

MENA's Power Transition: Conflict and the Long Game

Whitepaper

Mapping the region's power capacity through
near-term shocks and long-term growth

New Energies
August 2026



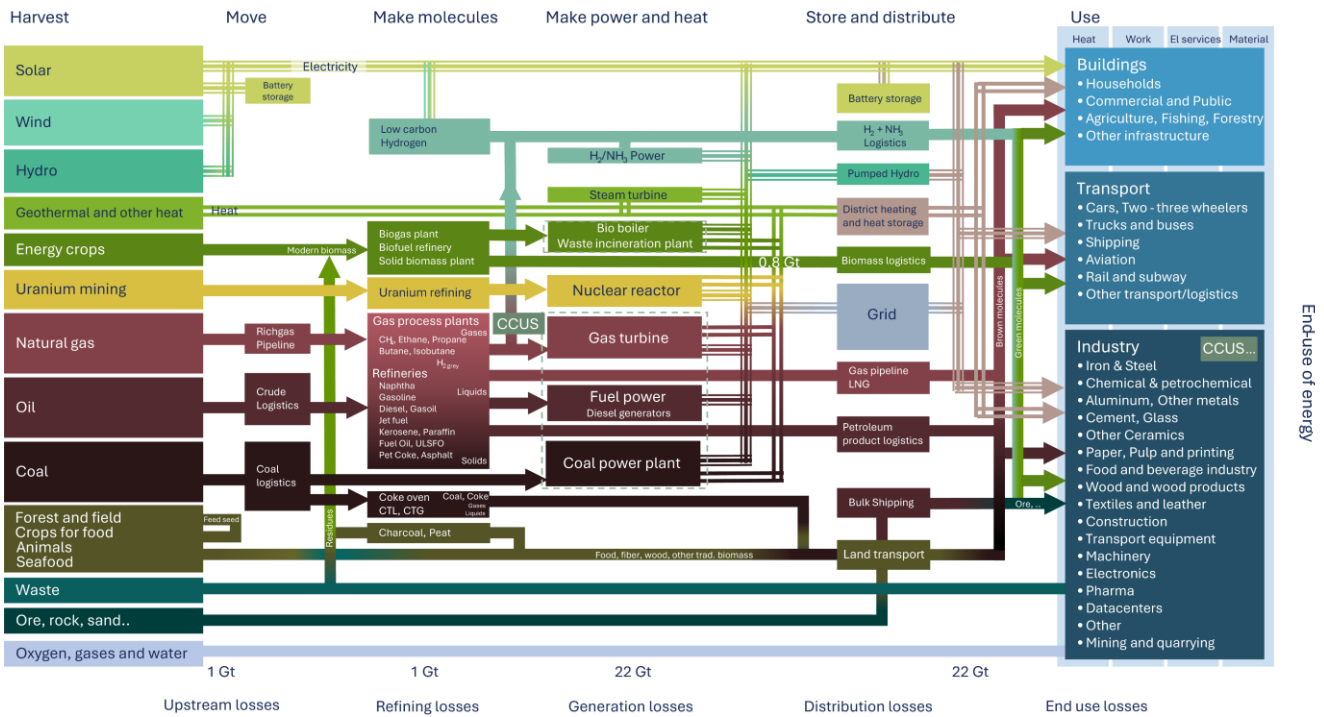
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MENA's energy transition weathers conflict shock, set to accelerate toward 2050

The Middle East and North Africa (MENA) is absorbing a near-term conflict shock to its renewable pipeline even as its energy transition accelerates. This whitepaper examines how conflict is reshaping deployment timelines in 2026, against the shift in the region's power system through 2050.

The Middle East war is expected to delay the region's active renewable pipeline by three to 12 months, driven by supply chain disruptions, capital diversion toward hydrocarbon repairs and rising war-risk premiums. The Persian Gulf's solar imports have slumped – the UAE and Saudi Arabia each lost more than 500 megawatts (MW) of average monthly imports, while the shares of Egypt, Morocco and Israel rose amid their independence from Hormuz-linked routes. Saudi Arabia, the UAE and Oman are expected to accelerate renewable deployment once the disruption clears.

Renewables remain the backbone of MENA's longer-term transition. Solar PV has surged fourfold since 2020 to nearly 40 gigawatts (GW) and is set to reach 176 GW by 2035. Meanwhile, onshore wind will see a tenfold lift to 108 GW. Battery storage is moving towards core grid infrastructure, with close to 60 gigawatt-hours (GWh) of capacity already announced. Green hydrogen adds longer-term upside despite financing risks.

Natural gas continues to anchor conventional generation and is forecast to reach 503 GW by 2035 as countries convert oil-fired capacity to gas-fired capacity to free up crude for exports. Nuclear power, concentrated in the UAE and Iran, is set to widen as Egypt and Saudi Arabia advance new build projects.

Power demand is expected to rise 40% by 2035 on population growth, data centers, and cooling and desalination needs. Total installed capacity is expected to quadruple to more than 2,300 GW by 2050, with clean energy driving the growth. Renewable generation's share will also advance from 5.4% to 70%.

Rystad Energy's base case tracks a 2.0-degree pathway for MENA region – where degree scenarios refer to average global temperature rises above pre-industrial levels in degrees Celsius (°C). Emissions are expected to peak near 830 million tonnes of carbon dioxide (CO₂)-equivalent in 2026 before diverging sharply across scenarios. MENA is absorbing a temporary setback without losing sight of its longer-term energy transition. A region built on gas and oil is steadily adding clean capacity to power its next 25 years of growth.



MENA's energy transition is absorbing a temporary conflict-driven setback without losing sight of its longer trajectory. A region built on gas and oil is steadily adding clean capacity to power its next 25 years of growth.



RystadEnergy

Middle East war delays, but will not derail, the region’s renewable transition

The Middle East war has reshaped near-term energy market expectations, disrupting hydrocarbon supply and pressuring power markets reliant on liquefied natural gas (LNG), oil imports and spot gas in Europe and Asia. While Middle Eastern countries retain access to domestic fossil fuels, the closure of the Strait of Hormuz and the crisis extend the disruption beyond hydrocarbons.

Conflict proximity, supply chain vulnerability, capital diversion and institutional resilience are all critical for the deployment of renewables. We expect the war to delay MENA’s active renewable pipeline by three to 12 months.

