode. Each episode identifies a source-war development; the actor or institution controlling the relevant resource, capability, or decision; the object of potential transmission; the pathway through which the transmission occurs; the recipient; and the resulting change, if any, in a target war system.

The object of transmission may be a physical resource, such as an interceptor or fuel shipment; a productive capability, such as manufacturing knowledge; an organizational resource, such as trained personnel; or a policy condition affecting access to these resources.

This unit of analysis distinguishes three relationships that are frequently conflated.

First, pre-existing interdependence refers to relationships established before the relevant war-induced change. Such relationships may create the conditions for later transmission, but their continued existence is not itself evidence of a new cross-war effect.

Second, common exposure occurs when multiple actors or conflicts are affected by the same external event or market condition. Common exposure may generate correlated outcomes without a direct relationship between the affected war systems.

Third, war-conditioned transmission occurs when a development associated with one conflict changes an identifiable resource flow, capability pathway, or institutional constraint relevant to another. A realized consequence requires additional evidence that this transmission altered operational availability, system performance, or strategic choices.

The distinction is particularly important for third-party support networks. Delayed deliveries to a state supporting the security architecture surrounding a war may demonstrate cross-theater allocation pressure. They do not necessarily demonstrate a corresponding loss of capability among forces directly fighting that war. The relationship between supporting networks and operational consequences must be traced explicitly.

3.3. Transmission Pathways and Conversion

The framework distinguishes three principal pathways, each associated with different transmission objects and evidentiary requirements.

Resource competition and allocation arise when separate conflicts place demands on overlapping inventories, production lines, transport capacity, or procurement authorities. Competition may constrain one recipient, but a shared supplier does not by itself establish displacement. Realized effects depend on inventory availability, production schedules, contractual commitments, allocation decisions, substitution possibilities, and the timing of actual deliveries.

Adaptive capability transfer occurs when knowledge, technology, personnel, production methods, or operational practices developed or modified through one conflict become available to actors responding to another. Transfer and conversion are analytically separate. The recipient must possess sufficient organizational, technical, and material conditions to incorporate the input into a usable capability. The effects of transferred knowledge may appear through altered production, deployment, performance, or learning processes, rather than through a directly measurable movement of finished weapons.

3. Analytical Framework: From Cross-Theater Connections to War-System Consequences

Policy-controlled access and conditional commitments arise when governments or other authorities change the rules governing access to resources, markets, or support arrangements. Authorization, restriction, and credible threats may alter strategic expectations before physical transfers occur. Yet changes in legal permission, commercial execution, and material availability remain distinct. Likewise, a proposed limitation on attacks against a particular category of infrastructure does not become an operationally effective ceasefire merely because it has been announced.

These pathways are neither mutually exclusive nor uniformly beneficial. An external relationship may expand one actor's options while exposing it to competing claims on scarce resources or to decisions by a shared controlling institution. Knowledge may be reproducible while the specialists required to implement it remain scarce. Industrial cooperation may increase future productive capacity while temporarily diverting personnel, capital, or components from immediate operational needs.

Accordingly, cross-theater coupling should not be assigned a positive or negative value solely from the direction of cooperation or the existence of a transfer. Its consequences depend on the specific function affected, the timing of conversion, and the costs and alternatives available to the actors concerned.

3.4. From Transmission to War-System Consequences

This report separates five analytical questions.

The first concerns source-war dependence: what relevant resource, capability, demand, or policy condition changed, and to what extent can that change be associated with the source conflict rather than pre-existing developments?

The second concerns relational transmission: through which actors, institutions, supply arrangements, or technical pathways did that change become relevant to another war system?

The third concerns implementation and conversion: was the relevant input delivered, authorized, adopted, deployed, or otherwise placed into use?

The fourth concerns war-system consequences: did the receiving system experience a change in operational availability, replenishment, production, recovery, or strategically relevant choices?

The fifth concerns causal attribution: can the observed consequence be distinguished from changes that would plausibly have occurred without the proposed transmission?

These questions establish an evidentiary progression, not a presumption that every episode follows a uniform linear sequence. Policy threats, for instance, may influence decisions before any material transfer. Their immediate effects must nevertheless be identified as changes in expectations or behavior rather than retrospectively counted as delivered resources.

Similarly, evidence of operational use need not demonstrate a measurable net advantage. A transferred defensive system may intercept threats without establishing how much overall defense performance improved relative to alternative equipment, different attack patterns, or pre-existing defensive capacity.

3. Analytical Framework: From Cross-Theater Connections to War-System Consequences

The framework therefore distinguishes the existence of a relationship, the activation of a transmission pathway, the realization of a recipient-side change, and the attribution of a wider system effect. Failure to establish a later stage does not necessarily disprove an earlier one.

3.5. Relationship to War-System Reconstitution

Cross-theater coupling is conceptually connected to, but distinct from, war-system reconstitution.

War-system reconstitution concerns the preservation or restoration of strategically relevant functions under sustained disruption. Its three mechanisms are control of critical interfaces, functional rewiring across alternative nodes and institutions, and regeneration of usable capability.

Cross-theater coupling identifies external conditions that may facilitate or constrain these mechanisms. Access to foreign production can support regeneration; imported expertise can improve an adaptive process; alternative trade routes can facilitate rewiring; and decisions by a shared supplier or regulatory authority can restrict the usability of an otherwise existing relationship.

The distinction prevents the movement of resources from being confused with the capabilities those resources may eventually sustain. A completed transfer may contribute to reconstitution, but not every transfer restores a relevant function. Conversely, the threat of restricting an important interface may alter strategic choices before any measurable loss of physical capacity occurs.

Within the Multi-Domain Conflict and Coupling Model (MCCM), these relationships are represented through separately recorded events, actor–node relations, implementation conditions, functional changes, and capacity constraints. The frozen longitudinal core remains distinct from the evidence required to establish cross-war transmission and recipient-side effects.

The theoretical task is thus not to replace the existing account of reconstitution, but to explain when external war-conditioned relationships alter its feasible pathways and observable outcomes.

3.6. Pathways, Propositions, and Testable Consequences

Three pathway families organize the empirical analysis: resource scarcity and allocation; transferable technology, personnel, and learning; and policy-mediated access and credible commitments. Across these pathways, the framework yields five conditional propositions evaluated comparatively in Section 9.7. P1 (effective-bottleneck transmission) holds that a source-war demand or supply shock reduces recipient availability only where a shared, mission-non-substitutable constraint is binding after buffers. P2 (policy-mediated anticipation) allows a credible institutional-access change to induce an independently observed strategic decision (G5-D) before physical transfer; such a decision is distinct from a realized functional capacity change (G5-F). P3 (conversion dependence) requires technically, organizationally, and threat-compatible

3. Analytical Framework: From Cross-Theater Connections to War-System Consequences

recipient interfaces before imported equipment or expertise changes usable capability. P4 (conditional substitution and dependency migration) predicts that adaptation may relieve an initial constraint while shifting vulnerability to new components, skills, or regulatory interfaces. P5 (adversarial and feedback qualification) makes the durability of imported capability conditional on opponent adaptation and requires a dated, direction-specific causal return path for G6 rather than parallel changes or a common shock. These propositions are conditional tests, not claims of observed net cross-war benefit.

4. Research Design and Evidence Strategy

4.1. Research Strategy

The study employs structured, focused comparison and within-case process tracing. These methods are appropriate because the relevant transmissions unfold through different institutional and material pathways, and the available evidence often records intermediate decisions more clearly than their aggregate military effects (George & Bennett, 2005; Collier, 2011).

The comparison is organized around transmission episodes rather than treating the Russia–Ukraine war and the U.S.–Israel–Iran conflict as two undifferentiated observations. A single conflict may participate in several episodes through different actors, objects, and mechanisms, and those episodes may have contrasting consequences.

The integrated assessment incorporates developments available through October 26, 2026. It preserves dated October 13 and October 23 audit windows as historical subsets, not alternative whole-report cutoffs. Historical records prior to the Iran war identify pre-existing production, shortages, institutions and diplomatic pressure; subsequent observations are tested for additionality rather than automatically assigned to the later war.

The study does not presume that every case will support a completed causal pathway. Cases with partial implementation, contested attribution, or absent evidence of a downstream effect are retained because they help identify the limits of transmission and conversion.

4.2. Case Selection and Comparative Logic

The study selects three principal cases representing different forms and stages of cross-theater transmission, supplemented by a bounded policy episode. The cases are not treated as equivalent instances of successful coupling. They vary in their transmission objects, institutional arrangements, temporal relationship to the 2026 Iran war, and degree of observed conversion.

The first case examines competition over PAC-3 Missile Segment Enhancement (MSE) interceptors and related procurement arrangements. It focuses on the relationship between wartime demand, common production constraints, allocation decisions, and recipient availability. The analysis distinguishes effects on European procurement systems from effects on Ukraine's operational capacity. These are connected through overlapping supply arrangements but cannot be treated as empirically identical.

The second case examines the Shahed–Geran industrial relationship. Iranian technological inputs and Russian localization between 2022 and 2025 provide an observed historical baseline for capability absorption and adaptation. This baseline is distinguished from potentially new transmission associated with the 2026 Iran war, including reported Iranian interest in advanced Russian-produced Geran variants. Historical cooperation establishes the infrastructure and capabilities through which later transfers might occur; it does not independently establish that the later war caused them.

4. Research Design and Evidence Strategy

The third case examines the deployment of Ukrainian counter-drone specialists and associated defense cooperation with Gulf states exposed to Iranian attacks. Here, the source-war relationship is more direct: operational knowledge accumulated in Ukraine is reportedly transmitted to recipients confronting related threats in the Middle East. Evidence of deployment and consultation can be evaluated separately from recipient implementation, changes in defensive performance, and any subsequent return of resources to Ukraine. The Gulf recipients are not assumed to share identical military objectives or command arrangements with the principal belligerents in the regional conflict.

A supplementary episode examines Russian diesel export arrangements, U.S. sanctions authorization, and proposals for reciprocal limitations on attacks against energy infrastructure. This episode addresses policy-controlled access and conditional commitments rather than a completed defense-industrial transfer. It is used to assess whether formal changes in resource access or anticipated future deliveries can be distinguished from actual transactions and observable military behavior.

The comparison follows a variation-in-conversion logic. The cases include historically observed industrial absorption, contemporary allocation pressure, implemented knowledge-transfer activities with incompletely measured consequences, and policy interventions whose downstream material effects remain uncertain. This variation permits the study to examine not only how cross-theater relationships become active, but why their consequences may differ.

The inferential claims are correspondingly bounded. Evidence that the Iran war affects Polish procurement expectations can establish pressure on a shared transatlantic supply system without proving a particular loss of Ukrainian interceptors. Evidence that Russia localized Iranian-origin drone technology can establish historical industrial conversion without proving a new 2026 reverse transfer. Evidence of Ukrainian expertise deployment to Gulf states can establish a transmission activity without independently identifying an improvement in interception efficiency. Formal diesel licensing can establish a policy change without demonstrating additional oil-product deliveries or a functioning energy ceasefire.

The cases are therefore compared through common causal questions rather than through an assumption of identical outcomes. Particular attention is given to the period before each alleged transmission, the actors controlling implementation, and evidence capable of distinguishing realized effects from plausible but unverified pathways.

4.3. Identification Gates, Source Independence, and Evolving Counterfactuals

A cross-war transmission episode is entered in the empirical register only when the source-war development, transmission object, controlling interface, intended recipient, and relevant observation window can be distinguished. This does not imply that the entire causal path is observed. Each episode is separately coded for shared exposure; an attributable source-war change; an activated transmission or communicated condition; implementation or receipt; recipient technical conversion or an independently identified behavioral choice; a type-specific functional or decision consequence; and, where claimed, a return pathway. Unknown status is preserved rather than recoded as verified absence.

4. Research Design and Evidence Strategy

Source independence is assessed at the underlying information-family level, not by counting outlets. A Financial Times intelligence report reproduced by multiple news sites remains one reporting cluster unless additional reporting demonstrates a separate primary witness, technical specimen, transaction record, or other independently generated observation. Government statements establish what an institution announced or did within the scope of the record; interested-party assessments do not independently establish the downstream effect they describe. Sources are dated by event time, observation time, publication time, and the [12:00 ET, following-day 12:00 ET) MCCM analytical window where applicable.

The counterfactual is the recipient trajectory that would plausibly have occurred absent the specified source-war change, not an inert recipient whose procurement priorities, production, tactics, or demand remain fixed. In a dynamic allocation model, priorities may evolve even without the source shock. The comparison therefore requires two otherwise matched, independently evolving worlds—with and without the intervention—rather than subtracting a changing observed world from a frozen baseline. Model consistency checks and parameter sweeps are useful for specifying this contrast, but they do not identify historical treatment effects without real-world measurements.

Two causal estimands must be distinguished. The total source-war effect compares the target war system under the observed source-war change with an independently evolving trajectory in which that source-war change did not occur. By contrast, an instrument-specific effect compares outcomes with and without a particular policy measure—such as General License 135—under a specified, otherwise comparable wartime context. The second comparison can identify a conditional license effect; it does not by itself identify the total effect of the Iran war, because energy demand, earlier U.S. pressure, Russian export restrictions and other channels may change independently of the license. To describe the policy effect as a component transmitted from one war to another, the analysis must also identify the source-war-to-policy link and the policy-to-recipient-response link, with their timing and competing causes. The two effects should not be added or treated as a formal mediation decomposition without the further assumptions and joint observations that such a decomposition requires.

The PAC-3 episode requires variant-matched contracted schedules, original versus revised allocation decisions, actual receipts, inventory buffers, and mission-specific substitutability; earlier European weapons warnings cannot be assumed to refer solely to PAC-3 MSE or to Ukraine-bound deliveries. The Shahed–Geran episode requires evidence specific to the Russian-produced model and a dated chain linking manufacturer, dispatch, recipient custody, and Iranian use. The Ukrainian counter-drone episode requires recipient-specific adoption dates, compatible threats, defensive outcomes, and changes in opposing tactics. The diesel episode requires the actual legal gate, trade or banking execution, independent customs or shipment observations, and military orders and attack records compared with the September bargaining baseline.

4. Research Design and Evidence Strategy

Mechanism-disconfirming observations must be separated from incomplete observation. A genuinely negative case requires sufficient source and recipient coverage, a defined exposure window and a matched comparison to establish that a specified link did not operate—for example, that a proposed common-supplier bottleneck was nonbinding for the relevant recipient and variant, or that documented alternative capacity fully absorbed a production shock during the period under test. Similarly, a proposed energy-target restriction that demonstrably never entered into force can disconfirm the claim that it produced an operative bilateral prohibition. Such results challenge a specified pathway and outcome, not every possible cross-theater mechanism.

Other episodes are evidence-limited rather than proven zero-effect cases. An intelligence account without independently verified custody leaves material receipt NOT_IDENTIFIED; training without documented recipient integration leaves G4 and G5-F unestablished; and a license without evidence of executable trade does not establish delivery or a material functional gain. The same license or a credible conditional threat could nevertheless generate a separately identified G5-D decision response before shipment. A public announcement of an energy ceasefire is not proof of military implementation, but an unverified implementation record is not proof of its absence. Source silence, inaccessible transaction records and unmatched batches therefore remain NOT_IDENTIFIED unless a sufficiently observed counterexample justifies CONTRADICTED. These distinctions preserve the usefulness of negative and partial cases as discriminating tests against supply-chain, diffusion and bargaining alternatives.

Source-family coding attaches to the originating observation, not to the number of outlets carrying it. An institutional primary record establishes the existence and wording of a decision or statement, but does not independently authenticate every consequential assertion made by the institution. Event, observation, publication, and retrieval times are retained separately; where an institutional web page is dynamically updated, a present-day retrieval does not establish the text that appeared on an earlier date. The historical JUMPSTART baseline is consequently assessed against dated 2022 policy memoranda rather than inferred from a current program-guidance page.

4.4. Six Claim-Specific Evidence Gates and Attribution Standard

The six G1–G6 gates classify the highest documented stage for a specified source-war condition, transmission object, direction, recipient and observation interval; they are not case rankings or a mandatory linear sequence. G2 identifies the originating authorization, allocation, communicated condition or other activation decision. G5 has two separately coded outcome types: G5-D records an identifiable consequential decision or behavioral adjustment by an affected actor beyond the originating G2 act, whereas G5-F records a change in operationally usable capacity, production, performance, availability or resilience. Merely expanding legally permitted options, announcing an intention, or issuing the G2 authorization does not establish either G5 outcome. A G5-D response may precede material G3 receipt or G4 conversion; it must not be counted as a delivered resource or G5-F gain. An observed G5-D or G5-F outcome remains distinct from attribution to the source war: rival explanations and an independently evolving counterfactual are necessary. Historical G1 interfaces do not verify new 2026 activation

4. Research Design and Evidence Strategy

or shipments. Evidence status (CONFIRMED, REPORTED, PROSPECTIVE, NOT_IDENTIFIED, CONTRADICTED/SUPERSEDED) is coded separately from gate/type. G6 additionally requires a dated, identifiable return direction, actor, mechanism and recipient-side-to-originating-theater sequence; simultaneous developments or a common shock do not establish feedback, and an identified return does not prove net mutual benefit. Table 1 summarizes the minimum identified observations at each gate and the attribution boundaries that remain unresolved.

Table 1. Claim-Specific Evidence Gates (G1–G6) and Attribution Boundaries

Gate	Minimum Identified Observation	Not Established by This Gate
G1 · Shared interface	Specific supplier, stock, rule, route, productive system, or expertise relevant to both theaters	War-conditioned change or executed transfer
G2 · Activation	A dated, war-conditioned initiating policy, allocation, restriction, deployment or communicated condition by a controlling actor	Implemented response by affected actor, material arrival, recipient integration or functional benefit
G3 · Receipt	Dated custody or material/personnel/information arrival at a defined recipient node	Usable or improved recipient capability
G4 · Conversion	Identified technical, industrial, doctrinal, or organizational integration	Net operational benefit
G5 · Observed consequence (D/F)	G5-D: observed consequential decision or behavior of the affected actor, beyond the G2 authorizing/communicating act; or G5-F: observed usable capacity, output, performance or resilience change, with recipient and interval specified	Causal attribution to source war without a dynamic comparator; G5-F benefit from G5-D; or receipt from authorization alone
G6 · Feedback	Dated, direction-specific return pathway from an identified recipient-side actor or altered recipient war system to the originating theater, with the returning object or condition, controlling interface, target actor/function and temporal sequence documented; evidence must distinguish the return from synchronized changes or a common external shock	Net reciprocal gain, source-war causal attribution without a credible comparator, or a closed loop inferred solely from parallel changes

Source: Author's original conceptualization and operationalization of the Cross-Theater Conflict Coupling (CTCC) framework, developed in this report (Sections 3–4).

Note: G1–G6 represent claim-specific evidentiary thresholds rather than a mandatory linear sequence or cumulative scoring system. G5-D and G5-F distinguish observable decision consequences from functional consequences, respectively. Identification at any gate does not independently establish causal attribution, net strategic benefit, or completion of the remaining gates. G6 requires an identifiable, direction-specific causal feedback pathway.

4. Research Design and Evidence Strategy

4.5. Documentary Tests and Evidentiary Stages

The empirical analysis combines structured, within-case process tracing with staged documentary checks. The first pass specified nineteen tests of the PAC-3/PURL and diesel episodes; ten second-pass checks examined receipts, parallel channels, temporal sequence, and trade direction. Later targeted audits assembled fifty dated observations and twenty-four identification gates, including cross-source linkage of a proposed PAC-3 donation package. These counts describe the organization of available evidence rather than independent causal effects, new deliveries, or statistical observations drawn from a representative sample. The source and test registers retain the underlying records without converting undated events into dated transactions.

Four forms of evidence must remain analytically separate. Production output and contractual capacity show what suppliers report making or propose to make, not the disposition of a specific missile. Promised donations and funding contributions establish conditional commitments or financial activity, not handover. Recipient announcements may establish a reported receipt or reported delay, but generally do not provide independent batch identification. Finally, customs, signed schedules, technical provenance, and functional outcome records are needed to assess implementation and effects. The absence of such records is coded as NOT_IDENTIFIED, not as zero transmission. A statement reproduced across several carriers remains a single underlying information family (George & Bennett, 2005; Collier, 2011).

A conditional result is already visible across the cases. Historical Iran-to-Russia industrial localization can be substantiated without showing a new Russia-to-Iran Geran return flow. Ukrainian specialists' reported Gulf deployment and recipient-side cooperation do not identify interception improvements net of local threat and operating conditions. The October diesel license changes regulatory permissions without demonstrating a legally executable and completed shipment or a reciprocal energy ceasefire. The PAC-3 record is strongest for a shared supply interface and an attributed channel-level delivery delay, but still lacks an auditable Ukrainian PAC-3 MSE displacement amount. The claims are evaluated by object, actor, event window, implementation stage, and rival explanation rather than by a common assumption that each mechanism succeeded.

4.6. Prewar Constraints, Batch Identity, and Trade-Direction Controls

The PAC-3 record has substantial pre-Iran-war context. Ukraine requested urgent Patriot replenishment by February 16, 2026 (Ministry of Defence of Ukraine, 2026c); a Dutch parliamentary letter dated February 9 had already described limits on releasing PAC-3 and other missiles because of Dutch national-readiness costs and limited commercial supply (Government of the Netherlands, 2026a). Germany's conditional February 12 proposal contemplated 30 partner-contributed PAC-3 missiles and five German rounds but did not establish a verified 35-missile receipt. On March 11, Zelenskyy reportedly dated receipt of Germany's portion to March

4. Research Design and Evidence Strategy

10; Germany stated simultaneously that the coalition target remained incomplete and declined to disclose the outstanding quantity or schedule. Ukraine's March 13 announcement may describe this same delivery episode: publication on separate dates does not establish separate batches (Cabinet of Ministers of Ukraine, 2026; Federal Government of Germany, 2026a; Ukrinform, 2026a).

Channel and model identity further constrain inference. Ukraine's June defense-ministry record names JUMPSTART for PAC-3 procurement and PURL as a parallel support mechanism. JUMPSTART's DSCA program code dates to 2022 rather than the Iran war. A June announcement of approximately $1 billion in PURL support and $200 million in German JUMPSTART procurement indicates financial programs, not numbers of completed PAC-3 MSE deliveries. The August report of 264 planned PAC-2/PAC-3 rounds for 2026 is a mixed-model projection formed after the Iran war began. Dutch reporting also explicitly distinguishes program payments from the later arrival of materiel. A May 11–12 Washington Post report attributed to Ukrainian official Pavlo Palisa the claim that some PURL shipments had arrived late because of the Iran war; the published account does not identify affected PAC-3 MSE batches, original arrival dates, or quantities (Defense Security Cooperation Agency, 2022a, 2022b; Ministry of Defence of Ukraine, 2026e; Government of the Netherlands, 2026c; Robertson & Francis, 2026).

The diesel case provides unusually useful negative timing and direction controls. The same cargo-tracking family reported Russian national seaborne diesel/gasoil loadings of 81,000 metric tons for the week ending September 24 and 149,000 for the week ending October 1—both before General License 135 on October 9. Within the same period, Black Sea loadings were reported at 66,000 tons in the week ending September 17 and zero in the week ending September 24. The Black Sea figures are a geographical subset, not an additional national quantity. The national difference of 68,000 metric tons, about 84 percent, cannot be attributed to the later license. A September monthly estimate from the same tracking family is not a further independent sample (S&P Global, 2026b; Azhar et al., 2026; Ledakis, 2026).

Distinct logistical objects must not be pooled. July–August South Korea-to-Russia fuel shipments, Russian outbound diesel loading, a possible U.S.-bound vessel, refinery throughput and U.S. diesel price reactions have different directions, denominators, and causal implications. The candidate tanker MINERVA ZEN was subsequently described by trackers as carrying fertilizer rather than the initially alleged diesel/gasoil; an authenticated contemporaneous bill of lading and customs entry were not available in the examined record. It is therefore excluded from verified Russian-diesel receipts, without assuming that every other candidate cargo is absent. Separately, Reuters reported Ukraine's September diesel imports of 537,000 metric tons, nine percent below August, and Ukrainian inbound logistical difficulties. Those are constraints on Ukraine's import system, not deliveries of Russian fuel under the U.S. authorization (Babel, 2026; Rashid, 2026; Reuters, 2026d).

4. Research Design and Evidence Strategy

4.7. Strategic Non-Disclosure and Observational Equivalence

Missing batch information is not plausibly random. In a March 11 press briefing, Germany's defense ministry declined to disclose the precise PAC-3 shortfall, donor quantities, dates, or a reporter-proposed monthly Ukrainian expenditure rate. Dutch reporting placed detailed deliveries in a confidential annex and used accounting conventions under which international program payments could precede Ukrainian receipt. Such statements distinguish PROSPECTIVE, NOT_PUBLICLY_DISCLOSED, REPORTED_RECEIPT, RECIPIENT-ATTRIBUTED_DELAY, and VERIFIED_BATCH_DELIVERY. An official statement about a receipt is direct evidence that the recipient made the statement; without lot-level records it may not fully establish the quantity and subtype of the transferred object (Federal Government of Germany, 2026a; Government of the Netherlands, 2026c).

The two-world exercise is a test of identification, not a reconstruction of observed secret deliveries. In the PAC-3 case, observed German partial receipt and recipient-reported PURL delay are compatible both with an Iran-war-induced reduction of Ukraine-specific MSE availability and with a dynamic no-shock world in which preexisting contracts, inventories, or domestic demand would have changed the same schedules. In the diesel case, the dated prelicense loading recovery and issuance of General License 135 are compatible with an expectation-only response and with subsequent transactions not identifiable in the public cutoff record. Both counterfactual worlds must independently evolve in procurement priorities, industrial capacity, inventory, vessel routing, and opponent actions; only the defined source-war condition differs. No historical treatment estimate is learned by assigning artificial numerical differences to these illustrative paths.

