2026

May

Gulf and US Investments in Global Critical Metals and Minerals

Energy Research Paper

The Al-Attiyah Foundation

01 OUR MEMBERS

The Al-Attiyah Foundation is proudly supported by:

Gulf states are accelerating global investments in critical metals and minerals, focusing on securing long-term supply for industries linked to clean energy and advanced manufacturing. The US has sought to build partnerships with the GCC for these materials. Gulf investments increasingly target Africa and Latin America, prioritising supply chain resilience and the expansion of political relations. These efforts are reshaping the region's industrial landscape, positioning the Gulf as an active global player amid rising demand and supply chain uncertainties. Which specific minerals and global regions are the focus of Gulf investments? What are the geopolitical implications of Gulf involvement in the global critical minerals market? How do these investments affect global supply chain concentrations?

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

- Gulf states are becoming significant global minerals investors. Saudi Arabia, the UAE, Qatar and Oman are deploying state, quasi-state and private capital across mining, processing and trading, with activity accelerating markedly since 2023. Africa is the principal focus, while Latin America has attracted more selective investment.
- Strategies reflect different national strengths but share the objectives of investing profitably, achieving economic diversification, and building political relations. Saudi Arabia and Oman are developing domestic mineral resources, while the UAE places greater emphasis on capital deployment, building on its existing metals industries and targeting overseas assets. Qatar has made large but more singular portfolio investments. Across the GCC, abundant finance, competitive energy and infrastructure support ambitions to develop material supply chains for batteries, renewable energy, defence, aerospace, data centres and low-carbon hydrogen.
- Current portfolios are concentrated and leave strategic gaps. Copper, gold, nickel and cobalt are well represented, but lithium, rare earths, tin, manganese, platinum-group elements, bauxite and uranium receive comparatively limited attention. Investment is also geographically concentrated in African producers such as the Democratic Republic of Congo (DRC), South Africa and Zambia, with relatively little exposure to Australia, Canada, Indonesia, much of South America, North Africa or Central Asia.
- The US has a relatively new but very high-profile focus on reducing dependence on China-dominated supply chains. Recent Saudi and UAE ventures combine Gulf capital and processing potential with US technology, market access and strategic support, while cooperation opportunities also exist with the EU, UK, India, Japan, South Korea, Australia and Canada. Success will depend on mastering advanced exploration and processing technologies, controlling costs and balancing relationships with both Western partners and China.
- Recent conflict in the Gulf has created some challenges for domestic minerals and metals industries, but also heightened the importance of economic diversification, building robust supply chains, and deepening political relationships with a range of influential countries, especially but not limited to the US.
- Execution remains the central challenge. Many announced deals have not progressed because of long development timelines, difficult host-country politics, resource nationalism, financing and capability gaps, regional security risks and uncertain US policy. The strongest path forward is to build expertise through credible joint ventures, target overlooked minerals and geographies, expand advantaged Gulf-based processing, and design resilient logistics and supply chains.

FOUR OF THE GCC COUNTRIES HAVE BECOME ACTIVE INVESTORS IN INTERNATIONAL MINERALS

In recent years, four of the six GCC countries have become notable investors in international minerals, including ventures in mining, processing and sometimes trading[ii].

Their investment is a mix of state, quasi-state and private. The main protagonists are:

- **Saudi Arabia** – Ma'aden, the state-owned mining company (63.89% held by the Public Investment Fund (PIF) with the remainder listed on the Saudi stock exchange), and Manara Minerals, its international joint venture with the PIF
- **UAE** – International Resources Holding (IRH), a unit of International Holding Company (IHC), controlled by Sheikh Tahnoon bin Zayed, the UAE's national security adviser; and Emirates Global Aluminium (EGA), jointly owned by Mubadala and the Investment Corporation of Dubai
- **Qatar** – Qatar Mining Company (QM) and the Qatar Investment Authority (QIA)
- **Oman** – Minerals Development Oman (MDO); also, Mawarid Mining (private)

The main geographic focus has been on Africa and, to some extent, Latin America. This reflects the geographic proximity of the continent and its relative familiarity to GCC investors, growing political relations, and its large and relatively untapped mineral endowment. It is also linked to the increasing US interest in Africa, as discussed below.

05 MOTIVATIONS ARE SUBTLY DIFFERENT FOR EACH COUNTRY

The strategies and approaches of the GCC countries in mining reflect a combination of their overall national strategies, domestic resource endowment and industrial base, and financial capabilities (Table 1).

Domestic mining investment is generally intended to diversify the economy, to create employment, and to invest in a capital-intensive natural resource sector which seems relatively familiar given the long experience with hydrocarbons. Saudi Arabia, with the biggest plans, wants the mining sector to be worth $80 billion, about 6% of non-oil GDP, by the 2030s[xvii]. It is also seen as a promising area to attract foreign direct investment, an area where Saudi Arabia has fallen short of its targets.

For example, Saudi Arabia and, to a lesser extent, Oman have substantial domestic mineral resources. A major part of their strategy is to attract international investment into their mining sector, as well as building the skills and capabilities of their state-owned minerals champions. Chromite, nickel and copper, in Oman, and gold, phosphate, bauxite, zinc and copper, in Saudi Arabia, are the main resources mined today or under active development.

Saudi Arabia has achieved significant integration of its domestic resources into processing industries. It mines approximately 4 million tonnes per year of bauxite from the Al Ba'itha mine, operated by Ma'aden, which is transported by rail to Ras Al Khair on the Arabian Gulf. There it is processed into alumina, which feeds an aluminium smelter.

Table 1 Mineral Investment Capacity of GCC Countries

GCC country	Domestic mineral resources[iii]	Major domestic mineral industries	Sovereign wealth ($ billion)[iv]
Bahrain	None	Aluminium, steel Titanium (under development)	17
Kuwait	None	None	969
Oman	Chromite, copper	Aluminium, steel Polysilicon, titanium (under development)[v] Antimony (suspended)[vi]	50
Qatar	Helium, sulphur	Aluminium, steel	523
Saudi Arabia	Phosphate, gold, copper, bauxite, lithium, rare earths, zinc	Aluminium, steel, titanium	1057
UAE	Sulphur	Aluminium, steel, gold Lithium (in progress)	2325

Aluminium has since the early 1980s been the GCC's major non-oil industry and industrial export. Low-cost natural gas makes it an ideal site for the energy-intensive process. The Gulf's other major aluminium smelters, at Jebel Ali and Taweelah in the UAE (Emirates Global Aluminium), Alba (Aluminium Bahrain), Sohar in Oman, and Qatalum in Qatar, rely on imported bauxite or alumina, a supply-chain vulnerability. For them, investment in overseas mines can be an important part of the supply chain, as well as a hedge against volatility and non-transparency in prices. Chinese companies have used this vertical integration to great effect, for example through the nickel supply chain.