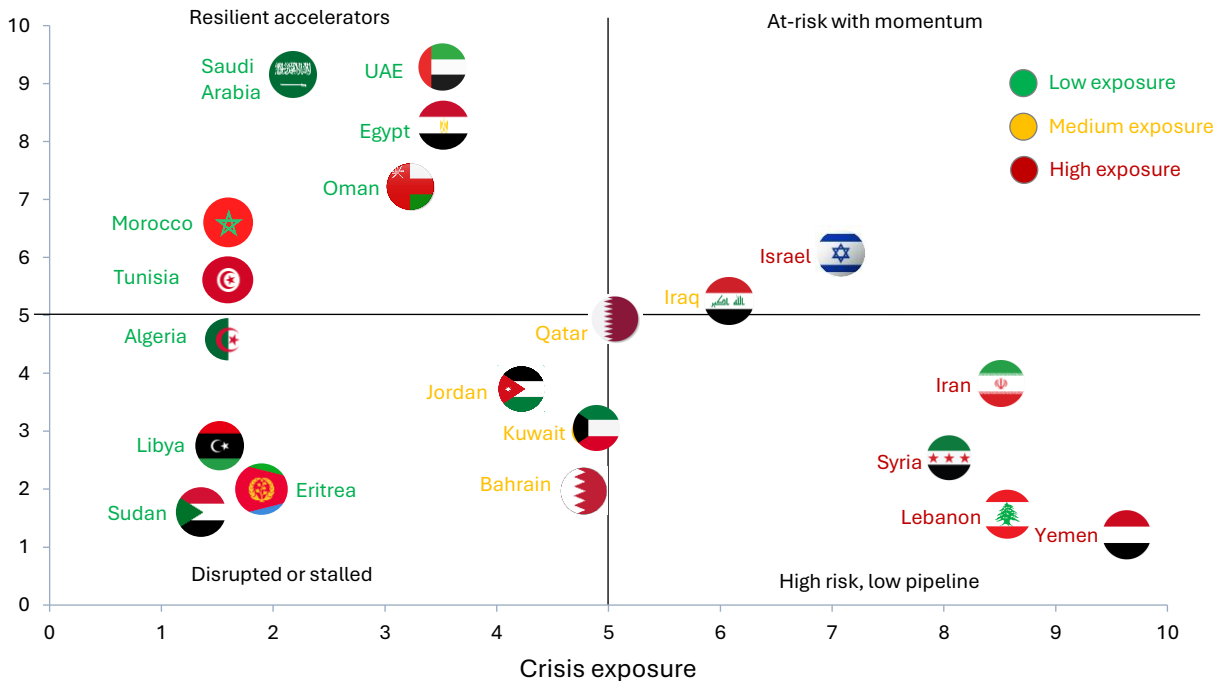
The near-term delay stems from three factors. Supply chain disruptions are delaying equipment deliveries across the Persian Gulf corridor, given the region’s heavy reliance on Chinese imports. Capital, sovereign funds, national oil companies (NOCs) and government attention are shifting towards the restoration of damaged hydrocarbon infrastructure. War-risk premiums and surging cargo insurance costs are hitting renewable projects’ economics, given the high upfront capital needs and thin-margin,

25-year power purchase agreement (PPA) revenues. On the other hand, the financial incentives of renewables for oil and gas exporters – such as the UAE, Saudi Arabia, Qatar, Kuwait, Iraq, Algeria and Egypt – have strengthened on the back of the war. Every MW of solar or wind deployed domestically frees up hydrocarbons for export at elevated prices.

The overall effect is a short-term delay followed by a sharper medium-term acceleration in Saudi Arabia, the UAE and Oman. Meanwhile, Qatar, Kuwait, Iraq, Bahrain and Jordan are expected to face moderate delays, with recovery contingent on market stabilization. Iran, Israel, Syria, Lebanon and Yemen remain at high risk and are likely to face prolonged delays in renewables deployment.

Low crisis exposure and strong pipeline momentum enable Egypt and Morocco to capture the same export incentives that are driving renewables in the Persian Gulf. Tunisia and Algeria face low exposure but weaker momentum, while Libya and Sudan are held back by weak institutional capacity rather than direct conflict risk.

Risk-opportunity scatter matrix
Renewable pipeline momentum



Crisis exposure includes multiple factors beyond conflict proximity such as Institution resilience, Supply chain vulnerability, Capital diversion, Existing power infrastructure and Renewable pipeline capacity.
Source: Rystad Energy research and analysis

Persian Gulf’s solar imports crash, North Africa bucks the trend

A clear disruption across key maritime routes is pushing back project timelines. While other regions saw module imports surge ahead of China’s removal of the value-added tax (VAT) export rebates for solar PV products on 1 April, the Middle East has lagged. The average monthly solar PV imports of Persian Gulf markets since the conflict began in March 2026 have fallen sharply from their respective 2025 averages. The UAE’s imports slid 687 MW from 785 MW to just 98 MW, while Saudi Arabia saw its imports fall 580 MW from 719 MW to 139 MW. Imports of Iraq, Oman and Iran also shed 105 MW, 70 MW and 48 MW, respectively.

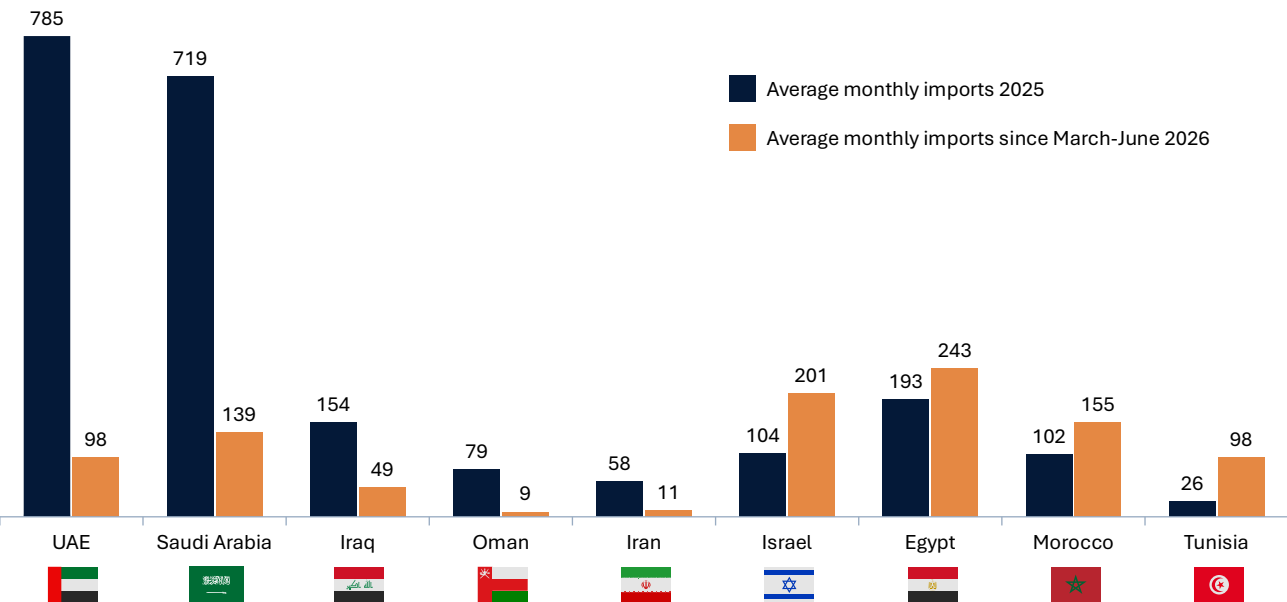
Israel and North African nations emerged as a contrast to the Gulf markets. Israel’s monthly average imports stood at 201 MW, up 97 MW from the 2025 average. Over in North Africa, Egypt’s average amounted to 243 MW (+50 MW) and Morocco’s totaled 155 MW (+53 MW). Tunisia’s monthly average rose to 98 MW from a 2025 average of 26 MW. This reflected the countries’ independence from routes through the Strait of Hormuz and the Red Sea.

