Shockwaves Beyond Conflict: War, Supply Chains, and the Future of Green Industrialization

What is unfolding today is far more than a regional conflict—it is exposing the structural fragility of the global economic and industrial system.

The Gulf is not only an energy hub; it is a central artery of global industrial flows. A significant share of the world's oil, aluminum, fertilizers, and critical inputs moves through this region. When disruption occurs here, it does not remain contained—it cascades across supply chains, affecting industries far beyond energy, from semiconductors to food systems.

This is the deeper reality often overlooked: the energy transition is not insulated from geopolitics—it is shaped by it.

A System Built on Efficiency—Now Facing Fragility

For years, global green industries have been built on a model of efficiency. Manufacturing has become increasingly concentrated, supply chains highly optimized, and costs driven down through scale—most notably in China, which now dominates global clean technology manufacturing, accounting for approximately 79% of solar PV, 64% of wind turbine components, 76% of battery production, 41% of electrolyzer manufacturing, and 36% of heat pump production.

At the same time, China's decision to eliminate export tax rebates on solar PV by April 2026—and phase out battery rebates by 2027—signals a shift toward less subsidy-driven pricing, making global clean technology markets increasingly exposed to underlying cost drivers such as energy, logistics, and trade disruptions.

This model has enabled rapid deployment and dramatic cost reductions, but it has also created a structural vulnerability.

When energy flows are disrupted, shipping routes rerouted, or logistics delayed, the effects are immediate: costs rise, delivery schedules shift, and uncertainty spreads across projects and markets—as demonstrated during COVID-19, the Russia–Ukraine war, and the recent Red Sea–Bab al-Mandab disruptions.

These pressures are already visible in the solar market. Photovoltaic module prices have risen for four consecutive months despite continued declines in upstream input costs such as polysilicon. The increase reflects stronger demand for energy security and diversification, combined with production cuts in China and tightening

supply conditions across key technologies. Together, these dynamics are creating a more constrained market environment in which future pricing will depend increasingly on geopolitical developments and the sector's ability to adapt to evolving market conditions.

The disruption of key maritime routes—combined with higher freight costs and shipping delays—is already producing tangible downstream effects: postponed project timelines, rising input costs, and mounting pressure on developers and investors. Even modest increases in solar PV module prices—from $0.08/W to $0.10/W—can materially increase project CAPEX, particularly in utility-scale developments where equipment costs represent a significant share of total investment.

Recent pricing data suggests that these pressures are now feeding directly into equipment markets. Since January 2026, solar module prices have increased across all major categories by approximately 19–27%, indicating that logistics disruptions, tighter supply conditions, and growing strategic demand are beginning to reverse the prolonged decline in clean technology costs. This reinforces a broader reality: geopolitical instability is no longer only affecting project timelines—it is increasingly reshaping the economics of renewable energy deployment itself.

The very system once praised for efficiency is now exposing its structural fragility. Cost optimization and concentrated production have delivered scale—but at the expense of resilience, flexibility, and strategic security.

From Energy Shock to Industrial Shock

The real issue is not only oil prices or shipping delays—it is the transmission of these shocks into global industrial systems.

Primary energy sources remain a foundational input for manufacturing. Countries like China, which anchor global clean technology production, rely heavily on imported energy—much of it sourced from the Gulf, which accounts for a significant share of China's hydrocarbon imports. This dependence is reflected in broader trade patterns: in 2023, GCC exports to China reached approximately USD 158.3 billion, of which 88.3% consisted of petroleum and hydrocarbon products valued at USD 139.8 billion. Any disruption in these energy flows therefore feeds directly into industrial production costs and manufacturing competitiveness.

At the same time, the Gulf region supplies key industrial materials such as aluminum, petrochemicals, and plastics that are essential inputs for renewable energy and clean technology infrastructure. Disruptions therefore affect both ends of the system: the energy required to power manufacturing and the material inputs required to build clean technologies.

This dual exposure transforms regional instability into a global industrial supply-chain shock. For green industries—where cost competitiveness, synchronized supply chains, and delivery timelines are critical—the consequences can be particularly severe.

The Hidden Risk in Green Deployment

The global push for clean energy is accelerating. Solar installations are reaching record levels, with 511 GW of new solar PV capacity added globally in 2025, while wind capacity expanded by a further 159 GW. At the same time, governments are committing to ambitious deployment targets, including the COP28 pledge to triple global renewable energy capacity to at least 11,000 GW by 2030 in support of the 1.5°C climate pathway.