The other major metals industry today is iron and steel, based on direct reduced iron (DRI) with natural gas, followed by processing in electric arc furnaces (EAF), with some input of scrap steel. Like aluminium, this benefits from cheap domestic energy. But the GCC has no significant iron ore mines, with the most notable deposit, Wadi Sawawin in Saudi Arabia, remaining undeveloped since its discovery in 1963[xviii].

Wadi Sawawin is relatively small and low-grade by global standards[ix]. As for aluminium, iron ore must therefore be imported.

The third major resource processed locally is phosphate in Saudi Arabia, which is converted to the fertiliser diammonium phosphate (DAP). This is a valuable addition to the regional fertiliser exports, which otherwise concentrate on the purely nitrogenous fertilisers, ammonia and urea.

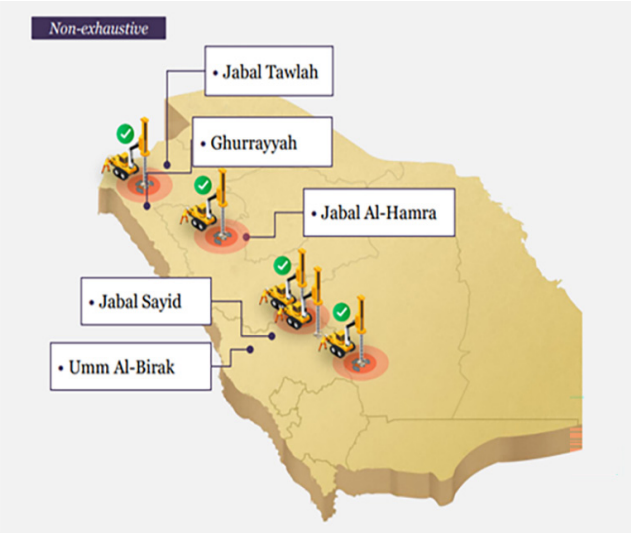
New mineral resources of strategic importance may be developed locally. These include lithium, which can be extracted from oil-field waters in the UAE[x] and Saudi Arabia[xi]; uranium, where Saudi Arabia has substantial resources[xii], though there are doubts over their commerciality[xiii]; and rare earths, also in Saudi Arabia (Figure 1). Emirates Global Aluminium is considering extracting the strategic metal gallium as a byproduct of its alumina refining[xiv] .

The Jabal Sa'id deposit, which currently produces copper, is estimated to hold 552,000 tonnes of the more strategic and valuable heavy rare earths, such as dysprosium and terbium, 355,000 tonnes of the light rare earths, and 31,000 tonnes of uranium.

Al Ghurayyah is another large deposit of strategic metals, including tantalum, niobium, yttrium and zirconium, but although often described as a rare earth deposit, it in fact does not have large quantities of REEs. Despite its large size, its low grade and complicated mineralogy mean its commerciality is doubtful[xvi]. Surveys have identified other potential REE resources[xvii].

The other GCC countries do not have significant traditional hard mineral endowments, beyond building materials such as gypsum, limestone and sand.

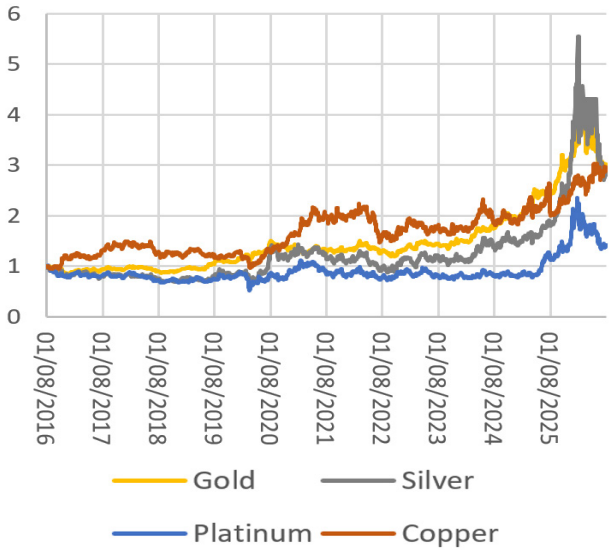
Figure 1 Rare Earth Deposits, Saudi Arabia[xv]



However, as noted, they have significant domestic metals industries. They have competitive advantages in minerals processing, mostly relating to low energy costs for natural gas and electricity. Gas prices may rise because of the requirement to develop more complex fields in future, such as the sour and unconventional resources in the UAE and Kuwait, and the shale and tight sand and carbonate resources in Saudi Arabia, Oman and Bahrain. Gas production costs are likely to remain low in Qatar because of the large remaining resources in the North Field. However, electricity costs can remain moderate because of the successful development of solar photovoltaic and, in some cases, wind power, at record low global costs. These are increasingly teamed with batteries to supply continuous power. These low-cost, low-carbon energy supplies will maintain the GCC countries as an attractive place for aluminium smelting, direct reduced iron and electric arc furnaces. Other energy-intensive materials, such as magnesium[xviii], titanium[xix] and polysilicon[xx], may be produced in the region. These three are crucial for defence, aerospace, renewable energy and electronics applications. There are also significant developments of 'green' hydrogen production, notably in Saudi Arabia and Oman, which can be used for other minerals processing, particularly for iron ore reduction. The region is likely to be one of the lowest-cost producers of green hydrogen globally. The GCC has other advantages, notably low corporate taxes, fairly easy permitting processes, available low-cost land, good infrastructure, political stability, and a central geography between several major markets.

