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Geopolitics and Climate Shifts: Canal Disruptions and the Emergence of New Energy Trade Routes

Energy Research Paper

The Al-Attiyah Foundation

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Geopolitics and climate have emerged as the two wildcards impacting the world's busiest trade chokepoints, i.e. the Suez and Panama Canals. Daily shipments through the Suez Canal in the Red Sea have dropped by 50% since January 2024, while Panama Canal transit restrictions have led to a 32% decline since October 2023. While geopolitical volatility is often short-lived, it can increase risk premium over the longer-term, while climate impacts could cause disruption of entire supply chains. What has been the impact of such disruptions to global energy trade since 2023? Will such events contribute to rise in energy prices, and what will they mean for the future supply of energy commodities?

ENERGY RESEARCH PAPER

This research paper is part of a 12-month series published by the Al-Attiyah Foundation every year. Each in-depth research paper focuses on a current energy topic that is of interest to the Foundation's members and partners. The 12 technical papers are distributed to members, partners, and universities, as well as made available on the Foundation's website.

03 EXECUTIVE SUMMARY

- Approximately 12-15% of global trade passes through the Red Sea and 5% through the Panama Canal. Both are crucial for international shipping, especially oil and gas.
- Daily shipments through the Suez Canal in the Red Sea have dropped by 50% since January 2024, while Panama Canal transit restrictions have led to a 32% decline since October 2023.
- The market impact of rerouting energy shipments around the Cape of Good Hope has been limited due to weaker demand and abundant supply, alongside improved shipping efficiency.
- Reduced oil and gas exports from GCC countries via the Suez Canal to Europe are balanced by North African energy supplies diverted from Asia and US shipments originally meant for Asia are offset by GCC supplies redirected from Europe.
- Current bearish charter rates indicate effective crisis management. However, prolonged underutilisation of the Red Sea will increase the cumulative effects of rerouting.
- Mismanaged shipping capacity could cause market supply to tighten slightly. However, this tightening may be balanced by new oil and gas entering the market (e.g. new gas from West Africa).

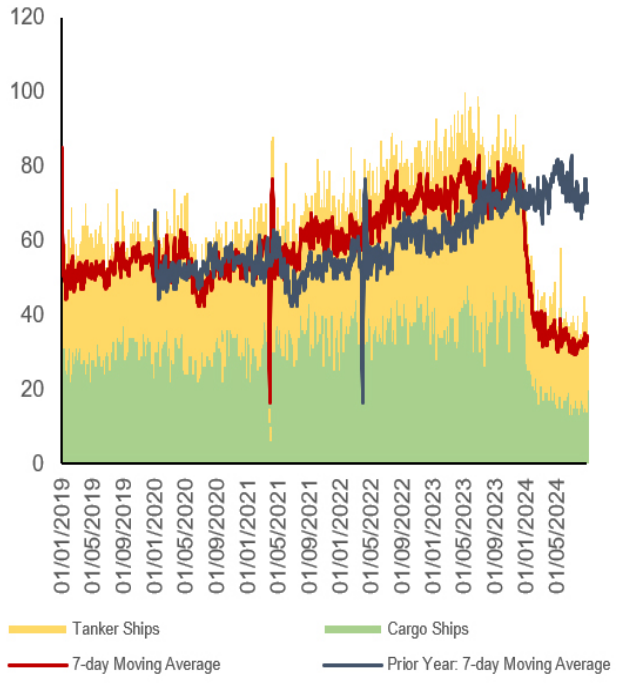
- Resilience amid Disruption: MENA energy producers are well-acquainted with trade route disruptions. The Red Sea crisis is more of an inconvenience than a catastrophe, prompting a thorough assessment to enhance supply chain logistics and contingency planning.
- Proactive Risk Management: Investing in robust risk management strategies is essential. By optimising rerouting between the Atlantic and Pacific markets, producers can capitalise on attractive arbitrage opportunities and higher price differentials.
- Real-time Logistics Systems: Investing in logistics that enable real-time decision-making is crucial. Utilising advanced technology for tracking, analytics, and communication can significantly improve supply chain visibility, enabling quicker and more effective responses to disruptions.
- Dynamic Flexibility: Strategies like dynamic scheduling and intermodal transport will boost flexibility based on real-time data, allowing producers to swiftly adjust shipping plans. The Red Sea crisis has inadvertently optimised asset utilisation, minimising idle time for container ships and tankers while facilitating efficient transfers.
- Just-in-Time Coordination: Implementing just-in-time (JIT) practices can allow producers to sell byproducts of their oil and gas production (such as sulphur) as and when demand arises by aligning delivery perfectly with demand needs. Such practices can translate into higher efficiency gains along the entire oil and gas export value chain and minimise the risk of obsolescence for rerouted shipments.

05 GEOPOLITICS AND CLIMATE ARE IMPACTING THE WORLD'S MAJOR TRADE ROUTES

In the Red Sea, daily shipments through the Suez Canal (the northern entrance to the Red Sea) have reduced by 50% to date from January 2024[i] due to Houthi attacks on transiting ships at the Bab El Mandeb (the southern entrance).

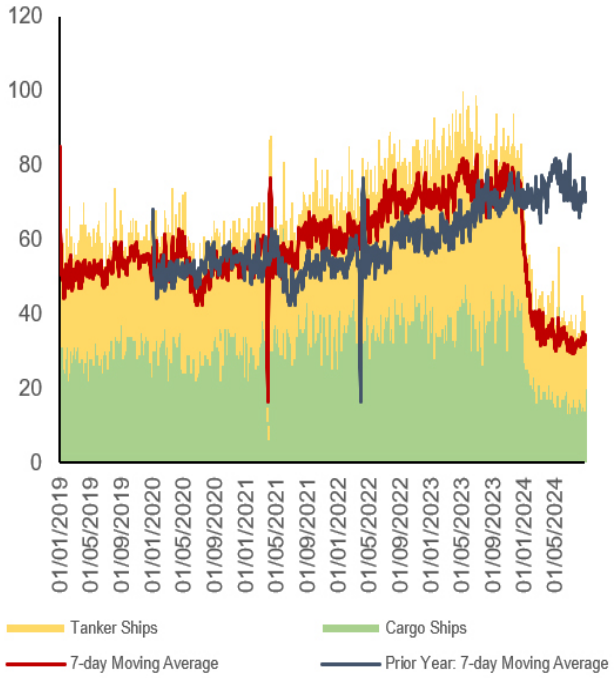
At the Panama Canal, severe drought has led to transit restrictions, causing the number of daily shipments transiting through the canal to fall by 32% to date from October 2023[ii], the last month before restrictions were imposed.