Yet this acceleration is occurring on top of a supply system that is increasingly strained.

Green energy projects depend on the synchronized delivery of components—solar modules, wind turbines, batteries, transformers, and specialized equipment. When supply chains are disrupted, even briefly, the effects ripple through entire project timelines. For example, disruptions in major maritime shipping routes such as the Red Sea have increased freight costs, extended equipment lead times, and delayed renewable energy project execution across multiple markets.

Delays of weeks can quickly become months. Increases in freight, insurance, or input costs can materially affect project economics. For capital-intensive projects, these pressures undermine bankability, weaken investor confidence, and reduce long-term competitiveness.

In other words, the risk is no longer hypothetical—it is operational.

A Moment of Realignment, Not Just Disruption

History offers a clear lesson: geopolitical shocks do not halt the energy transition—they reshape its trajectory.

The Russia–Ukraine war did not slow global decarbonization; it reconfigured it. Europe accelerated renewable deployment, restructured its energy systems, and moved rapidly to reduce dependence on Russian gas. At the same time, China further consolidated its position as the dominant supplier of clean technologies, supported in part by continued access to discounted Russian energy and the industrial advantages this provided.

We are entering a new phase of global industrial development characterized by:

- Diversification of supply chains to reduce overdependence on concentrated production hubs
- Regionalization of manufacturing to bring strategic industries closer to end markets
- More assertive industrial policy as states actively shape strategic sectors
- Rising emphasis on strategic autonomy in critical technologies and industrial capabilities

This is not a cyclical adjustment—it is a structural reordering of how the global green economy will be built.

The current crisis may prove similarly transformative.

What is emerging is not simply a temporary market reaction, but the early stages of a broader industrial and geopolitical realignment—one in which governments and industries increasingly prioritize resilience, security, and strategic control alongside cost and efficiency

What This Means for the GCC—and Oman

For the GCC, this moment presents both exposure and opportunity.

While regional industrial sectors remain vulnerable to cost volatility, logistics disruption, and supply chain fragility, the Gulf's position at the center of global energy and trade flows also provides a powerful strategic advantage in the emerging industrial order.

Oman, in particular, stands at a pivotal juncture. With industrial hubs such as Sohar and Duqm, expanding renewable energy capacity, and ambitious green hydrogen plans, the country is well positioned to evolve from a downstream energy exporter into a

strategic node within future global green value chains.

But strategic positioning alone is not enough.

The real challenge lies in whether Oman can move beyond benefiting from global shifts to actively converting them into long-term industrial advantage. This requires simultaneously managing near-term disruptions—rising costs, delivery delays, and market uncertainty—while building the domestic capabilities, industrial infrastructure, and policy frameworks needed to capture a greater share of future value creation.

In practical terms, this demands a shift in mindset: from pursuing clean energy deployment alone to building the resilient industrial ecosystems required to sustain it competitively.

From Cost Efficiency to Strategic Resilience

The next phase of green industrialization will not be shaped by cost competitiveness alone. It will increasingly be determined by the ability of countries and regions to combine resilience, speed, and strategic positioning into a coherent industrial advantage.

Those that can align secure energy systems, industrial capacity, logistics infrastructure, and enabling policy frameworks will do more than withstand disruption—they will define the geography and competitiveness of the next global industrial era.

Conclusion

This moment is not simply a disruption—it is a redefinition of the global industrial landscape.

The energy transition is no longer a purely technical or economic process; it is increasingly geopolitical, shaped by trade routes, resource access, industrial concentration, and strategic positioning.

For policymakers, investors, and industry leaders alike, the implication is clear: resilience is no longer optional—it has become a core requirement for long-term competitiveness.

For the GCC—and Oman in particular—this represents more than a challenge. It presents a strategic opening to move beyond the traditional role of energy supplier and toward becoming an active architect of the industries that will define the next phase of global economic transformation.

Achieving this, however, will require more than resource advantage. It will

demand coordinated industrial strategy, targeted infrastructure development, institutional agility, and the deliberate cultivation of domestic industrial capabilities.

Those who act early to align these foundations will not merely adapt to the changing global order—they will help shape it.

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