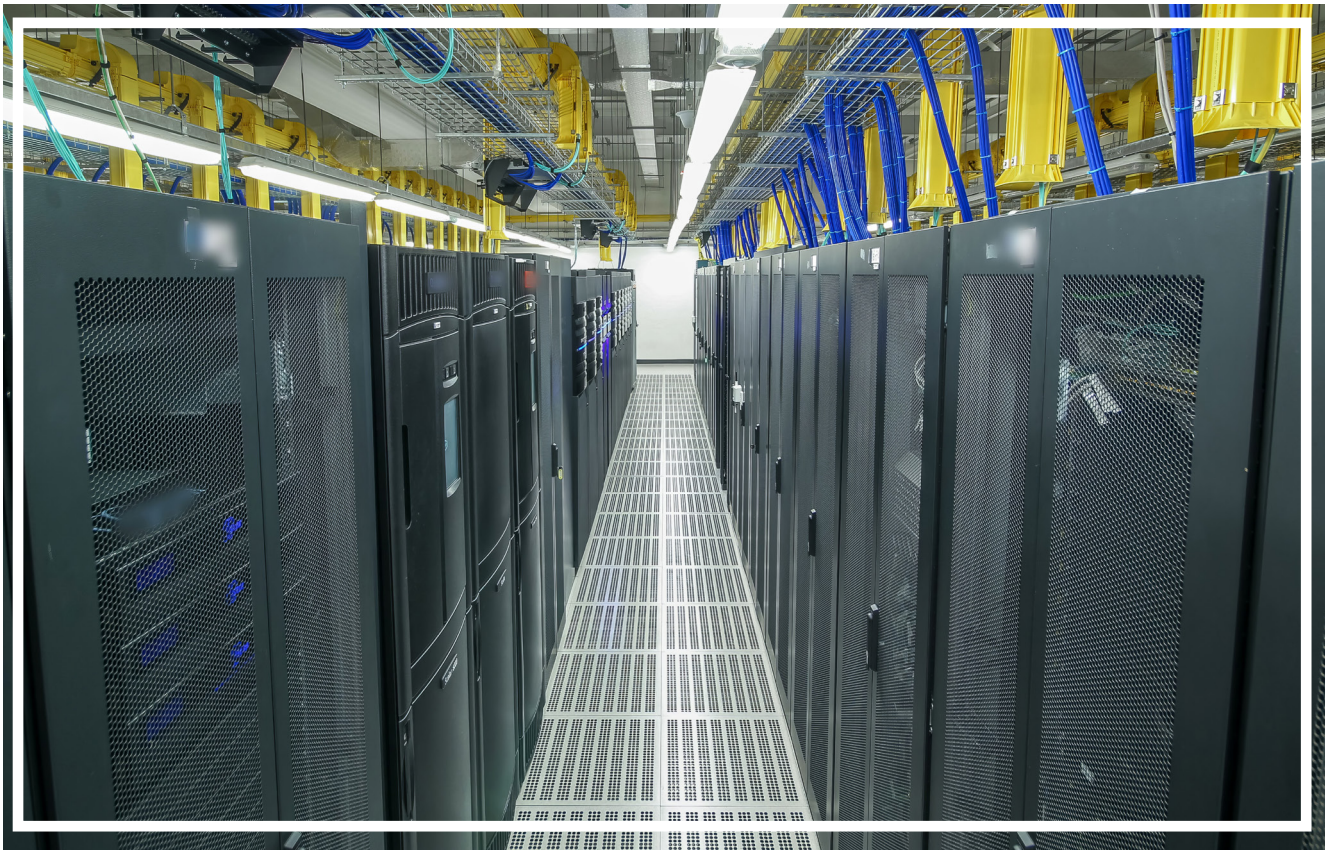
The incentives for overseas minerals investments are somewhat different. First, the GCC states are capital-rich, and are comfortable with long-term investments to build their sovereign and private wealth. They have the appetite for a degree of political risk. Mining provides a sectoral diversification from their usual investments, and a geographic diversification into sub-Saharan Africa and South America where they have traditionally been less active. The minerals sector seems to be an attractive area in recent years, because of higher prices for several key commodities (Figure 2), a perceived risk of under-supply, and the growing demand for several critical minerals for new energy and other technologies.

Figure 2 Relative Price Development of Detals, 2016-2026[xxii]



Investments in critical metals elevate the strategic importance of the GCC states, particularly in relation to the US, but also with other minerals-short blocs. They can build political relations with the recipients of investment and open further business opportunities.

The causality may run the other way; the GCC states invest in nations with whom they already have good political relationships, because that provides them with access to good assets, and greater investment security. This is particularly clear in the case of the proposed investment by Saudi Arabia's Ma'aden in the major Reko Diq copper-gold mine in Pakistan. Islamabad and Riyadh are close diplomatic and military allies, and Saudi Arabia is already a major investor in Pakistan.



The GCC countries are developing new industries which are intended to be the bedrock of their future economies, including various combinations of:

- Data centres and AI
- Aerospace and defence
- Electric vehicles, batteries and renewable energy
- Low-carbon hydrogen

These sectors require a wide range of critical minerals: copper for electric cables; titanium, tantalum, germanium and antimony for defence and aerospace applications; polysilicon, tin, gallium, germanium, silver, copper and tantalum for electronics and solar panels; lithium, nickel, cobalt, manganese, phosphorus and graphite for batteries; rare earths for electric motors and wind turbines; and platinum-group elements for hydrogen electrolysers. The GCC states are unlikely to develop full supply chains for these metals. Nevertheless, having a presence at some points does provide additional supply assurance, more visibility into pricing, and an economic hedge against disruptions or price volatility.

The other factor that should not be underestimated is the competitive tendency of GCC countries. They are often keen to emulate or to surpass what seems a promising approach taken by one of their Gulf neighbours.

Examination of actual and potential investments shows the spread of GCC investments (Table 2). The UAE is the clear leader in number and variety of investments, while Saudi Arabia is also strongly placed and leads on domestic investments.

It should be noted that this table includes some transactions that have not been completed—and may never be—and does not take account of the investment size in each case, which is not always reported. In some deals, a named mineral may only be a secondary part of the focus or value.

Table 2 Number of Potential and Concluded Minerals Investments by GCC countries (○ = domestic, ● = international; PGE = platinum-group elements)

	Oman	Qatar	Saudi Arabia	UAE
Copper	○○	●●	○●●●●●	●●●●●●●●
Gold	○	●	○●●	●●●●●●
Nickel	○	●●●	●●	●●●
Cobalt	○	●●	●●	●●
Titanium	○		○	○●
Tantalum			●	●●●
Silver		●	●	●
Zinc		●●	○	
Lithium		●	●	●
Tin				●●
Bauxite			○	●
Tungsten				●●
Phosphate			○	
Chromium	○			
Manganese	○			
PGE		●		
Vanadium				●
Niobium				●
Rare earths		●	○	
Antimony	○			
Germanium		●		
Gallium				○
Uranium				

Copper, gold, nickel and cobalt are well represented. On the other hand, given their importance and vulnerability of supply chains, tin, lithium, rare earths, manganese and platinum-group elements appear under-represented.

The lack of investments in bauxite is also surprising, given the high profile of the GCC's aluminium smelters, and the UAE's recent loss of its assets in Guinea. Also notable is the lack of any known investments in uranium, other than the so far undeveloped domestic resources in Saudi Arabia. Given the development of civil nuclear power in the UAE, and the ambitions of Saudi Arabia, this stands out as another potential future focus. As the GCC's mineral investment plans advance and mature, there may well be more attention to these minerals.