This evidence permits mechanism-level findings but not identified downstream net effects. A defensible PAC-3 estimate would require original and revised Ukraine-specific, same-subtype allocation schedules, recipient shipment/receipt identities, threat exposure and substitutability controls, with evidence linking any change to the Iran war. A defensible diesel estimate would require dated, origin- and product-verified postauthorization cargoes, arrivals and customs entries, legal execution records, and a credible no-license comparison that allows preexisting exports and supply restrictions to change. Until those observations exist, point estimates—and numerical bounds that depend on unverified inventory or transaction limits—are withheld. The case analyses below retain fuller detail.

5. Resource Competition and Allocation: The PAC-3 MSE Case

5.1. The Empirical Problem

Air and missile defense illustrates a central problem of cross-theater conflict coupling. Separate conflicts may rely on weapons obtained through overlapping industrial and procurement systems, even where the recipients do not share command arrangements or immediate operational objectives. A surge in demand in one theater can therefore affect the resources potentially available to others. Yet a common supply structure does not establish that each additional expenditure in one conflict causes a corresponding loss in another.

The 2026 war involving Iran substantially increased demands on U.S. and allied air-defense resources. The PAC-3 Missile Segment Enhancement (MSE) interceptor provides a useful case because its production arrangements are partly observable, its international customers depend on common manufacturing and allocation processes, and several European recipients have reported delivery pressure.

The question examined here is not whether PAC-3 MSE interceptors are scarce in an abstract sense. It is whether demand associated with one war can be linked to identifiable changes in the timing, quantity, or availability of interceptors supporting security commitments related to another.

Three distinct empirical claims must be considered: first, that the relevant production system faced finite near-term capacity; second, that heightened Middle Eastern demand affected particular European delivery expectations; and third, that such changes produced identifiable consequences for Ukraine's operational capacity. The available evidence supports these claims to different degrees.

5.2. Industrial Capacity, Production Commitments, and Temporal Constraints

PAC-3 MSE production was already undergoing expansion before the onset of the 2026 Iran war. Lockheed Martin reported delivering 620 PAC-3 MSE interceptors in 2025. In January 2026, the company and the U.S. government announced a seven-year framework to increase annual production capacity from approximately 600 to 2,000 interceptors. The timing of this agreement matters: the original expansion framework preceded the outbreak of the February 2026 conflict with Iran and cannot, without additional evidence, be attributed to that war alone (Lockheed Martin, 2026a).

Subsequent contracting developments strengthened the industrial response. In April, the U.S. Army announced a $4.7 billion undefinitized contract action supporting accelerated production. In July, an additional $53.86 billion contractual modification replaced the earlier one-year action with a seven-year arrangement and raised the program's not-to-exceed ceiling to approximately $58.62 billion; the Army said no funds were obligated at the time of the July award (U.S. Army, 2026a, 2026c). The announced production objective was approximately 2,000 interceptors annually by the end of 2030.

5. Resource Competition and Allocation: The PAC-3 MSE Case

The July 29 Army award illustrates why CTCC must retain distinct procurement states rather than convert a headline ceiling into deliveries. The modification raised a not-to-exceed ceiling to $58.620843289 billion and established a seven-year undefinitized action, but the Army explicitly reported that no funds were obligated at that award. This is not a statement that all prior PAC-3 program expenditure was zero. A ceiling, obligation, production-line expansion, completed missile, recipient allocation, shipment, and usable Ukrainian receipt are separately observable transitions, and none is automatically implied by the preceding contractual state (U.S. Army, 2026c).

The April 9 official contract notice supplies a narrower, genuinely obligated financial observation that should not be conflated with the later ceiling. Contract W31P4Q-26-C-0013 had $4,761,000,000 obligated at the award, comprising $4,496,040,000 in fiscal-2026 Foreign Military Sales (FMS) funds and $264,960,000 in U.S. Army missile-procurement funds. FMS therefore accounted for approximately 94.43 percent of that contract-level award; the originally published completion estimate was June 30, 2030. These are financing-category and contract observations, not completed PAC-3 MSE output, an identified foreign customer, or PURL deliveries. The original April 9 government notice is corroborated by a contemporaneous syndication of its text, while the direct government page body was inaccessible in this review (U.S. Department of War, 2026).

These announcements establish substantial efforts to expand future production capacity. They do not establish that the target production rate had already been achieved in 2026, nor do they provide a breakdown of actual missiles delivered to each operational recipient.

The industrial structure also extends beyond final assembly. On October 5, 2026, Boeing announced an approximately $14.7 billion seven-year undefinitized contract action from Lockheed Martin to expand production of the seeker subsystem used in PAC-3 MSE interceptors. The agreement was intended to triple seeker production capacity and was accompanied by reported investments in facilities, workforce expansion, and supplier relationships (Boeing, 2026).

This additional production layer matters because expansion of final-system capacity depends on the availability of essential subsystems and the ability of suppliers to synchronize output. A contract to expand seeker production is not, however, proof that seeker shortages independently caused the delivery delays reported in 2026. It identifies a potentially consequential industrial interface whose realized constraint requires separate evidence.

The production trajectory therefore reveals an important temporal asymmetry. Demand associated with current operations can increase immediately, while new production capacity must pass through contracting, investment, workforce development, component manufacture, testing, and delivery. Planned future capacity cannot be treated as an available current stock.

This distinction provides an industrial basis for possible cross-theater competition, but it does not establish how existing output was allocated.

5. Resource Competition and Allocation: The PAC-3 MSE Case

5.3. Evidence of Cross-Theater Delivery Pressure

The strongest evidence that competing demand was affecting European procurement emerged through two temporally distinct observations.

In April 2026, Reuters reported that U.S. officials had informed several European counterparts of likely delays in previously contracted weapons deliveries as the Iran war continued to draw on U.S. stocks. The report cited five sources familiar with the matter and identified recipients in the Baltic and Scandinavian regions. Some affected purchases were reportedly made through the U.S. Foreign Military Sales program. The original April 16 dispatch is independently identified, rather than inferred only from the later October Polish reporting (Slattery & Pamuk, 2026).

This reporting establishes an attributed connection between demand arising from the Iran war and anticipated delays in U.S. weapons deliveries to European customers. Its scope is nevertheless wider than PAC-3 MSE alone: the report concerns multiple weapons categories and recipients, and it does not disclose the complete item-level allocation decisions.

A more specific observation emerged on October 12. Speaking at the Warsaw Security Forum, Polish operational commander General Ireneusz Nowak stated that deliveries of PAC-3 MSE interceptors to Poland were expected to be delayed. His remarks identified the missile variant and connected the anticipated delays to the broader depletion of U.S. weapons inventories during the Iran war (Reuters, 2026e).

This represents an important increase in evidentiary specificity. The April reporting concerned expected delays across several European procurement arrangements. The October statement concerned a particular recipient and a particular interceptor variant, with a named military official publicly attributing the expected disruption to the shared resource pressure.

Yet the statement remains an assessment of expected deliveries rather than a complete contractual audit. The original delivery schedule, revised schedule, number of interceptors affected, and final delivery record are not established by the statement alone.

Nor does a reported Polish delay automatically demonstrate that the same quantity was diverted away from Ukraine. Poland is a NATO member whose own defense procurement and readiness requirements are analytically distinct from Ukrainian battlefield consumption. A cross-theater effect on Polish procurement is therefore not identical to a realized effect on Ukraine's operational capacity.

The evidence supports a narrower conclusion: the Iran war has been publicly associated with concrete delivery pressure on a shared U.S. air-defense supply system, including a specifically identified PAC-3 MSE recipient in Europe. The downstream consequences for Ukraine remain a separate empirical question.

A newly admitted pre-October observation moves the evidence beyond contractual pressure alone. In an August 27 investigation, the Associated Press reported, based on a U.S. defense official serving in Europe and a NATO official, that U.S. missile stocks in Europe had been moved to the Middle East amid the war with Iran. This is a reporter-established, source-attributed

5. Resource Competition and Allocation: The PAC-3 MSE Case

account of cross-regional physical stock movement, not a public transfer manifest; neither the number of rounds nor the exact missile variant, sending depot, receiving unit, and shipment date is disclosed (Burrows & Finley, 2026).

A first-party institutional record now confirms that cross-command materiel support was not merely an anonymous-reporting hypothesis. The Department of Defense Office of Inspector General's September 2026 report on Operation Epic Fury states that U.S. European Command served as a principal enabler and sustainment backbone for U.S. Central Command and reported transferring munitions, equipment, aircraft, and personnel while arranging fuel and logistics support. The report covers operations through June 30 and records no dated interceptor manifest or PAC-3 variant for these transfers. It independently supports an actual Europe-to-Iran-war logistics pathway, but it does not establish that any item was reserved for PURL or subsequently withheld from Ukraine (U.S. Department of Defense Office of Inspector General, 2026, p. 14).

The same AP investigation is also a necessary disagreement record. A U.S. Army NATO spokesperson, Col. Martin O'Donnell, expressly rejected the characterization that European Patriot supplies were 'beyond critical,' while Pentagon spokesperson Sean Parnell denied broader U.S. munition shortages. Those denials concern the assessed severity and readiness implications of inventory scarcity; they are not a transparent inventory reconciliation, nor do they by themselves affirm that no interregional redeployment occurred. The attributed relocation claim and contested scarcity assessment must therefore occupy separate observational fields (Burrows & Finley, 2026).

A July 27 CSIS assessment independently estimated that U.S. Patriot interceptor inventories had fallen below 1,000 as a consequence of wartime expenditure, using public-source procurement and inventory modeling rather than a declassified item-by-item count (Cancian & Park, 2026). The modeled U.S.-wide stock is distinct from American stocks physically located in Europe, from NATO-allied national inventories, and from an allocated PURL package. Nor may the mixed PAC-3 inventory be treated as a same-variant count of PAC-3 MSE. The widely reported roughly 65-percent estimate is a model-derived national stock reduction, not a measured transfer to the Middle East or a loss of that proportion of Ukraine's promised deliveries.

The key accounting implication is that three ledgers cannot be silently collapsed: U.S. military stock physically assigned to Europe, missiles contractually or administratively designated for PURL, and PAC-3 MSE actually received by Ukraine. Source-attributed movement from the first category to the Middle East does not establish diversion of the second category or non-receipt in the third. The necessary bridge is a dated common-variant serial, allocation change, shipment document, or otherwise independently verifiable batch record (Burrows & Finley, 2026; Cancian & Park, 2026).

German official records add two useful but bounded observations. On March 11, a Ministry of Defense spokesperson stated that a multinational PAC-3 collection objective reported as 35 missiles had not been fully reached; he declined to specify the unfilled quantity, donor shares, delivery timing, or Ukraine's estimated monthly requirement. This does not verify a 35-missile delivery, still less 35 MSE interceptors withheld as a consequence of the Iran war (Federal Government of Germany, 2026a).

5. Resource Competition and Allocation: The PAC-3 MSE Case

The August 24 German federal briefing supplied a more explicit source-war assessment: existing production complexity and long-standing scarcity were being intensified by heavy interceptor expenditure in the Middle East. Yet the same discussion confirmed only a forward-looking agreement for several hundred PAC-2 missiles and expressly declined to authenticate Ukraine's reported figure of 600. Recognition of a supply-system mechanism must therefore remain separate from object-matched receipt or Ukrainian operational loss (Federal Government of Germany, 2026b).

An important intermediate change in the evidence is that a Ukrainian recipient-side official reported realized channel-level delays, not merely future risk. The May 11–12 Washington Post account attributed to Pavlo Palisa the statement that some PURL deliveries occurred later than expected because of the Iran war. NATO simultaneously maintained that shipments continued. These observations are compatible: partial delays do not imply a total PURL stoppage. They increase support for an attributed implementation-stage disturbance while leaving the identities, variants, counts and counterfactual schedules of any affected Ukrainian PAC-3 MSE batches unresolved (Robertson & Francis, 2026).

A separate prewar Dutch parliamentary source shows why the same recipient might have faced shortage absent the Iran war. The government stated on February 9 that its own available stocks could no longer meet a Ukrainian request explicitly including PAC-3 without undue harm to Dutch readiness; commercial replacements were also limited by industry constraints. This establishes an independently documented donor-specific baseline. The statement does not prove that the Netherlands was responsible for any specific share of the German-led 30-missile partner target (Government of the Netherlands, 2026a).

An August 5, 2026 recipient-side aggregate adds an observed supply-change indicator but not a PAC-3 MSE lot count. Zelenskyy reported that allied deliveries of air-defense missiles during the first half of 2026 were approximately one-third of the comparable 2025 level, and attributed the shortage mainly to the Middle East war (Dysa, 2026). The report does not disclose absolute deliveries by year, distinguish PAC-3 MSE from other interceptors, or provide the contemporaneous prewar allocation schedule and reassignment decision for any Ukraine-bound lot. The reported ratio and attribution are therefore relevant recipient testimony, not a two-thirds measured diversion of MSE rounds or an identified causal effect on Ukraine's air defense.

5.4. Ukraine's Dependence on the PURL Channel

The channel structure was not created by the Iran war. At a January 23, 2026 meeting with the U.S. chargé d'affaires, Ukraine's Ministry of Defence already described PURL and JUMPSTART as operating arrangements and sought more reliable delivery forecasts. The February 13 Ramstein summary separately reported PURL contributions and intended emergency Patriot stock releases, with quantities subject to approval. These observations establish a prewar procurement baseline, not a recipient-specific PAC-3 MSE obligation or receipt (Ministry of Defence of Ukraine, 2026a, 2026b).

5. Resource Competition and Allocation: The PAC-3 MSE Case

The Prioritised Ukraine Requirements List (PURL) mechanism is a distinct institutional interface for possible coupling. In July 2026, Ukraine's Ministry of Defence reported that approximately 95 percent of Patriot interceptors reaching Ukraine, including PAC-3 types, came via PURL (Ministry of Defence of Ukraine, 2026f). This is a recipient-side channel-share statement, not Ukraine's share of world PAC-3 MSE production or a model-specific MSE count. NATO Secretary General Mark Rutte had reported approximately 70 percent of missiles for Ukraine's Patriot batteries through PURL since its launch on May 20; Deputy Secretary General Radmila Šekerinská repeated about 70 percent on June 1; and a NATO video published July 9 reported around 75 percent (NATO, 2026b, 2026c, 2026f; Fenbert, 2026). Different reporting vintages and denominators are possible, not demonstrated. Without original missile counts, shipment windows, variant composition, and treatment of stock transfers, these figures cannot be averaged or converted into a PAC-3 MSE delivery series.

Financial PURL records are more specific than public missile-delivery ledgers. For January–March 2026, the Special Inspector General for Operation Atlantic Resolve reported more than $4.8 billion committed by March 20 but $4,151,515,848.52 received by the U.S. Treasury as of March 31 (Special Inspector General for Operation Atlantic Resolve, 2026). An August 31 Congressional Research Service update reported about $6.3 billion announced by June and roughly $4.8 billion then received, with approximately $2.3 billion allocated to replenish U.S. Department of Defense stocks and $2.5 billion toward new procurement (Congressional Research Service, 2026). These are different cumulative reporting points: the earlier March receipt must not be added to the June total.

Stock replenishment can reimburse U.S. inventory after defense articles have been furnished to Ukraine, while new procurement finances future supply. Neither a replenishment dollar nor a procurement appropriation proves a newly received PAC-3 MSE, a Ukraine-funded diversion to the Iran war, or the identity of an end-user lot. The apparent proximity between a $4.49604 billion April foreign military sales obligation and roughly $4.8 billion cumulative PURL Treasury receipts is not a valid accounting join, because funding dates, beneficiaries, program codes, and stages differ (U.S. Department of War, 2026; Congressional Research Service, 2026). The separate USAI approximately 57.3 percent delivered-value ratio is neither a PURL fulfillment rate nor a physical-interceptor ratio (Congressional Research Service, 2026).

Administrative documents identify parallel, not interchangeable routes. Defense Security Cooperation Agency (DSCA) memoranda 22-52 and 22-61 established and qualified the JU (JUMPSTART) FMS program code in 2022; memorandum 26-15 updated guidance in June 2026. DSCA memorandum 25-115 assigned program code WD to the USAI–PURL arrangement in December 2025 (Defense Security Cooperation Agency, 2022a, 2022b, 2025, 2026). Ukraine reported roughly $1 billion in PURL contributions and a separate German initiative to procure $200 million in Patriot missiles through JUMPSTART in June (Ministry of Defence of Ukraine, 2026d, 2026e). The United Kingdom said on October 6 that equipment financed by its September 8 £100 million PURL contribution was expected to be released before winter (UK Parliament, 2026). These codes and statements establish funding channels and planned actions; without case-level documents, generic FMS obligations cannot be mapped to WD or JU or converted into delivered MSE rounds.

5. Resource Competition and Allocation: The PAC-3 MSE Case

European bilateral and coalition initiatives should not be pooled with PURL. Germany's February 12 initiative conditionally pledged five German PAC-3 missiles if partners contributed 30; Ukraine reported arrival of the German portion on March 10, and German officials confirmed on March 11 that the overall coalition target remained incomplete (Reuters Connect, 2026; Bloomberg, 2026; Federal Government of Germany, 2026a; Ukrinform, 2026a). The Ukrainian Cabinet's March 13 PAC-3 announcement could refer to the same overlapping episode and cannot be counted as an additional batch without lot identity (Cabinet of Ministers of Ukraine, 2026). A separate Dutch February 12 package of €420 million in multi-country PURL funding, including approximately €90 million from the Netherlands, was financial support rather than a count of missiles in the German collection effort (Government of the Netherlands, 2026b). A German–Ukrainian declaration in April concerned Patriot GEM-T and therefore provides a variant-specific negative control against including all Patriot support in PAC-3 MSE totals (Federal Government of Germany & Ukraine, 2026).

Policy control over PURL is also distinct from scarcity of physical interceptors. October reports citing the Financial Times described possible U.S. threats to restrict PURL and intelligence support in connection with Ukrainian refinery strikes, but an announced threat does not establish implemented suspension. NATO reported continuing vital assistance on March 26, no immediate observed PURL impact from Middle Eastern demand as of June 3, and continued interceptor deliveries amid finite stocks on July 6 (NATO, 2026a, 2026d, 2026e). A NATO official and U.S. Ambassador to NATO Matthew Whitaker reported continuing PURL support in October, while Whitaker acknowledged delays under high air-defense demand (Ukrainska Pravda, 2026b; Agence France-Presse, 2026). An operational channel and recipient-level shipment delays can coexist without proving either complete suspension or a quantified Iran-war-specific MSE diversion.

5.5. Distinguishing Three Causal Explanations

The observed delivery pressure can arise through at least three partially overlapping processes.

The September 2026 U.S. Department of Defense Office of Inspector General oversight report distinguishes broad readiness assurances from procurement-specific shortfalls. In that report, the Office of the Under Secretary for Acquisition and Sustainment acknowledged that Operation Epic Fury munitions expenditure had produced strategic inventory shortfalls and exposed industrial-base bottlenecks, particularly solid rocket motors, high-grade explosives and propellants, and skilled labor. This official account provides stronger support for a system-level resupply constraint than a model-derived inventory projection alone. It does not identify a Patriot-specific stock level in Europe, an unavailable Ukrainian engagement, or the date on which a particular PURL lot was delayed (U.S. Department of Defense Office of Inspector General, 2026, pp. 16–18).

Under an inventory-competition explanation, increased use or reserve requirements associated with the Iran war reduce the number of immediately available interceptors for other customers. Establishing this process requires information on compatible interceptor stocks, consumption, reserve requirements, and recipient allocation decisions.

5. Resource Competition and Allocation: The PAC-3 MSE Case

Under an industrial-throughput explanation, production and subsystem constraints limit the ability to satisfy delivery schedules across several customers. This can generate delays even without a deliberate decision to redirect a particular finished missile from one recipient to another. The multiyear production and seeker expansion agreements make this explanation relevant but do not independently identify the operative bottleneck for any specific Polish or Ukrainian shipment.

This record permits a more explicit falsification screen. A blanket claim that the PURL program had stopped by October 12 is inconsistent with the NATO-source account of continuing arrivals and Whitaker's account of continuing purchases. In contrast, those observations do not falsify a Ukraine-side report of delayed consignments, because at least one positive shipment does not establish that every pre-specified lot met its scheduled delivery date. The admissible comparison unit is a recipient–variant–lot–scheduled-date record, with a separate administrative status for procurement authorization; a shared program name is insufficient for a counterfactual assignment.

The same oversight document records a May 1 proposed Qatar Patriot replenishment sale of approximately $4.01 billion and a January 30 Saudi PAC-3 MSE notification of approximately $9.00 billion. These are different administrative observations, not confirmed deliveries or missiles manufactured: the Saudi notification predates the February 28 war onset, while the Qatar notification falls after it. Neither amount can be inserted into a 2026 interceptor expenditure series or an inventory-to-Ukraine displacement estimate without executed contracts, missile quantities, delivery dates, and compatible lot identifiers (U.S. Department of Defense Office of Inspector General, 2026, p. 25).

Under a policy-allocation explanation, governments modify approval, prioritization, or release decisions for reasons that may include changing military requirements, alliance policy, diplomatic bargaining, or operational contingencies. Such a change can affect expected availability even when some shipments continue to be delivered under earlier arrangements.

The mechanisms are analytically distinct but need not be mutually exclusive. An inventory shortage may trigger a prioritization decision, while delayed industrial expansion prolongs the effect. Conversely, a political hold can affect a particular recipient without demonstrating that the producing firm lacks the ability to manufacture the item.

For each recipient, the distinction requires a dated record of the original commitment, the subsequent decision or constraint, and the resulting change in delivery or availability.

Without those observations, the evidence may establish serious pressure on a shared supply system but not the quantity of war-induced displacement.

Supplier-level implementation can also be observed without recipient-side receipt. Lockheed Martin stated on September 17 that GM Defense had delivered the first set of components for PAC-3 MSE production to Lockheed Martin. This is a traceable industrial input, but its arrival at the manufacturer cannot establish finished interceptor output, delivery to Ukraine, or a reduction in the operational scarcity experienced by recipients (Lockheed Martin, 2026c).

5. Resource Competition and Allocation: The PAC-3 MSE Case

A newly documented substitution proposal adds a fourth, threat-matched explanation for future interceptor availability: a customer may gain access to a cheaper effector without gaining a like-for-like replacement for scarce PAC-3 MSE shots. Lockheed Martin introduced PAC-3 ACE on July 20, 2026 as a complementary lower-cost interceptor, publicly setting its projected unit price at less than half that of MSE. In an October 13 interview with Defense News, company executive Jason Reynolds said that initial industrial cooperation with Ukraine might involve ACE rather than MSE. The interview specifies material design differences, including a single-pulse rather than MSE's dual-pulse propulsion and a blast-fragmentation rather than direct hit-to-kill mechanism. These attributes require threat-class-specific evaluation; common family membership, Patriot compatibility and lower price do not establish one-for-one defensive substitutability. They also do not establish that ACE had entered serial production or reached Ukrainian forces by October 13 (Lockheed Martin, 2026b; Sprenger, 2026).

The industrial-location decision has its own war-system exposure. Reynolds identified the survivability of a missile factory within an active war zone as an antecedent issue and discussed possible production in neighboring, safer countries, including cooperation with Germany's Diehl Defence. The same interview made clear that U.S. government authorization remains necessary before such production can proceed outside the United States and that parts availability and local industrial capability must also be assessed. Neither a willingness to negotiate nor an existing component partnership proves approval, factory construction, current output, or physical delivery to Ukraine. Geographical relocation would exchange one set of potential constraints—enemy targeting of the production site—for others involving licensing, supplier synchronization, transport, and border-to-recipient delivery. This is a prospective spatial-reconstitution pathway, not an observed cross-theater transfer (Sprenger, 2026).

A distinct PAC-3 family announcement must also be excluded from present MSE availability. On October 9, Lockheed Martin unveiled PAC-3 Edge for the U.S. Army's Future Interceptor competition; the company separately states an intended development-and-delivery horizon of 2031. Edge is a proposed future interceptor drawing on MSE technology, not an additional 2026 MSE missile, a fulfilled PURL allocation, or evidence of a completed near-term increase in Ukrainian intercept capability. For data admission, PAC-3 MSE, PAC-3 ACE and PAC-3 Edge must occupy different product-identity keys, with independent production-stage and customer-receipt timestamps (Lockheed Martin, 2026d; Lockheed Martin, n.d.).

The divergence also limits policy-leverage inference. Reported PURL dependence implies a potentially consequential procurement-control interface; it does not identify the share of physically available MSE inventory subject to a particular October approval, the number of missiles released or withheld, or a counterfactual quantity Ukraine would have obtained without the Iran war. An official statement that PURL continues to deliver is therefore consistent both with substantial dependence and with shipment-level delays affecting particular orders.

5. Resource Competition and Allocation: The PAC-3 MSE Case

5.6. Identification of Effects on the Ukraine War System

The final inferential step concerns whether this cross-theater resource pressure altered Ukraine's usable air-defense capability.

A claim of direct displacement would require more than evidence that the Iran war consumed interceptors and Ukraine also needed interceptors. It would require a plausible counterfactual delivery path: the quantity, type, and delivery timing that Ukraine would otherwise have received in the absence of the relevant source-war demand or associated allocation decision.

The primary observable outcomes would include documented changes in Ukraine-bound procurement authorizations, originally scheduled and revised arrivals, physical receipts, and usable inventory. Where available, information about substitution among interceptor types and other air-defense layers would help assess the operational consequence.

A reduction in the number of delivered missiles would not automatically identify a proportional decline in defensive effectiveness. Operational consequences also depend on threat type, engagement requirements, alternative systems, existing reserves, and the use of layered defenses.

The available evidence does not establish the full counterfactual. The 2025 manufacturing delivery total is global and historical. The 2026 production commitments concern future capacity. The April reporting concerns several European customers and weapons categories. The October Polish statement identifies expected PAC-3 MSE delays but does not establish Ukrainian receipts. The PURL statement demonstrates channel dependence while the contemporaneous NATO response indicates that at least some assistance continued.