Figure 1 Daily Transit Calls at the Suez Canal[iii]



Energy supplies have been one of the most affected commodities transiting these waterways. At the Suez Canal, LNG, oil, and LPG tankers, which carried respectively 10%, 9%, and 7% of all volumes transiting the canal in 2023[v], almost entirely ceased using the waterway till June 2024[vi].

Figure 2 Daily Transit Calls at the Panama Canal[iv]



A Dubai-owned LNG carrier, the 137,200-cbm steam turbine Asya Energy, became the first in six months on June 11 to enter the Gulf of Aden en route for the Mediterranean in a full transit of the Red Sea and Suez Canal[vii]. Since then, energy commodity crossings have recovered partly but still number fewer than 10 per week, from the typical 30-40 crossings per week before the crisis[viii].

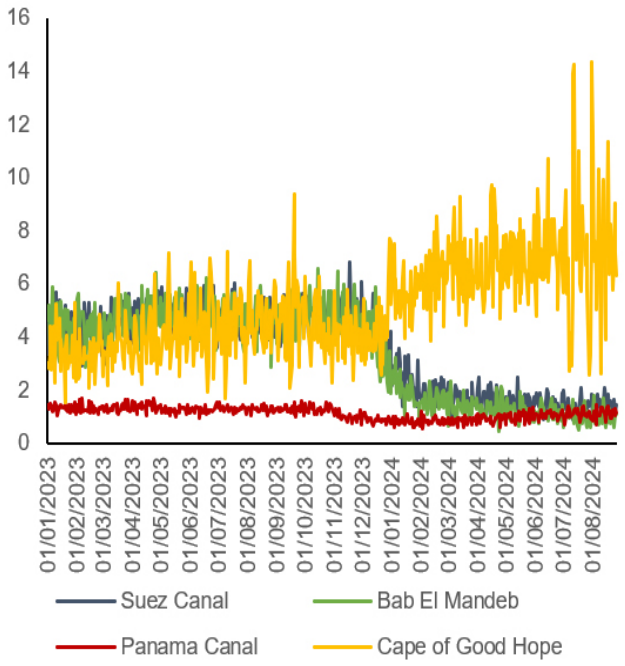
At the Panama Canal, monthly transit vessels carrying primarily LNG, oil, and other oil and gas products fell by more than 50% between August 2023 and January 2024[ix]. They have since remained 16%-25% lower than last year's transits[x], despite rainfall and more stringent water-saving measures improving the canal's water levels.

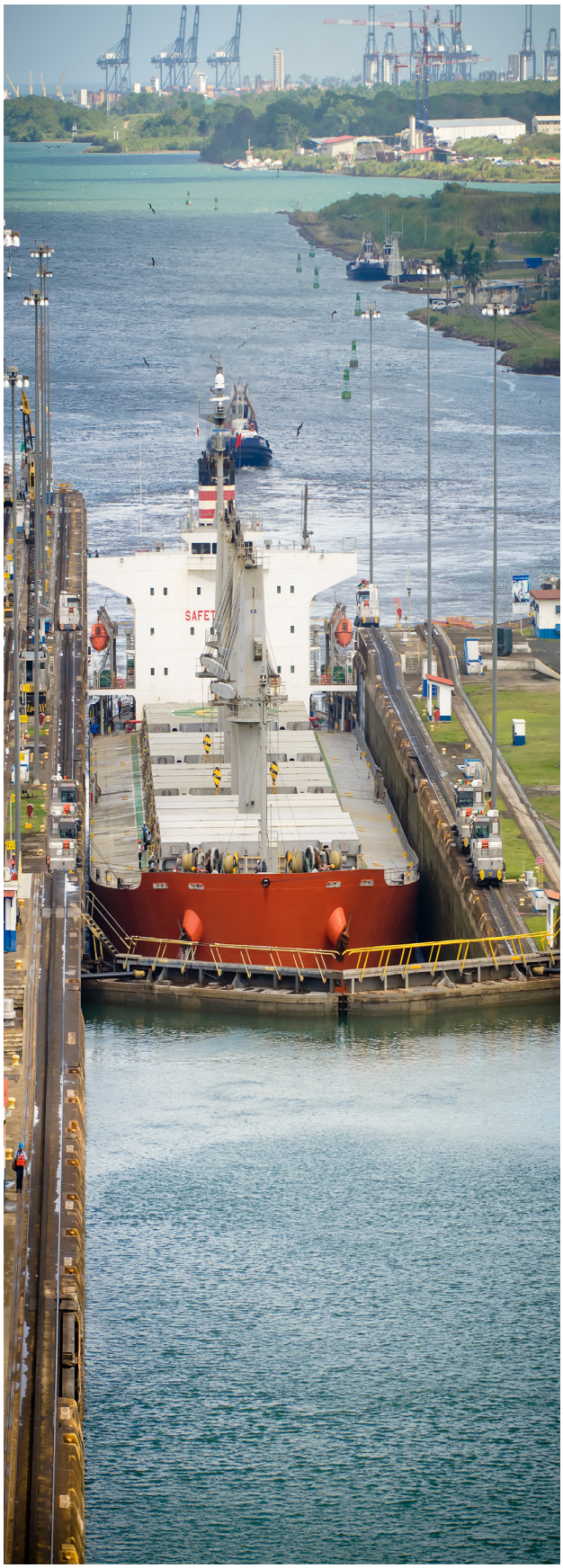
Trade has diverted from the Suez Canal to the Cape of Good Hope in recent months, while less trade has passed through the Panama Canal (Figure 3).

Even prior to the Red Sea disruption, shipping via the Cape of Good Hope had increased due to the curtailment of shipping via the Panama Canal, mainly impacting American deliveries to Asia, although the US routinely utilises both the Suez Canal and the Cape of Good Hope (and to a lesser degree Cape Horn) as alternates to the Panama Canal for LNG shipments.

This means that the increase in trade via the Cape of Good Hope since the crisis also includes diverted US shipments from the Suez Canal that were using it as an alternative to the curtailed Panama Canal in the first place.

Figure 3 Daily Transit Trade Volumes, Mt[xi]





07 MUTED MARKET RESPONSE

The surge in shipments via the longer Cape of Good Hope route logically implies greater shipping costs (daily charter costs and fuel costs for vessels) and a smaller volume of traded commodity that can be delivered by each vessel over a given period.

Moving cargoes between the Atlantic and Pacific Basins via the Cape of Good Hope or Cape Horn represents an "inter-basin shipping premium" that energy exporters can recoup through higher sales prices, but so far, the impact of rerouting has been limited due to, a) weaker-than-expected demand and plentiful supply; and b) greater efficiency in shipping and portfolio optimisations. This is also reflected in the limited reaction in European and Asian benchmark gas prices and international oil prices (Figure 4).