Turning to the geography of GCC minerals investments (Table 3), it is notable how prominent Africa is, particularly the core minerals-rich countries: DRC, South Africa and Zambia. Conversely, the US is not represented at all, nor is Australia, a leading global miner, and there is less focus than may be expected on Canada, Indonesia and South America (outside Brazil). This is striking given the importance of South America for several crucial minerals, particularly copper, silver and lithium; Indonesia for nickel; and Australia for lithium and numerous other materials. The GCC has also paid surprisingly little attention to its immediate neighbourhood in North Africa, South Asia and Central Asia.

Table 3 Geography of GCC Minerals Investments

	Oman	Qatar	Saudi Arabia	UAE
Brazil		●	●●	●●
Peru				●
Chile			●	
Canada			●●●	
Guinea				●
DRC		●	●	●●●
South Africa		●		●●
Zambia			●	●●● ●
Nigeria				●
Angola				●
Burundi				●
Rwanda		●		
Tanzania				●
Kenya				●
Mali				●
Egypt			●	
Morocco			●	
Russia			●	
Pakistan			●	●
Indonesia			●	
Turkey	●			
UK		●		

Critical minerals have risen rapidly up the US strategic agenda, both under the first and second administrations of President Donald Trump, and under President Joe Biden. This reflects several factors, but particularly the realisation of the US's dependence on China (and to a lesser extent, Russia) for a wide range of minerals and metals crucial to new energy, defence, and AI technologies.

China accounts for 61% of global rare earth mining and 92% of processing. Beijing has used formal and informal restrictions on the export of critical minerals at various times, to put pressure on countries such as Japan[xxii], and as a weapon against the US in their continuing trade war. These restrictions have applied particularly to rare earths[xxiii] such as gallium, germanium and antimony[xxiv].

The US's capacity for mining and processing of these materials has deteriorated greatly until recently. China has developed complex supply chains including domestic and international mines and processing, which also includes mastery of complex technologies for rare earth separation and nickel smelting. China also could undermine competing suppliers by lowering prices.

The heavy consumption of munitions in the Russia-Ukraine war and the US–Israel war with Iran has heightened awareness of this dependence, as has the recent boom in data centres. The Biden administration, though not the Trump administrations, was also concerned about the supply of raw materials for its intended onshoring of manufacturing for renewable energy, batteries and electric vehicles.

Finally, the transactional approach of the Trump administrations has been suited to negotiations for tangible business opportunities, as shown in engagement concerning Russia, Ukraine, Greenland and the DRC.

During the visit of Saudi Crown Prince Mohammed bin Salman to Washington in November 2025, the two countries created a 'Strategic Framework for Cooperation' on critical minerals[xxv]. Two notable US joint ventures involve Saudi Arabia[xxvi]. In November 2025, an American company, MP Materials, Ma'aden, and the US Department of Defense, signed an agreement to build a rare earths processing facility in the Kingdom. This will process ores from the Jabal Sa'id deposit as well as international sources.

MP Materials operates the only currently producing rare earth mine in the US, Mountain Pass in California. Mountain Pass does not produce large amounts of the more strategic heavy rare earths, which are present, as noted, at Jabal Sa'id. In early 2026, Critical Metals Corporation agreed with Saudi company Tariq Abdel Hadi Abdullah Alqahtani & Sons to process up to a quarter of its rare earth output from the Tanbreez mine in Greenland[xxvii]. The Saudi group later announced plans to invest with a US firm, Cove Capital, in critical minerals in Africa.

In January 2025, Abu Dhabi holding company ADQ (now folded into the L'Imad investment vehicle) committed $1.2 billion to a joint venture with Orion Resource Partners, a New York-headquartered metals investment firm,

which expanded in October into a $1.8 billion consortium including the US International Development Finance Corporation[xxviii]. This joint venture is intended to invest in critical minerals globally. In May 2025, EGA decided on Oklahoma as its site for a new aluminium smelter, the first to be built in the US since 1980[xxix].

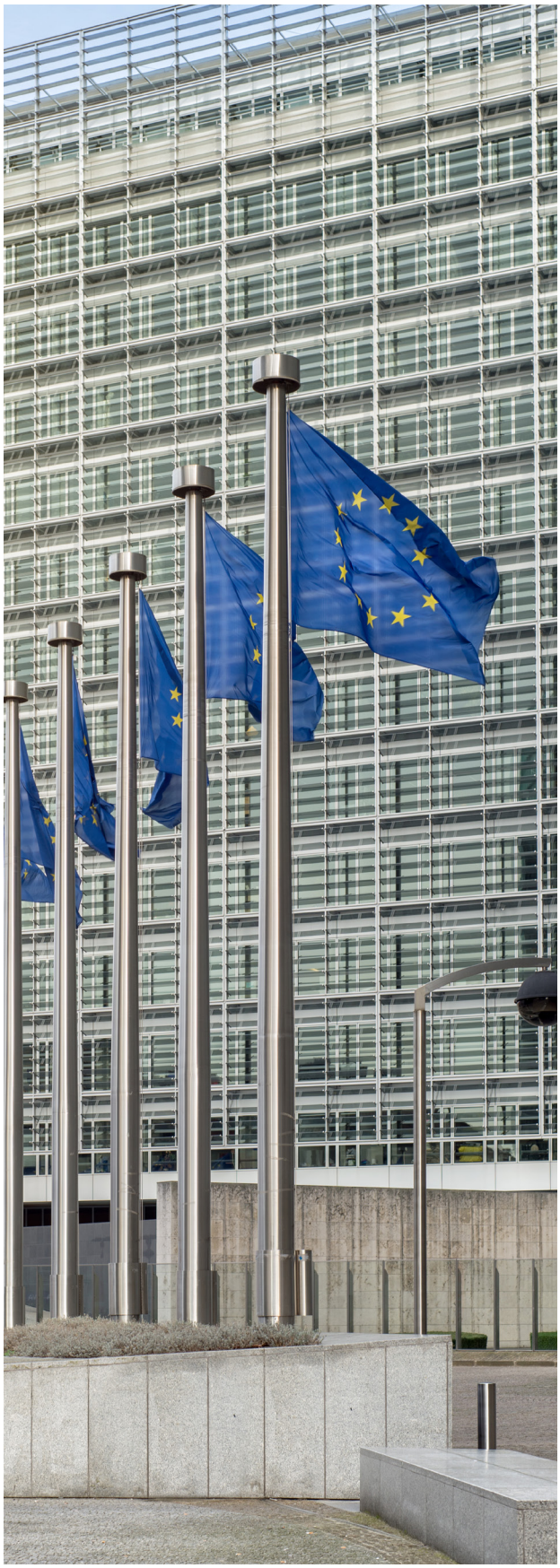
Finally, although not a major player, Bahrain has made one interesting move, sponsoring Impossible Metals, a California-based company, to explore the deep waters of the western Pacific Ocean for minerals[xxx].