Consequently, the case supports the existence of a war-associated allocation problem within an overlapping defense-industrial system, but not a numerical estimate of interceptors displaced from Ukraine by the Iran war.

This is an analytical limit, not evidence that such displacement was absent. It identifies the additional observations required to move from shared scarcity and allocation pressure to a claim about realized Ukrainian operational capacity.

A further dated planning observation does not close this gap. On August 23, 2026, Interfax-Ukraine reported Zelenskyy as saying that 264 PAC-2 and PAC-3 interceptors were projected for 2026, compared with 675 received in 2023 and 364 in 2025; the account separately discussed 600 PAC-2 missiles in arrangements for 2027–2028 (Interfax-Ukraine, 2026b). The 264 figure combines different missile types and reflects a plan observed after the Iran war had begun. Differences between these annual aggregates cannot be interpreted as MSE-specific displacement, nor can an August plan substitute for the unobserved allocation Ukraine would have received absent that conflict.

An operational-performance report cannot substitute for that missing material path. In an August 7 assessment, the Ukrainian Ministry of Defence reported that four of 28 missiles traveling along ballistic trajectories were intercepted during the July 2 combined attack. The observation concerns a specific engagement environment and the Ministry’s own published account. It does not identify the type or number of interceptors expended by individual systems,

5. Resource Competition and Allocation: The PAC-3 MSE Case

nor the difference from a no-Iran-war supply trajectory. Using it as an estimate of PAC-3 MSE depletion or as a causal effect of the Iran war would conflate threat composition, available defense layers, and procurement conditions (Ministry of Defence of Ukraine, 2026g).

The March multinational collection effort illustrates partial observability within a known recipient-side event. A verified prewar institutional initiative and a recipient-reported partial post-onset arrival coexist with an unfilled total target; they neither identify a delivery quantity nor the no-Iran-war scheduled allocation. The observed arrival therefore supports a bounded implementation-stage finding, while both variant-specific displacement and war-system consequences remain unidentified. In particular, neither 35 minus an undisclosed delivered count nor the number five mentioned in secondary reports should be interpreted as an Iran-war loss.

The recipient-attributed May PURL delay account permits a bounded advancement from anticipated procurement pressure to reported realized logistical timing effects within a program used for air defense. It does not close the object-identity or counterfactual gates for PAC-3 MSE. Moreover, a February 27 prewar Reuters report had already attributed to Zelenskyy a shortage severe enough that some Patriot batteries had reportedly exhausted ammunition in January. This independently reinforces the need to model preexisting Ukrainian vulnerability rather than assigning all observed post-onset scarcity to the Iran war (Hunder, 2026; Robertson & Francis, 2026).

5.7. Implications for Cross-Theater Conflict Coupling

The PAC-3 MSE case demonstrates why cross-theater conflict coupling cannot be inferred from shared procurement relationships alone.

The same industrial system may simultaneously experience higher present demand, expanded future contracting, constraints at the subsystem level, and competing recipient priorities. The effects do not necessarily occur on the same timeline. Immediate wartime expenditure concerns current inventories, whereas industrial expansion concerns future throughput. Procurement pressure may become visible before the final distribution of missiles can be independently reconstructed.

The case also reveals a distinction between supplier-system effects and recipient-war-system effects. An anticipated delay in Polish PAC-3 MSE deliveries is consequential for Poland's defense planning and provides evidence of cross-theater supply pressure. It is not, without further evidence, an observed reduction in Ukrainian operational capacity.

The October industrial discussions expose an additional bottleneck beyond capacity and stock allocation: substitute interceptors have different engagement roles, while an expanded production geography remains conditional on site survivability and U.S. authorization. The Polish commander’s identified MSE delivery warning cannot be offset arithmetically against announcements of ACE or Edge variants, unexecuted factory negotiations, or seven-year production targets. The admissible comparison concerns completed, threat-compatible, received and serviceable capability within a matched window.

5. Resource Competition and Allocation: The PAC-3 MSE Case

This distinction matters for the broader framework because one source-war shock can transmit through several institutional relationships without producing identical outcomes for every recipient.

The strongest supported inference is therefore conditional: demand associated with the Iran war was publicly linked to anticipated delivery pressure on U.S. and European weapons procurement arrangements, including the expected delivery of PAC-3 MSE interceptors to Poland. The consequences for Ukraine depend on further decisions and material flows that remain incompletely observed.

The October 14 operational outcome sharpens the importance of this missing bridge rather than removing it. Reuters reported a Ukrainian account of four interceptions among 39 Russian missiles during the overnight strike, alongside severe infrastructure disruption. The ratio is an all-reported-missile event outcome, not a threat-matched Patriot engagement success rate: missile types, engagement opportunities, available launchers, fired interceptors, electronic warfare effects, and prior-warning functions are not jointly enumerated. It cannot be converted into the number of losses caused by the Iran war or by the European stock movements discussed above (Peleschuk, 2026).

The case supports the proposition that shared scarcity creates opportunities for cross-theater displacement, while illustrating why the realization, magnitude, and operational effects of that displacement cannot be established from common demand, production targets, or delivery warnings alone.

6. Adaptive Transfer and Industrial Conversion: The Shahed–Geran Case

6.1. The Empirical Problem: Historical Conversion and Contemporary Return Flows

The Shahed–Geran relationship offers a distinctive case of cross-border military technology transfer followed by sustained wartime industrial adaptation. Unlike procurement arrangements in which the principal resource is a finished weapon, this case involves the transfer of designs, technical knowledge, manufacturing methods, and organizational capabilities that can continue producing effects after the original transfer has ended.

The relationship also presents a problem of temporal attribution. Iran supplied Russia with Shahed-family drones and associated production knowledge during the earlier years of the Russia–Ukraine war. Russia subsequently localized production, modified the underlying design, and developed increasingly differentiated variants in response to Ukrainian defenses. When the 2026 U.S.–Israel–Iran conflict intensified, reports emerged that Iran had requested advanced Russian-produced Geran drones.

These developments suggest the possibility of a reversal in the direction of technological and material dependence. A state that initially supplied a military technology may later seek advanced versions developed by its former recipient through prolonged combat experience.

Yet this possibility is not equivalent to an observed reciprocal transfer. Historical cooperation, domestic adaptation, reported procurement interest, physical delivery, recipient adoption, and operational improvement represent distinct processes. Establishing the first three does not demonstrate that the remaining processes have occurred.

The case therefore examines three separate questions. First, what evidence establishes the historical conversion of Iranian technological inputs into Russian manufacturing capability? Second, how did the Russia–Ukraine war contribute to the subsequent adaptation of that capability? Third, what evidence supports the proposition that the resulting Russian capabilities have been transferred back to Iran during the 2026 conflict?

Distinguishing these questions allows the case to assess both realized capability conversion and the limits of claims about reciprocal cross-war reinforcement.

6.2. Iranian Technology and the Localization of Russian Production

Russia's initial use of Iranian-origin Shahed drones preceded the 2026 Iran war. The first Iranian-produced Shahed systems arrived in Russia in 2022 and were subsequently employed against Ukraine under Russian designations. Their military significance initially rested on the ability to launch relatively inexpensive long-range attack systems in large numbers, placing sustained pressure on Ukrainian air defenses and infrastructure.

The relationship subsequently expanded beyond finished-weapon transfers.

The 2025 C4ADS investigation Airborne Axis traced a substantial industrial cooperation arrangement involving Iran's Sahara Thunder and Russia's Alabuga enterprise. Drawing on leaked commercial and operational records, the investigation documented arrangements through which Iranian technical inputs and know-how supported the localization of Shahed-derived unmanned aerial vehicle production in Russia (Al-Ghusbi & Rousseau, 2025).

6. Adaptive Transfer and Industrial Conversion: The Shahed–Geran Case

This evidence supports a stronger proposition than the existence of diplomatic or procurement cooperation. The relationship involved the transfer of productive knowledge and the development of domestic manufacturing capacity. The recipient was not merely purchasing weapons for immediate use; it was acquiring the means to reproduce and modify a weapons system.

The distinction is central to war-system reconstitution. A finished drone adds a potentially usable unit to an inventory. A functioning domestic production system can create a recurring flow of units, permit modifications, and reduce certain dependencies on repeated foreign deliveries. Its strategic effect depends on production throughput, component availability, workforce organization, quality control, and continued operational demand.

The evidence nevertheless has limits. The C4ADS investigation relies in part on leaked records whose complete underlying documentation is not uniformly available for independent verification. Nor does the existence of an industrial agreement establish the precise incremental number of drones produced because of each Iranian technical contribution.

For the purposes of the present study, the strongest supported inference is that Iranian technology and manufacturing knowledge contributed to the development of localized Russian Shahed-derived production. The exact contribution of individual technical transfers to subsequent Russian output remains a separate measurement problem.

Most importantly, this process began before the 2026 Iran war. Its continuation cannot be counted as a new capability transfer caused by that later conflict. It is instead the historical productive foundation through which subsequent wartime adaptation became possible.

6.3. Russian Industrial Absorption and Battlefield-Driven Adaptation

Localization created the conditions for an additional process: the adaptation of the original technological system through repeated combat experience.

Bondar and Errera's September 2026 CSIS analysis describes Russian Geran development as an iterative process in which manufacturers modify navigation, communications, propulsion, payloads, and airframe configurations in response to changing Ukrainian defensive measures (Bondar & Errera, 2026).

The evidence indicates that Russian adaptation extended beyond replacing imported components with local equivalents. Different production facilities pursued distinct technical configurations, while battlefield observations informed successive changes intended to improve survivability, flexibility, and mission performance.

Electronic warfare provides one example. Changes in Ukrainian navigation interference created incentives to develop or incorporate alternative anti-jamming equipment, additional antenna configurations, and new combinations of navigation subsystems. Other modifications sought to expand communication, reconnaissance, or in-flight control capabilities.

Such changes demonstrate the relevance of the receiving state's organizational environment. An imported design does not determine its subsequent developmental trajectory. Manufacturers, component suppliers, operators, and military authorities can adapt the original system in response to operational experience.

6. Adaptive Transfer and Industrial Conversion: The Shahed–Geran Case

The resulting capability is therefore not adequately described as a continuing Iranian export. Some aspects derive from the original Iranian design; others reflect Russian engineering decisions, foreign-sourced components, and the operational demands generated by the Ukraine war.

This differentiation matters for source-war attribution. The initial technology transfer and the later adaptation process belong to related but distinct causal episodes. Iranian industrial assistance helped make Russian production possible. Ukrainian countermeasures, Russian production organization, and access to additional component markets then shaped the subsequent development of the platform.

The CSIS analysis also presents evidence of rapid iteration. In one examined example, a navigation receiver had been installed on October 8, 2025, in a drone that was lost on October 15. The short interval supports the possibility of rapid movement from subsystem installation to operational deployment.

It does not establish a representative average production-to-deployment interval for the entire Geran program. The precise earlier stages of manufacture are not fixed by the receiver-installation date, and a single recovered specimen cannot establish the distribution of adaptation times across factories, variants, or production batches.

The observation is valuable because it demonstrates a short interval in a documented individual case, not because it proves that all Russian drone modifications are developed, manufactured, and fielded within one week.

6.4. The Emergence of Distinct Russian Variants

The evolution of the Geran family further illustrates why shared technological ancestry cannot substitute for model-specific identification.

Later Russian developments included jet-powered systems with altered propulsion, airframe geometry, navigation arrangements, and payload options. These variants cannot be assumed to possess the same operational characteristics, production requirements, or component supply chains simply because they retain the Geran designation.

A more recent example appeared on October 5, 2026, when Ukraine's Defence Intelligence published technical information concerning a newly examined Geran-4 variant. The agency identified an autonomous optical navigation arrangement, magnetometer-assisted inertial navigation, a specialized KRSN payload, and an engine it described as a localized Russian replacement for an earlier Chinese unit (Defence Intelligence of Ukraine, 2026).

The significance of this disclosure lies in its technical specificity. It identifies components and functions associated with an examined configuration rather than merely asserting that Russian drones had improved.

6. Adaptive Transfer and Industrial Conversion: The Shahed–Geran Case

At the same time, several qualifications are necessary.

First, the information comes from a Ukrainian intelligence agency that is also a participant in the war. Its technical observations may provide substantive evidence, but broad conclusions about production or combat effectiveness require additional corroboration.

Second, evidence of a particular configuration does not establish that the same configuration is deployed across all Geran-4 units. Variant prevalence requires a representative series of dated specimens or manufacturing records.

Third, identified technical changes do not automatically establish operational improvement. A modified navigation system may be intended to enhance performance under interference, but its realized effectiveness depends on implementation quality, environmental conditions, and opposing countermeasures.

Fourth, technical developments within Russia are not evidence that the resulting systems or the knowledge required to reproduce them have been transferred to Iran.

The case therefore establishes a sequence of historical input, localized production, and subsequent adaptation within the Russian war system. Whether that sequence generated a new material or organizational capability in Iran during 2026 remains a different question.

6.5. Iran's Reported Demand for Advanced Russian Gerans

In September 2026, the Financial Times reported, citing Western security officials, that Iran had approached Russia about obtaining advanced Geran drones for use in the ongoing conflict against Israel and the United States. The original article is not fully accessible in the present audit, and this detail has been corroborated against secondary reporting that explicitly attributes it to the Financial Times (Ukrainska Pravda, 2026a).

A distinct, earlier report changes the evidentiary chronology. On March 25, 2026, the Financial Times, citing Western intelligence assessments, reported that a phased Russian drone shipment to Iran was approaching completion, with precise models unconfirmed and Geran-2 discussed as a possible type (Judah et al., 2026). The Kremlin rejected the claim the following day (Peach, 2026). This is a more specific reported transfer process than a mere prospective Iranian request, but it is still not a verified consignment: the available sources do not independently document dispatch, arrival, model-specific custody, quantity, or Iranian operational use. Moreover, a possible March Geran-2 shipment must not be treated as fulfillment of the separate September report about advanced Geran variants.

Source provenance matters in evaluating this episode. The original Financial Times article is publicly identifiable, but its full text is subscription-restricted in this review. Iran Watch and several other carriers reproduce or summarize the same March 25 intelligence reporting; they are not independent confirmation of physical delivery. The Kremlin's March 26 denial supplies an opposing attributed statement, not proof of non-delivery. Accordingly, reported preparation, reported phased dispatch, completed receipt, variant identification, and battlefield employment remain separate evidentiary gates.

6. Adaptive Transfer and Industrial Conversion: The Shahed–Geran Case

The report is analytically significant because it identifies a possible change in the direction of demand. Iran, which originally developed the Shahed technology supplied to Russia, was reportedly seeking access to more advanced Russian-produced variants that had emerged through subsequent wartime adaptation.

Such a request is consistent with a potential reversal of technological dependence. The initial recipient may have developed capabilities that the original supplier now values.

However, the evidentiary basis remains limited. In the reviewed material, the request is principally traceable to a single Financial Times reporting cluster. Secondary accounts referring to the same article do not provide independent confirmation.

The report does not establish a completed purchase contract, a production allocation, a shipment of finished Geran-4 or Geran-5 systems, an Iranian receiving record, or their subsequent operational use.

These distinctions are particularly important because the absence of publicly available evidence should not be translated into a finding that no transfer occurred. Military technology transfers may be concealed, routed through intermediaries, or disclosed only after substantial delay.

The appropriate assessment is narrower: a reported Iranian demand for advanced Russian Gerans exists, but the reviewed sources do not establish a completed and operationally consequential transfer corresponding to that demand.

Demand is therefore an observed or reported indicator of interest in a capability. It is not itself the capability.

6.6. The Gulf Debris Lead and the Limits of Reciprocal Attribution

A separate source of evidence emerged earlier in 2026.

The March debris lead has a defined evidentiary origin rather than establishing an independent sequence of physical recoveries. CSIS published its assessment on March 10, describing open-source imagery and markings possibly consistent with a Kupol-produced Geran-2 and a Kometa-M navigation component (Center for Strategic and International Studies, 2026). Later commentary recycling that footage or serial-number claims cannot be counted as additional specimens without separate recovery, custody, and technical examination.

The CSIS debris assessment and the March Financial Times intelligence report are analytically distinct observations. Neither establishes that the recovered object originated in the particular shipment described by the other; an integrated inference would require a dated serial, custody, or logistical bridge between them. The same caveat applies to the later reported demand for advanced variants (Center for Strategic and International Studies, 2026; Judah et al., 2026).

If correctly identified and placed within an Iranian operation, such a specimen would be important. It would suggest that a Russian-manufactured derivative of Iranian technology had reached an operational environment associated with Iran's Gulf campaign.

6. Adaptive Transfer and Industrial Conversion: The Shahed–Geran Case

Nevertheless, this finding remains conditional.

The reviewed evidence derives from a limited video and debris source cluster. The complete chain connecting manufacture, dispatch, custody, Iranian acquisition, operational launch, and recovery has not been independently reconstructed. It is therefore not possible to identify a verified transfer quantity or determine whether the object entered Iranian possession shortly before the 2026 conflict, during the conflict, or through an earlier arrangement.

There is also a critical temporal and technical distinction.

The reported Gulf debris concerns a possible Geran-2. The September procurement report concerns interest in advanced Russian Geran systems. The March evidence predates the September report and cannot establish fulfillment of a request reported later without separate evidence of an earlier transaction. Nor can a possible Geran-2 establish delivery of Geran-4 or Geran-5.

These observations may be consistent with a broader pattern of reciprocal cooperation, but consistency is not causal identification. Treating them as separate episodes preserves the possibility of eventual corroboration without artificially closing the transmission chain.

6.7. Distinguishing Drone Cooperation from Other Military-Technical Programs

The wider Russia–Iran relationship includes military-engineering activity outside the Geran family.

A September 2026 Financial Times investigation described a reported collaboration concerning the C430L supersonic cruise-missile program. The source materials included accounts of earlier contacts, a reported 2023 contractual arrangement, technical exchanges involving Iranian flight-test information, Russian engineering analysis, and subsequent discussions about further development (Johnson et al., 2026).

This provides evidence of another possible pathway for exchanging military-technical knowledge. It also illustrates the difference between continuing cooperation and demonstrated operational conversion.

An engineering consultation, proposed specialist visit, or technical response does not independently establish that the recipient incorporated the advice into a successfully modified weapon. A prototype developed before the exchange cannot be attributed to subsequent foreign assistance merely because both concern the same program.

More importantly, C430L and Geran are distinct programs involving different technological objects and engineering problems. Evidence associated with C430L cannot establish Geran deliveries, and Geran industrial adaptation cannot establish the performance or deployment of a Russian-assisted cruise missile.

The C430L material is therefore retained as contextual evidence of the broader military-technical relationship and as a comparison of evidentiary stages. It is not merged into the Geran transmission chain.

6. Adaptive Transfer and Industrial Conversion: The Shahed–Geran Case

This separation prevents multiple cooperation projects from being treated as independent confirmation of a single unverified transfer.

6.8. Production, Domestic Demand, and the Problem of Exportable Surplus

The possibility of Russian exports to Iran also raises a quantitative question: does Russia possess sufficient production capacity beyond the requirements of its own operations against Ukraine?

The answer cannot be inferred from gross production announcements or aggregate drone-launch figures alone.

A defensible estimate of exportable availability would require matched data on production by model, opening and closing inventories, operational consumption, testing and training use, other commitments, and actual completed exports.

Such data are especially important where the Geran family contains different propulsion systems, payload arrangements, navigation configurations, and production processes. An aggregate count of jet-powered drones used against Ukraine does not necessarily correspond to the output of Geran-4 or Geran-5 production lines.

Neither does a production target establish realized output. A state may announce substantial future capacity while facing bottlenecks in components, engines, electronics, testing, or available labor.

Russia's domestic operational demand may constrain its capacity to export advanced drones, but this remains a plausible constraint rather than a demonstrated quantitative shortfall.

A shortage of independently matched model-level observations prevents the present study from calculating a reliable export surplus, Iranian import requirement, or net transfer.

This limit is directly relevant to war-system reconstitution. Finished units delivered to another state, productive knowledge transferred, and industrial capacity retained at home are different quantities. Their effects cannot be combined into a common measure without specifying the recipient, object, timing, and functional consequence.

The same material flow may also have an opportunity cost for the sender. Exporting finished drones can reduce domestically available stocks or planned deliveries, whereas transmitting reproducible technical knowledge may eventually expand the recipient's productive capacity without consuming an equivalent number of finished units. Such differences must be identified rather than assumed.

6.9. Causal Assessment and Competing Explanations

The case supports three findings of unequal strength.

6. Adaptive Transfer and Industrial Conversion: The Shahed–Geran Case

First, the historical Iranian-to-Russian transfer of drone technology and production know-how contributed to the development of domestic Russian manufacturing capability. The evidence supports an actual industrial conversion process, although its precise quantitative contribution remains incompletely measured.

Second, Russian wartime adaptation generated differentiated Geran variants and technical arrangements through a process strongly associated with operational demands in Ukraine. Technical analyses and recovered components support this finding, while the speed, prevalence, and effectiveness of particular modifications require appropriate limits.

Third, the possibility that advanced Russian Gerans subsequently contributed to Iran's 2026 operations remains incompletely observed. The March intelligence-based report of a pending drone shipment, the conditional Geran-2 debris attribution, and the later report of demand for advanced variants are three different observations; taken together they strengthen the case for examining a reverse flow but do not establish one verified, model-specific transfer event or a completed reciprocal learning cycle.

Several explanations remain compatible with the available evidence.

Iran may have sought Russian variants because they incorporated modifications useful against current defenses. The request might also reflect concerns about domestic production, inventory availability, or the advantages of accessing an alternative supplier. Even if Russian-origin components or complete drones were found in Iranian operations, their dates of acquisition and effects would require independent verification.

Similarly, apparent technological overlap may reflect the original common Shahed design, parallel development, shared third-country components, or transfers preceding the current war.

These explanations can only be discriminated through dated, model-specific evidence connecting the technical object to the relevant source-war development and recipient outcome.

The case therefore supports the proposition that technological transfer and recipient-side conversion are distinct processes. It also shows why the further transfer of an adapted capability cannot be assumed merely because the original supplier and recipient maintain an active military relationship.

6.10. Implications for Cross-Theater Conflict Coupling

The Shahed–Geran case demonstrates that cross-border military cooperation can create capabilities whose subsequent development becomes increasingly autonomous from the initial transfer.

Historical Iranian technology helped establish a Russian manufacturing base. Continued fighting in Ukraine then created an environment for experimentation, component substitution, and operational feedback. The resulting Russian adaptations generated capabilities that Iran reportedly sought during the 2026 war.

6. Adaptive Transfer and Industrial Conversion: The Shahed–Geran Case

This sequence makes a reciprocal pathway plausible, but it does not prove that the pathway has been completed.

The case therefore differs from a simple model of two countries exchanging equivalent quantities of equipment. Productive knowledge, manufacturing capacity, organizational adaptation, finished weapons, and operational performance occupy different stages of capability development. Their transmission need not occur in the same direction, at the same time, or with comparable effects.

For cross-theater conflict coupling, the central implication is that the capability produced through historical cooperation can become a potential input into a later war without every subsequent interaction constituting a realized transfer.

The evidence supports a historically established Iranian-to-Russian industrial conversion and continuing Russian wartime adaptation. It identifies intelligence-based reporting of a possible March 2026 reverse material transfer, conditional debris attribution, and later Iranian demand for advanced variants, while leaving the physical completion, model specificity, and consequences of these reported transfers unresolved.

The observed relationship is thus best described as an established technological lineage with demonstrated Russian absorption and adaptation, alongside an incompletely identified contemporary return pathway. This formulation recognizes the strategic importance of the relationship without presuming a closed cycle of reciprocal war-system reinforcement.

7. Knowledge Transfer and Recipient-Side Conversion: Ukrainian Counter-Drone Assistance to Gulf States

7.1. The Empirical Problem: Transferring Wartime Experience Across Theaters

The deployment of Ukrainian counter-drone expertise to the Middle East in 2026 provides a case of cross-theater transmission in which the principal initial resource was not a large inventory of finished weapons, but operational experience accumulated through prolonged combat.

Since Russia's full-scale invasion in 2022, Ukrainian forces have confronted repeated attacks involving Iranian-designed Shahed drones and their increasingly modified Russian derivatives. Sustained exposure to these threats created incentives to develop lower-cost interception methods, electronic warfare practices, distributed detection arrangements, and procedures for coordinating different defensive systems.

The 2026 conflict involving Iran generated demand for related capabilities among states in the Gulf and the wider Middle East. Many possessed sophisticated air-defense systems but faced substantial challenges associated with the frequency, diversity, and cost of countering large numbers of drones.

This created an opportunity for Ukraine to transfer experience developed under different operational conditions. The transfer was potentially valuable because relevant knowledge extended beyond the technical characteristics of individual interceptors. It also concerned threat recognition, force organization, sensor integration, engagement decisions, training, and adaptation to changing enemy tactics.

The central analytical question is whether such experience, accumulated through one war, can be converted into additional defensive capability in another theater.

Three distinctions are required. The movement of specialists demonstrates personnel transmission. The adoption of procedures, equipment, or organizational changes demonstrates recipient-side implementation. An improvement in operational performance requires evidence that these changes produced results beyond what the recipient would otherwise have achieved.

The case therefore examines the progression from deployment and consultation to institutional cooperation, operational claims, and potential reciprocal support. It does not presume that these stages form a completed and mutually beneficial cycle.

7.2. Deployment of Ukrainian Specialists

The first important development was the deployment of Ukrainian counter-drone personnel to countries exposed to attacks associated with the Iran conflict.

On March 17, 2026, President Zelenskyy reported that 201 Ukrainian military experts were already in the Middle East and 34 more were ready to deploy (Interfax-Ukraine, 2026a). On March 20, Reuters reported his updated statement that 228 specialists had deployed across the United Arab Emirates, Saudi Arabia, Qatar, Kuwait, and Jordan to assist drone interception and airspace defense (Hunder & Dysa, 2026). The figures have different observation dates and should not be added or interpreted as identical host-state roster counts.