Multiple cost pressures have also amplified the impact. Freight rates for the Asia-Mediterranean route

were up by 25-30% by early April compared to late February. China's elimination of the VAT rebate also raised module costs by 9%. Meanwhile, elevated silver prices are pushing up cell costs, prompting original equipment manufacturer (OEM) suppliers, engineering, procurement and construction (EPC) contractors, and developers to revisit signed contracts, reprice risks and consider redirecting capital toward more stable, lower-risk markets in the Middle East.

The region's highly competitive auction market produces record-low bids ranging from \$10.5-20, leaving developers with thin margins. To achieve these bids, project capital intensity is already near the lower end. With multiple cost pressures and war-risk premiums now embedded into project finance, EPC contractors are repricing force majeure and logistics risks in new bids. Countries awarding their first large-scale projects – such as Kuwait, which is advancing its initial large-scale solar program with projects totaling 1.6 GW – are particularly vulnerable to this repricing. Meanwhile, projects in the Middle East that have already reached financial close will face margin compression.

Average monthly solar panels imports since conflict of key countries compared to 2025 average
Megawatts (MW)



Source: Rystad Energy Solar Solution

From oil to solar: MENA’s energy transition gathers pace

Historically a major oil and gas hub, MENA has switched gears to focus on renewable energy, particularly solar PV. The region has one of the highest solar energy potentials in the world, with average solar irradiance exceeding 2,000 kilowatt-hours (kWh) per square meter annually. Countries such as Saudi Arabia, the UAE, Morocco and Egypt are leading the charge.

Solar PV in MENA has risen from 10 GW in 2020 to close to 40 GW by end-2025, driven by abundant solar potential and falling technology costs. Saudi Arabia leads with over 12 GW (30% of MENA’s total), followed by the UAE with over 6.5 GW. Solar PV remains the center of the region’s energy transition. Solar PV capacity is projected to rise from 39 GW in 2025 to 176 GW by 2035, with Saudi Arabia, the UAE, Egypt, Oman and Israel accounting for two-thirds of new capacity additions.

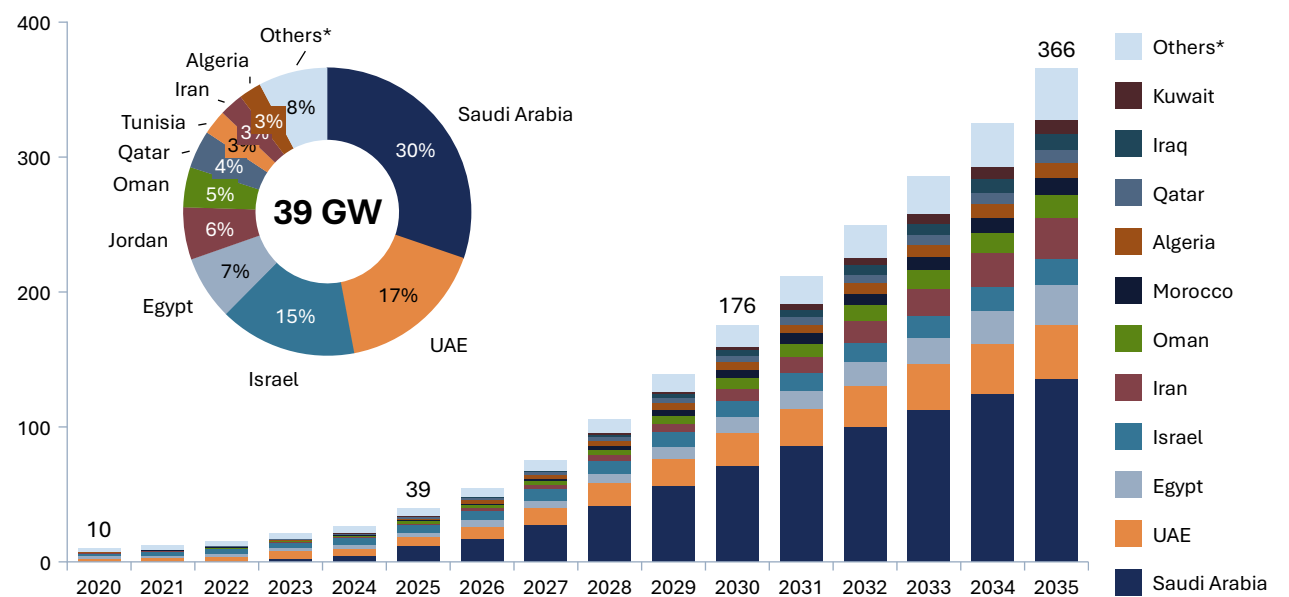
Governments in MENA have also introduced policy reforms and governmental support for rooftop and commercial & industrial (C&I) solar PV. These are in line with the region’s moves to diversify its energy sources, reduce its dependence on fossil fuels, address environmental concerns and support

economic development. Future growth will be driven by ambitious national targets, low-cost auctions and a deep construction pipeline. Saudi Arabia has set its sights on 100-130 GW of renewable installed capacity by 2030. Landmark projects – including the 3-GW Bisha and Humaij clusters, as well as the Al Sadawi and Haden projects of 2 GW each – underpin a solar PV pipeline that surpasses 40 GW.

In the UAE, electric utility company Emirates Water and Electricity Company (EWEC) plans to grow Abu Dhabi’s solar PV beyond 30 GW by 2035, supplying around 40% of the country’s total power generation. The Masdar-EWEC flagship project – which pairs 5.2 GW of solar with 19 GWh of storage to deliver round-the-clock clean power – reflects this momentum.

In North Africa, Morocco’s Noor and Egypt’s Benban projects are some of the largest globally. In Algeria, solar PV developments stems from Sonelgaz’s sequential tenders. Elsewhere, Egypt’s pipeline centers on flagship mega-projects led by Scatec and Infinity Power. Morocco’s Noor Midelt projects sit under MASEN’s Noor program while Tunisia is progressing through smaller independent power producer (IPP) tenders.

Solar PV cumulative capacity by country
Gigawatts (GW)



Source: Rystad Energy Power Macro Solution

Abundant resources and project pipeline drive solar manufacturing ramp-up

MENA’s solar manufacturing potential is rising rapidly as countries leverage abundant resources and a growing PV project pipeline. These projects are typically used for direct power generation and powering electrolyzers for hydrogen production.