Nevertheless, US and other Western companies remain well behind China in technology and experience with critical minerals processing, particularly for rare earths and nickel. To be successful, these ventures will need to control costs and move rapidly up the technology ladder.

15 THERE IS POTENTIAL TO COOPERATE WITH OTHER IMPORTANT BLOCS

The US and China are not the only games in town when it comes to critical minerals. In recent years, the EU, UK, India, Japan, South Korea, Australia and Canada have all issued their own lists of what they consider 'critical' and have sought to develop strategies to strengthen their supply chains. In October 2024, the EU and GCC announced plans to cooperate on strategic minerals[xxxi]. India has signed Memoranda of Understanding with the UAE and Saudi Arabia for critical minerals supply chains[xxxii].

These countries have somewhat different motivations from the US, particularly given the EU's current focus on clean-tech manufacturing. Nevertheless, there is considerable complementarity. The EU, UK, Japan and South Korea have substantial technical expertise but would find it difficult to site new energy-intensive minerals processing facilities. India has a growing clean-tech manufacturing base. India, Australia and Canada have substantial domestic minerals resources, as do some EU countries such as Sweden. The GCC's capital, low-cost, low-carbon energy, and political relations in areas such as Africa, could make it a valuable partner.



EGA owned Guinea Alumina Corporation, but its mining concession was revoked in mid-2025, and in May 2026, a settlement transferred its assets to a state-owned company, leaving EGA without an upstream ownership position. The growing 'resource nationalist' focus in many important mining jurisdictions includes moves for greater state control, and requirements for more domestic processing. This could be problematic for Gulf alumina smelters and other mineral processing facilities reliant on feedstock imports.

Many of the announced deals, particularly in Africa, have not progressed[xxxiii] . This may reflect the aspirational nature of many of the "memoranda of understanding" signed, and the difficulty of dealing with some African governments. Private GCC companies, too, often have big ambitions that are not sufficiently supported by finance and capabilities.

The US–Israel war with Iran that began on 28 February 2026 is a further complication. The interruption to most shipping through the Strait of Hormuz prevented Gulf-based minerals industries from importing feedstock or exporting products. The Alba and Taweelah aluminium smelters were hit by Iranian attacks, forcing shutdowns. QatarEnergy was forced to halt gas deliveries to domestic industrial customers, requiring Qatalum to halt operations, though by mid-March it had returned to 60% of full operations, allowing it to avoid metal freezing in the pots[xxxiv].

The war may be less problematic for much of Saudi Arabia's mining industry, which is concentrated in the western part of the country. Oman, outside the Strait of Hormuz, has also been able to operate normally. The UAE has developed alternative rail and road routes and announced plans to expand its east coast ports. It is also working on the Hafeet

Rail joint venture with Oman, which would allow the import and export of heavy industrial feedstocks, such as alumina and iron ore, through Sohar.

Joint ventures with the US also face challenges from Washington's unpredictable politics. There is the chance that deals struck with the Trump administration could be reversed by a future president, or indeed by President Donald Trump himself. After signing a crucial '123' agreement on civil nuclear power cooperation in July 2026[xxxv], the US then appeared to attach new conditions. In June 2026, political and commercial rivalries in Oklahoma saw a legal case brought to stop the planned new EGA smelter, with the state's attorney general complaining about pollution and ownership by an "Islamic foreign monarchy."[xxxvi]

The economics of new processing plants in the GCC may depend on preferential access to Western markets, which could be undermined by the imposition of tariffs if domestic interests feel they are being competed against unfairly, or if there are allegations of Chinese involvement in supply chains. China has already been significantly involved with Saudi domestic minerals through companies such as Zijin Mining Group, as well as state-led cooperation on uranium exploration, and in several manufacturing ventures for electric vehicles and other technologies .

The GCC states also do not want to compromise their good relations and economic connectivity with China by appearing to take sides. It may be tricky to keep their investments in minerals and new technology manufacturing segregated between China and US or other Western involvement. They may also end up competing with China for assets, particularly in Africa.

The GCC countries, and especially Saudi Arabia, the UAE and Oman, have expansive minerals and metals ambitions. To some extent, these build on existing assets, domestic resources and experience. But from 2023 onwards, there has been a significant acceleration in activity, particularly internationally.

So far, this has yielded numerous headlines, but relatively little in terms of tangible investments or operating projects. Partly this reflects the long timeline for developing new mines or processing plants. It also demonstrates the difficulty of concluding transactions in tricky jurisdictions and the lack of experience in the minerals sector among GCC countries.

Promising areas for investment include:

- some minerals that have been relatively overlooked in GCC projects to date (such as uranium, tin, lithium, rare earths and bauxite)
- top mining geographies which have seen limited GCC involvement (South America, Canada, Australia, Indonesia, North Africa, Central Asia)
- domestic processing in areas where the GCC should have an advantage (including titanium, magnesium, synthetic graphite, and polysilicon)

Successful GCC expansion in critical-mineral supply chains will depend on four priorities:

1. Improving capabilities and gaining access to advanced minerals exploration and processing technologies. Much of this can only be gained by experience, by participating in joint ventures. The GCC has so far been most successful internationally in aluminium, where it has long-standing and world-leading expertise.
2. Defining the unique GCC advantages, whether for domestic or international projects.
3. Managing complicated political relations, both with partners (US, China, EU and others) and with host countries in Africa, the US, South America and South Asia.
4. Integrating into intricate global supply chains, managing the right mix of inevitable dependence on China, in some places, with local or internationally owned assets.