7. Knowledge Transfer and Recipient-Side Conversion: Ukrainian Counter-Drone Assistance to Gulf States

The figure establishes a reported scale of personnel mobilization, but its scope must be interpreted carefully. It is a cumulative number across five countries, not an identical contingent assigned to each recipient. Nor does it establish the number of specialists continuously present, their exact operational responsibilities, or the number of enemy drones independently intercepted as a result of their assistance.

Official briefings after the initial deployment reports provide further, though still source-attributed, evidence of physical presence and advisory work. During a March 28 regional visit involving the United Arab Emirates and Qatar, Ukrainian presidential and recipient-state accounts described consultations on airspace protection, critical-infrastructure defense, and counter-drone recommendations adapted to host requirements (President of Ukraine, 2026a; Qatar News Agency, 2026a).

These accounts support reported deployment and tailored consultation beyond initial negotiating statements. They do not independently establish host-adopted combat procedures, a fully integrated operational system, sustained troop strength, or measured incremental interception success.

The distinction matters because the transfer of expertise involves several implementation stages that may be separated by organizational, technical, and political constraints.

Reuters also attributed statements about Ukrainian interception units and defensive technology to Ukrainian officials. These statements support the existence of an official Ukrainian deployment account; the reviewed record does not independently provide host-state personnel rosters, specific tasks performed in each country, or a host-verified operational contribution. Multiple statements within the same originating official reporting cluster are not separate recipient-side validations (Hunder & Dysa, 2026).

7.3. The Object of Transfer: Equipment, Expertise, and Defensive Organization

The Ukrainian contribution should not be reduced to the delivery of inexpensive interceptor drones.

Although low-cost interceptors are an important component of Ukraine's defense against unmanned systems, Ukrainian operational experience also concerns the organization of the wider detection-to-engagement process.

That process may involve the recognition and classification of approaching threats, integration of heterogeneous sensor information, assessment of available defensive resources, engagement decisions, coordination among multiple units, and evaluation of results.

Some of these elements can be transferred through equipment. Others depend on specialist instruction, organizational routines, system integration, and continued operational learning.

This difference affects the conditions required for successful recipient conversion.

A recipient can purchase an interceptor without adopting the operational practices required to use it effectively. Conversely, expert assistance may improve the employment of existing defensive systems without a large new shipment of Ukrainian-manufactured equipment.

7. Knowledge Transfer and Recipient-Side Conversion: Ukrainian Counter-Drone Assistance to Gulf States

The relevant transmission object is therefore multidimensional. It can include technical artifacts, procedures, training, software or configuration changes, and knowledge of how defensive components interact.

The March 28 Ukrainian briefing in Qatar is particularly relevant. It reported an assessment of local defensive capabilities and the development of concrete recommendations. This indicates that the activity was at least partly tailored to the recipient's existing system rather than consisting solely of the presentation of a finished Ukrainian product.

Nevertheless, the contents of those recommendations have not been independently documented in sufficient detail to determine which organizational or technical changes were subsequently implemented.

The case consequently supports a finding of active technical consultation, while leaving comprehensive operational integration unresolved.

7.4. Institutionalization Through Defense Cooperation

The transfer of expertise was accompanied by formal efforts to institutionalize cooperation.

On March 28, Ukraine and Qatar concluded a ten-year defense cooperation arrangement. The Ukrainian presidency identified counter-drone capabilities, air defense, military training, technological cooperation, joint industrial projects, cybersecurity, artificial intelligence, and command-and-control systems among the relevant areas (President of Ukraine, 2026a).

The Qatar News Agency independently confirmed the signature of a defense cooperation agreement between the two defense ministries. Its account specifically referred to technological cooperation, joint projects, defense investment, and expertise exchange in countering missiles and drones (Qatar News Agency, 2026a).

This recipient-side acknowledgment is an important evidentiary improvement. It does not simply reproduce a Ukrainian statement of intention. It confirms that Qatar's relevant institutions formally participated in the arrangement.

The agreement creates an institutional pathway through which immediate assistance may develop into sustained technical cooperation, production partnerships, training, and longer-term defense relationships.

It does not, however, prove that those prospective projects have been completed.

The difference between an institutional commitment and industrial output is particularly important in a wartime environment. Agreements can create access, financing opportunities, legal arrangements, and expectations, but new production facilities require additional investment, equipment, personnel, licensing, and operational integration.

In April, Zelenskyy described broader Drone Deal arrangements with Saudi Arabia, the United Arab Emirates, and Qatar, including prospective weapons exports, production partnerships, and technology development. He also reported interest from additional countries beyond the three principal partners.

7. Knowledge Transfer and Recipient-Side Conversion: Ukrainian Counter-Drone Assistance to Gulf States

These statements indicate that Ukraine was seeking to transform wartime experience into longer-term institutional and commercial relationships. The planned scale of cooperation should nevertheless be distinguished from confirmed shipments, implemented production lines, and completed transactions.

The evidence therefore establishes formal institutional transmission with the potential to support later material and organizational conversion. Its longer-term results remain partly prospective.

7.5. Reported Operational Employment and the Limits of Performance Attribution

The strongest claims of direct operational use emerged in reporting concerning Ukrainian systems deployed in the Middle East.

In April 2026, the Financial Times reported Zelenskyy's statement that Ukrainian electronic warfare and interceptor systems had successfully engaged Iranian drones in Gulf countries. The article presented this as Zelenskyy’s account of operational use against Shahed-family drones; it did not supply an independently audited interception event ledger (Financial Times, 2026a).

This claim is more specific than an agreement to cooperate. It describes purported operational activity involving Ukrainian defensive technology.

Nevertheless, it remains an attributed operational claim rather than an independently reconstructed effectiveness assessment.

Several pieces of information are required before the result can be converted into a quantitative estimate of recipient benefit.

First, the specific defensive systems and responsible units must be identified. A reported interception may involve Ukrainian operators, Ukrainian-supplied equipment operated by local personnel, or a joint engagement within an existing national defense system. These configurations have different implications for capability transfer.

Second, the relevant threat type and engagement opportunity must be established. A successful engagement against a relatively slow drone does not directly measure the ability to counter a faster system or a ballistic missile.

Third, the number of successful engagements must be considered relative to the number of opportunities, the wider threat environment, and other defensive assets participating in the same operations.

Fourth, the analysis must distinguish an individual successful interception from an improvement in the overall defensive system. A newly deployed interceptor can successfully engage a drone without establishing how much additional protection it provided compared with the recipient's previous capabilities.

7. Knowledge Transfer and Recipient-Side Conversion: Ukrainian Counter-Drone Assistance to Gulf States

A contemporaneous host-country announcement supplies a further attribution test. On March 28, Qatar News Agency reported a statement by Qatar's Ministry of Defense that Qatari forces had intercepted drones launched from Iran that day. It did not identify Ukrainian personnel, Ukrainian-origin equipment, or a Ukraine-supported engagement chain. The Qatari interception statement and the Qatar–Ukraine defense agreement were both published on March 28; their available accounts do not establish an event-time sequence or a system-level attribution connecting the two. Consequently, this host-state operational claim does not independently identify an additional defensive effect caused by Ukrainian expertise, although it remains compatible with the separately documented consultations (Qatar News Agency, 2026b).

A more identifiable intermediate observation appears in a Reuters investigation published on April 22, 2026. Based on five people familiar with the matter, David Jeans reported that U.S. forces had introduced Sky Map, a Ukrainian-developed counter-drone command-and-control platform produced by Sky Fortress, at Prince Sultan Air Base in Saudi Arabia, and that Ukrainian military personnel had arrived to train U.S. operators. The report provides a named receiving force, location, technology and training activity. It supports REPORTED G3 placement/receipt of software and expertise, with local training as an implementation indicator; it does not independently establish accepted operational integration, a commissioned system or measurable defensive improvement (Jeans, 2026).

This is a triadic rather than a simple bilateral transfer. Ukrainian developers and instructors constitute the source-side actors; U.S. forces at the installation are the directly reported operational recipient; Saudi Arabia is the territorial host. The location of a U.S. installation on Saudi territory does not establish that Saudi armed forces procured or operated Sky Map. Nor does the reported presence of Ukrainian trainers identify those trainers with all 228 specialists earlier reported across five countries, or specify whether the local installation was fully integrated into every U.S. command and engagement interface.

The reporting provides meaningful but bounded implementation evidence. It is a five-source journalistic account within one Reuters reporting family, not five independently available primary records. U.S. Central Command declined to comment, Sky Fortress declined to comment, and the Ukrainian presidency did not respond to the reporter. The exact installation date, software version, system acceptance status, participating sensor network, operational log, and completed engagements attributable to Sky Map remain unavailable in the reviewed public record (Jeans, 2026).

Attribution is further complicated because the same base reportedly employed pre-existing and newly introduced defenses, including Northrop Grumman's FAAD architecture, RTX Coyote interceptors, and Merops drones. The simultaneous presence of these systems precludes assigning base-level interception outcomes to Sky Map without engagement-level integration records or a defensible counterfactual. The software platform is a coordination and sensing interface, not itself evidence of a Ukrainian-produced interceptor shipment or a successful kinetic engagement (Jeans, 2026).

7. Knowledge Transfer and Recipient-Side Conversion: Ukrainian Counter-Drone Assistance to Gulf States

The quantitative lineage of Ukrainian acoustic-defense claims does not close the Saudi outcome gap. A July 2024 Defense One interview reported U.S. Air Forces Europe commander James Hecker's account of an attack in which Ukrainian defenses intercepted 80 of 84 drones with assistance from Sky Fortress acoustic cueing. The U.S. Army's April 2026 Center for Army Lessons Learned review repeated that episode while citing the 2024 account; the later institutional publication is not an independent measurement of another engagement. Separately, a 2025 CSIS synthesis reported a 98.4 percent detection rate for Zvook, a distinct Ukrainian acoustic network. Neither the historical attack-level interception ratio nor the reported Zvook detection figure constitutes a Sky Map-at-Prince-Sultan trial or identifies the C2 platform's marginal effect (Decker, 2024; U.S. Army Center for Army Lessons Learned, 2026; Dahlgren et al., 2025).

The chronology cannot be treated as a conventional before-and-after test. Reuters described Sky Map as having been introduced in the weeks preceding April 22 but did not supply a commissioning date. A March 27 strike at Prince Sultan was documented separately, including reporting of missile and drone attacks and damage to aircraft. Both an installation before that strike and one after it remain compatible with the public date window. Without a dated unit-level activation record, the March 27 event cannot be assigned to a treated or untreated interval; and without identifying which effects arose from drones rather than missiles, the incident cannot serve as a valid Sky Map-specific counter-UAS outcome (Reuters, 2026a; Jeans, 2026; Gordon & Losey, 2026).

An independently authored assessment using satellite imagery captured on April 21 and published on April 27 described the base as continuing to operate despite earlier damage. That observation adds a separate, broadly dated site-condition source family. It neither identifies when Sky Map became operational nor measures drone-engagement success, however, and continued base activity cannot be attributed to any one layer of air defense (Faytuks Network, 2026).

Accordingly, the reported introduction of Sky Map and Ukrainian instruction at Prince Sultan provide more specific evidence of recipient-side placement and training than a generic cooperation announcement. The reviewed record does not independently verify completed system acceptance, integration into a defined U.S. engagement chain, an activation date, or the platform's marginal effect on interceptions and cost per defeated threat. Its supported evidentiary status is therefore REPORTED G3 for the documented pathway, while G4 conversion, G5 functional increment and G6 feedback remain NOT_IDENTIFIED.

7.6. Recipient Absorption and Threat-Specific Compatibility

The receiving states entered the 2026 crisis with their own military institutions, procurement relationships, air-defense equipment, and security requirements.

Successful conversion of Ukrainian expertise therefore cannot be assumed from similarity between the drones encountered in Ukraine and those used in the Middle East.

7. Knowledge Transfer and Recipient-Side Conversion: Ukrainian Counter-Drone Assistance to Gulf States

The Shahed technological lineage provides an important common reference point, but operational environments differ.

The threat mix, geography, target distribution, sensor architecture, communications networks, available interceptor stocks, command arrangements, and applicable operational procedures may vary considerably across Ukraine, Qatar, the United Arab Emirates, Saudi Arabia, Kuwait, and Jordan.

The portability problem is also one of measurement identity, not simply operational setting. An acoustic node's probability of detecting a particular drone class, a fused command system's probability of producing an actionable track, a defender's probability of engaging the track, and an installation's probability of avoiding damage are different dependent variables. Published performance for one Ukrainian acoustic network cannot be assigned to a distinct command-and-control platform installed abroad without confirming the deployed sensor interface, software configuration, local calibration, threat denominator, co-located defensive layers, and time of exposure. A common evaluation standard makes such measurements conceivable but does not itself generate a historical Sky Map estimate (Joint Interagency Task Force 401, 2026a, 2026b, 2026c; U.S. Army Center for Army Lessons Learned, 2026). A June 8 Department of Defense Inspector General project announcement concerned a planned interoperability evaluation, while U.S. Army accounts described counter-UAS testing and assessment programs; these records do not independently validate Sky Map performance (Department of Defense Inspector General, 2026; U.S. Army, 2026b, 2026d).

A recipient-level effect must be evaluated for the layered system actually in use rather than imputed from a transferred component in isolation. In its July 2026 analysis, the Congressional Budget Office distinguished detection from defeat functions, treated command-and-control integration as a separate requirement, and modeled representative installation costs rather than site-specific field expenditure (Congressional Budget Office, 2026). For the reported Sky Map deployment, an admissible comparison therefore needs a confirmed activation interval, threat-class-specific event denominators, the operational contribution of the fused tracking and cueing layer, and documentation of simultaneous FAAD, Coyote, Merops, or other changes. Without those observations, even a change in aggregate interception or damage rates cannot be assigned to Sky Map.

These differences create recipient-side absorption requirements.

A detection method developed for one environment may require recalibration or integration before it becomes useful elsewhere. An interceptor that is effective against one drone type may not provide equivalent protection against another. Techniques for dispersed defense of Ukrainian cities may also interact differently with the infrastructure and existing defensive layers of Gulf states.

The ballistic missile problem imposes a particularly important boundary. Low-cost systems designed to counter drones cannot be treated as interchangeable with interceptors intended to defeat high-speed ballistic threats. Their operational functions, engagement envelopes, and costs differ.

7. Knowledge Transfer and Recipient-Side Conversion: Ukrainian Counter-Drone Assistance to Gulf States

Consequently, the potential value of Ukrainian assistance is better understood as a contribution to particular defensive functions rather than as a general replacement for existing air and missile defense systems.

Where those functions are complementary, Ukrainian expertise may permit more efficient allocation of expensive defensive assets. But this possibility becomes a measured outcome only when the recipient's actual engagement decisions, expenditures, and results can be observed.

This case therefore supports a conditional interpretation: the transfer of expertise creates opportunities for recipient adaptation, but those opportunities depend on compatibility, implementation, organizational learning, and the changing threat environment.

7.7. Reciprocal Support and the Possibility of Resource Return

Ukraine's engagement with Gulf partners was not presented solely as one-directional security assistance.

Ukrainian officials linked defense cooperation to broader forms of reciprocal support, including financial assistance, industrial cooperation, energy supplies, and access to additional air-defense capabilities.

Such arrangements could create a second transmission pathway: expertise developed through the Ukraine war contributes to Gulf defensive capacity, while Gulf resources support the resilience of Ukraine's own war system.

This is an important possibility because it would connect two otherwise separate forms of war-system reconstitution. Gulf countries might enhance selected defensive functions through Ukrainian knowledge, while Ukraine might improve resource availability through partners possessing energy, capital, or procurement capacity.

The evidentiary requirements, however, are different on each side of the proposed exchange.

A defense cooperation agreement does not prove that a specific fuel shipment was made. A declaration that a partner has pledged assistance does not establish that the assistance has entered Ukrainian inventories. Nor does evidence of energy support establish a direct contractual exchange for a particular number of Ukrainian interceptor drones or specialist deployments.

On May 11, following a conversation with the president of the United Arab Emirates, the Ukrainian presidency stated that reciprocal arrangements were being implemented and that Ukraine was receiving assistance, including support in the energy sector (President of Ukraine, 2026b).

The statement provides evidence of Ukraine's official assessment of the relationship. It does not independently establish a completed diesel consignment, its country of refining origin, quantity, loading and arrival dates, customs classification, or allocation to Ukrainian civilian or military requirements.

A related Reuters report reproduced the substance of the Ukrainian leader's statements but did not independently trace a specified shipment.

7. Knowledge Transfer and Recipient-Side Conversion: Ukrainian Counter-Drone Assistance to Gulf States

The proposition that Ukraine received a quantitatively identifiable fuel return from its counter-drone cooperation therefore remains unresolved in the reviewed evidence.

Even if a future shipment is confirmed, a further distinction will be necessary between a transfer associated with the broader political relationship and a transfer contractually or causally attributable to particular Ukrainian assistance.

The proposed return pathway is consequently more advanced than a purely hypothetical arrangement but remains insufficiently documented for calculating a reciprocal material balance.

7.8. Opportunity Costs and the Source War System

The possible benefits of external assistance must also be considered alongside its costs to the sending state.

Ukrainian personnel deployed abroad possess experience relevant to defending Ukraine against continued Russian drone attacks. Their temporary allocation to external missions may reduce the personnel or organizational attention immediately available at home.

This possibility creates a form of internal resource competition within a cross-theater transfer.

Yet it would be incorrect to assume that every specialist deployed abroad reduces Ukraine's domestic interception capacity by an equivalent amount.

Their original assignments, duration of absence, replacement arrangements, ability to support Ukrainian operations remotely, and the nature of their external missions are not established by the aggregate deployment figure.

Moreover, cooperation with foreign partners may generate compensating benefits through financing, access to components, production opportunities, information exchange, or diplomatic support. These possible gains operate on different timelines and cannot be inferred from the number of personnel deployed.

The net contribution to Ukraine's war-system reconstitution therefore depends on both the opportunity costs of exporting expertise and the extent to which reciprocal relationships generate additional usable capacity.

The present evidence does not permit a reliable comparison of these quantities.

Accordingly, the case should not be coded as an automatic net gain for Ukraine or as a known loss of 228 specialists from the Ukrainian domestic defense system.

7.9. Causal Assessment and Alternative Explanations

The case contains several observations consistent with the transmission of war-derived defensive expertise.

7. Knowledge Transfer and Recipient-Side Conversion: Ukrainian Counter-Drone Assistance to Gulf States

Ukrainian specialists were reported to have deployed to five countries. Ukrainian presidential records identify specific assessment and consultation activities in Qatar and the United Arab Emirates. Qatar's own news agency confirms a formal defense cooperation agreement. Subsequent statements and international reporting describe prospective production arrangements, operational employment, and reciprocal assistance; a separate Reuters investigation identifies reported introduction of Sky Map and Ukrainian training for U.S. forces at a base on Saudi territory (Jeans, 2026).

Taken together, these observations support the conclusion that Ukrainian operational knowledge was actively transmitted through personnel deployment, technical consultation, and institutional cooperation.

They do not establish a single, uniformly observed recipient-side outcome.

Alternative explanations remain important.

A Gulf state's defensive performance could change because of adjustments to its existing U.S.-supplied systems, new intelligence support, altered threat intensity, changes in attacking methods, domestic operational adaptation, or the arrival of equipment from other suppliers.

Similarly, a reported reduction in interception costs could reflect changes in the types of threats engaged or in the use of existing weapons rather than an independently measurable improvement produced by Ukrainian expertise.

The Prince Sultan evidence also sharpens the distinction between technology origin and a source-war-induced marginal contribution. Ukrainian provenance and operational development under Russian attacks explain why the platform is relevant to the theory; they do not by themselves identify how different the platform or its recipient effect would have been without the Ukraine war. U.S. Joint Interagency Task Force 401 separately announced standardized counter-UAS evaluation requirements in March 2026. That institutional standard supports the feasibility of defining common measures, but does not supply a Sky Map-specific effectiveness assessment (Joint Interagency Task Force 401, 2026a).

Any attempt to identify Ukraine's causal contribution would therefore require recipient-specific implementation dates, defensive-system configurations, engagement records, and appropriate comparisons across threat types and operational periods.

At the sending end, energy assistance or defense financing might reflect established diplomatic relations and wider strategic interests rather than a direct exchange for Ukrainian knowledge. Confirming a specific resource-return mechanism requires evidence connecting the relevant agreement or decision to a dated and verifiable transfer.

The current findings thus support realized personnel and institutional transmission, a reported named software deployment and recipient training at Prince Sultan, and the existence of arrangements for possible reciprocal support. They do not establish a quantified recipient-side operational gain or a completed material return loop.

7. Knowledge Transfer and Recipient-Side Conversion: Ukrainian Counter-Drone Assistance to Gulf States

7.10. Implications for Cross-Theater Conflict Coupling

The Ukraine–Gulf case illustrates a form of cross-theater coupling in which operational knowledge accumulated under one conflict becomes a potentially valuable resource in another.

Unlike a completed shipment of finished weapons, expertise transfer can influence system design, training, procedures, and the effectiveness of existing equipment. Its impact may therefore depend more heavily on recipient-side organization and integration than on the physical quantity of the initial input.

The case also demonstrates that implementation can be partially observable without allowing a complete assessment of strategic effect. Personnel deployment and institutional cooperation are better documented than the resulting changes in normalized defensive performance.

The possibility of reciprocal energy and defense support introduces a further dimension. Wartime experience may provide the sending state with access to resources that contribute to its own resilience. But reciprocal arrangements should not be treated as completed war-system regeneration until identifiable material or functional effects are observed.

The principal conclusion is consequently bounded. Ukrainian counter-drone expertise was transmitted to Middle Eastern partners through deployed specialists, practical assessment, and defense cooperation. Named Sky Map deployment and U.S. operator training at Prince Sultan are reported by Reuters, but cannot yet be independently converted into an interception-performance increment or a verified net return to Ukraine.

The case supports the proposition that adaptive knowledge can cross theaters without a transfer of equivalent finished-weapon inventories. It also shows that successful transmission and realized system-level consequences remain separate empirical questions.

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

8.1. The Empirical Problem: Policy Control Before Material Transfer

The preceding cases examine relationships in which cross-theater transmission depends principally on shared military production, technological adaptation, or the movement of operational expertise. A different pathway arises when states control the institutional conditions under which resources may become available.

Such control can influence strategic choices before the relevant resources are physically transferred. Governments can modify sanctions, authorize transactions, prioritize procurement, condition military assistance, or offer future access to markets and supplies. These measures may change the expectations and options of actors engaged in another conflict, even when their eventual material consequences remain uncertain.

The October 2026 negotiations involving Russian diesel exports, Ukrainian attacks on Russian refineries, and U.S. military assistance provide a bounded case of this mechanism.

The episode emerged against the backdrop of the war involving Iran, which had intensified pressures on international energy markets, particularly diesel supplies. At the same time, repeated Ukrainian attacks against Russian refining infrastructure had reduced Russia's capacity to process crude oil and complicated its domestic fuel supply. These developments made Russian refining capacity relevant not only to the Russia–Ukraine war but also to wider energy-market stabilization efforts.

The United States subsequently authorized a category of Russian-origin diesel transactions that had previously been restricted under its sanctions regulations. Washington also continued pressing Ukraine to limit attacks against Russian oil infrastructure, while reports described the possible use of military assistance arrangements as diplomatic leverage.

The analytical significance of the episode lies in the separation between these policy actions and their potential downstream results. A sanctions license changes the rules governing certain transactions. A declared supply commitment changes expectations about future availability. Pressure to suspend refinery strikes may influence military decisions. None of these developments automatically establishes a completed shipment, a functioning bilateral ceasefire, or a measurable recovery of Russian industrial capacity.

The case therefore asks whether, and through which institutional and behavioral mechanisms, policy-controlled access to resources can alter strategic choices before material transfers are realized.

8.2. The Pre-Agreement Baseline: Energy Pressure Before October

An analysis beginning with the October 9 diesel agreement would misrepresent the causal sequence.

On September 13, President Donald Trump publicly urged Ukrainian President Volodymyr Zelenskyy to stop attacking Russian diesel-related infrastructure. Trump argued that the strikes were contributing to global fuel shortages and imposing costs beyond the Russia–Ukraine conflict (Al Jazeera, 2026).

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

The September 13 pressure is independently documented in contemporaneous Reuters reporting and should remain in the pre-license baseline rather than be recoded as an effect beginning on October 9 (Reuters, 2026b).

This intervention occurred nearly four weeks before the new U.S. diesel license. It establishes that American pressure concerning Ukrainian refinery attacks was already present independently of the October transaction.

The following day, the United States publicly asserted that an arrangement to halt attacks on energy infrastructure had been reached. Ukraine did not confirm an unconditional bilateral ceasefire. Zelenskyy instead expressed willingness to take reciprocal steps if Russia demonstrated a credible commitment to ending attacks against Ukrainian infrastructure.

The distinction between an announced understanding and mutually accepted operational obligations was therefore already evident in September.

Further discussions continued later that month. Following his September 22 meeting with Trump at the United Nations, Zelenskyy reiterated that Ukraine was prepared to consider a reciprocal energy ceasefire, provided Russia stopped attacking Ukrainian energy infrastructure.

Russia's position also developed before the October authorization. On September 25, Kremlin spokesperson Dmitry Peskov stated that a substantial restoration of Russian diesel exports would require the removal of foreign sanctions and market restrictions, in addition to satisfying domestic demand, maintaining reserves, and ensuring transport safety (S&P Global, 2026a).

These observations establish a pre-existing bargaining structure. Washington was already seeking to reduce Ukrainian attacks against Russian refining infrastructure; Kyiv had already articulated a conditional and reciprocal approach to energy restrictions; and Moscow had already identified sanctions relief as a condition for increasing exports.

The October 9 license therefore represented a new policy instrument within an existing diplomatic process, not the origin of that process.