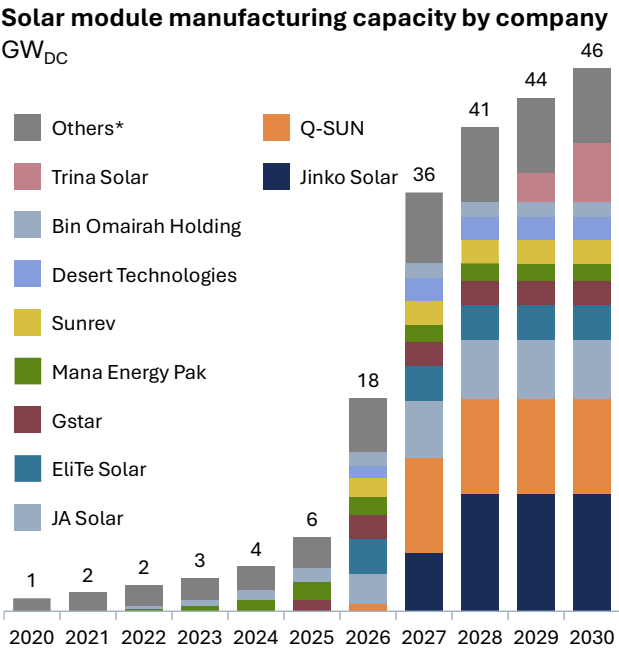
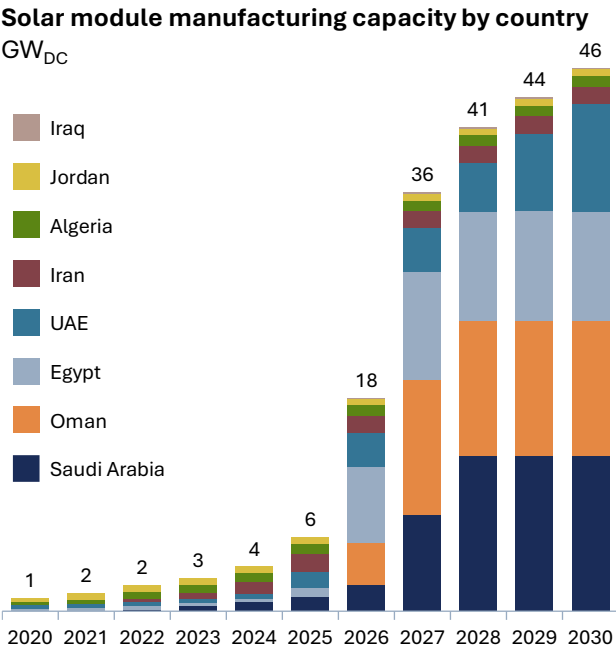
MENA’s growing focus on renewable energy and domestic value chains is pushing several nations in the region to scale up their manufacturing capacities for solar panels and related components. MENA’s solar module manufacturing capacity is forecast to jump from 1 gigawatt direct current (GW_{DC}) in 2020 to 46 GW_{DC} by 2030.

Saudi Arabia, Oman, Egypt and the UAE will account for the bulk of regional capacity by 2030. Saudi Arabia’s growth is anchored by three large projects – Bin Omairah Holding’s 1.2-GW Masdar Solar factory in Tabuk, Desert Technologies’ 5-GW Jeddah facility that is split between cell and module capacity, and the Public Investment Fund’s \$1-billion joint venture with JinkoSolar for a 10-GW TOPCon cell and module plant, alongside a separate 20 GW ingot-and-wafer agreement with TCL Zhonghuan. Oman follows closely behind, built around Q-SUN’s 10 GW facility in Sohar and JA Solar’s \$565 million cell and module factory, also in Sohar, alongside a smaller domestic base through Sheida Solar and American Advanced

Clean Energy, which targets US exports under Oman’s free trade agreement.

Egypt and the UAE round out the next tier, though each country is scaling capacity through a different model. Egypt’s growth is concentrated on a few large anchor projects in the Suez Canal Economic Zone – such as EliTe Solar’s 5-GW cell-and-module facility, Sunrev’s \$200-million complex at Ain Sokhna and a 4-GW cell, module and storage plant by a consortium led by JA Solar – alongside a longer tail of smaller entrants. The UAE’s pipeline is built on manufacturers DuSol Industries and Microsol International, which are now expanding into N-type technology. The country’s pipeline also includes new entrants such as Trina Solar’s large-scale polysilicon-to-module base, Almaden’s proposed solar glass plant, Gstar’s N-type module facility, Nippon Energy’s Dubai plant and Sahaj Solar’s facility targeting exports to the US and countries in the Gulf Cooperation Council (GCC).

However, a meaningful share of this pipeline may face delays, downsizing or cancellation. Its reliance on Chinese partners and US re-export access leaves it exposed to shifts in trade policy, while global oversupply and weak domestic demand limit fallback options if exports falter.



Source: Rystad Energy Solar Solution

Onshore wind gathers pace as the region diversifies beyond solar

Onshore wind has been overshadowed by the region's solar ambitions but is now emerging as a meaningful second pillar of MENA's energy transition. The region benefits from strong wind resources, with consistently high wind speeds and abundant land supporting large utility-scale developments. Egypt, Saudi Arabia, Morocco and Oman are the region's leading markets, supported by cheaper Chinese turbine technology and steadily improving grid infrastructure.

MENA's onshore wind capacity has risen from 5 GW in 2020 to around 9 GW by the end of 2025. Egypt led this growth, anchored by projects along the Gulf of Suez corridor – including AMEA Power's 500-MW Amunet farm, as well as NREA's Gulf of Suez and Lekela's West Bakr projects. Projects commissioned in Morocco over the same timeframe (Jbel Lahdid, Midelt, Aftissat and Boujdour) are all part of Morocco's 850-MW integrated wind program, developed under the Nareva–Enel Green Power joint venture.

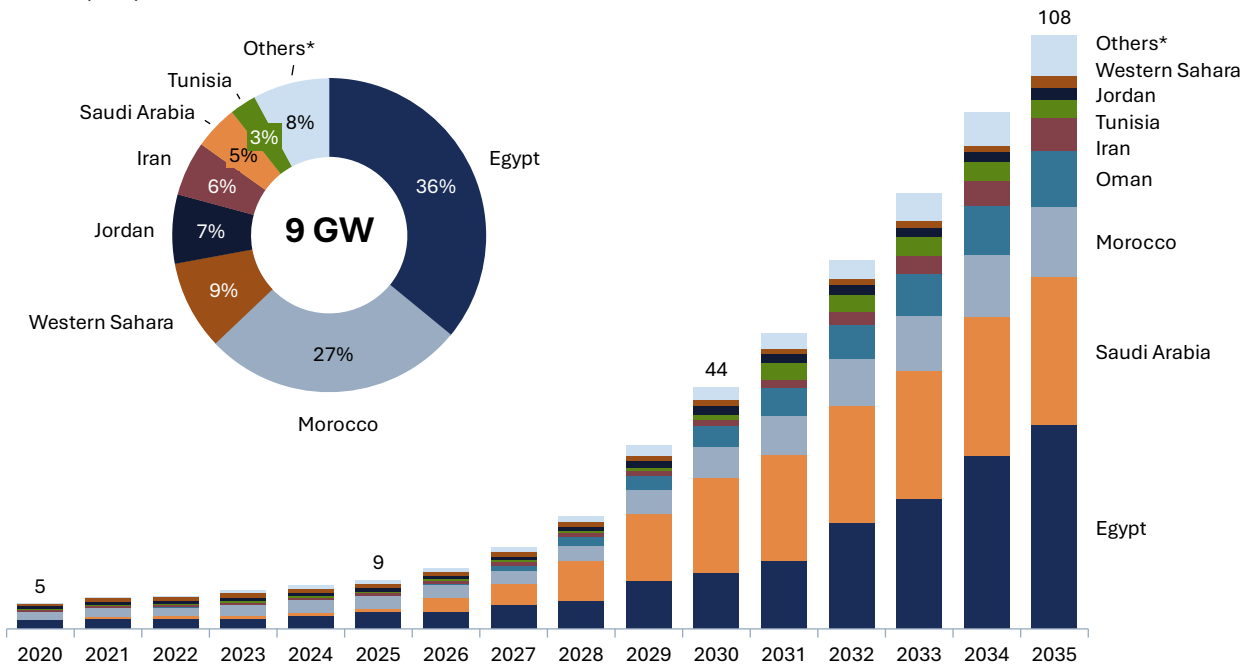
Onshore wind capacity is expected to climb to nearly 44 GW by 2030 and reach 108 GW by 2035, driven by