i. https://www.flickr.com/photos/iaea_imagebank/51759856522
ii. https://www.iiss.org/charting-middle-east/2025/07/the-gulf-states-push-for-critical-minerals/
iii. Excluding hydrocarbons and building materials (sand, gypsum, limestone, etc)
iv. Observer Research Foundation, https://orfme.org/research/mapping-gulf-sovereign-wealth-funds-in-the-global-energy-transition-capital-technology-and-diplomacy/
v. https://www.pv-tech.org/united-solar-inaugurates-40gw-polysilicon-plant-in-oman/
vi. https://www.spmp.co.om/what-we-do
vii. https://en.majalla.com/node/323787/business-economy/pedal-metal-saudi-arabia-breaks-ground-mining-sector
viii. https://www.mindat.org/loc-26446.html
ix. https://sgs.gov.sa/media/mndoc12d/metallic-minerals_compressed.pdf
x. https://miningdigital.com/operations/saudi-and-uae-oil-companies-gearing-up-to-produce-lithium
xi. https://saudiminingconsulting.com/insights/articles/direct-lithium-extraction-saudi-arabia-from-kaust-lab-breakthroughs-to-a-high-stakes-pilot-race
xii. https://www-pub.iaea.org/mtcd/meetings/PDFplus/2009/cn175/URAM2009/Session%203/05_88_Howari_USA.pdf
xiii. https://www.washingtoninstitute.org/policy-analysis/saudi-arabias-nuclear-asks-what-do-they-want-what-might-they-get
xiv. https://www.rtx.com/news/news-center/2025/05/16/tawazun-council-rtx-and-ega-sign-mou-to-explore-gallium-production-in-abu-dhabi
xv. Ma'aden, https://www.maaden.com/
xvi. https://sgs.gov.sa/media/mndoc12d/metallic-minerals_compressed.pdf
xvii. https://www.argaam.com/en/article/articledetail/id/1860904
xviii. https://www.lightmetalage.com/news/industry-news/magnesium/mag-mec-and-metix-to-develop-magnesium-metal-production-facility-in-the-uae/
xix. https://www.tasnee.com/en/products/advanced-metals, https://technicalreview-middleeast.com/mining/sohar-titanium-begins-production-in-oman, https://www.argusmedia.com/es/news-and-insights/latest-market-news/2504463-interlink-to-build-titanium-plant-in-bahrain
xx. https://www.pv-magazine.com/2026/04/21/inside-pv-manufacturing-united-solars-polysilicon-factory-in-oman/
xxi. Data from https://www.macrotrends.net/2628/silver-price-last-ten-years
xxii. https://www.mining.com/china-reaffirms-japan-rare-earth-ban-despite-us-request/
xxiii. https://www.europarl.europa.eu/thinktank/en/document/EPRS_ATA(2025)779220
xxiv. https://www.reuters.com/world/china/china-suspends-ban-exports-gallium-germanium-antimony-us-2025-11-09/
xxv. https://home.treasury.gov/news/press-releases/sb0318
xxvi. https://rare-earth-mining.com/middle-east-rare-earth/

xxvii. https://agsi.org/analysis/downstream-ambitions-saudi-arabias-move-toward-rare-earth-processing/
xxviii. https://www.dfc.gov/media/press-releases/dfc-joins-18-billion-consortium-secure-critical-mineral-supply-chains-and
xxix. https://aluminiumtoday.com/news/ega-and-century-aluminum-partner-on-us-production-plant
xxx. https://www.mining.com/web/bahrain-sponsors-deep-sea-mining-firm-impossible-metals-for-international-permit/
xxxi. https://www.neglobal.eu/eu-seeks-cooperation-with-arab-gulf-states-on-green-energy-minerals-ukraine-conflict/
xxxii. https://csep.org/blog/indias-critical-minerals-partnerships-with-the-gulf-countries-from-oil-to-green-energy-transition/
xxxiii. https://agsi.org/analysis/saudi-arabias-and-the-uaes-quest-for-african-critical-minerals/
xxxiv. https://news.metal.com/newscontent/103806228-qatalum-shifts-from-full-shutdown-to-60-capacity-operational-update-amid-strait-of-hormuz-disruption
xxxv. https://www.wsj.com/world/middle-east/trump-approves-landmark-nuclear-deal-with-saudi-arabia-in-big-win-for-kingdom-2ed77584
xxxvi. https://www.reuters.com/legal/litigation/oklahomas-attorney-general-sues-block-largest-us-aluminum-smelter-2026-06-03/
xxxvii. https://agsi.org/analysis/saudi-arabia-pushes-ahead-to-become-a-global-mining-player/

APPENDIX 1. SAUDI ARABIA INTERNATIONAL MINERALS INVESTMENTS

Date	Saudi Entity	Counterparty / Target	Mine / Project	Country	Mineral(s)	Value
2023 (Jan.)	Saudi Arabian Mining Co. (Ma'aden) & Public Investment Fund (PIF)	Joint venture formation (Ma'aden 51% / PIF 49%)	Manara Minerals Investment Co. – global mining investment platform established	Saudi Arabia (investment vehicle; global mandate)	Iron ore, copper, nickel, lithium (initial focus)	$50m paid-up capital; ~$3.2bn (SAR 12bn) additional committed funding
2023 (Jan., signed) / closed July 2023	Ma'aden	Ivanhoe Electric Inc.	50/50 exploration JV ("Ma'aden Ivanhoe Electric Exploration") + equity stake in Ivanhoe Electric	Saudi Arabia / United States – Canada dual-listed counterparty	Copper, gold, silver, electric/battery metals	~$127.1 million (9.9% equity stake in Ivanhoe Electric)
2023 (July, signed) / closed April 2024	Manara Minerals (Ma'aden / PIF JV)	Vale S.A.	10% stake in Vale Base Metals Ltd. (VBM) – copper & nickel assets in Brazil, Canada, Indonesia	Brazil (assets also in Canada, Indonesia)	Copper, nickel (also cobalt, precious metals)	~$2.5 billion (implied VBM enterprise value ~$26bn)
2023 (June, expressed interest) / 2024 (talks ongoing)	Public Investment Fund (PIF), via Ma'aden	Democratic Republic of Congo (government / state mining sector)	Proposed joint venture to acquire DRC critical-mineral mining assets	DRC	Cobalt, copper, tantalum, lithium	~$3 billion (proposed JV; not concluded)

Date	Saudi Entity	Counterparty / Target	Mine / Project	Country	Mineral(s)	Value
2024 (Jan.)	Kingdom of Saudi Arabia / Ministry of Industry & Mineral Resources	Governments of Egypt, Morocco, Russia and DRC	Mining cooperation Memoranda of Understanding (framework, Future Minerals Forum 2024)	Egypt, Morocco, Russia, DRC	Framework only – no specific minerals/assets named	No committed value (non-binding MOUs)
2024 (Oct., in advanced talks) – not concluded	Manara Minerals	First Quantum Minerals Ltd.	Proposed 15–20% stake in Zambian copper & nickel assets (Kansanshi, Sentinel, Enterprise)	Zambia	Copper, nickel	~$1.5–2 billion (proposed; deal not finalized)
2025 (Jan., reported) – in talks	Manara Minerals	Government of Pakistan / Barrick Gold	Proposed 10–20% stake in Reko Diq copper-gold project, Chagai District, Balochistan	Pakistan	Copper, gold	~$500 million–$1 billion (proposed; per later reporting, negotiations subsequently stalled)
2026 (Jan.)	Kingdom of Saudi Arabia / Ministry of Industry & Mineral Resources	Governments of Chile, Canada and Brazil	Mining cooperation Memoranda of Understanding (framework, Future Minerals Forum 2026)	Chile, Canada, Brazil	Framework only – no specific minerals/assets named	No committed value (non-binding MOUs)