This temporal distinction also changes the appropriate counterfactual. The question is not whether Ukraine would have considered an energy ceasefire without the diesel agreement, since it had already done so. The relevant question is whether the additional trade authorization altered the willingness or ability of the parties to implement arrangements that had previously remained unfulfilled.

Operator records from DTEK Grids identify preauthorization energy strikes and repair activity. On September 28, the operator reported an FPV-drone attack on a frontline Dnipropetrovsk-region distribution installation and reconnection of nearly 10,000 affected homes without a public asset identifier or complete repair timestamps (DTEK Grids, 2026i). On October 7 it described the ninth FPV-drone attack since early September at another frontline service site; an October 9 bulletin identified two distinct facility strikes occurring around October 8, 20:00 and October 9, 05:36 Kyiv time, equivalent to October 8, 13:00 and 22:36 U.S. Eastern Time (DTEK Grids, 2026l, 2026m). Both impacts fall within the October 8 noon-to-noon Eastern Time MCCM analytical window and precede the U.S. October 9 diesel authorization. Regional figures of 11,900 reconnected families and nearly 26,000 homes still without service cannot be uniquely allocated to either installation.

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

Restoration aggregates require denominator controls. DTEK Grids reported more than three million electricity-restoration occurrences during September and noted that some customers had electricity restored repeatedly, even dozens of times (DTEK Grids, 2026j). These records count reconnection occurrences rather than distinct families, customers, restored assets, or permanently repaired capacity. Repeated restoration can coexist with increased attack exposure and longer outages.

Weekly DTEK reports recorded roughly 600,000 household restoration instances during September 28–October 4 and nearly 1.9 million during October 5–11, with markedly different regional composition: approximately 290,000 versus 185,300 in Donetsk, 260,000 versus 451,000 in Odesa, 43,600 versus 86,000 in Dnipropetrovsk, over 300 versus 773,100 in Kyiv city, and over 500 versus 386,400 in Kyiv oblast (DTEK Grids, 2026k, 2026n). The second week spans both the October 9 authorization and October 11 ceasefire announcement. Nonunique restorations, shifting strike intensity, unavailable facility IDs, and repair-access delays prevent interpreting the aggregate increase as a policy-caused recovery gain or reduction in Russian strikes.

A dated, named pre-announcement statement supplies a more discriminating baseline than a monthly hit total. In a Reuters interview conducted in Kyiv on October 2 and first published on October 3, Zelenskyy said Ukraine would intensify strikes against Russian refineries in response to Russia's broader air-strike strategy, while rejecting indiscriminate civilian targeting (Flynn & Harmash, 2026). The stated intention preceded both the October 9 diesel authorization and the October 11 U.S. announcement, although American pressure against refinery strikes was already documented on September 13. This is evidence of Ukraine's public target-policy posture, not a mission order, scheduled launch, or estimate of attack availability.

8.3. U.S. Authorization and the Boundaries of Legal Access

On October 9, 2026, the U.S. Treasury Department's Office of Foreign Assets Control issued General License 135, authorizing transactions related to the sale, delivery, offloading, and importation of diesel fuel of Russian Federation origin that would otherwise be prohibited under specified Russian and Ukraine-/Russia-related sanctions regulations (Office of Foreign Assets Control, 2026).

The signed license, rather than only its issuance notice, specifies 31 CFR parts 587 and 589 and authorization through 12:01 a.m. Eastern Daylight Time on April 7, 2027. It expressly excludes debits to accounts at U.S. financial institutions belonging to Russia's central bank, National Wealth Fund, or Ministry of Finance (Office of Foreign Assets Control, 2026).

The signed instrument contains no express ceasefire condition, requirement for Ukraine to stop attacks on Russian refineries, or automatic suspension trigger tied to reciprocal restraint. The exclusion that is expressly stated concerns debits from specified Russian state accounts held at U.S. financial institutions. Political efforts to connect diesel access with changes in military conduct therefore cannot be read back into the license as a legal condition precedent (Office of Foreign Assets Control, 2026).

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

This is an observable institutional change. It modifies the permissibility of certain transactions under the sanctions regimes explicitly identified in the license.

Its scope, however, must be distinguished from the legal and commercial conditions required for an actual diesel import.

The Ending Importation of Russian Oil Act, enacted in 2022 as Public Law 117-109, separately prohibits imports into the United States of Russian-origin products classified under Chapter 27 of the Harmonized Tariff Schedule. The statute also establishes procedures and substantive conditions for terminating that prohibition, including congressional consultation and presidential certification (Government Publishing Office, 2022).

Section 3 of the 2022 statute prescribes consultation with designated congressional committees at least 45 calendar days before presidential certification, followed by a 90-day period before termination becomes effective unless Congress disapproves. The required certification also incorporates substantive determinations concerning Russia's cessation of hostilities, threat to NATO, and Ukraine's sovereign political choice (Government Publishing Office, 2022). General License 135 expressly names two regulatory programs but does not expressly address the separate 2022 statutory prohibition; a contemporaneous sanctions-law analysis therefore identifies an unresolved scope question, rather than treating the license as either definitively unlawful or conclusively overriding the statute (Herbert Smith Freehills Kramer, 2026).

A second statutory layer arose under the Lindsey O. Graham Sanctioning Russia and Iran Act of 2026 (Public Law 119-111), enacted on September 18. Section 112 establishes increased duties on Russian goods, while Executive Order 14436 of October 16 stated a headline 500-percent ad valorem increase and simultaneously waived application of the relevant duties under Section 4. By the October 26 cutoff, neither the statutory headline nor the implementing order can be read as proof that a 500-percent Graham Act duty was actually payable on a specific Russian-diesel entry. The Graham Act tariff-and-waiver mechanism remains legally distinct from the 2022 Chapter 27 import prohibition and from OFAC General License 135 (Government Publishing Office, 2026; The White House, 2026a).

Section 114(h) of the Graham Act addresses Treasury general licenses issued before the Act, while preserving authority to extend or issue new licenses. Because General License 135 postdates September 18, it is not itself a pre-enactment license. Section 115 separately authorizes specified presidential waivers and reporting, exercised in the October 16 order; those waivers do not on their face terminate or supersede every independently applicable restriction on a transaction. A lawful U.S. diesel entry therefore requires a transaction-specific examination of the 2022 import statute, applicable exceptions and authorizations, sanctions programs, counterparties, tariff status and customs documentation. Legal compatibility remains unresolved in the reviewed record rather than judicially adjudicated (Government Publishing Office, 2022, 2026; The White House, 2026a).

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

8.3.1. October 16 Implementation Order: Waivers and Independent Statutory Gates

The October 16 order exercises the Graham Act Section 115 waiver after setting out increased duty rates in Section 2. Its Section 4 waives duties under Sections 112–113 and specified additional Graham Act measures, and states that the national-interest certification was submitted to Congress (The White House, 2026a). This is evidence of a legally operative waiver within the Graham Act, not evidence that the distinct 2022 statutory ban on Russian-origin Chapter 27 imports was repealed, that any private diesel contract was performed, or that an American customs entry occurred. Accordingly, CTCC codes legal authorization, independent statutory admissibility, commercial execution and physical receipt as separate propositions; this is an evidentiary legal-scope assessment rather than a definitive compliance opinion.

Before the October 16 implementation order, the diesel authorization had already generated congressional objections. On October 11, Senator Jeanne Shaheen and six other senators challenged the legality of permitting Russian diesel imports and alleged that the administration had not completed the consultation or explanation they considered necessary. The released statement establishes the senators' position, not a judicial determination; the reviewed evidence does not supply a controlling Treasury explanation or establish whether the distinct statutory termination process was completed (U.S. Senate Foreign Relations Committee, 2026).

On October 13, a further bipartisan group of twelve U.S. senators, including six Republicans, called for the diesel arrangement to be rescinded. Reuters reviewed the senators' letter and identified its signatories (Zengerle & Volcovici, 2026). This establishes additional legislative opposition to the policy, not a judicial invalidation of General License 135, evidence of a completed transaction, or a change in the controlling import statutes.

The present study does not attempt to resolve that legal dispute. An administrative license can authorize conduct otherwise prohibited by regulations within its stated scope, but the existence of that authorization does not itself establish that every independently applicable statutory restriction has been satisfied.

Nor does the dispute concerning imports into the United States determine the legality of every Russian diesel transaction involving third countries.

A further jurisdictional distinction emerged on October 12. The European Commission publicly maintained that European sanctions against Russia remained in force, notwithstanding Washington's decision. The Commission also reaffirmed the European Union's policy of reducing dependence on Russian fossil fuels.

The result was not a uniform reopening of Western energy markets. Rather, different institutional authorities continued to define different conditions of admissibility.

For cross-theater coupling, this illustrates a limitation of unilateral boundary control: changing one institutional gate may improve access through that gate without removing constraints imposed by other authorities, commercial institutions, or physical infrastructures.

Consequently, the realized economic significance of General License 135 depends on more than its formal issuance. It also depends on the compatibility of applicable legal regimes, the willingness of firms and financial intermediaries to participate, and the existence of commercially viable trade routes.

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

8.4. Russian Supply Commitments and Material Feasibility

The U.S. announcement presented the diesel arrangement as a possible increase in international fuel availability, initially exceeding 300,000 metric tons, with larger subsequent quantities envisioned. Russian Deputy Prime Minister Alexander Novak described partial export-restriction relief and prospective volumes of roughly 300,000 metric tons in October, 500,000 in November and potentially one million in December; subsequent discussions included contract sequencing and allocations to third-country destinations such as Turkey (Astakhova & Soldatkin, 2026; Interfax, 2026b; Reuters, 2026h). These are proposed volumes and supply intentions, not completed contracts or verified additional worldwide sales. Separately, Reuters reported Ukraine's September diesel imports at 537,000 metric tons, down approximately nine percent, with lower Danube water levels and transport delays identified as recipient-side constraints—not as Russian seaborne exports (Reuters, 2026d).

Russian production, domestic requirements and pre-existing trade routes limit any straightforward attribution of new export supply. Industry estimates placed about 3.1 million barrels per day of Russian crude-processing capacity offline around late September. An October 11 Washington Post investigation examined 54 refinery strikes and reported damage to important process units, while citing a separate estimate of very high nominal-capacity outages (Azhar et al., 2026; The Washington Post, 2026a). Facility-level maintenance, nominal-versus-actual throughput, and product yields have not been reconciled: offline crude-processing capacity must not be treated as equal to lost diesel output. Domestic demand and inventory management mattered before the U.S. license; on October 2 Novak said an easing of export restrictions would depend on production surplus and storage constraints (Turner & Norways, 2026). Port records also described prepolicy fuel imports from South Korea into Russia, a reminder that domestic supply and export capacity may diverge geographically (Rashid, 2026).

Seaborne recovery was already under way before October 9. S&P Global Commodities at Sea recorded about 479,000 metric tons of Russian seaborne diesel and gasoil in September and national weekly loadings increasing from 81,000 metric tons in the week ending September 24 to 149,000 in the week ending October 1, notwithstanding a temporary fall in Black Sea loadings (Azhar et al., 2026; Ledakis, 2026; S&P Global, 2026b). The approximately 68,000-metric-ton weekly increase preceded the license and cannot be attributed to it. Ukrainian Defence Intelligence and marine observations separately identified a pre-existing Russian petroleum-product corridor from Astrakhan to Amirabad, Iran, involving Dmitry Pokrovsky (IMO 9683726) from early 2026; this establishes an attributed route, not a documented new shipment to the United States or authenticated diesel-grade consignment (War & Sanctions, 2026).

Market expectations and vessel signals must remain separate from physical trade. Ultralow-sulfur-diesel price spreads weakened after the October 9 announcement amid concurrent Middle East supply risks (Azhar et al., 2026; DiSavino, 2026). A reported early example involving Minerva Zen (IMO 9410909) was corrected by cargo trackers, which classified its shipment as fertilizer rather than Russian diesel. It cannot count as a verified U.S. receipt (Babel, 2026; EADaily, 2026; TankerTrackers, 2026). Later AIS destination signals are assessed separately in Section 8.4.1; no prospective discharge is an import without customs, consignment, and receipt evidence.

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

A material increment requires comparing Russian diesel production plus imports with domestic deliveries, physical losses and inventory change under a consistent product scope and time window. A new U.S.-bound cargo may reflect reallocation from Brazil or another buyer, stocks drawn down, or incremental refinery output rather than an increase in world supply. The Reuters report of a within-month diesel production recovery in October is a relevant observation but does not independently identify a net increase induced by the U.S. license or Russian quota decisions. Destination diversion must therefore be estimated separately from worldwide export increments and from recipient availability (Reuters, 2026k).

A fiscal-military increment requires a second bridge. Reuters estimated that a hypothetical 300,000-metric-ton transaction might yield roughly $400 million in gross sales while only a relatively small portion might reach the Russian federal budget; no such sales receipt or military appropriation had been verified (Reuters, 2026f). Prelicense fiscal data, RUB 452.4 billion in September federal oil-and-gas receipts and RUB 305.5 billion in fuel-damper payments for a different accounting period, cannot be netted into a diesel-license effect without harmonized budget definitions and payment periods (Interfax, 2026a; The Bell, 2026). Thus production, export, commercial receipts, tax revenues and war-sustaining function are successive, not interchangeable, evidentiary objects.

8.4.1. Production and Shipment Signals Through October 26: Reported Recovery Without Verified U.S. Receipt

An October 26 Reuters report, citing two industry sources close to Russian refining, adds a production-side observation to the shipping record. Estimated diesel output declined from roughly 175,000 metric tons per day in September to about 160,000 per day in the first half of October, then began recovering toward 180,000 per day after Russian export quotas were granted around mid-October (Reuters, 2026k). Traders described exemptions to the August diesel export ban beginning from October 1, while the reported output rebound followed the subsequent quota decisions. These are source-attributed estimates and timing claims, not independently audited daily production totals or an identified effect of the U.S. General License 135.

The same sources estimated seasonally lower October domestic diesel use at approximately 140,000 metric tons per day and suggested that, at the indicated higher run-rate, around 40,000 tons per day might be potentially exportable; they anticipated that roughly 200,000–300,000 tons a month could be required by neighboring states (Reuters, 2026k). This is a conditional capacity illustration, not an observed export surplus or a completed customs flow. Production recovery could reflect the Russian quota exemptions, refinery restart, storage management, shifting domestic demand, or other simultaneous changes. Identifying an incremental *policy-caused* output effect requires a comparable no-quota production path; attributing a component to the Iran war additionally requires a distinct source-war-to-policy link. Increased output does not by itself establish greater worldwide net deliveries, realized additional fiscal resources or recipient-war capabilities.

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

October 23 cargo-trackers identified Agioi Fanendes (IMO 9798375), a Malta-flagged product tanker reportedly loaded with about 40,000 metric tons of Russian ultra-low-sulfur diesel at Primorsk on October 22. New York appeared as an initial AIS destination, but the manager described the ship as proceeding “for orders”; the buyer, final unloading port, accepted entry and settlement remained unidentified (Vladimirova et al., 2026; Riviera Maritime Media, 2026). Lloyd’s List Intelligence reported on October 26 that two other Russian-loaded tankers signaled Norfolk and Corpus Christi, while Agioi Fanendes was idling near Skagen; the report attributed to Moscow a claim that three cargoes were proceeding to the United States (Lloyd’s List, 2026). These are separate, time-varying vessel-level signals rather than three completed imports. Changing AIS destinations, origin classification, discharge documentation and customs receipt must be traced for each IMO independently.

Commercial feasibility and causal attribution remain bounded: the Lloyd’s List account cited shipping analysts’ skepticism about Russia reaching 250,000 barrels per day by December under refinery-damage constraints, while S&P Global quoted a trader characterizing the first prospective U.S. cargo as potential redirection of supply previously sold to Brazil (Lloyd’s List, 2026; Vladimirova et al., 2026). These are attributed forecasts and assessments, not a measured global-export counterfactual. As of October 26, the Reuters industry-source series provides a reported within-month recovery in Russian diesel production, but not independently verified incremental production caused by the new export quotas or by U.S. authorization. Neither that series nor multiple vessel destinations establish a completed U.S. import, higher net Russian worldwide diesel exports, a realized additional tax receipt or a changed military capability in either theater.

8.5. Military Assistance as a Conditional Policy Interface

The diesel arrangement became closely associated with renewed U.S. pressure on Ukraine to stop attacking Russian refineries.

Reports published in October described the possibility that Washington could use intelligence cooperation or the Prioritised Ukraine Requirements List (PURL) mechanism as leverage in this dispute.

This potential instrument differs fundamentally from refinery output and tanker availability. PURL concerns the authorization, procurement, and delivery of military equipment to Ukraine through arrangements involving the United States and participating partners. A change in its operation could affect Ukraine's access to equipment independently of the amount of diesel Russia exports.

The mechanism is especially relevant because Ukraine's air-defense requirements create substantial dependence on external suppliers. That dependence gives decisions concerning military assistance potentially consequential strategic significance.

However, the available reporting does not establish that the alleged threat was uniformly communicated, formally adopted, or implemented.

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

The reports require disaggregation by originating source and communication channel. A Reuters item on October 11 relayed a Financial Times account based on European officials about possible interruptions of PURL and intelligence sharing and explicitly stated that Reuters could not independently verify that account (Reuters, 2026c). A distinct October 11 Reuters article, however, cited a person familiar with the situation as saying that the United States had threatened to cut off those forms of support. This is additional attributed reporting, not a published administrative suspension or an independently audited record of the underlying communication (Flynn & Holland, 2026).

A subsequent October 12 Reuters investigation, based on three people familiar with the October 9 Miami meeting, reported that American representatives asked Ukraine to stop refinery strikes but did not threaten to withdraw military or intelligence assistance during that meeting (Banco et al., 2026). The accounts are not necessarily mutually exclusive because the speakers, audiences, communications and time windows may differ. They do not establish a formally enacted PURL interruption, a verified threat delivered in that particular meeting, or an attributable Ukrainian change in targeting decisions.

Two additional original reporting channels further specify—but do not resolve—the alleged U.S. pressure. An October 11 Axios investigation quoted a Ukrainian official describing a possible intelligence-sharing threat during the Miami discussions and a U.S. official denying that American negotiators had made such a threat; the latter account described the U.S. relationship as supportive while criticizing refinery strikes. An October 12 Kyiv Independent investigation separately quoted two Ukrainian officials describing pressure delivered to senior Ukrainian military and government personnel, including reported telephone calls after the ceasefire announcement (Ravid, 2026; Rushton & Zadorozhnyy, 2026). These reports refer to different alleged communications and audiences. Neither provides a contemporaneous recording, directive, PURL administrative suspension, or uniquely attributable Ukrainian targeting-order change.

Source corrections also matter for this inference. The Kyiv Independent explicitly corrected an earlier assertion that Pavlo Palisa had confirmed the Financial Times account; it retained its own interviews while removing that specific attribution (Rushton & Zadorozhnyy, 2026). The Axios meeting claim and denial cannot be merged into a consensus, and unnamed witnesses in different publications cannot automatically be counted as non-overlapping informants. CTCC therefore retains the event of reported pressure as a contested but multiply investigated communication mechanism, not an authenticated policy restriction.

Institutional evidence further limits the interpretation of implementation. A NATO official stated on October 12 that support continued to reach Ukraine through PURL, without providing a complete account of future approvals or schedules (Ukrainska Pravda, 2026b).

New statements on October 13 distinguish the continuity of intelligence cooperation from the performance of a particular warning function. Zelenskyy reported that Ukraine received no advance allied warning before a Russian ballistic-missile attack on Kyiv; he did not attribute that

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

specific failure to an American threat or formally announced cutoff. Ukrainian Foreign Minister Andrii Sybiha and President Trump independently stated that U.S.–Ukrainian intelligence sharing continued. Sybiha suggested that the type of missile may explain the warning delay, while Ukraine's air force was investigating (Harmash & Flynn, 2026; Bogage & Bose, 2026). These are reported public statements, not a communications-system audit: a missed warning neither establishes an assistance-wide suspension nor proves the intelligence arrangement operated without disruption.

A more attributable communication observation was published on October 13, after the anonymous and partially contradictory accounts. In a direct NPR interview with Joanna Kakissis in Kyiv, President Volodymyr Zelenskyy stated that the Trump administration had warned Ukraine that intelligence sharing could be withheld if Ukrainian forces continued long-range strikes on Russian oil refineries (Kakissis, 2026). The testimony identifies an on-record Ukrainian governmental claimant and the described condition; it does not identify the American speaker, the precise communication date or venue, the instrument of an adopted restriction, or the scope of any later intelligence interruption. Unlike secondary republications of the Financial Times, the NPR interview is its own interview and publication root, but it remains participant-attributed testimony rather than an authenticated U.S. decision record.

The same NPR dispatch also recorded President Trump saying on October 13 that intelligence was still being shared, without establishing the delivery or timing of every warning product. Zelenskyy separately described an allied early-warning omission before a Kyiv ballistic-missile attack. Those statements test different propositions: communication of a conditional threat, continuity of an intelligence-sharing relationship, and performance of a particular time-sensitive warning function. They are compatible with more than one underlying process and cannot establish a sanction-induced withholding of that warning without sensor, processing, dissemination and recipient records (Kakissis, 2026). In particular, a statement by Ukraine's president about pressure from the Trump administration does not itself resolve the U.S. official's denial of a threat at the October 9 Miami meeting; separate post-meeting contacts remain plausible but unverified in speaker and timing.

Accordingly, the evidence supports reported policy pressure and the existence of a potentially powerful supply-control interface. It does not establish a complete PURL suspension, a specific halted Patriot shipment, or an identifiable resulting loss of Ukrainian air-defense capacity.

This is analytically important. The ability to impose conditions on assistance, the communication of a threat, the adoption of a formal restriction, and the eventual interruption of material support should be examined as separate events.

Policy leverage may operate through expectations of future constraints. But identifying an actual coercive effect requires evidence that the expectation influenced a relevant decision, rather than simply assuming that dependence produced compliance.

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

8.6. The Proposed Energy Ceasefire: Negotiability and Operational Control

On October 11, 2026, President Trump announced that Russia and Ukraine had agreed to refrain from attacking energy infrastructure. The publicly described object was not consistent across actors: a White House official characterized a possible initial phase as reciprocal restrictions on refinery strikes, with power plants and grids potentially subject to later discussion; Russian acceptance of an operative text remained in question. Ukraine expressed conditional willingness to restrain attacks if Russia reciprocated. No jointly authenticated target list, start time, command instruction, verification mandate, or breach procedure established an implemented bilateral sectoral ceasefire (Flynn & Holland, 2026; Ravid, 2026; President of Ukraine, 2026c, 2026d).

The relevant pre-announcement history constrains attribution. Zelenskyy publicly indicated an intention to intensify strikes against Russian refineries in an interview on October 2–3, after U.S. pressure to limit such attacks had already been reported on September 13. Following the October 11 announcement, he described conditional restraint and on October 13 asserted that Ukraine had not struck Russian refineries for the preceding two days. This identifies a change in public position and a participant-attributed short-window behavior, not a verified cancellation of specific missions. His statement that he first learned of the U.S. announcement through social media likewise cannot independently rule out other discussions (Flynn & Harmash, 2026; President of Ukraine, 2026d; Romanenko, 2026; Kakissis, 2026).

On the Russian side, the Ministry of Defense's October 13 summary did not enumerate energy targets in the cited passages, while Kremlin contacts on the proposed arrangement reportedly continued. Absence of a target category from an official summary is source silence, not an independent census of attempted strikes. An Associated Press review and separate open-source monitoring did not verify a complete two-sided halt. Those reporting clusters must not be added as independent strike-free days or as proof of a jointly operative ceasefire (Arhirova & Spike, 2026; Harmash & Flynn, 2026; Reuters, 2026g; Katola, 2026).

The target set is fundamental to evaluating compliance. A refinery-for-refinery instrument would not necessarily protect Ukrainian gas production, electricity generation, transmission grids, or pumping and distribution infrastructure. Zelenskyy explicitly distinguished Ukraine's electricity and gas exposure from Russia's refining and petroleum-export vulnerabilities. An equitable-sounding reciprocal rule may therefore protect unequal functions even when its language is formally symmetric. A pumping station is not a refinery, and repeated attacks on one installation are not multiple distinct plants; a September summary of twelve refineries reportedly affected cannot become twelve daily strike attempts or a verified loss of throughput (President of Ukraine, 2026d; Ravid, 2026; ArmyInform, 2026; Radio Svoboda, 2026).

Reported post-announcement physical effects illustrate why target matching matters. Naftogaz stated that a drone hit a Kharkiv-region gas-production installation overnight before October 12, damaging equipment and causing a fire; precise impact time and lost output were not provided. On October 14, accounts from Kyiv's mayor, an electricity distributor and Ukraine's president described overlapping dimensions of one attack wave, including reported damage to 26

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

power elements and four oil-and-gas installations and electricity loss affecting at least 600,000 customers. These are participant- and operator-attributed accounts with different units, not thirty distinct strikes or 600,000 unique households, and attacks on non-refinery targets do not alone establish breach of a narrower, unaccepted refinery-only plan (Naftogaz Group, 2026h; Interfax-Ukraine, 2026d, 2026e). Separate October 12–13 reporting documents continued energy-site attacks and electric-grid restrictions, without providing a comprehensive incident ledger (Flynn & Polityuk, 2026; Interfax-Ukraine, 2026c).

Recipient-system restoration must be measured separately from military restraint. Naftogaz reported a Russian strike on Pryluky on October 7 and the restoration of gas supply by October 12 after damaged pipelines were repaired, equipment inspected and 45 emergency crews deployed. Its English release describes service to approximately 18,000 homes, while related reporting uses resident or household language; these populations must not be treated as an identical verified denominator (Naftogaz Group, 2026g). The strike predates both the October 9 diesel license and the October 11 announcement, so neither measure can have caused that earlier strike. But the earlier date of damage alone cannot exclude a later intervention effect on repair access, restoration speed or subsequent attack exposure. No such effect is identified here: the record lacks a policy-linked mechanism, comparative repair clock and evolving no-policy restoration trajectory. The separate Kharkiv gas-production impact is not the Pryluky distribution-service episode (Naftogaz Group, 2026g, 2026h).