For example, oil and gas prices spiked momentarily by a few dollars a barrel / MMBtu when the Israel-Gaza war broke out, and then again, albeit at a lower level, when the Red Sea disruption began. These settled relatively quickly due to the swiftness in rerouting of energy cargoes initially intended to transit via the Red Sea, and a relatively softer market (supported by milder weather, substantial storage stocks, and macro-economic headwinds that lend credence to an outlook of only modest recovery in energy demand in key geographies like China and Europe).

Moreover, the decline in major energy benchmarks such as European Dutch TTF and Asia's JKM has allowed the differential between them to reach a level that is usually considered sufficient to attract LNG cargoes to the Asian market (~US$ 1-1.5/MMBtu).

Still, prices remain generally high enough to absorb the extra shipping costs generated by the lengthy detours. This means that it may take prices falling further to motivate a greater degree of optimisation to reduce physical flows between the Atlantic and Pacific Basins.

Figure 4 Premium of North-East Asia LNG Delivered Price Assessment Over North-West Europe LNG Delivered Price Assessment (US$/MMBtu)[xii]

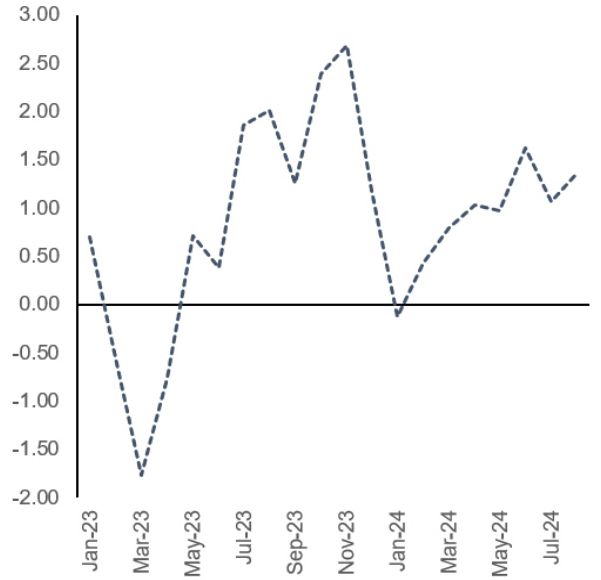
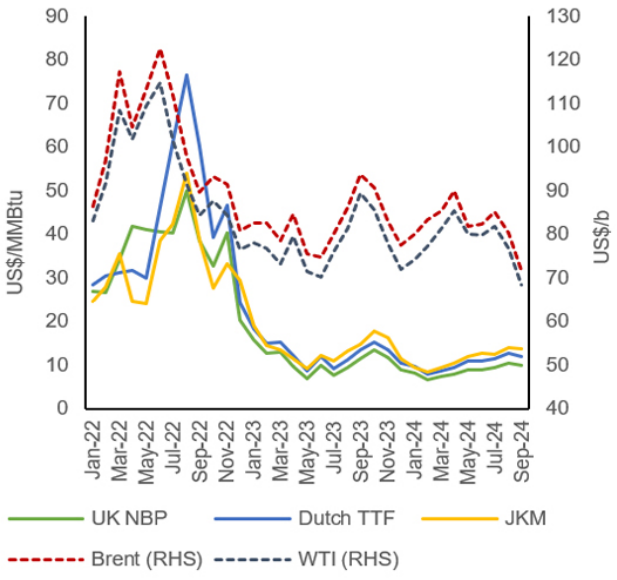


Figure 5 Global Energy Prices Have Remained Relatively Unaffected as a Result of Shipping Disruptions[xiii]



So far, the reduction in oil and gas exported from the GCC countries via the Suez Canal to Europe has been offset by North African energy supplies diverted from Asia to Europe, as well as US shipments originally intended for Asia, which, in turn, are being offset by GCC supplies diverted from Europe.

In other words, the market has borne the costs of the shipping premium thus far by continuing to send cargoes to their originally intended destinations via longer routes and portfolio shifts. Still, the cumulative impact of the disruption will grow, since each delivery with a longer round-trip time is "later" than it would have otherwise been, increasing the financial burden on cargo owners.

Therefore, the longer the disruptions continue, the more portfolio optimisation will increase in order to reduce the number of inter-basin deliveries.

Charter rates for commodities continued declining; for example, for a typical modern tonnage 155,000 – 165,000 m^3 capacity Tri-Fuel Diesel-Electric (TFDE) LNG carrier, they fell between September 2023 (US$ 183,000) and January 2024 (US$ 55,625) before stabilising at US$ 40,000-60,000 for as of August.
The decline since September 2023 has been influenced by several factors, including:

- The unwinding of LNG shipping capacity being used as floating storage (that effectively increased transportation capacity, thus pushing down charter rates).
- New carrier capacity (including an additional 2 million TEU expected to come online in 2024/25).
- The diversion of a significant proportion of US LNG exports from Asia to Europe, reinforcing the price-driven shift seen previously in 2022 (since the distance from the US to Europe is much shorter, shipping capacity is therefore used more effectively); and
- Shipping rates simply "bottoming out" to the average range of the past five years for the same period, indicating that despite longer routes logically increasing tanker rates (since the demand for tankers would increase), softer-than-expected demand and plentiful supply have offset anticipated gains.

Charter rates for VLCCs, Suezmax and Aframax carriers for crude oil have also remained on a downward trajectory, mainly due to weaker Asian demand which has increased vessel availability in the Middle East Gulf to Asia region, and lower activity in the Mediterranean.

This is despite tanker tonne-miles hitting a five-year high to 49.1 B tonne-miles/d as of April 2024, an increase of 6.5% from January on the back of the crisis compared with an average of 44.5 B tonne-miles/d in 2018-2019 and a high of 47.1 B tonne-miles/d during the CoVid-19 pandemic[xiv].

Rates have also continued softening due to the spring refinery maintenance season – leading to higher vessel availability – and continued concerns about Chinese economic growth and a weaker US economy on lower-than-expected jobs data.

Despite the availability of new capacity, charterers have refrained from leasing it until they are more certain that present disruptions will persist for some time and that the rerouting justifies the leasing of such additional shipping capacity. This explains why there has been no major spike in shipping rates.

