WHITE PAPER · SUSTAINABILITY STRATEGY

# Geopolitical Volatility and the Decarbonization Roadmap

A Marginal Abatement Cost Analysis of Sustainability Initiatives for the CPG Sector Following the 2026 Iran Conflict

SECTOR FOCUS
Consumer Packaged Goods

FRAMEWORK
Marginal Abatement Cost Curve

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EXECUTIVE SUMMARY

The military escalation in the Persian Gulf beginning February 28, 2026 has fundamentally reordered the strategic landscape for global CPG companies. The effective closure of the Strait of Hormuz, responsible for 20% of global oil and LNG flows, has transformed sustainability from a long-term regulatory priority into an immediate macroeconomic risk imperative.

This report applies a Marginal Abatement Cost Curve (MACC) framework across five primary sustainability initiatives, modelling the shift from a 2025 business-as-usual baseline to a 2026 conflict-impacted reality. The key finding: while certain initiatives (notably zero-deforestation sourcing) have become prohibitively expensive, others, including renewable PPAs and fertilizer optimization, have crossed into net-negative cost territory, making the economic case for decarbonization stronger than ever.


SECTION 01

## Commodity Market Transmission Mechanisms

The primary channel of transmission for the conflict's sustainability impact is the global commodity market. The Strait of Hormuz facilitates the transit of 20% of the world's oil, 20% of its LNG, and roughly one-third of global seaborne fertilizer trade. CPG companies are uniquely vulnerable due to their dual reliance on energy-intensive manufacturing and carbon-heavy agricultural supply chains.

As crude oil prices surged toward $140 per barrel and European natural gas futures spiked by 77%, the marginal abatement cost of core Scope 3 initiatives experienced a violent decoupling from 2025 projections.

### CRITICAL COMMODITY RANKINGS FOR CPG OPERATIONS

| RANK | COMMODITY | TYPE | SEVERITY | CPG RELEVANCE |
|---|---|---|---|---|
| 1 | **Crude Oil (Brent)** | Direct | Critical | Logistics surcharges, PET feedstocks, bunker fuel |
| 2 | **Natural Gas (TTF/JKM)** | Indirect | Critical | Feedstock for nitrogen fertilizer; industrial electricity floor |
| 3 | **Urea / Nitrogen Fertilizer** | Indirect | High | Largest driver of Scope 3 agricultural emissions |
| 4 | **Diesel Fuel** | Direct | High | US prices hit $4.83/gallon, a 28% jump since conflict onset |
| 5 | **Aluminum** | Direct | High | LME prices toward $3,400/ton; direct impact on canning costs |
| 6 | **Sulfur** | Indirect | Medium-High | 50% of global supply stranded inside the Strait |
| 7 | **Palm Oil** | Direct | Medium | Price spikes driven by shipping risks and biofuel substitution |
| 8 | **Wheat and Maize** | Indirect | Medium | Cost and freight spiked; fertilizer-linked planting decisions |
| 9 | **Sugar** | Indirect | Medium-Low | High oil prices divert Brazilian sugarcane to ethanol |
| 10 | **Helium** | Indirect | Low | Qatar supplies 25% of global helium; semiconductor risk |

The interaction between these commodities creates a stagflationary environment: rising energy costs increase both the cost of manufacturing and the cost of packaging simultaneously.

SECTION 02

## Initiative Selection and Materiality Analysis

Most CPG emissions footprints are concentrated in Category 1 (Purchased Goods and Services), Category 4 (Upstream Transportation), and Categories 11 and 12 (Downstream Use and Disposal). The five initiatives selected represent the intersection of hard-to-abate Scope 3 categories and the extreme volatility of the 2026 energy and logistics market.

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### MATERIALITY VS. COST-DELTA SELECTION GRID

| INITIATIVE | SCOPE 3 MATERIALITY | ABATEMENT COST DELTA | STATUS |
|---|---|---|---|
| **Nitrogen Fertilizer Optimization** | High | High (Negative Shift) | Selected |
| **Recycled PET (rPET) Integration** | High | High (Negative Shift) | Selected |
| **Heavy-Duty Fleet Electrification** | High | High (Negative Shift) | Selected |
| **Renewable Energy PPAs** | High | High (Hedge Value) | Selected |
| **Zero-Deforestation Sourcing** | High | High (Positive Shift) | Selected |
| Sustainable Cooling (HFC Phase-out) | Medium | Medium | Not selected |
| On-farm Methane Capture (Dairy) | High | Low | Not selected |
| Product Reformulation (Plant-based) | High | Low | Not selected |
| Food Waste Reduction (On-farm) | High | Low | Not selected |
| Chemical Recycling (Flexible Film) | Medium | High | Not selected |

SECTION 03

## Initiative Deep Dives: MACC Analysis

For each initiative, we model the shift in marginal abatement cost ($/tCO2e) from the 2025 BAU baseline to the post-conflict 2026 scenario. A negative MAC indicates that the sustainable alternative now costs less than the fossil-fuel-dependent baseline.

INITIATIVE 01

**Renewable Energy PPAs (Solar/Wind)**

Pre-conflict MAC: **+€10/tCO2e**
Post-conflict MAC: **-€55/tCO2e**

Grid electricity surged to €90+/MWh as gas prices rose 75%. Locked-in PPAs at €55/MWh now deliver €35/MWh in direct savings, making PPAs the single most attractive abatement lever of 2026.

INITIATIVE 02

**Nitrogen Fertilizer Optimization**

Pre-conflict MAC: **+$12/tCO2e**
Post-conflict MAC: **-$35/tCO2e**

Urea prices jumped from $363 to $700/metric ton. AI-driven precision application (15 to 20% nitrogen reduction) now pays for itself through avoided input costs alone.