A functionally meaningful ceasefire effect would require stable identities for facilities and protected target classes, verified risk windows and attack opportunities, service disruption and recovery records, and a feasible counterfactual. Service reconnection need not mean permanent repair of the originally damaged asset; network switching, repair-team security clearance and renewed attacks can affect availability independently of the announced policy. A local period of reported restraint can thus be analytically important without establishing full reciprocal compliance, restored energy output, or a causal increase in cross-theater military capacity. Related operator examples and source-unit qualifications are examined in Sections 8.7–8.8 below.

For the DTEK and Naftogaz operator records, facility identity is a distinct identification requirement, separate from information-source independence. One source can describe multiple attacks on the same facility, another can distinguish several sites, and a weekly total may count repeated service interruptions without disclosing unique affected assets. Retain the source's original identity statement (same site, different site or unspecified), event-time precision and originating information family. A public, address-based current-outage interface is not evidence of a historical feeder-level panel unless stable, privacy-preserving retrospective identifiers and dates can actually be retrieved. Without those joins, publication counts and outage totals cannot be used as facility-by-day denominators for a ceasefire treatment effect. DTEK Group has also explicitly withheld a facility name in a historical operator release for security reasons (DTEK Group, 2025).

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

8.7. Conditional Commitments and the Timing of Strategic Benefits

The bargaining episode creates a temporal asymmetry between authorization, expectations, force behavior and material delivery. An OFAC license changes one regulatory gate immediately; a mutually accepted restraint could alter target selection before refinery repairs produce additional fuel; while contracts, shipping, clearing and fiscal returns may follow over weeks or fail altogether. The sequence creates incentives and bargaining possibilities but does not, without evidence of deliberate misstatement, establish deception or a completed cross-war exchange.

Three hypotheses remain compatible with the public record: the United States may have sought fuel-market stabilization; trade permission may have served as a diplomatic inducement to Moscow; or threatened changes to Ukraine-related intelligence and procurement access may have been used as leverage over refinery targeting. These mechanisms can coexist, and they require different evidence—market supply and pricing for the first, authenticated bargaining communications for the second, and traceable decisions or implemented restrictions for the third. U.S. and Russian participant statements did not supply a common verified bargain, and the Kremlin publicly disputed a direct linkage (Banco et al., 2026; Reuters, 2026c; Flynn & Holland, 2026).

Industrial repair and service availability should not be collapsed. A damaged gas-production site, a repaired distribution line, an electricity customer temporarily reconnected through switching, and a facility hit again after repair represent different functional units. Operator records from Naftogaz and DTEK report repeated attacks at some sites, restoration through alternate network configurations, and hazards to crews and vehicles. Those observations motivate a repair-access and reattack model but do not identify an October diesel-policy effect, an average repair delay, or an aggregate military output gain (DTEK Grids, 2025, 2026a–2026d; Naftogaz Group, 2026a–2026f).

Accordingly, an observed pause in launches is not yet a replenished refinery; added Russian world exports are not yet net fiscal receipts; and improved access to a U.S. market is not an identified change in either belligerent's war-sustaining capacity. CTCC requires a separate causal chain for each object and recipient before claiming policy-induced strategic benefits.

8.8. Competing Explanations and Causal Identification

The October policy episode combines three potentially endogenous processes: Iran-war-related energy scarcity, pre-existing Ukrainian refinery attacks and American diplomatic pressure, and Russian trade-policy adjustment under damaged domestic processing capacity. These processes began before or overlap the October 9 license, so an October before–after contrast would misidentify the intervention. A dynamic no-license comparison addresses only the incremental effect of that authorization in the specified wartime setting; estimating the broader Iran-war effect requires a separate no-source-war trajectory that permits diplomacy, refining, inventories, wartime demand, targeting and shipping to evolve on their own. Neither contrast has been empirically closed by the public records examined here (Ravid, 2026; Flynn & Holland, 2026; Azhar et al., 2026).

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

- **Test 1 — legal and commercial activation.** Identify the scope of the OFAC authorization alongside independent statutory rules, the October 16 Graham Act waiver, Russia's export permissions, counterparties, cargo grade, signed terms, banking execution and any final importing jurisdiction. The October vessel signals can establish reported loading or anticipated routing by identifiable IMO, not destination-confirmed discharge, legally completed U.S. import, additional world production, or tax proceeds (Office of Foreign Assets Control, 2026; The White House, 2026a; Lloyd’s List, 2026).
- **Test 2 — negotiated restraint and recipient behavior.** Match a mutually accepted target list and effective time to authentic orders, attempted attacks, realized impacts, and comparable pre-policy risk windows. Zelenskyy's short-duration public non-strike statements, the omission of energy targets in a Russian daily summary, and continued attacks on other target classes measure different propositions. Their coexistence supports possible sector-specific restraint and continued hostilities, not a confirmed bilateral energy ceasefire or a response caused uniquely by the diesel license (Harmash & Flynn, 2026; Romanenko, 2026; Center for Analysis of World Arms Trade, 2026).
- **Test 3 — recipient war-function change.** Distinguish attack and impact dates, damage, loss of service, access authorization, provisional reconnection, physical repair and durable restoration. The Pryluky record supplies an operator-reported October 7–12 damage-to-restoration interval, but does not identify when safe repairs became feasible or whether a policy-induced change shortened that interval. Divergent homes-versus-residents descriptions also cannot serve as a single population denominator. DTEK’s October 7–9 observations describe repeated frontline attacks, reported reconnection events and remaining outages without the stable customer and feeder identifiers needed for a matched stock-flow balance (Naftogaz Group, 2026g; DTEK Grids, 2026l, 2026m).

Even where a physical stock balance can be written as opening disconnected customers plus new interruptions minus genuine reconnections plus classification adjustments, the published aggregates cannot be substituted into it: the exact windows, population, opening stock, new transitions and adjustments are not jointly observed. One account reconnected twice after separate outages represents two service events but one unique account. Repeated operator statements and overlapping weekly totals must not be counted as additional independently observed households (DTEK Grids, 2026i, 2026k, 2026n).

Negative and competing controls are available but not sufficient to estimate policy effects. DTEK recorded large storm-driven outages and restorations on September 24–25, renewed disconnections while earlier attack-affected customers were restored on September 23, and mixed weather-and-strike recovery in July. Load rebound, safety restrictions on crew access and temporary network switching can also change restoration clocks without any restraint in military activity. These records identify alternative pathways and denominator hazards; they are not automatically matched untreated units for the October intervention (DTEK Grids, 2025, 2026e–2026h).

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

Time coding remains a separate identification problem. Two distinct DTEK impacts described in an October 9 publication occurred on October 8 Kyiv time and belong to the October 8 noon-to-noon Eastern Time analytical day. The October 14 morning Kyiv news reports establish their publication clocks, not necessarily their strike-impact clocks. Weekly restoration windows crossing October 9 and 11 cannot be designated entirely pre- or post-policy; publication time, event time, measurement time and the CTCC/MCCM analytical day remain separate fields (DTEK Grids, 2026m, 2026n; Interfax-Ukraine, 2026d).

The practical decision rule is fail-closed: absent stable site/customer identity, matched exposure windows, independently identified attack causes and a nonstatic counterfactual, a numeric sectoral recovery effect cannot be admitted. Likewise, a diesel export increment requires product- and time-matched worldwide exports net of diversion from other destinations, inventory changes, domestic delivery and production recovery. The available evidence identifies authorization, attributed public restraint and some independently originated operator damage/recovery observations. It does not identify the policy's net effect on Russian fiscal capacity, Ukrainian service regeneration, or another war's operational options.

8.9. Implications for Cross-Theater Conflict Coupling

The diesel and energy-ceasefire episode contributes a mechanism not fully captured by the movement of weapons, personnel, or technical knowledge.

Policy authorities can alter the conditions under which resources become accessible, and expectations about those conditions can become relevant to strategic decisions before physical transfers occur.

Yet control over one interface does not guarantee control over the wider system. U.S. regulatory authorization did not automatically remove independent statutory questions, European sanctions, Russian production constraints, or shipping requirements.

Similarly, Washington's ability to condition assistance does not establish that a restriction was implemented, and the announcement of a sector-specific ceasefire does not establish that the belligerents accepted or observed a common set of obligations.

The episode therefore clarifies the meaning of strategic optionality within cross-theater coupling. A policy decision may change the range of actions that actors can credibly consider, but a change in available options should not be confused with an exercised option or a realized increase in operational capacity.

It also reveals why the timing of transmission matters. A policy concession, an anticipated trade flow, a targeting decision, and industrial recovery can occur on different schedules. Their strategic significance depends on which actors bear costs or receive benefits at each stage, as well as on whether later commitments are fulfilled.

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

As of the October 26 evidence cutoff, the case supports an implemented U.S. regulatory authorization, the separately issued October 16 Graham Act duties waiver, reported Russian export-policy adjustments and efforts to link energy targeting with bargaining. It does not establish that the 2022 import-law question was legally resolved for any cargo, that a U.S. customs entry was completed, or that a corresponding military change was caused by the diesel policy. These distinctions remain valid despite additional reported vessel destinations (Office of Foreign Assets Control, 2026; The White House, 2026a; Lloyd's List, 2026).

The case therefore supports a bounded version of the policy-conditionality proposition: changes in institutional access and expectations of future resources can become instruments of cross-theater diplomacy before material transfers are realized, but their behavioral and system-level consequences require separate causal identification.

Alongside the preceding cases, this finding illustrates that shared production, adaptive expertise, and policy authority are distinct pathways through which politically separate conflicts may interact. Their outcomes depend not simply on connection, but on implementation, conversion, timing, and the conditions under which an observed change can be attributed to another war.

8.10. International Energy Buffers and Recipient Accounting

8.10.1. International Stock Releases as Multi-Stage Physical Events

At its October 15, 2026 meeting, the International Energy Agency (IEA) Governing Board reported approximately 330 million barrels released under its March collective action and about 100 million barrels still to be completed, with acceleration plans involving more than 20 million barrels of diesel (International Energy Agency, 2026). The IEA total is a collective-program report, not a source independently additive to individual national stocks, authorizations or contract awards; it does not identify delivered fuel to either military theater.

8.10.2. U.S. Strategic Petroleum Reserve: Independent Stocks Versus Nominal Awards

In the U.S. Energy Information Administration's weekly WCSSTUS1 series, Strategic Petroleum Reserve crude stocks fell from approximately 415.442 million barrels for the week ending March 6, 2026 to 282.683 million barrels for the week ending October 16, a net decline of 132.759 million barrels (U.S. Energy Information Administration, n.d.; CK Economics, 2026). Four Department of Energy emergency exchange groups awarded in March–May totaled approximately 133 million barrels of nominal awards (U.S. Department of Energy, 2026). The similar magnitudes provide a consistency check, not lot-level physical reconciliation: contract awards, net stocks, actual withdrawals, repayments and operational deliverability occupy different ledgers and dates.

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

8.10.3. Japan: Recipient Recognition and Multi-Owner Stock Behavior

Japanese official reserve bulletins show state-held crude falling from 41.68 million kiloliters at the end of March to 28.99 million at the end of July 2026, a 12.69-million-kiloliter net decline, or about 79.82 million volumetric barrels (Agency for Natural Resources and Energy, 2026a, 2026b). Over the same interval private crude rose by 2.89 million kiloliters, private refined products by 1.81 million and joint foreign-producer crude fell by 0.72 million, producing a reported all-owner stock reduction from 68.40 million to 59.68 million kiloliters. Japan's accounting recognizes certain reserve transfers when refineries confirm receipt, rather than solely when upstream pumping begins. The Japan Organization for Metals and Energy Security reported a March 26, 10:59 Japan-time transfer start from Kikuma to Taiyo Oil. These records connect a 14.3-million-kiloliter combined plan, named transfer initiation and recipient-recognition rules, but do not verify the exact composition of every shipment or refined-product destination (Japan Organization for Metals and Energy Security, 2026).

8.10.4. Japan: Measured Refinery Throughput and Diesel Allocation

Japanese official petroleum statistics show April 2026 crude imports of 4.070 million kiloliters against refinery runs of 10.422 million. The 6.352-million-kiloliter difference demonstrates that same-month imports alone do not account for refinery throughput; it cannot be assigned to government reserves without accounting for earlier arrivals, commercial stock movements and different holder coverage. In July, crude imports were 11.719 million kiloliters and refinery throughput 11.843 million, while diesel production reached 3,188,748 kiloliters, diesel exports 782,311, domestic sales 2,687,282 and commercial diesel stocks declined by 170,736 kiloliters from June (Ministry of Economy, Trade and Industry, 2026).

Under the restrictive assumption that the four July diesel series share identical product and holder coverage, production plus inventory decline equals 3,359,484 kiloliters and domestic sales plus exports equal 3,469,593, leaving an unreconciled arithmetic residual of −110,109 kiloliters. This is not an observed diesel import, a proved reserve release, a measured trade destination, or a validated deficit. Closure would require original definitions, product-specific imports, other uses, stock coverage and statistical adjustments for one consistent observation window (Ministry of Economy, Trade and Industry, 2026).

8.10.5. The Country-Destination Identification Problem

Japan's monthly customs catalog contains distinct country-by-commodity geographic tables (including 26-02 for Southeast Asia, 26-03 for Southwest Asia and 26-08 for Oceania) and commodity-by-country tables (including 26-05 for Harmonized System chapters 25–27) (Ministry of Finance, Japan, 2026a, 2026b, 2026c). Japan-origin gasoil is identified by principal-commodity code 3030105 and nine-digit statistical codes 271019200 and 271020300 (Japan Customs, 2026). The original July 2026 country-specific CSV records were not fully extracted at cutoff; exports to Saudi Arabia, other Gulf destinations, Singapore or Australia therefore remain unverified, not zero. Bilateral all-goods imports cannot substitute for gasoil quantities or military end use.

8. Policy Conditionality and Strategic Choice: Diesel Diplomacy, PURL, and the Proposed Energy Ceasefire

8.10.6. Analytical Implications of Energy Buffers for CTCC

The energy evidence illustrates multistage conversion rather than an immediate transfer of publicly announced barrels into wartime capability. Public crude inventories can decline while private stocks increase; refiners can maintain throughput during an import trough; and refined-product exports may accelerate after feedstock supply recovers. Announcement, storage dispatch, recognized refinery receipt, processing, export, final recipient use and state fiscal consequences must be established separately.

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

Sections 5–8 identify several ways in which conflicts that remain geographically and politically distinct can nevertheless become consequential to one another. Competition for scarce air-defense supplies, the historical transfer and localization of unmanned systems, the reuse of battlefield-tested counter-drone expertise, and the diplomatic regulation of diesel and military assistance do not constitute interchangeable instances of a single flow. They instead expose different interfaces through which changes originating in one war may modify the conditions of action in another. The cross-case question is therefore not simply whether an interwar connection exists. It is when that connection becomes causally effective, what it changes, and what evidence is required before a war-system consequence can be claimed. Table 2 compares claim-specific stages across the principal cases using the G1–G6 criteria from Section 4.4, without collapsing historical and contemporary pathways; the final column records the missing observation needed for a cross-war causal claim.

Table 2. Cross-Case Comparison of Transmission Claims and Highest Justified Evidence Stages

Transmission Claim	Highest Justified Stage	Unidentified Downstream Condition
Ukraine-bound PAC-3 MSE displacement	G1 shared interface; Iran-attributable Ukraine-lot reallocation NOT_IDENTIFIED	Variant-matched baseline/revised allocation, receipt and threat-matched function
Historical Shahed–Geran industrial learning	G4 historical conversion	Historical marginal operational effect and counterfactual
2026 Russian–Iranian reverse drone flow	Historical G1 antecedent only (pre-2026). A new 2026 source–recipient activation, independently verified G3 receipt, G4 conversion and G6 return feedback are NOT_IDENTIFIED; March/September reports remain attributed leads.	A dated, independently authenticated 2026 direction-specific interface decision, manufacturer/serial record, dispatch, recipient custody, use and return effect; do not upgrade from historical conversion.
Ukrainian specialists and Sky Map in Gulf	REPORTED G3: personnel presence and reported Sky Map placement/training for U.S. forces at a Saudi-hosted base. G4 operational integration, G5 incremental effectiveness and G6 feedback NOT_IDENTIFIED.	Recipient-verified acceptance and activated interfaces, commissioning date, threat-matched engagement logs, independent performance counterfactual and any reciprocal material benefit.
Russian diesel permission and shipping	G2 legal activation; reported Russian output rebound after quota allocations; reported outbound loadings, not U.S. G3 receipt	Independent output/causal attribution, U.S. customs receipt, net additional global exports, fiscal increment and attributable war-function effects

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

Table 2. Cross-Case Comparison of Transmission Claims and Highest Justified Evidence Stages (Cont.)

Transmission Claim	Highest Justified Stage	Unidentified Downstream Condition
Emergency petroleum buffers	G1 shared global energy interface; domestic releases and stock movements documented separately, not cross-theater G3 receipt or G5 consequence	Recipient-specific cross-war change and attributable functional result

Source: Author's comparative analysis based on official government and institutional records, defense-industry disclosures, operational reports, and contemporary reporting examined in Sections 5–8. Evidence stages are classified using the CTCC G1–G6 framework defined in Section 4.4.

Note: Evidence stages represent the highest justified level for each specific transmission claim, not an overall validation score for the case. Historical technological relationships are distinguished from new transfers associated with the 2026 conflicts. Reported transmission, recipient integration, functional consequences, and causal attribution are evaluated separately. Unverified downstream effects remain **NOT_IDENTIFIED** rather than being treated as absent or disproven.

9.1. From Connection to Consequence

CTCC distinguishes exposure to a shared interface from activation of a transmission pathway. Two combatants may depend on the same supplier without an additional order affecting either one. A country may possess relevant knowledge without transferring it. A government may announce permission for trade without a cargo being shipped. In each example, a connection is observable, but the more demanding claim that a change in one war has altered the receiving war remains open.

The proposed causal sequence is: source-war change; activation of a shared material, informational, technological, or institutional interface; an effective constraint or decision rule; transmission and implementation; recipient conversion or behavioral adjustment; a function-specific outcome; and, potentially, subsequent rewiring or feedback. These stages should be investigated separately. In particular, an observed change at an earlier stage cannot substitute for evidence at a later one.

This distinction also prevents an overly narrow definition of coupling. A receiving actor may revise a procurement decision or targeting plan because an anticipated resource becomes credible before delivery. Such a behavioral response can be important even if no shipment occurs. But its existence does not demonstrate a change in usable military capacity, and it need not improve operational performance. CTCC therefore treats credible expectation effects as a possible intermediate mechanism, not as automatic evidence of realized material benefits.

The appropriate observation unit is a source-war change, a specified interface or object, a receiving war or functional subsystem, and a bounded time window. Broad country-level association is insufficient when the asserted mechanism concerns a particular interceptor, drone variant, training capability, license, or energy facility.

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

9.2. Different Constraint Structures: Material Resources and Knowledge

The cases expose an important asymmetry between physical supplies and transmissible know-how. A finished interceptor assigned to one recipient cannot simultaneously be delivered as the same physical item to another. Industrial capacity and inventories impose conservation constraints, although stocks, expanded production, substitution, and rescheduling may alter the relevant opportunity cost. Consequently, an apparent increase in demand in one theater does not identify displacement in another unless the two claims draw on an effectively shared and binding resource pool.

Production itself can be limited by complementary bottlenecks. When finished output requires several non-substitutable components, surplus in one component does not offset a shortfall in another. Conversely, a loss to a nonbinding input may have no observable effect on completed output. Political allocation authorities can influence who receives the available quantity, but allocation and aggregate production must not be conflated. These distinctions reflect strict component complementarity: binding constraints limit finished output, while changes to nonbinding inputs do not by themselves establish a wartime delivery loss.

Knowledge behaves differently. Once a procedure, design insight, or operational lesson has been communicated, its use in one theater does not necessarily prevent another recipient from learning it. Transmission may thus be partly non-rival. Yet successful replication still requires credible evidence, compatible hardware, trained personnel, organizational uptake, and operational conditions in which the knowledge is useful. Scarce experts, integration capacity, sensitive data, and time can remain rivalrous even when an abstract idea is not.

The Sky Map episode makes the recipient interface more specific. A software system can travel without a corresponding transfer of national inventory, but its real-world contribution depends on receiving-unit training, sensor access, command integration, and rules for acting on its outputs. In a third-country installation, the source state, immediate receiving military, and territorial host must also be identified separately; geographical location is not evidence of domestic adoption by the host state (Jeans, 2026).

The historical Iranian contribution to Shahed–Geran development illustrates how earlier technology transfer can become embedded in a later production system. It does not by itself prove new Russia-to-Iran deliveries of adapted Geran variants during the 2026 Iran war. Similarly, the transfer of Ukraine-tested counter-drone approaches to Gulf defense does not establish the effectiveness of every receiving deployment. Across both cases, the relevant inferential boundary lies between availability of knowledge, successful implementation, and independently attributable operational effects.

9.3. Policy Authority and Strategic Optionality

Policy conditionality introduces a third constraint structure. States can control access through licenses, export restrictions, procurement priority, contracts, financial services, intelligence cooperation, or the conditions attached to military assistance. Unlike physical inventories, these

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

arrangements define whether an action is legally, administratively, or politically available. Their influence depends on jurisdiction, credibility, enforcement, institutional coordination, and the willingness of other actors to respond.

The October diesel case is particularly instructive because authorization, commitment, implementation, and military restraint were separated in time and in evidentiary status. The October 9 U.S. license changed the stated regulatory permissions for specified transactions, but it neither resolved every independent legal restriction nor established a completed diesel delivery. American pressure on Ukrainian refinery strikes also predated that authorization. It is therefore unwarranted to treat the new license as the unique origin of subsequent discussions, or to equate a publicly announced energy ceasefire with reciprocal compliance.

The strategic object of policy control is often not an immediate transfer but an actor's set of feasible choices. Let $K_i(t)$ denote function-specific usable capabilities and $\Theta_i(t)$ the conversion structure connecting resources, institutions, and organization to usable action. The feasible choice set $\Omega_i(t)$ is derived from $K_i(t)$, $\Theta_i(t)$, mission requirements, and binding legal or institutional constraints. The perceived feasible set, $\hat{\Omega}_i(t)$, can differ because decision-makers have incomplete information and uncertain beliefs about future support.

This separation matters. A credible threat to change future assistance may reduce perceived options before any supply restriction takes effect. An actual restriction can later change feasible options. A resulting decision to avoid a target is a further behavioral observation. Only subsequent evidence of altered destruction, repair, or operational capacity can support a war-function claim. Policy influence thus operates across distinct levels of expectation, constraint, decision, and result; the levels must not be counted as multiple independent gains.

The April Sky Map account offers a limited warning against treating public rhetoric as an operational veto: the U.S. president publicly rejected Ukrainian help in March, while Reuters later reported local U.S. adoption and training at Prince Sultan. These are not a verified reversal of a formal prohibition, since no applicable directive or authorization chain was obtained. They illustrate why public preference, binding institutional control, and executed installation decisions must be coded separately (Jeans, 2026).

Control over one boundary is also partial. The United States may modify its sanctions rules, but not thereby remove European restrictions, Russian production limitations, commercial reluctance, or shipping obstacles. Likewise, a proposed condition on PURL assistance is not equivalent to an established shipment interruption. Institutional authority is strategically consequential only insofar as the interface it controls is relevant, credible, and effective.

9.4. Asynchronous Transmission and Conversion

The four cases do not share one universal causal lag. Procurement reallocation can occur within an administrative decision cycle while finished interceptors require longer production and logistics schedules. Technical knowledge may be communicated quickly but absorbed slowly. Policy announcements can influence expectations immediately while trade requires contracting, loading, shipping, and receipt. A halt in strikes, even if observed, may precede the recovery of damaged refinery capacity by a substantial interval.

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

An analytical framework that records only the announcement date and a later outcome risks combining mechanisms that operate on incompatible clocks. CTCC instead distinguishes decision and expectation time, material production and delivery time, recipient learning and implementation time, and adversarial adjustment time. These clocks may overlap, reverse order, or stall; no universal ordering should be imposed before examining the case.

Temporal asymmetry also creates bargaining opportunities and risks. If a recipient changes its targeting behavior immediately in anticipation of later diesel deliveries, the costs of restraint and the benefits of supply may accrue to different parties on different schedules. This sequence could result from sincere incentives, uncertainty, limited delivery capacity, or strategic manipulation. Timing alone does not identify deception or intent. It does establish why commitments must be assessed separately from execution and why reversibility and verification are relevant to the credibility of negotiated restrictions.

Where a candidate event falls near an analytical-day boundary, its event time, observation time, publication time, and subsequent revision must be separately retained. The MCCM analytical window [12:00 ET, next-day 12:00 ET) is appropriate for consistent event accounting, but publication during that window does not establish that the reported military event occurred within it.

9.5. Strategic Allocation, Substitution, and Effective Bottlenecks

The PURL case identifies a measurement-level divergence between institutional continuity and material service level. Continued financing or sales may preserve a route of access while competition for high-demand interceptors produces lag within that route. Conversely, a lag cannot be assigned to the Iran war merely because the same production system serves multiple theaters: prewar scarcity, other recipient commitments, production lead times, and allocation decisions remain alternative pathways. The more precise observable progression is program authorization, funded procurement, scheduled lot, release, actual receipt, and threat-matched usable availability; claims of cross-war effects require evidence across the relevant transition, not a proxy from another stage.

A shared supplier does not impose a fixed zero-sum relation across theaters. Displacement occurs when claims compete over a sufficiently scarce, non-substitutable, and jointly controlled resource, and when buffers or alternative supplies cannot absorb the additional demand. Where these conditions fail, one theater's increased requirements may alter procurement queues or expectations without measurably reducing another theater's completed receipts.