large project pipelines, competitive auction prices and firmer policy backing.

The Starah (2 GW), Dawadmi (1.5 GW) and Shaqrah (1 GW) developments are the gigawatt-scale wind projects under Saudi Arabia's national renewable program. In Egypt, the pipeline is led by ACWA Power's 2-GW South Hurghada project, which is set to surpass ACWA's 1.1-GW Suez facility to become the country's largest wind farm. The remainder of the pipeline is spread across a broader set of developers expanding across the Ras Shokeir and Ras Ghareb coastal areas along the Gulf of Suez corridor.

Meanwhile, Oman is scaling up quickly with the Riyah 1 and Riyah 2 wind projects, developed by OQ Alternative Energy and TotalEnergies. Nama PWP has advanced a pipeline of five new wind IPPs totaling around 1 GW and worth over \$1 billion, forming a central part of Oman's plan to have renewables account for 30% of its power generation by 2030. Meanwhile, Morocco aims to build on its 850-MW program and additional bid rounds to help push the country towards its target of 52% renewables by 2030.

Onshore wind cumulative capacity by country
Gigawatts (GW)



Source: Rystad Energy Power Macro Solution

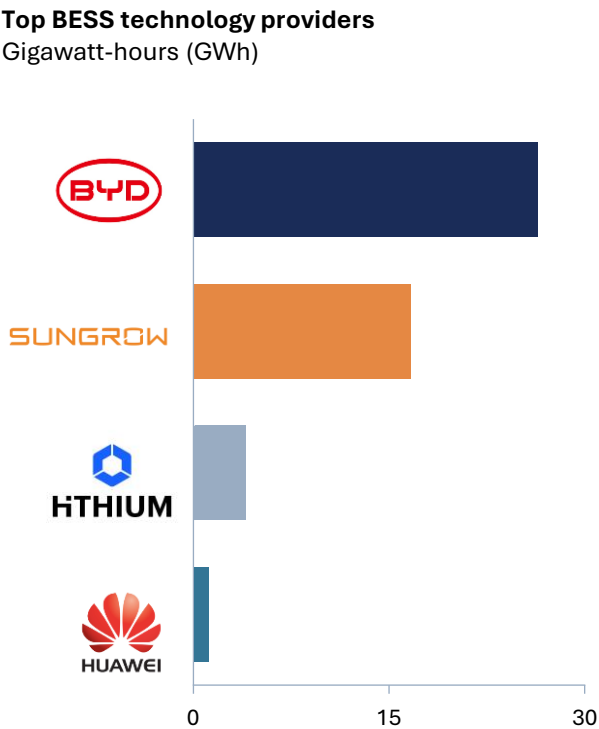
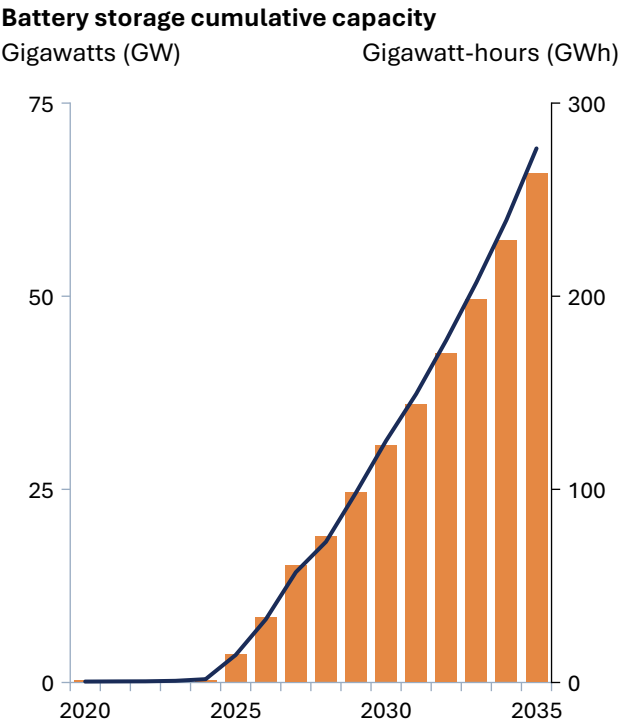
MENA turns to battery storage to power its energy transition

Energy storage is becoming critical as MENA positions itself as a global leader in renewable energy, particularly in solar and onshore wind. The intermittency of these sources has pushed battery energy storage systems (BESS) into the spotlight, as they improve the reliability of existing renewable capacity, reduce system costs and help balance supply and demand. Advances in battery technology, combined with falling costs across renewables and storage, are further propelling MENA to the forefront of the global energy storage market.

Saudi Arabia, the UAE, Egypt, Morocco and Israel are the key players in the region's BESS buildout, having collectively announced projects totaling close to 60 GWh of capacity. Saudi Arabia is aiming to reach 48 GWh of battery storage capacity by 2030 under its National Renewable Energy Program. The country connected 7.8 GWh of storage to the grid last year, which featured Sungrow BESS systems, and commissioned a 2.5 GW/ 12.5 GWh grid-forming BESS spanning five regions, featuring BYD's BESS systems. Further momentum came from a second tender round for 3 GW/12 GWh of independent storage projects.

In the UAE, the standout project is the Masdar-EWEC round-the-clock scheme, which pairs 5.2 GW of solar PV with a 19 GWh battery system featuring BYD and Sungrow BESS systems. This marks the largest integrated solar-plus-storage project globally and is part of a broader EWEC-Masdar framework that aims for more than 8 GW of battery storage capacity by 2035. Additionally, the Dubai Electricity and Water Authority (DEWA) launched an auction for Phase 7 of the Mohammed bin Rashid Al Maktoum Solar Park, featuring 1.4 GW/8.4 GWh BESS along with 2 GW solar PV.

