Where the Future Smells of Salt, Steel and Risk

By **Frank Tetzel**

The wind arrives from the Arabian Sea, carrying salt, dust, and heat across the port of Duqm. Cranes stand against the pale sky, storage tanks rise from the earth, and beyond them the water appears calm, belying the scale of transformation underway. At first glance, this coastline in Oman does not look like the place where a new energy order is being forged. And yet that is precisely what is happening. Across the Middle East and North Africa, hydrogen is no longer merely a promise wrapped in climate rhetoric. It is becoming infrastructure, capital, logistics, and strategy. What is taking shape here is not a conventional market, but a geography of power.

For years, hydrogen was described as the clean molecule of the future, as if it would naturally become a global commodity, traded across continents with the smooth efficiency of oil or LNG. But the emerging reality in MENA is very different. More than $150 billion in investment commitments have been announced across the region, while globally more than $110 billion has already been committed, with offtake agreements for over four million tonnes secured through 2030. Yet this is not producing a unified global market. It is producing corridors. Hydrogen does not simply flow to wherever prices are highest. It depends on production clusters, conversion plants, ports, pipelines, industrial buyers, and long-term contracts that must function together. In this sense, hydrogen is less a conventional commodity than a chain of dependencies.

MENA at the Center of the New Map

This structural reality explains why MENA matters so much. The region combines low renewable energy costs, vast land, export experience, strategic coastlines, and a location between Europe, Asia, and Africa. It is not merely a supply zone. It is the hinge on which future energy flows may turn. Oman illustrates this with particular clarity. In Duqm, the objective is not simply to maximize hydrogen production, but to build an integrated maritime system from the ground up. Production, conversion into transportable derivatives such as ammonia, export logistics, and route

diversification are conceived together. The significance of Duqm lies not only in its industrial ambition but also in its location outside the Strait of Hormuz. In this context, Oman's hydrogen strategy is shaped as much by route security as by production potential.
Saudi Arabia, by contrast, has chosen scale and visibility. NEOM, with planned production of around 650 tonnes of hydrogen per day, is one of the most prominent hydrogen projects in the world. It is the kind of project that signals industrial ambition in unmistakable terms. Yet the grandeur of NEOM also reveals the fragility of the wider system. A project of such size depends not only on cheap electricity and state backing, but on sea routes remaining open and politically manageable. That assumption no longer appears secure. Saudi Arabia therefore represents both the scale of regional aspiration and the vulnerability of maritime export dependence.

Egypt offers a different image of the hydrogen future. In Ain Sokhna, near the Suez Canal, the hydrogen economy is not being built as an abstract export vision, but as an extension of existing industrial capacity. Hydrogen and green ammonia are being linked to fertiliser production, chemicals and established export infrastructure. The Egypt Green Hydrogen project in Sokhna, backed under the H2Global mechanism, is valued at around 397 million euros. Here, the energy transition does not arrive on an empty landscape. It plugs into an exisiting industrial corridor. That is likely to become one of Egypt''s greatest strengths in an increasingly unstable region.

Morocco, meanwhile, is pursuing one of the most politically sophisticated strategies in the region. It is not relying solely on export hopes or on European demand. It is tying hydrogen to domestic industrial transformation, above all through OCP and the fertiliser sector, while also opening itself to European, Gulf, and Chinese partners. OCP has set targets of producing one million tonnes of green ammonia annually by 2027 and three million tonnes by 2032. This gives Morocco something many hydrogen states still lack, an industrial demand anchor at home. At the same time, the country is positioning itself close to Europe's future hydrogen infrastructure without becoming dependent on Europe alone. Morocco is close to Europe, but not strategically dependent on it. Morocco thus emerges as a diversified hydrogen actor, linking export positioning with domestic industrial development.