Date	UAE Entity	Counterparty / Target	Mine / Project	Country	Mineral(s)	Value
2016–2019 (construction; first exports Jan 2019)	Emirates Global Aluminium (Mubadala / Investment Corporation of Dubai), via subsidiary Guinea Alumina Corporation (GAC)	Republic of Guinea (mining concession / greenfield build)	GAC bauxite mine & export facilities, Boké region	Guinea	Bauxite (aluminium ore)	~$1.4 billion
2021 (May)	JFR Investments Ltd. (UAE-incorporated; part of Ridge Solutions Group)	JPB / JBP Cabral Minérios	Upstream mining assets portfolio	Brazil	Copper, gold, silver, nickel, iron ore, tantalite	Undisclosed
2021 (June)	JFR Investments Ltd.	Negociaciones Y Construcciones EIRL ("Peruendes") – JV "RS Global Peruendes"	Iron / gold / copper resources, Peruvian mining belt	Peru	Iron ore, gold, copper	Undisclosed
2022 (Sept.); operations from 2025	Dubai Investment Fund (DIF), via new subsidiary Ignitica Minerals	Niobium mining/refining project	Niobium project (Nigeria) and open-cast mine, Minas Gerais	Nigeria (and Brazil)	Niobium	~$430 million (5-year plan)
2022 (Dec.) / 2023 (Jan., operational) – ended 2024	UAE-registered Primera Group Ltd. (Primera Gold DRC SA JV, 55% UAE / 45% DRC state)	Democratic Republic of Congo (government)	Artisanal gold export monopoly, South Kivu	DRC	Gold	~$300m/year gold exports handled (JV capital value undisclosed)
2023 (July)	UAE government / Primera Group (Primera Mining Ltd.)	Sakima SA (Société Aurifère du Kivu et du Maniema, DRC state mining co.)	4 planned industrial mines, South Kivu & Maniema (specific mines undisclosed)	DRC	Gold, tin, tantalum, tungsten (concessions)	$1.9 billion (announced)

Date	UAE Entity	Counterparty / Target	Mine / Project	Country	Mineral(s)	Value
2023 (Oct.)	F9 Capital Management (Abu Dhabi) – Energy Transition Fund	Q Global Commodities (QGC), South Africa	Green-metals deposits, southern/eastern Africa (30% of QGC portfolio)	South Africa (assets also in Botswana, Zambia, Tanzania, Namibia)	Lithium, copper, nickel, vanadium, titanium	$1 billion
2023 (Dec.); closed March 2024	International Resources Holding (IRH), via subsidiary Delta Mining Ltd.	ZCCM Investment Holdings / Government of Zambia	Mopani Copper Mines (51% stake)	Zambia	Copper, cobalt	$1.1 billion ($620m equity + up to $400m shareholder loans)
2023 (Dec.)	International Resources Holding (IRH)	Jubilee Metals Group	Mufulira / Copperbelt "Waste Rock Project" copper-recovery JV	Zambia	Copper	Capital commitment undisclosed (IRH funds capex; project targets 20,000+ t/yr copper concentrate)
2024 (announced May)	International Resources Holding (IRH)	Angolan government / partners	Iron ore JVs, Kassala-Kitungo & Munenga	Angola	Iron ore	Undisclosed (part of IHC's stated $1bn 2024 acquisition target)
2024 (March); bid withdrawn July 2024	International Resources Holding (IRH)	Vedanta Resources	Konkola Copper Mines (proposed 51% stake)	Zambia	Copper	~$1.0–1.1 billion offered (deal not completed)
2024 (March); outcome unresolved	International Resources Holding (IRH)	EMR Capital / Lubambe Copper Mine	Lubambe Copper Mine (proposed 80% stake)	Zambia	Copper	Undisclosed
2024 (May, in talks)	International Resources Holding (IRH)	Burundi government	Nickel mining (advanced talks)	Burundi	Nickel	Undisclosed

Date	UAE Entity	Counterparty / Target	Mine / Project	Country	Mineral(s)	Value
2024 (May, in talks)	International Resources Holding (IRH)	Tanzania / Kenya governments	Various metals (advanced talks)	Tanzania, Kenya	Various (unspecified)	Undisclosed
2024 (Oct.)	International Resources Holding (IRH)	Public Investment Corporation (PIC), South Africa	Mining, green energy & logistics collaboration (non-binding MOU)	South Africa	Various (framework only)	No committed value disclosed
2025 (Feb.)	Ambrosia Investment Holding (UAE, chaired by Ahmed Amer Al Amry)	Allied Gold Corporation	50% of Allied Gold ML Corp. (Sadiola mine, Mali) + 12–19% stake in Allied Gold parent; also linked to Kurmuk project	Mali (and Ethiopia)	Gold	~$500 million total (~$375m JV stake + ~$110–190m parent-company equity)
2025 (Feb.)	International Resources Holding (IRH) / IRH Mining RSC Ltd.	Government of Balochistan, Balochistan Mineral Resources Ltd., Mari Energies (Pakistan)	Mineral exploration licenses EL302 & EL303, Chagai district	Pakistan	Copper, gold (porphyry exploration)	Undisclosed
2025 (June)	International Resources Holding (IRH)	Tremont Master Holdings (Denham Capital subsidiary)	Alphamin Resources – Bisie tin mine (56% stake)	DRC	Tin (also tantalum, tungsten, coltan)	~$366–367 million (C$503m)
2025 (Jan., JV formed)	ADQ (Abu Dhabi sovereign wealth fund) & Orion Resource Partners – JV "Orion Abu Dhabi"	Mining companies across Africa, Asia, Latin America (target universe, not a single deal)	Diversified metals & mining investment platform	Africa / Asia / Latin America	Copper, high-grade iron ore, other critical minerals	$1.2 billion (initial 4-year commitment)