Figure 6 LNG Tanker Rates, US$ Thousand[xv]

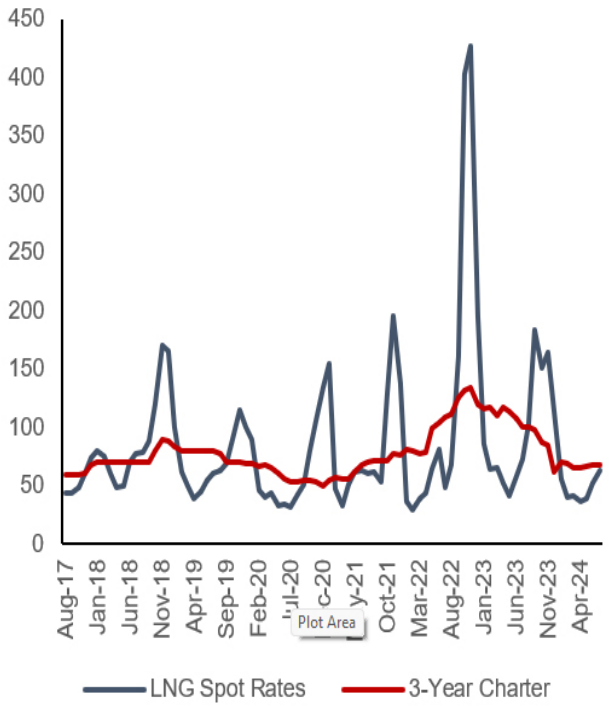
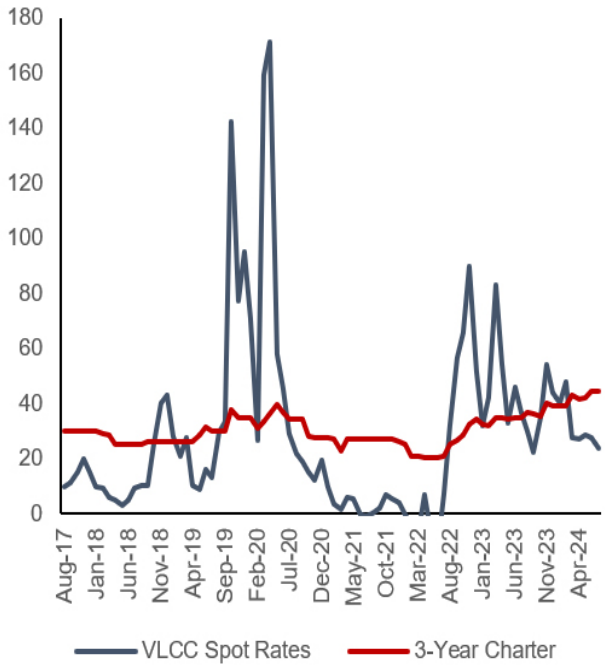


Figure 7 VLCC Tanker Rates, US$ Thousand[xvi]

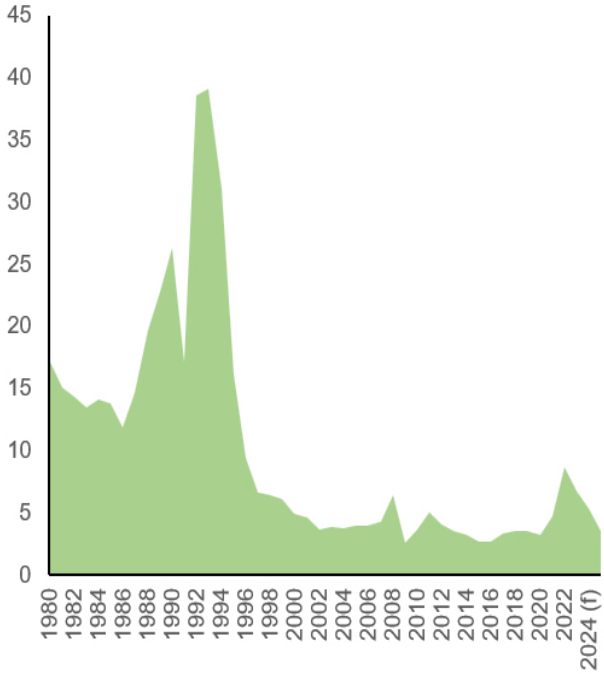


Port calls to 70 ports in sub-Saharan Africa have declined by 6.7% year-on-year (as of Q1 2024), while the corresponding declines for Europe, the Middle East, and Central Asia are 5.3%. These decreases likely reflect the transitory effects of longer shipping times. If the rerouting of cargoes is the "first wave" of impact, the later arrival of these rerouted cargoes is the "second wave". A future potential "third wave" in the form of increased consumer goods prices is yet to be felt, since demand is still sluggish, meaning that there are limited price pressures. Several economic outlooks agree that even if the Red Sea crisis escalates further, inflation levels should not reach those of 2022/23. One possible reason is the lessons learnt from the previous long-lasting supply chain disruptions during the pandemic, which added up to 2.5 percentage points to US personal consumption expenditure price inflation[xvii].

Supply chains are now far more resilient, have taken on more "nearshoring" practices, made gains in optimisation and efficiency by switching to alternate transport modes (such as rail freight for example, which has increased dramatically between China and Europe in recent months), and major container liners of the world have already included rerouting as the next "normal" in their future sailing schemes. This has allowed them to recalibrate and rebalance.

Note also that international shipping costs typically account for 3% of manufacturing's final costs and less than 1% of input prices in Europe[xviii]. This means that any transmission to inflation is likely to be limited to a fraction of this. In Middle East countries, where subsidies are common, the impact felt is likely to be even lower or not at all.

Figure 8 Global Inflation Rate, Average Consumer Prices, Annual % change [xxii]



11 THE IMPACT ON ENERGY EXPORTERS

Longer duration trips mean a considerable degree of curtailment in the final volumes delivered to end-destinations. By extension, this means that an energy exporter might be forced to export less than they would have had the disruption not occurred.

Let's take the example of Qatar, who is the world's second largest LNG exporter. In 2023, Qatar exported 78.1 Mt of LNG, 19% of which was delivered to Europe – almost exclusively via the Suez Canal, the rest nearly all to Asia, and a few cargoes in July 2023 to South America.

Since the Red Sea disruption, total Qatari loadings and export volumes (measured at Ras Laffan) have remained relatively in line with 2023 levels. But volumes to Europe have dipped 30% year-on-year as of H1 2024[xx], partly because of softening demand (though Europe in fact, increased its imports of Russian LNG by 11% during the same period[xxi]), but also due to higher efficiencies gained by diverting exports towards Asia, where gas benchmarks are favourably priced, and letting the US and North African suppliers offset its reduced exports to Europe.

Still, the fact that exports to Europe are continuing despite the disruption suggests an acceptance of rerouting via the Cape of Good Hope, at least for now.