Egypt's BESS pipeline spans several hybrid and standalone projects. AMEA Power leads with three projects – the 900-MWh Abydos Hybrid, 1-GWh Nefertiti and 500-MWh Horus BESS projects. Scatec follows with three projects, led by the 3.94-GWh Energy Valley Hybrid, the largest in the pipeline, along with the Dandara and Obelisk projects(200 MWh each). The rest is spread across companies including Kemet Industries Group and Infinity Power. Morocco's buildout centers on ONEE's 1.6-GWh tender for standalone storage sites in northwest Morocco to supply Kenitra, while storage is also embedded in the country's solar and wind programs.



Source: Rystad Energy Power Macro Solution

Green hydrogen bets advance unevenly across the region as demand risk lingers

Green hydrogen has become one of MENA's flagship energy transition bets, with Saudi Arabia, Oman, Egypt, the UAE and Morocco all pursuing large-scale export-oriented projects built on the region's exceptionally cheap solar and wind resources.

Saudi Arabia anchors the region's ambitions through NEOM, an \$8.4-billion joint venture (JV) with Air Products targeting 1.2 million tonnes of green ammonia per year with operations due to start in 2026. The country is also using hydrogen domestically through a \$25 billion decarbonization push across petrochemicals, steel, cement and aluminum. The program targets 130 million tonnes of annual CO₂ reductions by 2030, supporting both exports and domestic decarbonization.

The UAE has taken a more diversified approach centered on Masdar, which has committed to producing 1 million tonnes of low-carbon hydrogen per annum by 2030. Rather than relying on a single megaproject, it is pursuing multiple smaller developments alongside its solar and nuclear build-out. Egypt has historically led the region in project count, featuring over 30 green hydrogen projects and

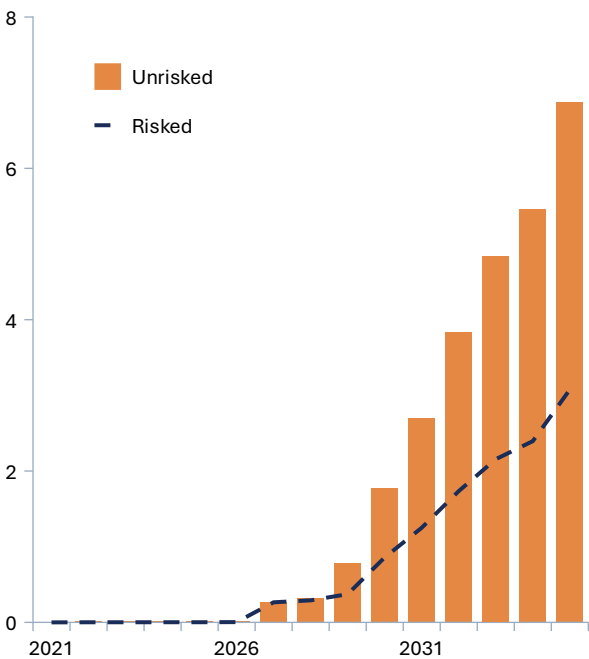
surpassing all other MENA markets, supported by momentum from hosting the COP27. While most projects remain at feasibility or memorandum of understanding (MoU) stage, Egypt's wind resources along the Gulf of Suez and existing Suez Canal port infrastructure give it an advantage in export logistics.

Oman has emerged as the clearest second flagship market after Saudi Arabia in the Middle East, featuring over 20 projects. Elsewhere, Morocco's hydrogen ambitions focus on reducing its reliance on fossil-fuel imports while building export capacity.

Financing and offtake risk remain the central constraints for the sector to scale beyond the handful of projects that have reached a final investment decision (FID). Green hydrogen requires substantial upfront capital. Without long-term offtake agreements, developers have struggled to commit, leaving most regional projects stalled at the feasibility stage. That risk is compounded by uncertainty around global hydrogen demand, which remains concentrated in traditional refining and fertilizer use instead of new export markets.

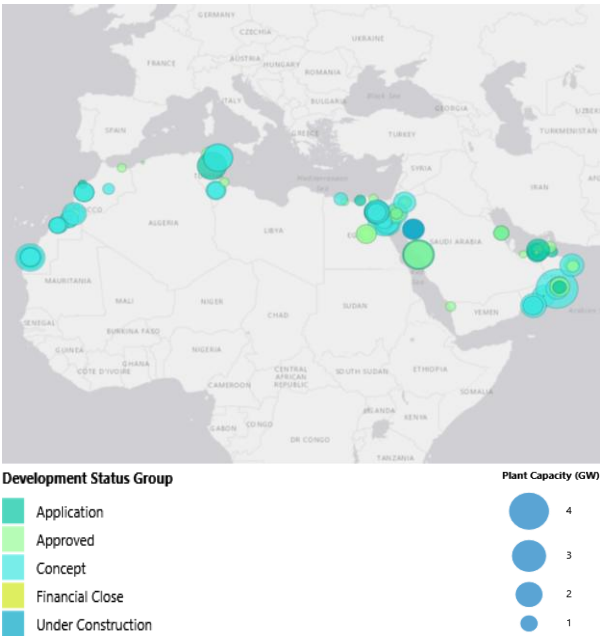
Green hydrogen production capacity

Million tonnes of hydrogen



Hydrogen electrolyzer project pipeline

Gigawatts (GW)



Source: Rystad Energy Hydrogen & Derivatives Solution

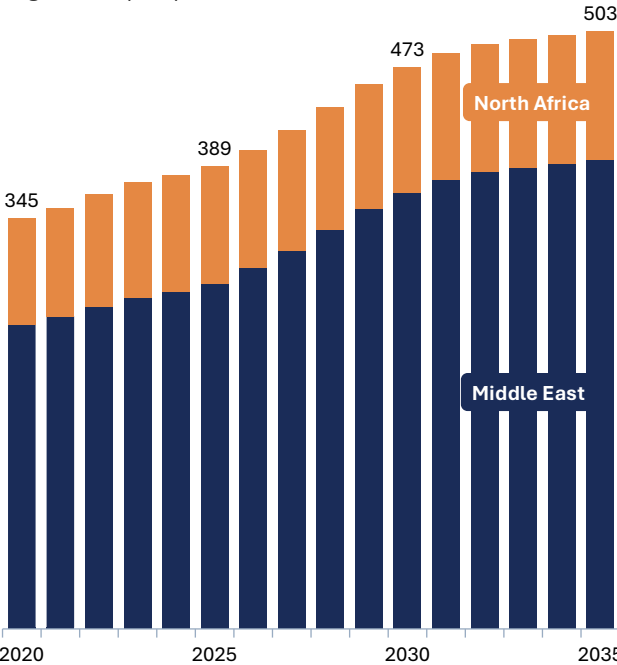
Gas to remain the backbone of MENA’s power mix through 2035

Natural gas remains the backbone of MENA’s power generation mix, and its dominance looks set to deepen. Regional gas-to-power capacity is on track to rise from 345 GW in 2020 to 503 GW by 2035, with the Middle East accounting for the larger share.