Furthermore, the aggregate quantity available and its recipient distribution are distinct. A controller may reallocate an unchanged stock across competing priorities. Conversely, an increase in overall production may fail to improve the recipient's war function if the delivered article is incompatible with its systems, arrives too late, or lacks a complementary input. A system-level effect therefore depends on the binding bottleneck and the point at which the resource becomes usable, rather than on headline quantities alone.

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

The same qualification applies to substitutes. A low-cost counter-drone interceptor can reduce pressure on certain defensive tasks, but it cannot automatically replace a missile designed to engage another target class. Substitutability must be evaluated at the mission-function level, with attention to engagement conditions, failure modes, and costs of integration. The relevant question is not whether two items are described as air defense, but whether they can perform the same necessary function under the observed conditions.

The evidentiary chain therefore advances at the transmission stage without collapsing distinct state variables. The official USEUCOM account identifies wartime movement and support between combatant-command systems; the procurement office identifies strategic resupply pressure; AP provides a separately sourced account of European U.S. missile-stock movement to the Middle East. Their agreement at a general system level is not three independent confirmations of PAC-3 MSE diversion. Treating official FMS notifications as physical deliveries, broad munitions transfers as Patriot-only transfers, or system pressure as lost Ukrainian combat capability would each cross an unobserved conversion gate.

The stylized formal consistency checks make this point in a bounded way. They distinguish binding from nonbinding constraints, parallel suppliers from serial components, offers from accepted deliveries, aggregate output from allocation, and—in dynamic extensions—dispatch, receipt, conversion lags, and stylized adversarial offsets. Their results are conditional on stipulated parameters and rules; the dynamic allocator is not a solved intertemporal strategic equilibrium. The stylized checks do not establish an empirical cross-war displacement coefficient or prove that actual policymakers optimized the modeled objective.

The recovery pathway may itself generate non-adversarial secondary failures. Where scheduled disconnection and simultaneous re-energization stress distribution equipment, an increase in counted service restorations need not translate into a persistent increase in available service. A sustained-function endpoint should specify the same asset or user cohort and a predeclared uninterrupted follow-up period, alongside attack recurrence, weather exposure, repair access and load-induced technical events. Such an endpoint is a design proposal, not an available historical outcome in the reviewed press accounts. The 2025 DTEK warning supports the plausibility of this mechanism in one operator system but does not establish its magnitude in October 2026 or link it to trans-theater policy (DTEK Grids, 2025).

The resource case now provides a particularly clear demonstration of type-specific adaptive capacity. A shared interceptor family offers design reuse and alternative manufacturing possibilities, but neither an announced variant nor a safe-country production option bypasses the separate stages of licensing, industrial construction, qualification, delivery, and threat-matched field use. The repair-access observations from the Ukraine energy sector illustrate a related but distinct exposure mechanism: attacks can degrade not only operating assets but the personnel and equipment needed to restore function. These mechanisms may both constrain war-system reconstitution, but the studied evidence does not establish a direct causal link between Ukrainian utility repairs and PAC-3 industrial decisions, nor a quantified Iran-war-to-Ukraine missile effect.

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

The PURL accounting evidence illustrates an additional conversion gate: the financing instrument contains distinct replenishment and new-procurement branches. The branch split is measurable in dollars at the U.S. Treasury, yet neither branch identifies an MSE allocation or an accepted delivery to Ukraine. This is a concrete case in which high channel dependence can coexist with funding growth, productive constraints, and unobserved recipient-level material effects. A valid cross-theater estimate must bridge the branches using variant-specific contracting and receipt records rather than treating received funds, U.S. inventory rebuild, and Ukraine arrivals as interchangeable quantities.

9.6. Endogenous Rewiring and Adversarial Response

War systems adapt to losses, sanctions, uncertainty, and changes in supply. A recipient may localize production, replace a supplier, revise tactics, reorganize training, or alter its target choices. Such adaptations can reduce dependence on a particular external interface while creating dependence on new components, expertise, finance, or transport routes. Consequently, decreased reliance on one supplier should not be treated as generalized strategic autonomy.

This introduces a dynamic feature to CTCC. The relevant interface and conversion structure need not remain fixed after an initial shock. If a source-war disruption prompts localization or diversification, a later disruption of similar size may produce a different outcome. The causal parameter is therefore conditional on the network and conversion architecture prevailing at the time of the later event.

Adversarial response adds another layer. Improved drone defense may prompt an opponent to change routes, timing, payload composition, or saturation tactics. A new supply source may relieve one bottleneck while the opposing force identifies another. Thus, increased technical or material inputs may improve an intermediate capability without yielding a sustained net operational advantage. Evaluating only the recipient's adoption of a system would miss this interaction.

Feedback should be claimed only where an attributable return pathway is observed. A source war can affect a receiving war, whose adaptation later changes the original source's supply conditions or strategic decisions. Such closed-loop dependence is theoretically possible, but it is stronger than a one-way transfer and cannot be inferred merely because two conflicts continue to evolve at the same time. Internal repair, control, and regeneration are addressed by War-System Reconstitution; CTCC focuses on how interwar inputs and constraints alter those internal processes.

9.7. Cross-Case Propositions and Observable Implications

The comparison motivates five conditional and falsifiable propositions across three transmission-pathway families and four principal empirical episodes; it does not establish that every episode has produced a verified operational effect or that the five propositions have already passed their causal tests.

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

- **Proposition 1 — Effective-bottleneck transmission.** A source-war demand or supply shock is more likely to reduce a receiving war's realized resource availability when the two draw on a demonstrably shared stock, production line, or allocation authority; the relevant item is non-substitutable at the mission level; and available buffers do not absorb the shock. A comparable shock to a nonbinding input predicts little or no reduction in finished deliveries.
- **Proposition 2 — Policy-mediated anticipation.** A credible change in an institutional access condition may induce an affected actor to make a consequential strategic choice before any physical transfer. Public statements and expressed plans identify expectations or claimed intentions; they do not by themselves establish an implemented decision or G5-D behavioral consequence. The proposition predicts a dated, independently identifiable decision or adjustment by the affected actor after credible communication, evaluated against that actor’s pre-existing choices and a dynamic no-communication trajectory. The corresponding material G5-F outcome is a separate hypothesis and need not occur for a genuine anticipatory response to be observed.
- **Proposition 3 — Conversion dependence.** Transmission of equipment or expertise produces a recipient capability change only where the required absorptive, technical, and organizational interfaces are present. Where those interfaces are absent or too slow, increased inputs need not produce an operational improvement.
- **Proposition 4 — Conditional substitution and dependency migration.** Adaptation can reduce exposure to an existing bottleneck while relocating vulnerability to another component, supplier, skill, or authority. The observable implication is a change in the system's sensitivity to a subsequent matched shock, not necessarily a decline in vulnerability overall.
- **Proposition 5 — Adversarial and feedback qualification.** The long-run functional effect of an imported capability depends on opponent adaptation; a stronger cross-war feedback claim requires an identifiable, dated causal return pathway from the initially affected war system to the originating theater through a specified actor, interface and object. Independent adaptation in the source theater, common shocks and temporally coincident one-way transfers cannot be treated as reciprocal feedback. Evidence of a return pathway does not itself establish net strategic gain.

The present cases provide unequal evidentiary leverage on these expectations. For Proposition 1, prewar donor constraints, a reported Ukraine-side PURL delay and a named Polish PAC-3 MSE delivery warning demonstrate common exposure and attributed allocation pressure, but no variant-matched Ukrainian displacement effect is identified. For Proposition 2, sanctions authorization and reported policy conditionality establish a legal decision and possible anticipatory channel, not an independently established induced Ukrainian targeting decision or completed fuel exchange. For Proposition 3, Iranian-origin technology was historically absorbed

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

into Russian production before the 2026 Iran war, whereas the Reuters account of Sky Map introduced to U.S. forces and local instructor activity supports reported recipient receipt and training (G3), not yet verified integration (G4) or net performance (G5). A 2026 Geran return shipment remains unverified. Propositions 4 and 5 remain predominantly dynamic expectations: the record does not establish a matched sequence of dependency migration, quantified adversarial offset or closed cross-theater feedback loop. The comparison thus separates observed mechanism components, participant-attributed effects and claims still lacking the required outcome evidence.

These propositions are neither jointly guaranteed nor reducible to one scalar coupling index. Some concern measured resource quantities, others recipient decisions, and still others technology conversion; a changed legal choice set alone is not a measured recipient decision. Their confirmation requires indicators appropriate to each causal object.

9.8. Identification, Rival Explanations, and Scope

CTCC distinguishes the shared interface, source-war-conditioned G2 activation, G3 recipient receipt, G4 operational conversion and G5 consequences, with any G6 return separately recorded. For policy-mediated channels, a recipient or other affected actor may exhibit an observed G5-D consequential decision before G3 material receipt or G4 conversion; this is a non-mechanical branch, not a license to reclassify an issuing authority’s G2 permission as downstream behavior. G5-F instead concerns operationally usable capacity or performance. Neither subtype by itself identifies the source war’s causal effect without a credible independently evolving comparison. G6 return transmission does not prove net mutual gain. These are claim-specific observational distinctions, not aggregate scores for entire cases.

The causal estimand must be declared for every case. For PAC-3, the central question is the Iran-war-induced change in Ukraine-specific availability, not merely the existence of scarcity. For diesel, the incremental effect of the October license in an already contested energy market is an instrument-level question; it is not interchangeable with the total Iran-war effect. Calling a measured license response 'cross-war mediation' would additionally require evidence that the specified Iran-war change induced the relevant policy decision and that the resulting transmission altered an identified recipient decision or function. In the absence of this joint chain, retain separate policy-effect and source-war-effect assessments rather than reporting a single coupled estimate.

A shared external shock is a central rival explanation. Energy prices, sanctions, global demand and U.S. strategic decisions may affect both theaters independently. The correct counterfactual allows production, procurement, repair, threats, inventories, institutional priorities and opponent adaptation to change in both worlds. It does not freeze all other actors when the source-war variable is removed. A valid negative case can be a shared supplier without binding shortages, a policy license without an executable transaction, a trained team without accepted integration, or a stock release absorbed by domestic consumption.

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

PAC-3 demands a recipient–variant–lot–time join across original and revised allocation schedules, donor inventories, administrative program codes, shipment, Ukrainian receipt and mission-compatible substitute systems. Prewar Dutch scarcity, NATO's differing PURL shares, Germany's conditional collection drive, a recipient-reported PURL delay and Polish MSE delivery warnings occupy different units and information families. The existence of European-to-Middle-East logistical support does not identify a Ukraine-designated MSE lot; zero confirmed diversion and an unidentified count are different findings (Robertson & Francis, 2026; Government of the Netherlands, 2026a; U.S. Department of Defense Office of Inspector General, 2026).

The Shahed–Geran evidence supports historical Iranian-to-Russian productive conversion, not automatic confirmation of a new Russian-to-Iranian 2026 consignment. The March intelligence report, conditional Gulf debris identification and September request for advanced variants must remain separate objects with different model, time and custody identities. A return-transfer hypothesis requires authenticated manufacture, serial provenance, dispatch, receipt, recipient use and effects; reports repeating the same intelligence root are not independent confirmations (Al-Ghusbi & Rousseau, 2025; Judah et al., 2026; Center for Strategic and International Studies, 2026).

The Gulf expertise case separates reported Ukrainian personnel arrival, named Sky Map installation/training for U.S. personnel at Prince Sultan Air Base, recipient acceptance, actual activation, engagement-level performance and feedback to Ukraine. Saudi territorial location does not establish Saudi operator status. Historical Sky Fortress acoustic cues, a distinct Zvook detection rate and later third-party evaluations cannot be inserted as Sky Map treatment effects. Without installation date and stable concurrent defensive layers, March strikes cannot be reliably assigned before or after software activation (Jeans, 2026; Decker, 2024; U.S. Army Center for Army Lessons Learned, 2026).

For sanctions-conditioned Russian diesel, OFAC authorization, the Graham Act duty waiver, the separate 2022 import statute, Russian output and stocks, initial AIS destinations, final discharge and fiscal increment must be modeled as separate gates. An authorized cargo heading toward a U.S. port is not a legally settled U.S. import. A realized arrival would still require a dynamic no-license comparison to estimate the incremental authorization effect, taking into account diversion from other markets, domestic demand, existing contracts, refining constraints, banking and taxation. This instrument-specific comparison would not alone identify the total effect of the Iran war, for which the source-shock, policy response and other market channels require separate identification (Office of Foreign Assets Control, 2026; The White House, 2026a; Lloyd’s List, 2026).

The electricity and gas records provide a useful negative attribution and measurement test, but they do not identify an October diesel-policy effect. The October 7 Pryluky impact preceded the policy, whereas restoration was reported on October 12; that sequence rules out policy causation

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

of the initial damage, not a hypothetical effect on subsequent repair speed. Establishing the latter would require an independently identified intervention, stable site and service identifiers, repair-access timestamps and a comparable no-policy recovery trajectory. DTEK's regional reconnections are repeatable service events, not counts of unique households. Storm damage, multiple outage causes, crew safety restrictions and reattacks similarly prevent a simple interpretation that additional reconnections imply fewer hostile strikes (DTEK Grids, 2026g, 2026k, 2026n; Naftogaz Group, 2026g).

For asymmetric termination, the decisive missing treatment is a verified national-level change in war status accompanied by measurable post-change resource allocation. Local humanitarian permission in Oleshky cannot be coded as an implemented nationwide armistice, and any Russian conquest scenario cannot be coded as observed termination. A future test should compare matched resource classes and owners at 1, 4, 12 and 26 weeks after a verified transition, with nonbinding-resource controls and independently evolving commitments. This is a proposed identification design, not a numerical estimate of benefits from a war that has not ended on the hypothesized terms.

Across these claims, field-complete spreadsheets, passing software validators, large publication counts and high-frequency time stamps improve record discipline, but do not authenticate original secret transactions or create the absent comparator. Missing data are especially nonrandom where military batches, targeting instructions, private contracts and classified engagement logs are withheld. A mechanism can be supported at an intermediate gate without any quantified G5 consequence or G6 feedback. This asymmetric evidence structure is the central empirical result rather than a reason to invent a net cross-war total.

9.9. Theoretical Contribution and Boundary of the Claim

The distinctive CTCC claim is that war-conditioned changes can be transmitted across otherwise separate conflicts through interfaces whose constraints, conversion requirements, and political authorities differ. The receiving effect is conditional: a connection may remain latent; an activated transmission may fail at delivery; a delivery may fail at conversion; a changed choice may not be exercised; and a capability improvement may be offset by adversarial response.

This framework moves the analysis beyond both a metaphor of interconnected wars and an assumption of automatic zero-sum redistribution. It identifies where scarcity is truly binding, where knowledge is non-rival but difficult to absorb, where institutional permissions reshape expectations without guaranteeing commerce, and where the timing of commitments alters strategic choices before promised resources materialize. It also specifies the stronger evidence required to progress from observable linkage to attributable functional consequences and, ultimately, feedback.

The four cases should therefore be read as unequal tests of related propositions, not as four confirmed examples of a completed system-wide effect. Their common contribution is to show

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

why linkage, transmission, conversion, and consequence must remain analytically separate. CTCC is presently a coherent candidate framework for tracing these processes. Its claim to explanatory superiority over existing theories, and any quantitative claim about the size or direction of actual cross-war effects, remains to be established through matched evidence, negative controls, and genuinely discriminating tests.

9.10. Asymmetric Termination: Capacity, NATO Contingencies, and Sectoral Restraint

9.10.1. Hypothetical Russian Conquest: Control versus Deployable Capacity

Scenario definition and the prohibition on treating it as a forecast. This is an extreme counterfactual, not a claim that Russia currently controls all Ukraine or that total conquest is likely. “Conquest” must be separated from (a) temporary occupation of major cities, (b) long-term occupation of all territory, (c) legal annexation asserted by Russia, (d) international recognition, and (e) durable effective administrative control. Even a collapse of Kyiv's conventional defense would not prove low-cost control over all Ukrainian territory or eliminate resistance, refugee, governance, sabotage, and border-security costs.

What NATO and the EU would be obliged to do—and what they would choose. Ukraine is not a NATO member. Russian conquest of Ukraine alone would not automatically invoke NATO Article 5, regardless of how serious NATO members judged the threat. Member governments could intensify sanctions, provide support to remaining Ukrainian resistance, reinforce eastern deployments, build air defense, expand the defense industrial base, or negotiate containment. Their concrete choices would be political and strategically conditioned; treaty obligations concerning direct armed attacks on allies are categorically different.

Estonia, Latvia, and Lithuania are NATO and EU members. An armed attack against them would engage NATO Article 5's collective-defense obligations and the EU's Article 42(7) mutual-assistance clause (NATO, 1949; European Union, 2008). Under Article 5, each ally takes such action as it deems necessary, potentially including armed force; the clause does not prescribe a mechanically identical military response by every member. Nevertheless, the alliance's commitment, forward deployments, and credibility costs create a materially higher deterrence threshold than Russia faced against nonmember Ukraine. It is analytically inappropriate to declare either that NATO “would do nothing” or that a specific war plan is automatic.

Conditional risk of a subsequent Baltic confrontation. A subsequent Russian attack on NATO’s Baltic members would not be inevitable. Although a hypothetical Russian conquest and occupation of Ukraine could change the strategic geography and heighten regional security concerns, proximity and opportunity alone would not establish Russian intent, usable forces or willingness to confront NATO. Intervening constraints include occupation and garrison requirements, depleted stocks, force reconstitution, NATO forward defense, air and missile defense, European industrial mobilization, anticipated allied retaliation, nuclear-escalation risks, Russian domestic costs and alternative coercive strategies.

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

The near-term alternatives may include cyber and electronic interference, political destabilization, border probes, airspace incidents, coercive threats, and limited tests of alliance response rather than an immediate full-scale invasion. An Institute for the Study of War assessment on October 16 noted Russian repositioning and some reconstitution near NATO, but assessed the conventional land threat to Finland or the Baltic states as very low while the Ukraine war continues, underscoring the distinction between observed preparations and realized near-term invasion probability (Institute for the Study of War, 2026). The counterfactual that Ukraine ceases active resistance changes that assessment's premises but not automatically its conclusion.

What full conquest would change even without a Baltic attack. The Russia–NATO contact geography, potential force basing, refugee and humanitarian burdens, European logistics, western Ukraine security, Black Sea access, and political deterrence calculus could shift dramatically. Equally, Russia could be forced to allocate vast resources to occupation and suppressing resistance. This can increase Russia’s immediate coercive options while reducing net deployable capacity available for Iran-related military cooperation. A larger occupied frontier can also cause NATO to accelerate regional rearmament, thereby preserving or raising interceptor and artillery demand even after the Ukraine front appears to have ended.

Testable CTCC predictions under extreme conquest. A true post-conquest release of Russia's capacity would require falling net Ukrainian occupation/insurgency commitments and rising free stocks or operational units deployable elsewhere. Evidence of persistent large occupation garrisons, forced pacification, equipment repair, rail-security needs, and NATO-border reinforcement would falsify a simple “freed capacity equals former Ukrainian war consumption” model. A Baltic threat assessment requires simultaneous changes in Russian formations, logistical sustainment, readiness, decision signals, NATO posture, and diplomatic conditions. Military hardware near a border alone is not a sufficient result variable.

9.10.2. Territorial Freeze and the Misreported 75-Percent Formula

What Zelenskyy actually accepted in the interview. During an interview aired on October 21, 2026, Fox News interviewer Brian Kilmeade asked whether Zelenskyy could accept freezing the conflict along current lines, leaving Ukraine in control of “75% or more” of its country. Zelenskyy answered that freezing the current line could be a practical starting point to stop the killing, while emphasizing the need for ceasefire and further arrangements (Norman-Diamond, 2026). The percentage was embedded in the interviewer's question. It is not an independently announced Ukrainian threshold accepting permanent sovereignty loss over any specified percentage.

This is not a minor semantic difference. A de facto line of military control, an armistice line, a demilitarized zone, the parties' claims of title, international recognition, and a final peace treaty are different objects. A proposal to cease firing along a current line can coexist with a continuing legal claim to the territory beyond it.

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

Negotiation state variables. A meaningful settlement matrix must track (i) cessation scope, (ii) territorial control, (iii) legal sovereignty, (iv) security guarantees, (v) force restrictions or demilitarization, (vi) verification mechanism, (vii) sanctions relief and reinstatement triggers, (viii) reconstruction and reparations, and (ix) breach consequences. “Keep 75%” by itself says almost nothing about these important contractual features. It also does not settle NATO accession, security assistance, control over ports, or protection against later renewed offensives.

Strategic interaction and CTCC. A freeze may reduce immediate ammunition burn on the Ukrainian front but convert wartime support into enduring border defense and security-guarantee demands. It can create time for both Russia and Ukraine to replenish, train, fortify, and reconfigure systems. A ceasefire that cannot credibly deter another attack may produce rapid stockpiling rather than a genuine peace dividend. These consequences are relevant to PAC-3/PURL competition, Russia's potential exports to other partners, Iranian drone supply and technology exchange, and European industrial contracts.

Observable evidence should include actual attack counts after commencement, withdrawal or reinforcement of units, new signed guarantees, changed delivery schedules, budget obligations, and verified monitoring reports. A negotiated headline without these observations is not a measured reduction in military-system load.

9.10.3. Ukraine De-escalation before Iran War Termination

Define “ends” before estimating an effect. An end can mean a one-city humanitarian window, regional ceasefire, nationwide armistice, formal treaty, cessation of organized high-intensity combat without a treaty, frozen dispute with active militarization, or total occupation. The resource effect differs sharply across these states. CTCC should never model all of them as a single switch from 1 (war) to 0 (peace).

Potential reallocations to or from the Iran theater. United States. Some air-defense, intelligence, transport, and political attention tied to Ukraine might become available for Middle Eastern operations. But production orders, congressional appropriations, NATO deterrence missions, European stock replenishment, and strategic reserves may remain bound for years. A U.S. maritime blockade around Iran and aerial contingency operations have their own persistent inputs. Short-term ammunition reallocation and long-term order books must not be confused.

Russia. Reduced ammunition expenditure in Ukraine might facilitate reserve rebuilding, improved diesel exports, support to Iran, or new NATO-facing deployments. Yet sustaining occupation, training and repairing damaged forces, domestic fuel demand, sanctions exposure, and eastern-front deterrence may absorb much of the apparent capacity. A frozen front might enable quicker repair than a conquest requiring enormous garrison forces. The direction of net Russian help to Iran is therefore underdetermined.

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

Iran. A reduction in Ukrainian combat could lower pressure on Russian drone and electronic warfare outputs, possibly allowing some components, designs, expertise or finished systems to shift toward Iran. Alternatively Russia may replenish itself, and Iranian production might face its own airstrikes, shortages, energy bottlenecks or priorities. The net direction requires observed origin–destination transfers and recipient conversion, not an assumption of reciprocal "war dividends."

Ukraine. A cessation of heavy attacks might enable engineers and counter-drone specialists to cooperate more broadly with Gulf states, but security-guarantee implementation and domestic reconstruction may create strong competing demand for the same personnel and production facilities. Ukraine's willingness and ability to export defense expertise would depend on credible guarantees and commercial terms.

Europe and NATO. A ceasefire may loosen emergency shipment demand while driving larger standing readiness, integrated air defense, ammunition stockpiles, Baltic security, and reconstruction obligations. The same industrial capacity might remain fully committed even with fewer daily Ukrainian intercepts.

The asymmetric termination paradox. A war can end tactically and intensify the strategic competition around it. Russian annexation may increase deterrence pressure; an armistice may increase rearmament; a humanitarian ceasefire may barely affect munitions demand; and withdrawal of a supplier from one theater may only shift a procurement backlog rather than liberate stock. Consequently the cross-war supply pressure in a prolonged Iran conflict could decrease, stay constant, or increase after a Ukrainian ceasefire depending on resource class and lag.

An especially important negative control compares materials with a genuinely shared effective bottleneck (e.g., a scarce interceptor variant) against materials whose production or allocation is unrelated. A universal reallocation prediction would be weaker than a product- and owner-specific CTCC analysis.

Hypotheses that can be falsified. H-T1 (rapid consumption relief): following an independently verified nationwide major-hostility cessation, comparable Ukrainian daily firing and interception demand is expected to fall within a specified short post-cessation interval, conditional on continued threat exposure and coverage of relevant strike systems. Falsification would require sufficiently complete and threat-matched expenditure records showing no reduction (or a sustained increase) across the defined observation window relative to an independently evolving no-cessation comparator. If expenditure or exposure is not observable, code NOT_IDENTIFIED rather than rejection; the hypothesis makes no claim that signed agreements or unimplemented announcements alone reduce consumption.

H-T2 (obligation-sensitive reallocation): Following a verified Ukraine-front consumption decline, the test is not the accounting identity that gross relief minus obligations equals net availability. For a specified Russian owner, scarce and substitutable resource class, and fixed horizon, the conditional prediction is that transition scenarios with independently documented,

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

newly binding occupation, reconstitution, repair or deterrence demands will show a smaller realized increment in transferable supply or outward allocation than comparable lower-obligation scenarios. The research must establish before observing the outcome which obligations are incremental and genuinely compete for the same units, the opening inventory and production baseline, the comparator conditions, and a substantively meaningful difference threshold. Test with dated tasking, serviceable inventories, capacity commitments, actual shipments and recipient acceptance, while separately recording subsequent production growth, acquisitions and other supply adjustments. The hypothesis is challenged when sufficiently observed high-obligation cases show no discernible relative diversion or delayed release, or recover faster than the matched low-obligation baseline beyond the declared uncertainty range; it cannot be confirmed merely by subtracting a budgetary or physical liability. Without comparable obligation and transfer observations the result is NOT_IDENTIFIED. This predicts an empirical constraint on marginal reallocation, not an unconditional ceiling on Russia's total capacity.