Shipping distances to Europe and North-East Asia are comparable when the Suez Canal is available. However, the difference between the two is stark when deliveries to Europe require a trip around the Cape of Good Hope. The journey from Qatar to Rotterdam is 6,500 nautical miles (i.e. 17 days) via the Suez Canal, but 11,000 nautical miles (29 days) round the Cape of Good Hope.

To Asia, the distance is 5,000 nautical miles (13 days) to Hong Kong and 6,500 nautical miles (17 days) to Tokyo via Sri Lanka and Singapore. A roundtrip between Qatar and Rotterdam would therefore be 58 days, excluding the 3-4 days typically spent at port. If the overall trip extends to 63 days, an extra vessel will be required to maintain required export volumes during a particular period.

Figure 9 Qatar LNG Exports by Month, Mt

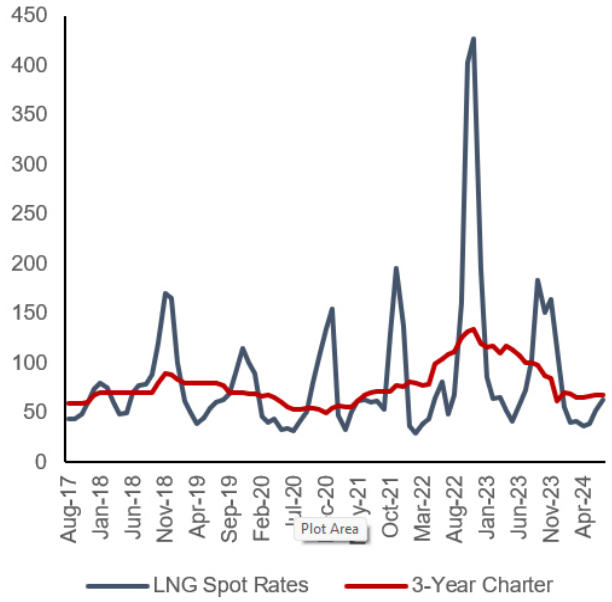
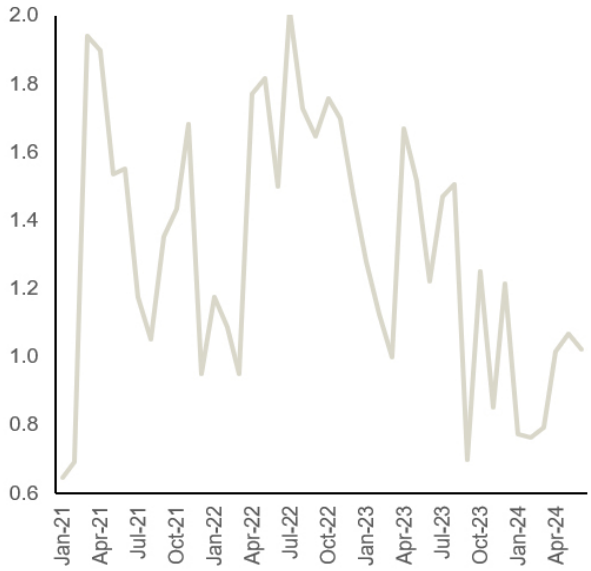


Figure 10 Monthly Qatar LNG Exports to Europe, Mt[xxiii]



This can encourage continued diversion of Qatari volumes to Asia where possible, subject to contractual terms, the ability to secure regasification capacity, and just as importantly, the spread between European and Asian spot LNG prices.

Table 1 shows the estimated reduction in natural gas deliveries to Europe in 2024 as a result of the rerouting of Qatari cargoes around the Cape of Good Hope. For example, taking the Italian port of Rovigo as an example, the rerouting of cargoes around the Cape of Good Hope has increased one-way journey times to 33 days – an increase of 13.5 days over the journeys made via the Suez Canal in 2023.

This means that a roundtrip now takes 69 days including 3 in-port days. The number of roundtrips for each vessel will therefore reduce to 5.3 per year from 2023's 8.7 via the Suez (assuming all other factors remain constant, such as delivery speeds). In terms of natural gas volumes delivered, this would suggest that if the number of vessels delivering LNG to Rovigo remain the same, then the overall volume of LNG delivered would decline by 2.5 BCM compared to 2023.

If the same estimation was applied to the other Qatari LNG-receiving European terminals, this would indicate an estimated decline of 6.3 BCM in Qatar LNG volumes received by Europe compared to 2023, or a 33% reduction, equivalent to around 6.1% of Qatar's total exports.

Interestingly, if Qatar decides to divert say 25% of the volumes it typically exported to Europe to Asia or other markets, this would imply a drop of 2.8 BCM (if calculated against 2023 European exports of 11.1 BCM).

If the remaining 8.3 BCM is reduced by 33% due to longer roundtrip times using a fixed number of vessels (as discussed), the volume of Qatari LNG supplied to Europe could fall by 50%. The lost 2.8 BCM would imply a decline in total gross global LNG supply of 0.9% year-on-year, although better portfolio optimisation practices (more vessels, better sailing strategies etc.) will most likely prevent this from happening.

Qatar has been extremely proactive in the LNG carrier newbuilds space. QatarEnergy is considering another tranche of up to 20 LNG carrier newbuilds to add to the 122 it has already secured under its massive shipbuilding project. These ships will support QatarEnergy's expanded LNG production capacity from the North Field in Qatar and the Golden Pass in the US, while at the same time meeting its long-term fleet replacement requirements.

The first new ship from this expansion is expected to be delivered by end-Q3 2024[xxiv], with the rest trickling in steadily, and could easily be utilised for sending additional tankers to Europe round the Cape of Good Hope if the disruption persists and/or till the North Field Expansion and Golden Pass projects are concluded.

New vessel capacity will also keep shipping rates from spiking, and as long as demand indicators remain soft, portfolio optimisation practices will increase, yielding new benefits and value add for MENA exporters.