INITIATIVE 03

**Recycled PET (rPET) Integration**

Pre-conflict MAC: **+$150/tCO2e**
Post-conflict MAC: **+$5/tCO2e**

Oil-driven vPET rose from ~$1,100 to ~$1,450/tonne while rPET held at ~$1,400. For the first time, recycled resin has reached near-parity with virgin material.

INITIATIVE 04

**Heavy-Duty Fleet Electrification**

Pre-conflict MAC: **+$80/tCO2e**
Post-conflict MAC: **+$30/tCO2e**

Diesel at $4.83/gallon has collapsed the 10-year TCO gap. BEV+HDV fleets now project a $1.4M vs $2.25M TCO advantage. In Germany and Poland, EVs are 5 to 15 cents per km cheaper than diesel, even without subsidies.

INITIATIVE 05

**Zero-Deforestation (Identity-Preserved Sourcing)**

Pre-conflict MAC: **+$20/tCO2e** Post-conflict MAC: **+$120/tCO2e**

The Hormuz closure forced shipping reroutes around the Cape of Good Hope, adding 10 to 14 days and $1M in fuel costs per vessel. War-risk insurance premiums doubled or more. Identity-preserved sourcing premiums soared from ~$10 to ~$100/tonne, making this the only initiative to move significantly in the wrong direction.

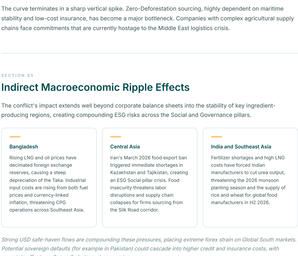
### KEY DATA POINTS BY INITIATIVE

| INITIATIVE | BAU BASELINE | POST-CONFLICT | COST DELTA | ABATEMENT |
|---|---|---|---|---|
| Renewable PPAs | €45/MWh (grid) | €90+/MWh | **-€35/MWh savings** | 12.0 MtCO2e |
| Fertilizer Optimization | $363/t urea | $700/t urea | **-$21/ha avoided** | 32.0 MtCO2e |
| rPET Integration | vPET $1,100/t | vPET $1,450/t | **Near parity (-$50 delta)** | 15.0 MtCO2e |
| EV HD Logistics | Diesel $3.60/gal | Diesel $4.83/gal | **BEV TCO $1.4M vs $2.25M** | 10.0 MtCO2e |
| Zero-Deforestation | $10/t premium | $100/t premium | **+$90/t cost increase** | 25.0 MtCO2e |

SECTION 04

## The Integrated MACC Curve (Post-Conflict 2026)

The data below represents the drawn MACC for a representative global CPG firm in the post-conflict 2026 environment. Initiatives are ordered from most to least cost-effective, with negative values indicating net financial benefit.




X-axis: Cumulative abatement potential (MtCO2e) | Y-axis: Marginal abatement cost ($/tCO2e) | Bars below zero line = net financial benefit

### MACC NARRATIVE: THE "V" SHAPE

The 2026 MACC exhibits a deep "V" shape not present in 2024 modelling. On the left, Renewable PPAs and Fertilizer Optimization have plunged further into negative-cost territory: their avoided costs have grown far faster than the cost of sustainable replacements. In the middle, rPET has moved from significant expense to near-parity as inflationary pressure on vPET has effectively taxed the business-as-usual approach.

The curve terminates in a sharp vertical spike. Zero-Deforestation sourcing, highly dependent on maritime stability and low-cost insurance, has become a major bottleneck. Companies with complex agricultural supply chains face commitments that are currently hostage to the Middle East logistics crisis.

SECTION 05

## Indirect Macroeconomic Ripple Effects

The conflict's impact extends well beyond corporate balance sheets into the stability of key ingredient-producing regions, creating compounding ESG risks across the Social and Governance pillars.

**Bangladesh**

Rising LNG and oil prices have decimated foreign exchange reserves, causing a steep depreciation of the Taka. Industrial input costs are rising from both fuel prices and currency-linked inflation, threatening CPG operations across Southeast Asia.

**Central Asia**

Iran's March 2026 food export ban triggered immediate shortages in Kazakhstan and Tajikistan, creating an ESG Social pillar crisis. Food insecurity threatens labor disruptions and supply chain collapses for firms sourcing from the Silk Road corridor.

**India and Southeast Asia**

Fertilizer shortages and high LNG costs have forced Indian manufacturers to cut urea output, threatening the 2026 monsoon planting season and the supply of rice and wheat for global food manufacturers in H2 2026.

*Strong USD safe-haven flows are compounding these pressures, placing extreme forex strain on Global South markets. Potential sovereign defaults (for example in Pakistan) could cascade into higher credit and insurance costs, with uncertain effects on Scope 3 abatement economics.*

SECTION 06

## Strategic Conclusions: The Great Decoupling

The 2026 Iran conflict has created a "Great Decoupling" in the economics of sustainability. For global CPG companies, the strategic mandate is now twofold, and the MACC modelling confirms that the economic justification for the most impactful decarbonization levers has never been stronger.

**— ELECTRIFICATION AND PPA ADOPTION**

The volatility of natural gas and diesel has made grid-decoupling a financial necessity. Initiatives previously considered optional or prestige projects, such as PPAs and EV fleets, are now the most effective hedges against energy-driven margin erosion.

**— RESILIENCE OVER EFFICIENCY**

The spike in fertilizer and segregated-shipping costs necessitates a shift from just-in-time sustainability sourcing toward just-in-case resilience. Co-investment with suppliers is needed to de-risk transition to regenerative practices.

**Key takeaway:** The companies that navigate this conflict successfully will be those that view their sustainability roadmap not as a series of environmental targets, but as a blueprint for geopolitical and economic resilience. The path to net-zero has become more complex, but the economic argument for the most impactful levers is now undeniable.