The share of intermittent renewable power generation in the region’s power mix is expected to tick up to 6.7% by the end of 2026 from 5.4% last year. With the rapid expansion of solar PV and onshore wind in the region, particularly in Saudi Arabia, the UAE, Oman and Egypt, Rystad Energy expects intermittent renewables to contribute around 19% to the region’s total power generation by 2030 and over 35% by 2035. Fossil fuels currently account for over 85% of the region’s power generation, with natural gas remaining the dominant power source.

Rising power demand – driven by economic diversification, artificial intelligence (AI)-linked data center growth and heavy desalination and cooling needs – is reinforcing the region’s dependence on gas. This comes despite subsidized domestic pricing across net importers such as Egypt, Morocco and Tunisia, which continues to keep consumption high.

Gas-to-power cumulative capacity by region
Gigawatts (GW)

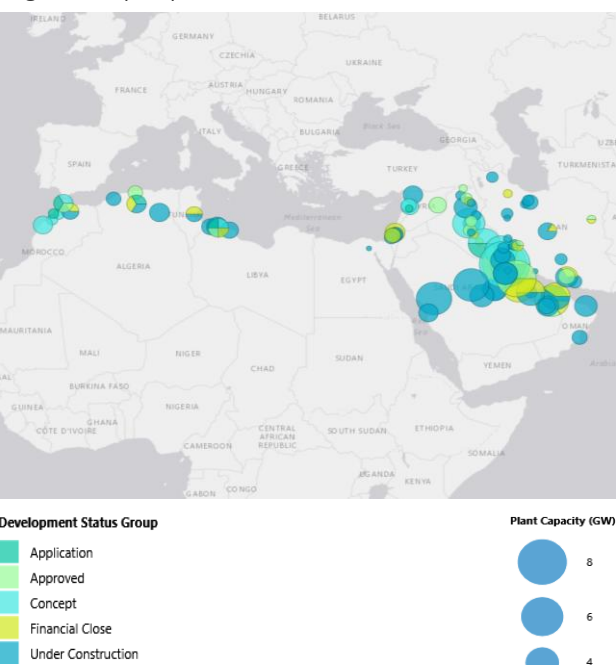


Source: Rystad Energy research and analysis; Rystad Energy Power Macro Solution

The flexibility of gas is crucial, particularly during periods of high power demand or when renewable generation is insufficient. Iraq, Lebanon and Saudi Arabia are using new gas capacity to displace oil-fired generation, which is expected to shrink to just 4% of the MENA’s power mix by 2035.

Saudi Arabia and Iraq are driving the current wave of development. Saudi Arabia accounts for a quarter of all gas-fired capacity under development in MENA, anchored by projects such as the 3-GW Qurayyah expansion, the Rumah 1, 2, Al Nairyah 1, 2, Taliba 1, 2 and Qassim project of 1.8 GW each. These are part of the nation’s strategy to convert oil-fired capacity to gas and free up crude for exports. Egypt, home to the 4.8-GW Beni Suef, Burullus and New Capital plants built under its 2018 megaproject, continues to add capacity alongside a growing renewables and nuclear program, while Iraq, Iran, Kuwait, Oman, Qatar and the UAE round out a Gulf-centered pipeline. Meanwhile, North Africa’s pipeline – concentrated in Egypt, Algeria and Morocco – remains comparatively thin, suggesting that the Middle East will continue to account for the larger share of regional gas-fired growth through 2035.

Gas-to-power project pipeline
Gigawatts (GW)



MENA's nuclear buildout widens as Saudi Arabia inches forward

Nuclear power in MENA remains concentrated in a small number of countries, with the UAE and Iran being the only operators today. The UAE’s 5.65-GW Barakah plant now meets about 22% of the country's domestic electricity needs and is the only fully commissioned, large-scale nuclear program in the region. Iran's Bushehr plant has one operational unit (1 GW), making it the region’s only other operating nuclear power state. However, its program carries far more geopolitical weight given renewed scrutiny following the recent conflict.

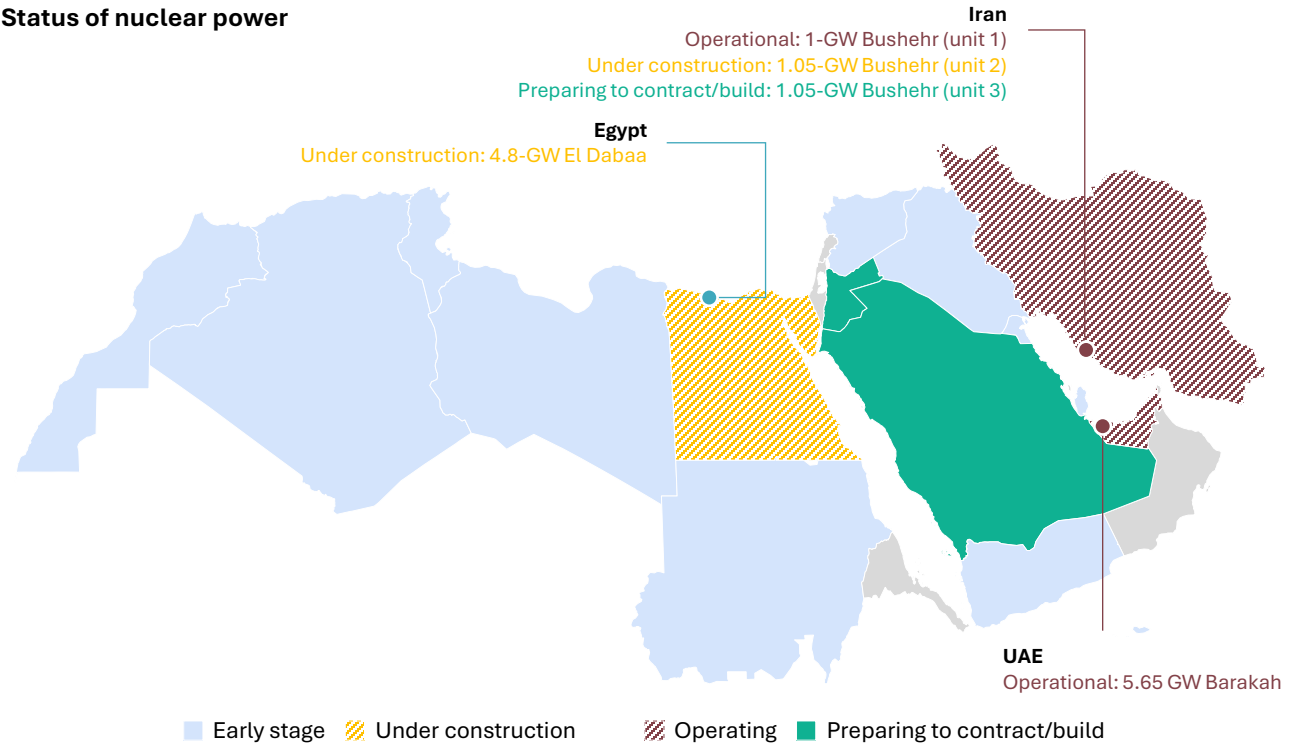
Egypt offers the region’s strongest short term construction outlook. Its El Dabaa plant, at 4.8 GW, is underway under a Rosatom-financed build. Iran is adding a second 1.05-GW Bushehr unit, extending an existing site. Saudi Arabia has seen the most progress towards a new nuclear build without yet breaking ground. Riyadh has shortlisted CNNC, EDF, Kepco and Rosatom as bidders for two 1.4-GW reactors planned at Khor Duweihin. Negotiations on a civil nuclear cooperation framework with the US also concluded in November 2025. The 123 Agreement was signed on 22 July 2026, setting terms for peaceful

cooperation while allowing Saudi Arabia to pursue domestic uranium enrichment following joint studies. Under US law, the deal is now under a mandatory congressional review period.