Date	Omani Entity	Counterparty / Target	Mine / Project	Country	Mineral(s)	Value
2022 (Oct.)	Oman Investment Authority (OIA)	Group14 Technologies (Series C financing round)	Silicon-carbon battery materials manufacturing	United States	Silicon / battery materials (lithium-ion supply chain)	Part of $214m tranche within $614m Series C round (OIA's specific share undisclosed)
2022 (Oct.)	Oman Investment Authority (OIA)	Ascend Elements (Series C financing round)	EV battery recycling & precursor/cathode active materials plants (Georgia; Apex 1 plant, Kentucky) – not a mine	United States	Lithium, nickel, cobalt (recovered via recycling)	Part of $300m financing (incl. $200m Series C equity); OIA's specific share undisclosed
2025 (Oct., MOU) / fund est. 2025	Oman Investment Authority (OIA), via the Turkey Oman Investment Company (with Turkey's OYAK)	Government of Turkey / Ministry of Energy and Natural Resources (framework)	Mining and critical-minerals exploration cooperation MOU (framework, no specific asset)	Turkey	Framework only – no specific minerals/assets named	No committed value (non-binding MOU; sits alongside the $500m joint fund below)
2026 (May)	Oman Investment Authority (OIA), via the Turkey Oman Investment Company (50/50 JV with Turkey's OYAK, est. Dec. 2024)	Samas Mining	Tokat sodium bentonite deposit – share purchase agreement	Turkey	Sodium bentonite (industrial mineral, used in oil & gas drilling, industrial, medical/cosmetic applications)	Undisclosed stake size/value (acquired through the $500m, 50/50 OIA–OYAK joint fund)

APPENDIX 4. QATAR INTERNATIONAL MINERALS INVESTMENTS

Date	Omani Entity	Counterparty / Target	Mine / Project	Country	Mineral(s)	Value
2022 (Oct.)	Oman Investment Authority (OIA)	Group14 Technologies (Series C financing round)	Silicon-carbon battery materials manufacturing	United States	Silicon / battery materials (lithium-ion supply chain)	Part of $214m tranche within $614m Series C round (OIA's specific share undisclosed)
2022 (Oct.)	Oman Investment Authority (OIA)	Ascend Elements (Series C financing round)	EV battery recycling & precursor/cathode active materials plants (Georgia; Apex 1 plant, Kentucky) – not a mine	United States	Lithium, nickel, cobalt (recovered via recycling)	Part of $300m financing (incl. $200m Series C equity); OIA's specific share undisclosed
2025 (Oct., MOU) / fund est. 2025	Oman Investment Authority (OIA), via the Turkey Oman Investment Company (with Turkey's OYAK)	Government of Turkey / Ministry of Energy and Natural Resources (framework)	Mining and critical-minerals exploration cooperation MOU (framework, no specific asset)	Turkey	Framework only – no specific minerals/assets named	No committed value (non-binding MOU; sits alongside the $500m joint fund below)
2026 (May)	Oman Investment Authority (OIA), via the Turkey Oman Investment Company (50/50 JV with Turkey's OYAK, est. Dec. 2024)	Samas Mining	Tokat sodium bentonite deposit – share purchase agreement	Turkey	Sodium bentonite (industrial mineral, used in oil & gas drilling, industrial, medical/cosmetic applications)	Undisclosed stake size/value (acquired through the $500m, 50/50 OIA–OYAK joint fund)

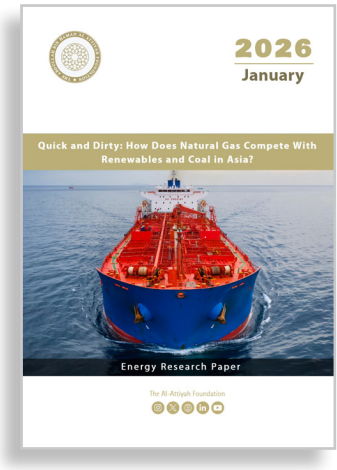
Have you missed a previous issue? All past issues of The Al-Attiyah Foundation's Research Series, both Energy and Sustainability, can be found on the Foundation's website at www.abhafoundation.org/publications

March – 2026

US–Gulf Nuclear Cooperation: Energy and Security

Three of the six Gulf Cooperation Council (GCC) countries are actively developing civil nuclear power programmes. Growing demand for electricity and desalination, ample financial resources, and political systems capable of delivering large-scale projects on time and within budget support this expansion.

(QRCODE)

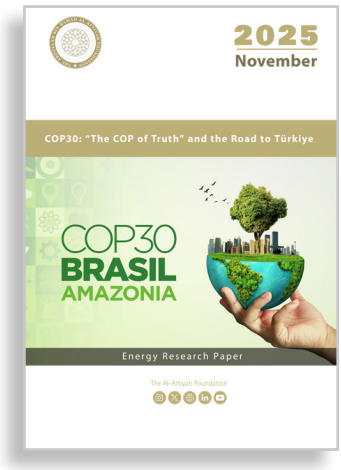


January – 2026

Quick and Dirty: How Does Natural Gas Compete With Renewables and Coal in Asia?

Faced with relatively expensive natural gas imports, many Asian countries have turned to a combination of renewables and coal. This delivers reliable electricity at reasonable costs with some reduction in greenhouse gases and other pollutants.

(QRCODE)



November – 2025

COP30: "The COP of Truth" and the Road to Türkiye

The COP30 conference in Brazil was the first after a series of wider Middle East-hosted COPs, but still the fifth in a row to occur in a significant oil and gas producer.

(QRCODE)

Our partners collaborate with The Al-Attiyah Foundation on various projects and research within the themes of energy and sustainable development.

مؤسسة قطر
Qatar Foundation
Unlocking human potential لإطلاق قدرات الإنسان

KAHRAMAA كهرماء
المؤسسة العامة القطرية للكهرباء والماء
Qatar General Electricity & Water Corporation

World Petroleum Council

جامعة قطر
QATAR UNIVERSITY

جامعة حمد بن خليفة
HAMAD BIN KHALIFA UNIVERSITY

COLUMBIA UNIVERSITY
IN THE CITY OF NEW YORK

UİP-ICP
ULUSLARARASI İŞBİRLİĞİ PLATFORMU
INTERNATIONAL COOPERATION PLATFORM
İSTANBUL

جامعة الدوحة للعلوم والتكنولوجيا
UNIVERSITY OF DOHA FOR SCIENCE & TECHNOLOGY

MITSUI & CO.

إرثنا
earthna

GORD
المنظمة الخليجية للبحث والتطوير
Gulf Organisation for Research & Development

United Nations Global Compact

NATIONAL COUNCIL ON U.S.-ARAB RELATIONS

GULF TIMES

Middle East Institute

وزارة البيئة والتغير المناخي
Ministry of Environment and Climate Change
State of Qatar • دولة قطر

CENTER FOR THE NATIONAL INTEREST

ICC Qatar

The Al-Attiyah Foundation

Tel: +(974) 4042 8000,
Fax: +(974) 4042 8099
www.abhafoundation.org

Barzan Tower, 4th Floor, West Bay.
PO Box 1916 Doha, Qatar
Alattiyahfndn

AlAttiyahFndn
The Al-Attiyah Foundation
Al-Attiyah Foundation