Table 1 Round-Trip Shipping Distances from Ras Laffan to European Regasification Terminals and Estimated Reduction in Deliveries in 2024[xxv]

Trip Duration	Rovigo	Zeebrugge	South Hook	Swinoujscie	Fos Cavaou	Barcelona	Average
2023 Average Days per One-Way Trip	19.5	21	23.5	25.5	18	17	20.8
Scheduled Number of Days per One-Way post the Disruption	33	29.5	29.5	36	33	32	32.2
Extra Number of Days	13.5	8.5	6	10.5	15	15	11.4
Round Trip via Suez Canal	42	45	50	54	39	37	44.5
Round Trip via Cape of Good Hope	69	62	62	75	69	67	67.3
Round Trips per Year via Suez	8.7	8.1	7.3	6.8	9.4	9.9	8.2
Round Trips per Year via Cape	5.3	5.9	5.9	4.9	5.3	5.4	5.4
Natural Gas Deliveries	**Rovigo**	**Zeebrugge**	**South Hook**	**Swinoujscie**	**Fos Cavaou**	**Barcelona**	**Total**
Deliveries in 2023 (BCM)	6.34	4.31	2.39	2.35	2.22	1.22	18.83
Deliveries in 2024 (BCM, estimated)	3.86	3.13	1.93	1.67	1.25	0.67	12.53
Year-on-year Decline (BCM)	2.48	1.18	0.46	0.66	0.96	0.55	6.3

Trans-shipped Russian energy volumes to Asia will also decline but will not stop. This is particularly important given the existing SPAs between Yamal LNG and PetroChina for supply from Yamal LNG, and the fact that the Yamal LNG project company is 30% Chinese-owned (20% CNPC and 10% Silk Road Fund). While spot LNG cargoes to Asia – typically delivered on a trans-shipment basis (ship-to-ship transfers with European vessels at European ports) via the Suez Canal – might reduce as a result of diversions and/or absorption by the European market (as was already witnessed in H1 2024, when Europe's Russian LNG volumes increased by 11% year-on-year from 2023), contracted volumes will continue.

The fact that Yamal continues to send LNG to China even when the Northern Sea Route is unavailable (from December to May), highlights the importance of contractual destination restrictions.

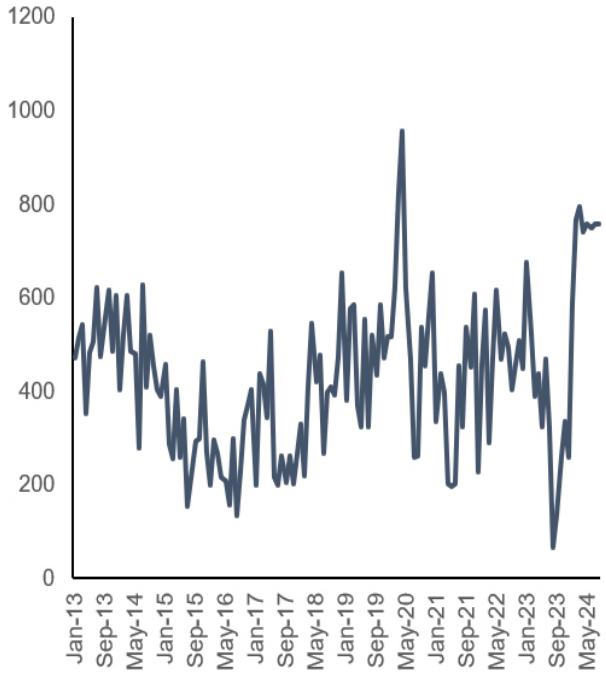
It is for this reason that Russian cargoes from Zeebrugge are willing to make the journey to Asia via the Cape of Good Hope, the same way that Qatari delivered ex-ship (DES) cargoes are willing to make the long journey to Europe also via the Cape of Good Hope.

Currently, Saudi Arabia is the only large MENA energy exporter that has not had to significantly divert its shipments via the Suez Canal to Europe. This is because it can utilise the East-West Pipeline (Petroline) to its western terminals on the Red Sea to send cargoes directly via Suez, instead of having to have them enter from the southern end – the Bab el-Mandeb strait – where the disruptions are concentrated. Saudi Arabia typically ships its crude oil to Europe from Yanbu on the west coast to Egypt's Ain Sokhna, from where it is piped through the Sumed network to the Mediterranean port of Sidi Kerir for onwards export.

Exports to Ain Sukhna are now comfortably above 700 kb/d since February 2024 for the first time (excluding the brief market share-war period of March-April 2020 when production was maximised)[xxvi].

Flows from the western terminals that would typically move southward through the Bab el-Mandeb for their journey onwards to Asia, meanwhile, have dwindled, with almost all Saudi Arabia's Asia exports transiting via the Strait of Hormuz between the Arabian Gulf and Arabian Sea, which the country already uses more than any other to export crude oil and condensate.

Figure 11 Saudi Crude Exports from Yanbu to Ain Sukhna and the Suez Canal, Kb/D[xxvii]



Supply chains seem to have adjusted both to diversions and the longer route around the Cape of Good Hope, bolstering energy exporters' efforts to withstand the disruptions without majorly affecting access to crucial markets.

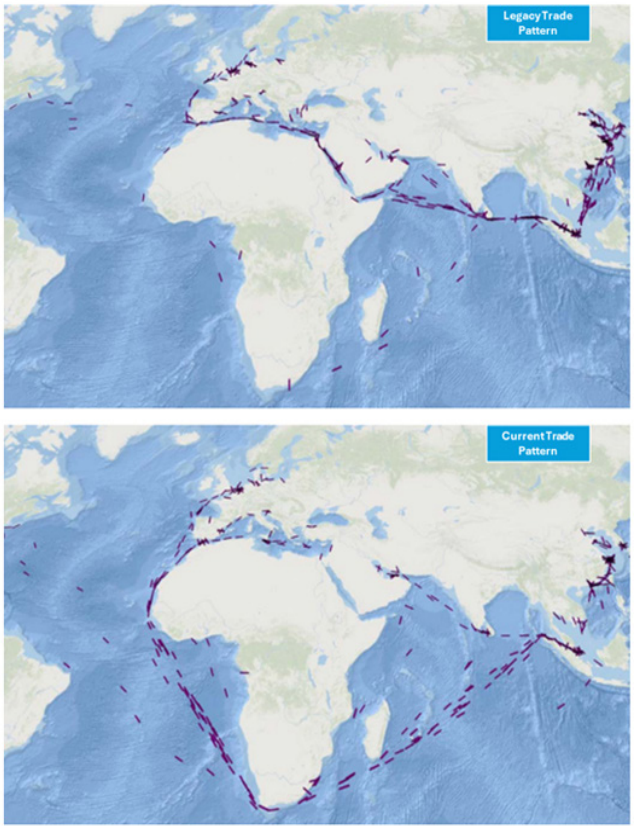
Even prior to the Red Sea disruption, supply chains had been under considerable pressure as a result of the COVID-19 induced economic crisis of 2020 and the Russian invasion of Ukraine in 2022, which had increased efforts to optimise, enhance, and augment international shipping.