Iran and the Strait of Hormuz as a Strategic Reality Check

Since the escalation involving the United States, Israel and Iran on 28 February 2026, and the subsequent de facto blockade of the Strait of Hormuz, the hydrogen story in MENA has entered a far more constrained strategic environment. Shipping traffic through Hormuz collapsed dramatically, with reports indicating that around 95 percent of pre-war traffic had at times ceased. For oil and gas, such a crisis is severe. For hydrogen, it is even more revealing. The new energy system is more rigid than

the old one. Oil can be rerouted more easily in an established global market. Hydrogen and its derivatives depend on tightly synchronised infrastructure, on specific ports, conversion facilities, insurance conditions and offtake arrangements. When one link weakens, the entire corridor is exposed.

The war has therefore changed more than transport routes. It has changed the hierarchy of places. Maritime export models in the Gulf suddenly carry a much higher geopolitical risk premium. North African pipeline options gain new relevance. Egypt gains strategic attractiveness for European buyers because it is closer, industrially integrated and less directly dependent on Hormuz. Algeria and Tunisia, often treated as secondary players, begin to appear differently when one considers Europe's search for more resilient pipeline-based supply options. The issue is no longer simply who can produce hydrogen most cheaply. It is who can deliver it through a corridor that still functions when the region is under stress.

Europe still matters, but differently

Europe remains the most important premium market in this emerging system. It is where much of the future demand is expected to come from, especially from industry, chemicals, steel and transport. It also remains the regulatory reference point for many projects in MENA. Oman in particular aligned much of its strategy with the European Union's RFNBO rules, treating European certification not as a technical detail but as the basis of future export viability. Yet this is precisely where another tension emerges. Europe remains central as a market, but is increasingly uncertain as a strategic counterpart. If rules become more complex, or if Europe softens the very standards it once encouraged partners to follow, then credibility becomes a problem. Investors in MENA do not need only European demand. They need confidence that Europe will remain a stable and reliable destination for compliant green molecules over many years.

This leaves Europe in an structurally awkward position. It is still the principal market on the horizon, but no longer the unquestioned architect of the system. It regulates more than it builds. It imports more than it produces. And while it debates standards, other actors are shaping the material foundations of the new order.

The Chinese shadow across the desert

One of those actors is China. It appears less in the visible landscape than in the industrial machinery behind it. China is not simply another hydrogen producer but the industrial system architect shaping the market. It accounts for around 60 percent of global electrolyser manufacturing capacity, with hydrogen production

costs of about 3.21 dollars per kilogram in China compared with nearly 8 dollars in Germany. Electrolyser costs are also dramatically lower. Across MENA, Chinese firms are increasingly present in projects from Morocco to Oman to Saudi Arabia, supplying technology, manufacturing capacity and in some cases helping to localise production itself.

That matters because it changes the structure of dependence. MENA may provide the sun, the land and the ports. Europe may provide the demand. But China is increasingly providing the industrial hardware that makes large-scale hydrogen viable. This means the region is not simply balancing between export markets. It is also becoming a meeting point between competing industrial systems. Europe brings regulation and premium demand. China brings cost, speed and manufacturing depth. MENA, for now, is where these forces converge.

Why this paper matters now

What makes this moment so consequential is that the old language of the energy transition no longer captures what is happening. Hydrogen is not emerging in a post geopolitical world. It is emerging inside one marked by chokepoints, war, industrial rivalry and long-term strategic dependencies. The Iran war did not create that truth, but it exposed it with unusual clarity. It showed that the future of hydrogen in MENA will be decided not only by production costs or climate targets, but by maritime security, route resilience, industrial credibility and political endurance.

This policy paper follows that reality where it is being made, from the ports of Oman to the industrial zones of Egypt, from the scale of Saudi ambition to Morocco's multi-directional statecraft, from Europe's regulatory pull to China's industrial reach. It argues that the question is no longer whether hydrogen is coming. The real question is who will control the corridors through which hydrogen moves, and how power will be structured around them.

Read the full policy paper: ***Hydrogen without Illusions: MENA, China, and the New Geopolitics of Energy Corridors***