H-T3 (ex ante constrained-variant persistence): At the independently verified nationwide major-hostility cessation date t_0, classify each named long-lead interceptor variant using information available before subsequent recovery is observed: opening serviceable inventory, accepted delivery schedules, production slots and lead times, minimum reserve requirements, outstanding orders and independently assessed Iran-related demand. A variant qualifies as ex ante binding only if these records indicate that forecast obligations cannot all be met from uncommitted compatible stocks and attainable production within a predeclared horizon. Where the inputs are unavailable, the binding classification is NOT_IDENTIFIED; it must not be reconstructed from the subsequent outcome. For variants classified as binding at t_0, H-T3 predicts that Ukrainian consumption relief alone will not restore accepted deliveries and serviceable inventories as quickly as a prespecified dynamic comparator without persistent Iran demand. Before evaluating any post-cessation record, declare the comparison variants, observation windows (for example, 4, 12 and 26 weeks), recovery measures, expected ranges and rejection thresholds. Timely normalization or recovery materially faster than the registered prediction must count against H-T3 even if Iran demand persists; later production surges, substitutions and demand changes belong in the explanation, not in a retrospective redefinition of initial binding status. No such prospective cessation test has been completed by the October 26, 2026 cutoff.

H-T4 (portable expertise and service capacity): verified easing of Ukrainian combat requirements may expand the effective expert services available to Gulf recipients through newly deployed teams, additional instructor-hours, remote advisory support, software maintenance or transferable procedures, conditional on Ukrainian continuing needs and host-side absorption. The outcome is recipient-accessible and demonstrably delivered service capacity, not the gross count of people traveling abroad or the number of announced agreements. A sufficiently complete record showing no increase in effective services despite verified available personnel/technical capacity and comparable recipient demand would challenge the claim; unknown hours, remote work or adoption instead remain NOT_IDENTIFIED.

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

H-T5a (anticipatory policy response): Credibly communicated changes in sanctions, diesel-market access or Ukraine-related support may alter an affected actor's negotiating decisions or targeting orders before shipment, payment or fiscal revenue. Support requires a dated credible message, an observed decision or behavior beyond the announcement, and a comparison against pre-existing pressure and independent motives. Contradiction requires adequate coverage of the relevant decisions and exposure window showing the predicted choice was not made, or a better-supported rival cause; an unpublished decision, unavailable communication record, or simply "no identifiable decision change" is NOT_IDENTIFIED, not disproof. H-T5b (realized fiscal–military feedback) is a separate claim requiring independently established additional global diesel exports or equivalent net resources relative to a no-policy path, traceable nonduplicated fiscal gains, and a recipient war-function consequence. Diversion between buyers without net additionality is not proof of this stronger pathway. Neither outcome is identified as a net cross-theater gain by the present records.

H-T1 and H-T2 are conditional intermediate tests only for claims that Ukraine-war de-escalation releases a particular consumable or Russian transferable resource; neither is a universal prerequisite for CTCC. H-T1 measures a specified Ukrainian consumption response, whereas H-T2 examines the marginal constraint imposed by Russia's competing obligations on its own outward reallocation. Neither establishes transfer or benefit in Iran or another receiving theater. A claimed material-release pathway must additionally identify owner-specific source-side availability, a dated cross-theater allocation or physical transmission, verified recipient receipt (G3), any applicable integration (G4), and an appropriately attributed functional consequence (G5-F). In contrast, a credibly communicated policy condition may lead to an independently observed recipient or affected-actor decision consequence (G5-D) before inventory is freed or shipped; that anticipatory pathway requires an identified signal, exposure, decision and dynamic rival-cause comparison, not H-T1 or H-T2. Missing records at any claimed link remain NOT_IDENTIFIED.

9.10.4. The Oleshky Micro-Ceasefire and Longer Iran Pressure

Agreement scope, implementation dates and competing claims (as of October 26). On October 23 the White House Office of the First Lady announced a humanitarian ceasefire limited to Russian-occupied Oleshky, initially scheduled to begin on October 29 (The White House, 2026b). Later on October 23 Russian and Ukrainian military authorities announced October 27 as the revised start, as reported in a contemporaneous Reuters account; Ukrainian ombudsman-level discussions on October 24 specified an aligned 03:00 Kyiv / 04:00 Moscow commencement on October 27 (Associated Press, 2026; Holland & Dysa, 2026; Reuters, 2026i; Vialko, 2026). The change concerns scheduled implementation, not proof of cessation across Kherson, still less a nationwide armistice or signed peace settlement. As of this report's October 26 cutoff the operative interval remained in the future.

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

The intended humanitarian sequence involves mine clearance, aid delivery, civilian needs assessment and voluntary evacuation via agreed routes. On October 26 Russia's Defense Ministry alleged that Ukrainian artillery and drones had struck Oleshky repeatedly during the preceding week, citing 18 artillery incidents and more than 120 drone attacks. Reuters said it could not independently verify this account and reported no immediate Ukrainian response (Reuters, 2026j). The allegations concern a pre-implementation interval; they cannot constitute a verified violation of a suspension that had not yet begun. Ukraine also raised concerns about the direction and voluntariness of evacuation, which require independently monitored destination, consent and safe-route records (Ukrinform, 2026b).

U.S. official comment about another year of conflict with Iran. On October 23 U.S. Ambassador to the United Nations Mike Waltz told the Financial Times that confrontation with Iran might still be unresolved one year later if nuclear and maritime-security objectives remained unmet (Financial Times, 2026b). This is a conditional diplomatic and operational planning possibility, not a signed twelve-month campaign order. An October 26 Washington Post report described a regional diplomatic initiative involving Saudi Arabia, Pakistan and Turkey, further demonstrating that negotiation and continued military preparedness can coexist without establishing either successful de-escalation or inevitable escalation (The Washington Post, 2026b).

For CTCC the important variable is the continuing requirement for U.S. naval presence, industrial replenishment, maritime protection, fuel, sanctions enforcement, and crisis management. Even without daily major bombardment, these can tie up finite resources across many months.

Why the juxtaposition matters. The parallel developments demonstrate distinct conflict clocks and mechanisms: a prospective, geographically bounded humanitarian pause in one theater alongside prolonged but potentially negotiable maritime, industrial and security pressure in another. Neither a scheduled local suspension nor an official statement about possible duration establishes a shift in third-theater inventories, recipient conversion or net strategically releasable capacity.

The Oleshky arrangement may be a test of communication and humanitarian implementation capacity, but its success cannot be extrapolated to a full territorial settlement without wider reciprocal controls. Likewise an Iran blockade's feasibility cannot be inferred from a single politician's assertion without inventories, ship rotations, refueling, costs, allied support and compliance.

Observable implementation conditions. For Oleshky, track the actual start time, observed attacks within the boundary, duration, mine-clearing actions, aid deliveries, evacuee counts, independent verification, and whether localized restraint spills into adjacent areas or collapses. For Iran, track a time series of port interdiction, global Hormuz transit, refiner damage and repair, tanker insurance and route capacity, naval rotations, sanctions licenses, diesel scarcity and procurement backlog. In both settings, distinguish controlled permissions from executed physical effects.

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

9.10.5. Conditional Scenario Matrix and Discriminating Indicators

The 3-by-3 matrix is a selective conditional planning stress test, not an exhaustive partition of future conflict states, a probability estimate, or a finding that any scenario has occurred. The report's fixed information cutoff is October 26, 2026; each future three- or twelve-month assessment is anchored to a separately identified dated scenario-entry event t_0, not automatically to publication. The short horizon examines combat drawdown, transport and near-term stock use; the longer horizon captures production, repair, replenishment and institutional obligations. I2 remains a prospective twelve-month persistence pathway until that interval has elapsed; an I3 material re-escalation can interrupt either I1 or I2 and must be dated against a declared recent baseline.

The three displayed Ukraine rows are mutually exclusive assignment rules for the selected stress-test branches, not a claim that territorial control and combat intensity are the same variable. Assign U3 first if its hypothetical trigger—effective Russian control and occupation of substantially all Ukrainian territory—is met, regardless of continuing armed resistance or long-range attacks; record resistance intensity and occupation burden separately. Otherwise, U2 requires an independently documented nationwide armistice or equivalent sustained cessation of organized major hostilities on the principal front and relevant long-range strike systems, with dated implementation and compliance. Otherwise U1 is used only where high-intensity combat demonstrably continues. A documented and potentially durable low-intensity conflict without U2 or U3 is classified separately as U4 (persistent low-intensity contestation) outside this compact matrix, rather than silently forced into U1 or assumed to be a brief transition. An unverified frozen contact line or isolated humanitarian pause remains UNCLASSIFIED until its intensity and scope can be established. The U3 category does not presume an end to resistance. Iran I1 denotes sustained easing over a specified short horizon; I2 denotes prospective or observed confrontation persisting for approximately twelve months; I3 denotes material re-escalation relative to a dated baseline. The report cutoff and each scenario-entry t_0 are recorded separately.

The matrix deliberately separates territorial control, the intensity of remaining hostilities, and net resource obligations. A nationwide cessation may reduce direct demand while raising security-guarantee and reconstruction needs. Hypothetical Russian occupation may coexist with serious resistance and substantial occupation/NATO-border commitments; no fall in combat intensity or liberation of deployable stocks is assumed merely from the U3 label. Every cross-theater result remains conditional on the relevant owner, resource, recipient function, baseline and time horizon. Table 3 summarizes these three Ukraine pathways across the three Iran conflict trajectories.

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

Table 3. Conditional Three-by-Three Scenario Matrix: Ukraine Termination Pathways and Iran Conflict Trajectories

Ukraine Pathway	Iran De-escalates Within ~3 Months (I1)	Iran Remains Constrained / Protracted ~12 Months (I2)	Iran Re-escalates Materially (I3)
U1: High-intensity fighting continues; no U3 occupation trigger	Both remain binding for interceptors now; later Gulf demand may ease, but European stock refill persists.	Maximum duration overlap; shared bottlenecks and energy shocks most testable, though still require matched deliveries.	Risks simultaneous military-industrial and maritime stress; reserve substitution becomes more important.
U2: Verified nationwide armistice or sustained front-wide major-hostility cessation	Some direct consumption falls, while both regions replenish; net freeing may be delayed.	Key termination-asymmetry case: residual NATO and Russia rearmament demand competes with enduring Iran requirements.	Short-term possibility of shifting specialized stocks, constrained by verification, reconstruction, deterrence and conversion time.
U3: Hypothetical Russian control/occupation of substantially all Ukraine; resistance intensity recorded separately	Russian occupation and potentially continued armed resistance, alongside NATO eastern reinforcement, may offset any reduction in conventional frontline expenditure.	Occupation, possible continued resistance, Russian force reconstitution and NATO deterrence could preserve common constraints; Iran supply direction remains unverified.	Heightened multi-theater geopolitical escalation risk; neither Russia→Iran availability nor NATO response can be assumed.

Source: Author's scenario-based analysis developed from the CTCC framework, the empirical evidence examined in Sections 5–8, and the conditional war-termination hypotheses presented in Section 9.10.

Note: The matrix presents conditional analytical scenarios, not forecasts or mutually exclusive predictions of future outcomes. U1–U3 represent three selected Ukraine pathways, while I1–I3 describe alternative Iran conflict trajectories. Prolonged low-intensity confrontation (U4) remains a distinct state outside the three-by-three matrix. Each scenario is contingent on observable military, institutional, and resource constraints. Changes in fighting intensity or territorial control do not automatically establish net releasable strategic capacity or realized cross-war effects.

The omitted U4 state is a substantive modeling limitation rather than an assumed short-lived transition. If low-intensity confrontation persists, its consumption, covert action, garrison requirements, rebuilding, external support and insurance or sanctions effects should be recorded on their own time series and evaluated against each of the Iran pathways before quantitative scenario modeling. The displayed nine cells remain illustrative comparisons of three strategically distinct Ukraine branches; they are not normalized to cover all observed or possible wars, and no probability mass or missing observations should be assigned to U1 by default.

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

Indicators for each scenario switch

- **Ukraine war status:** geographic and functional scope, verified cessation date, attack counts, unit redeployments, territory administered, security guarantees, sanctions triggers and negotiated compliance.
- **Russian free capacity:** refinery output and damage, exportable diesel beyond domestic demand, repair stock, trained formations, occupation deployment requirements, border deployments and verified partner shipments.
- **Allied allocation:** interceptor contracts versus accepted deliveries, stock replacement, Navy/air-defense readiness, Gulf deployment, European border commitments, and fiscal appropriations.
- **Iran war persistence:** blockade enforcement, intensity and target sets, Hormuz passage, tanker losses, diesel price and refinery throughput, negotiations, sanctions changes and ability to maintain naval rotations.
- **Cross-war material links:** original contract/lot/IMO/receiving country and date; not policy announcements as shipment proxies.

Three research comparisons that discriminate causality

- **Before/after with lag:** compare matched production, consumption, reserve stocks and deliveries at 1, 4, 12, and 26 weeks around any actual nationwide Ukraine ceasefire, rather than around a press conference.
- **Owner/commodity comparison:** contrast scarce shared interceptor variants, Russian diesel grades, knowledge specialists, and unrelated products. A genuine shared-constraint mechanism predicts heterogeneous effects by substitutability and control authority.
- **Recipient-country cargo check:** compare Japan customs diesel by exact country and date, Russian marine diesel cargoes by IMO, and U.S. import records with recipient-side registries. Correlation of oil headlines in two theaters is not proof that a barrel moved from one conflict to the other.

Measurement rule for post-termination capacity. For a specified owner, identical resource or capability class, consistent physical unit and horizon H, measure opening eligible stocks and verified receipts against already committed uses, minimum reserves and outstanding nonduplicated obligations. Estimate net source-side availability under the observed transition and a credible evolving no-transition baseline; their difference may be negative, zero or positive. Contract ceilings, cash awards and future factory targets are not commensurable with physically available inventory, and no replenishment or security obligation should be deducted twice. The capacity identity is descriptive accounting. For H-T2, the additional theoretical test is whether independently established, binding transition obligations actually divert scarce, substitutable marginal capacity away from observable alternative-theater availability or allocations relative to prespecified lower-obligation comparators. A large nominal obligation does not establish a binding diversion without the matched capacity and implementation record.

9. Cross-Case Discussion: Conditional Transmission, Strategic Choice, and War-System Effects

Branch-specific identification is essential. For a material reallocation claim, first establish the dated source-war transition and any incremental, owner-specific capacity actually available under a dynamic counterfactual; then trace allocation authority, physical transfer or service provision, recipient receipt, conversion where relevant, and an attributed G5-F effect. H-T1 and H-T2 can inform the source-side stage of this particular mechanism but cannot substitute for transmission or recipient observation. For an anticipatory decision claim, separately trace a credible war-conditioned policy signal, exposure and interpretation by the affected actor, the actor's documented choice (G5-D), and rival decision drivers; material discharge or positive source-side net stock need not precede that decision. Should a shipment occur later, its G3–G5-F chain is tested independently. A no-license comparison within the Iran-war environment estimates the instrument-specific effect, while a no-Iran-war comparison targets the source-war effect; identifying a mediated cross-war path requires evidence for both links, not substitution of one estimand for the other.

A source-side net surplus is not recipient-side military utility. Transferable-and-usable capacity within H is constrained by legal authorization, logistical throughput, compatible recipient equipment or doctrine, integration delays and absorption limits. Receipt, operational conversion, functional consequence and causal additionality remain separate. In the diesel case, worldwide incremental exports must be separated from redirection among buyers and from any incremental Russian public revenue; in the interceptor case, variant- and threat-compatible recipient inventory is the relevant quantity, not money announced or missiles planned.

10. Policy Consequences and Decisive Empirical Tests

Resource allocation. Maintain owner–variant–time ledgers separating legal permission, procurement ceiling, cash obligation, manufacturer output, physical shipment, recipient acceptance and serviceable operational inventory. Assess the opportunity cost of a ceasefire or conquest against replenishment, deterrence, occupation, reconstruction, contracts and minimum reserve stocks; do not model war status as a binary release switch.

War termination and diplomacy. Specify geographic boundary, protected function, jointly accepted start time, mine clearance, monitoring access, attack/violation records, evacuation consent and breach response. A localized humanitarian interval can have meaningful civilian value without materially changing the wider war or freeing measurable interceptor capacity. Conversely, persistent blockade and negotiated restraint may coexist with uneven intensity across the Iran theater.

Decisive falsification tests. (1) Compare original and revised PAC-3 MSE allocation, batch acceptance and recipient function for Ukrainian lots with binding-versus-nonbinding variants. (2) Authenticate dated manufacturer and custody chains for putative 2026 Geran flows; avoid imputing historical conversion to new reciprocity. (3) For Ukrainian expertise, identify host acceptance and operational treatment dates, comparable drone threats, simultaneous local defensive changes and net interception outcomes. (4) For diesel, trace each tanker through cargo origin, legal execution, customs discharge, gross exporter receipts, net global sales and incremental fiscal effect; test the license-specific effect against a dynamic no-license path and the wider Iran-war effect against an independently evolving no-source-war path, without equating the estimands. (5) For petroleum buffers, reconcile state and industry stocks with emergency awards, refinery receipt, exact product imports/exports, adjustment terms and ultimate recipients; the July Japanese diesel ledger currently has a conditional 110,109-kiloliter unreconciled residual, not a verified import. (6) For any independently verified nationwide cessation, compare matched production, consumption, stock and deliveries at predeclared one-, four-, twelve- and twenty-six-week windows; record dynamic counterfactual adjustments. (7) Evaluate H-T2 as a comparative, matched-obligation test of actual marginal diversion, not an identity; classify each H-T3 interceptor variant as binding or unclassified using pre-outcome t_0 records, and predeclare recovery metrics, comparisons and rejection bounds before examining subsequent deliveries. (8) Use H-T1/H-T2 only where the claimed mechanism requires Ukraine-war material release; assess anticipatory G5-D pathways through separately observed policy signals and decision responses. Require transmission and recipient-effect evidence for any asserted realized cross-war reallocation.

Reassessment triggers. Confirmed implementation and independent monitoring after the planned October 27 Oleshky start, a dated U.S. customs entry for Russian diesel, model-authenticated Iranian receipt of a 2026 Geran consignment, a recipient-verified Sky Map activation and performance series, or a sustained nationwide Ukraine armistice would warrant separate dated updates. As of October 26 these downstream events had not been established by the reviewed record; their future occurrence cannot be inferred from plans or routing signals. Table 4 summarizes evidence limits for the empirical and scenario claims as of October 26, 2026.

10. Policy Consequences and Decisive Empirical Tests

Table 4. Updated Claim-Specific Evidence Limits as of October 26, 2026

Empirical claim	Current highest admissible evidence level	What remains unidentified
PAC-3/PURL common allocation exposure	Confirmed shared institutional/procurement interface; reported Ukrainian constraints	Variant-specific displacement caused by Iran operations, delivered quantity, combat outcome
Shahed–Geran transfer	Historical Iranian-origin industrial conversion (historical G4); 2026 reverse delivery alleged but not authenticated.	Distinct new 2026 activation, model-specific manufacturer-to-recipient custody and attributable Iranian use or feedback.
Ukrainian counter-drone support in Gulf	Reported G3 personnel/software arrival and Sky Map training for U.S. forces, plus cooperation agreements; G4 recipient system integration NOT_IDENTIFIED.	Recipient acceptance/activation record, threat-normalized operational effectiveness, durable outcome and reciprocal return.
International oil stocks	IEA released ~330m barrels, future ~100m program remaining as of October 15	Country-specific net freely usable diesel, precise overlap across releases
U.S. SPR	EIA weekly net stock decline and DOE nominal awards	Award-to-gross-physical-draw-to-verified-return by site/contract
Japan reserve and refining	Government end stocks, receipt-recognition rule, refinery runs and diesel exports	Proven source-to-batch-to-exported diesel destination chain
Russia–U.S. diesel	OFAC license and October 16 Graham Act duties waiver; Reuters-reported production rebound after Russian export quotas; October 26 vessel/destination signals	Independent U.S. import-law resolution, discharge and customs entries, quota-attributable output increment, global net exports, fiscal and war-function feedback
Oleshky localized humanitarian pause	White House initial October 29 plan; revised October 27 agreed start; October 26 pre-start allegations unverified	Actual enforcement after the revised start, aid/evacuation counts, independent compliance and geographic spillover
Zelenskyy's front-line freeze position	Direct interview support for a ceasefire starting at present line	Binding territorial formula, formal legal renunciation, credible guarantees
NATO Baltic post-conquest response	Article 5 and EU 42(7) treaty commitments	Probability and form of response in any future concrete contingency
Iran another-year risk	Named U.S. ambassador's acknowledged contingency	Committed 12-month combat schedule or probabilistic forecast

Note: This supplementary audit scorecard reports the highest observable stage for each claim, not a complete G1–G6 causal identification. October 27 Oleshky implementation and final U.S. diesel discharge are prospective as of the cutoff. Source: CTCC source-specific assessment, including official, news and shipment sources in Sections 5–10.

11. Conclusion

The Russia–Ukraine and U.S.–Israel–Iran wars remain separate conflicts but share consequential suppliers, energy infrastructures, technical knowledge and regulatory boundaries. Their intersection creates possible transmission channels; it does not by itself prove that one war has changed another's functioning. CTCC therefore treats each cross-war claim as a particular source event, controlled interface, recipient, conversion function and observed interval, evaluated against plausible alternatives.

The cases occupy materially different proof stages. Historical Shahed–Geran industrial adaptation demonstrates technical conversion but not a verified 2026 reciprocal delivery. Ukrainian expertise and reported Sky Map placement/training support personnel and platform receipt (reported G3), not independently confirmed operational integration (G4) or quantified marginal Gulf-defense gains. PAC-3/PURL records show substantial shared inventory/industrial pressure and some attributed delivery disruption, but no defensible lot-matched count of MSE interceptors displaced from Ukraine by Iran-war demand. Russian diesel authorizations and observed export-end movements remain separate from U.S. import, net export expansion, enterprise-to-budget gains and resulting military capacity.

The same distinctions apply to energy buffers. International collective releases, U.S. Strategic Petroleum Reserve inventories, Japanese government stocks, refinery uptake and diesel exports belong to overlapping but nonidentical ledgers. A nominal release program does not create additional barrels when its national components are added again. A decrease in public stock is not a unique shipment-to-recipient chain, and a change in diesel destination is not measured new world production. Japan's July diesel production, domestic sales, exports and commercial-stock change also leave a provisional 110,109-kiloliter arithmetic residual under a common-coverage assumption; absent verified imports, other uses, adjustments and coverage, it must not be interpreted as a completed physical balance.

Asymmetric termination magnifies these accounting and attribution problems. Nationwide armistice, full occupation, local humanitarian restraint and continued long-range confrontation impose fundamentally different resource obligations. Reduced Ukrainian ammunition demand might release usable spare capacity, leave standing deterrence and replenishment needs unchanged, or generate costly new occupation and guarantee commitments. Even a hypothetical complete Russian conquest would not mechanically imply a subsequent Baltic invasion; strategic opportunity, political intent, Russian occupation requirements and NATO responses remain separate variables.

The October 26 evidence cutoff sharpens this distinction: Oleshky's originally announced October 29 start was revised to October 27, while allegations of attacks during the preimplementation period were not independently verified. Reuters also reported a Russian diesel-production recovery after mid-October export quota decisions, but the figures were attributed to industry sources and did not independently identify policy-caused additional output. Multiple vessel destinations likewise did not establish completed U.S. customs receipt or increased worldwide net exports. The October 16 Graham Act implementation order waived designated statutory duties but did not automatically dispose of other legal conditions affecting

11. Conclusion

Russian-origin diesel imports. These developments identify distinct production, regulatory, anticipatory and transport-stage observations without establishing a policy-induced battlefield decision, a completed material feedback chain or incremental military gain.

The evidence cutoff of October 26 does not provide a direct before-and-after causal estimate of strategic capacity reallocation following a nationwide Ukraine war termination. CTCC's five propositions are conditional and falsifiable, not established universal laws. Consumption relief and competing-obligation diversion are source-side intermediate tests only when a proposed material-release pathway requires them; the identity defining net availability cannot independently validate H-T2. Testing H-T3 requires an ex ante variant-specific binding classification and recovery benchmark fixed before subsequent delivery outcomes, rather than relabeling the initial constraint after the fact. An attributable cross-war consequence further requires a dated transmission channel, recipient response or conversion and an appropriate evolving comparison. A decision-level anticipatory G5-D pathway may precede physical release, provided the war-conditioned signal and ensuing decision are independently identified. Policy-instrument effects and total source-war effects have different counterfactuals and cannot be substituted for one another.

The central conclusion is that changes in war status can reconfigure internationally shared strategic constraints without automatically turning reduced fighting in one place into usable power elsewhere. Net source-side capacity must be estimated for a specified owner, resource class and availability window against an independently evolving comparator, after nonduplicated obligations; whether those obligations bind and alter actual reallocation is a separate empirical proposition, not an accounting truism. For material pathways, a cross-theater claim then requires separately identified transmission, receipt, any necessary operational adoption and an attributed mission effect. For anticipatory pathways, a documented, causally assessed G5-D decision may precede material arrival but cannot be inferred from an announcement alone. Shared-interceptor persistence claims must be judged against constraint states and recovery thresholds set before the post-cessation outcomes. Any G6 feedback claim further needs a dated and distinguishable return actor and mechanism, not coincident outcomes. Evidence through October 26 supports unequal stages of these mechanisms, not a verified general cross-war dividend.

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The **Cross-Theater Conflict Coupling (CTCC)** framework is an original analytical approach developed in this research. Its theoretical propositions, evidence classifications, and conditional scenarios should not be interpreted as independently validated predictions or definitive causal determinations. Reported developments are distinguished from verified observations, and unresolved causal relationships remain subject to further investigation.

All prospective conflict trajectories, war-termination scenarios, and strategic capacity assessments are conditional analytical exercises rather than forecasts or endorsements of particular military or political outcomes.

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