Energy commodity flows from MENA countries and Russia had already increased southbound / eastbound towards Asia, while flows from the US had increased significantly towards Europe, not least due to Europe's efforts to reduce reliance on Russian commodity imports, but also because of continuing drought-related challenges at the Panama Canal crossing.

Energy exporters had also increased their level of cooperation with leading shipping companies, leveraging advanced technologies such as blockchain, AI, and real-time tracking systems to enhance supply chain visibility and transparency.

These tools have enabled exporters to facilitate proactive risk management and agile decision-making in response to disruptions. For example, Abu Dhabi National Oil Company (ADNOC) was one of the first in the region to create a blockchain-based data visualisation system to enhance visibility of its supply chain and maximise returns across asset and operations following the 2019 drone attacks on neighbouring Saudi oil installations.

Figure 12 Legacy Trade Pattern Around the Red Sea Versus Current Trade Pattern[xxviii]



Predictive asset analytics have also empowered energy exporters' capabilities in diversifying their transportation routes and cultivating alternative export options to mitigate risks. For example, demand for rail transport services has surged in recent months as US shippers have limited access to the Panama Canal. The land bridge which connects the ports of Los Angeles and Long Beach in the US by rail with the wider North American hinterland is the other alternative for cargo destined to locations in central and eastern US[xxix].

Regional initiatives like Iraq's "Dry Canal Corridor," spearheaded by Qatar and the UAE, showcase major energy exporters investing in railways and highways to connect Middle Eastern countries with European markets via Turkey.

This allows for faster deliveries than ships passing through the Suez Canal, while bypassing issues in the southern Red Sea. The India-Middle East-Europe Economic Corridor (IMEC), meanwhile, could also lead to the development of additional trade infrastructure that could be used as a further alternative. It could also integrate with the "Saudi Land Bridge" project, a 1,500-kilometre rail line connecting Jeddah, Dammam, and Jubail for a more seamless supply chain.

Such developments will continue shifting supply chains away from the modus operandi that was in place in previous years, which relied mostly on established trade routes (Figure 12) and legacy vessels. Higher optimisation, cost competitiveness, and collaboration with experienced logistics partners will mean that energy exporters no longer undertake a "reactive" approach to disruptions as and when they occur, but a more proactive one that keeps them relatively immune to the new norm of random wildcards, while continuing to strengthen their competitive position in the global marketplace.

The global trend towards re-shoring, near-shoring, and friend-shoring presents opportunities for energy exporters to expand their portfolio with sales to regional customers in order to lower supply risk and improve prices, while at the same time reduce overall emissions.

Slow steaming has long been advocated as a way of reducing shipping's emissions, with supporting calculations showing that a 10% reduction in speed could result in a 27% drop in a ship's emissions, but the recent trend of cargo rerouting – which means more fuel and more speed to make the journey faster along longer routes – has undoubtedly increased emissions (Figure 13).

Optimised trading can help manage supply chain volatilities and reduce emissions. Ship-to-ship transfers utilising electric, or hybrid vessels can significantly enhance supply chain efficiency while simultaneously reducing emissions.

For example, electric container ships have commenced operations in China and Singapore for nearshore shipping. These vessels have:

- Lower operating costs due to the reduced fuel consumption and maintenance requirements.
- Faster turnaround times due to quicker loading and unloading capabilities minimising port stay durations.
- Enhanced reliability, often featuring advanced navigation and operational technologies that can improve scheduling and reduce delays caused by mechanical issues; and
- The potential to integrate with an overall sustainable supply chain, for example, with electric trucks to create a seamless and efficient multimodal transport network.

If an energy container vessel from the Middle East were to rendezvous halfway to Singapore with these electric ships and transfer its cargo, it could achieve a 50% reduction in emissions compared to the typical round-trip journey to and from these destinations.

Combining smaller shipments into larger loads can also help consolidate shipments by maximising the cargo capacity of such vessels, especially on the back of recent advances in battery technology that can allow electric ships to carry more cargo without the weight penalties associated with traditional fuel storage.

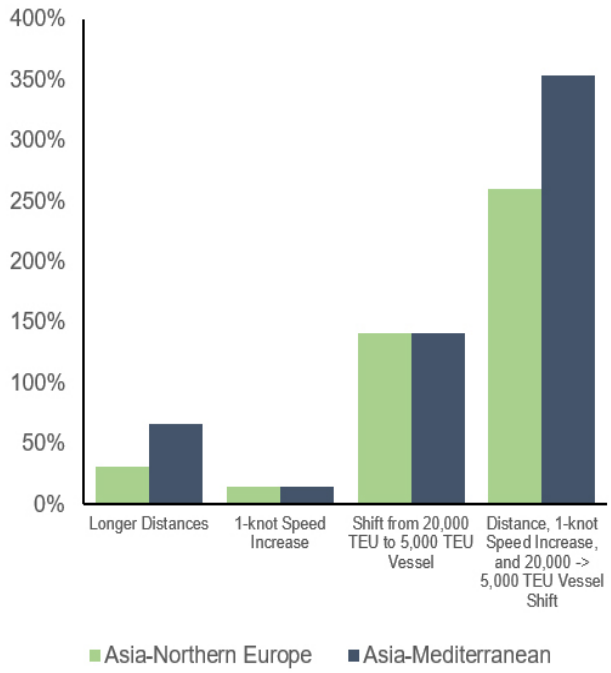
Strategies like dynamic scheduling and intermodal transport can increase flexibility based on real-time data and market forecasts to help adjust shipping plans quickly. The current Red Sea crisis has inadvertently led to improved asset utilisation, with minimal idle time for container ships and tankers as they connect with alternate modes of transportation to allow for more efficient transfers and reduce costs.

Collaborative logistics will further improve vessel capacity utilisation, reducing costs and emissions. This can take the form of partnering with other shipping companies for shared transportation and warehousing resources, or automated warehousing to streamline loading and unloading processes to reduce turnaround times for vessels.

Transitioning to cleaner fuels, such as LNG, biofuels, e-fuels, or (still niche) hydrogen, employing on-board carbon capture, and using auxiliary sails, can significantly lower emissions. While these might not be available to all immediately, container ships and tankers making longer journeys can implement technologies like air lubrication systems, bulbous bows and hull modifications to improve hydrodynamics that will reduce fuel consumption considerably in the short-term as they transition towards cleaner fuels.

Implementing just-in-time (JIT) practices can allow producers to sell byproducts of their oil and gas production (such as sulphur) as and when demand arises by aligning delivery perfectly with demand needs, minimising excessive voyages and emissions. Such practices can translate into higher efficiency gains along the entire oil and gas export value chain and minimise the risk of obsolescence for rerouted shipments.

Figure 13 Emissions Increase from Diverted Ships as a Result of the Red Sea Crisis[xxx]



Nine months into the crisis, the disruptions to shipping through the Panama Canal and the Red Sea have been largely accommodated by energy markets, highlighting the resilience of global supply chains. This adaptability is reflected in supply volumes across both the Atlantic and Pacific Basins and the flexibility of a dynamic global market.

While these ongoing disruptions are testing this flexibility, current bearish charter rates and pricing benchmarks suggest that the challenges are being effectively managed. Nonetheless, as long as the Red Sea remains largely avoided, the cumulative effects of longer delivery times due to rerouting will grow.

An important caveat is the influence of supply contracts. The presence of many vessels for extended journeys indicates that global shipping capacity is not fully optimised, as long-term contracts continue to govern shipping movements.

This restricts the potential for swaps between the Atlantic and Pacific Basins, whether through portfolio optimisation or trading.

This scenario suggests that the market is currently in a cautious interim phase, with participants hesitant to make significant changes to trading strategies until they have a clearer understanding of the crisis's duration. Expectations indicate that the crisis may last until 2025, potentially resulting in increased inter-basin swaps and a reduction in physical deliveries via the Cape of Good Hope. Alternatively, shippers might seek additional vessels to maintain cargo volumes over longer distances, which could intensify competition for energy carriers and likely raise charter rates.

If these adjustments do not take place and market rigidity continues, global supply could tighten slightly due to limited shipping capacity. However, this tightening may be balanced by new supply entering the market,

especially in the gas sector, with fresh LNG from Phase 1 of the Greater Tortue Ahmeyim (GTA) project in West Africa, the Rovuma LNG project from Southeast Africa, the Plaquemines, Corpus Christi Stage III, Golden Pass, Rio Grande, Port Arthur, and LNG Canada Expansion projects from North America, and the Qatari North Field Expansion, Abu Dhabi Ruwais LNG, and Oman's additional LNG train in Sur from the Middle East.

Additionally, if the Panamanian rainy season replenishes water levels adequately, this could alleviate constraints by shortening round-trip journey times from the US to Asia, facilitating more frequent deliveries and increasing supply. This could, in turn, free up LNG carrier capacity for more US supplies to Europe, improve energy deliveries to Asia (narrowing the Europe-Asia price spread), or both. The Panama Canal Authority has also begun work on targeted solutions such as cross-filling, new reservoirs, and damming of nearby rivers to prevent the 2023 disruption from being a recurrent issue, which should further improve water levels.

For now, it appears that the current reality of longer trade routes is here to stay, at least a while. Following the curtailment of Russian pipeline supplies to Europe in 2022 and the Panama Canal disruptions in mid-2023, the recent issues in the Red Sea can be viewed as inconvenient rather than catastrophic. At some point, the crisis will deescalate but the reality it has created is here to stay. Trade route blocking has now become a de facto measure of geopolitical conflict, or even war, meaning the shipping industry has shifted to a reality where conflicts will now determine who retains access to global trade routes, who has the power to safeguard and guarantee the flow of energy commodities, and who holds control over critical passageways.

While the Red Sea and Panama Canal crises may not be as disruptive as the COVID-19 pandemic, their impact on trade routes is significant and multifaceted. These events have prompted energy exporters to reassess their strategies, highlighting the importance of resilience and adaptability in supply chain management. The disruptions have served as a catalyst for deeper collaboration between exporters, shipping lines, and logistics providers, encouraging proactive measures to enhance operational efficiency and mitigate risks.

As exporters formulate comprehensive plans to navigate these challenges, they are likely to develop more robust logistics networks that can better withstand future disruptions.

This proactive approach can lead to improved supply chain visibility, allowing stakeholders to respond swiftly to changes in market dynamics or geopolitical conditions. By leveraging technology and fostering strong partnerships, energy exporters can create a more agile supply chain that not only withstands crises but also capitalises on emerging opportunities.

Moreover, the lessons learned from these crises can foster innovation in shipping practices, potentially leading to the permanent adoption of alternative trade routes and more sustainable logistics solutions. As the industry evolves, exporters that embrace these changes will likely gain a competitive edge, positioning themselves favourably in a shifting global landscape.

Ultimately, the challenges presented by the Red Sea and Panama Canal crises underscore the need for strategic foresight in trade operations. By proactively engaging with shipping partners and investing in resilient supply chains, energy exporters can navigate the complexities of today's market while ensuring the reliable delivery of essential commodities. This adaptability will be crucial for thriving in an increasingly interconnected and volatile world.

APPENDIX

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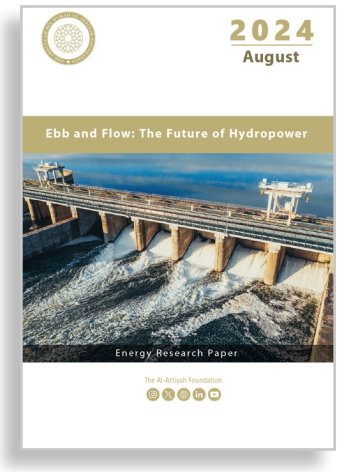

August – 2024

Ebb and Flow: The Future of Hydropower

For over a century, hydropower has driven global development by generating affordable and reliable electricity. It accounts for 14% of global power generation and is the largest contributor to renewable energy (in 2023, wind generated 7.8% of global electricity and solar 5.5%). Hydropower generation supports the integration of non-dispatchable renewables like solar and wind by offering balancing and flexibility services.

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July – 2024

The EU Carbon Border Adjustment Mechanism: Implications for MENA

The European Union's (EU) Carbon Border Adjustment Mechanism (CBAM) imposes a reporting obligation, and a carbon tax on EU imports of certain goods in order to reduce carbon emissions.

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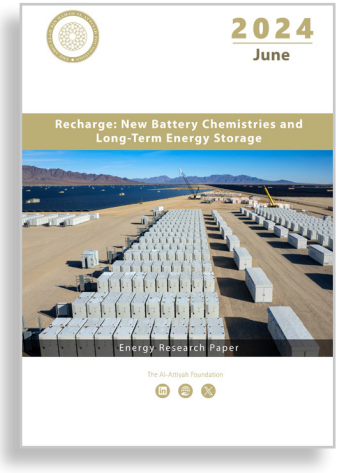

June – 2024

Recharge: New Battery Chemistries and Long-Term Energy Storage

Battery technologies are receiving intense attention and innovation, with new chemistries emerging that offer benefits over the conventional lithium-ion designs. These benefits span various aspects, including cost-effectiveness, reduced charging time, increased energy capacity, enhanced safety, and minimised use of scarce battery raw materials.

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