Iran's third Bushehr unit sits at a comparable preparatory stage, representing further expansion of an operational site. Nuclear plans in multiple other countries remain at an exploratory stage. Jordan is the most advanced but has shifted from a large-reactor plan with Rosatom towards small modular reactors. It has inked cooperation agreements with CNNC, Rolls-Royce, NuScale, X-energy and Rosatom, alongside active domestic uranium exploration. While Morocco, Algeria and Tunisia are all examining nuclear power as part of their longer-term energy mix, none of these countries have selected a site, vendor or financing structure.

Taken together, the region's nuclear buildout is being driven by three countries – the UAE, Egypt and Iran. Saudi Arabia is likely to be the next major entrant once financing and technology partners are finalized.

Status of nuclear power



Source: Rystad Energy research and analysis; Rystad Energy Power Macro Solution

As MENA diversifies beyond oil and gas, power demand set to rise 40% by 2035

Power demand across MENA has tripled since 2000 and is set to rise another 40% by 2035 under current policies. The increase is nearly equivalent to the combined power demand of France and Spain. The core drivers include rapid population growth, urbanization and rising incomes. But the most important reason for the region’s power demand growth is extreme heat and water scarcity, which will cause cooling and desalination to account for nearly 40% of all demand growth.

Industrial and commercial power demand is rising as the region diversifies beyond fossil fuels and moves up the value chain through petrochemicals, aluminum, steel, cement and desalination-linked heavy industry. A newer wave of data center and AI infrastructure investment – concentrated in Saudi Arabia and the UAE – is also boosting demand.

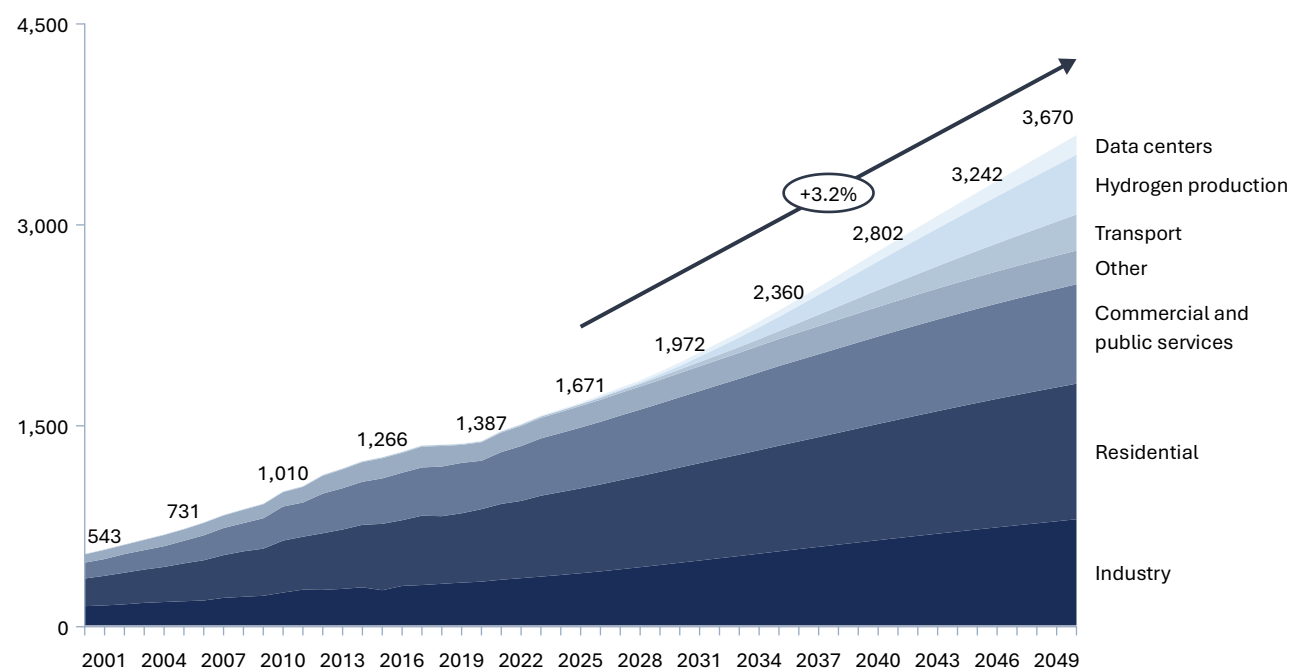
This is reinforced by national diversification strategies such as Saudi Vision 2030 and giga-projects like NEOM, the UAE's industrial strategy and Egypt's push to build out its Suez Canal Economic Zone. These are all designed to attract energy-intensive manufacturing and position these countries as

regional industrial and digital hubs. Persistently low, subsidized industrial electricity tariffs in several countries also make power-intensive production more competitive locally, reinforcing the sector's outsized growth trajectory. Additionally, commercial and public services demand tracks urbanization, rising living standards and heavy cooling loads, with tourism and services-sector build-out in the Persian Gulf emerging as a key contributor.

Power demand in the transport sector is rising on the back of electric vehicle (EV) incentives in the UAE and Saudi Arabia, as well as metro and rail expansions in Riyadh, Dubai and Cairo. Electrification also allows more oil to be exported, creating a new source of grid load from a near-zero base.

Residential power demand will continue to rise amid population growth, rising incomes and expanding air-conditioning penetration. Electricity subsidy regimes, which keep household tariffs well below cost-recovery levels across most of the region, are a significant policy driver of this growth, since they weaken the price signals that otherwise could curb consumption.

Power demand forecast by sector
Terawatt-hours (TWh)



Source: Rystad Energy Power Macro Solution

MENA’s power capacity to quadruple by 2050 as clean energy takes over

MENA's installed capacity has more than tripled since 2000, from around 160 GW to roughly 580 GW in 2025, mainly driven by gas-to-power buildouts. Low domestic fuel cost and abundant reserves have made this the default choice for new capacity across the region. Gas-fired capacity is expected to keep climbing from around 345 GW in 2020 to 503 GW by 2035. Oil exporting nations – including Iraq, Kuwait and Saudi Arabia – are also continuing to convert oil-fired capacity to gas-fired capacity, making more crude available for export.

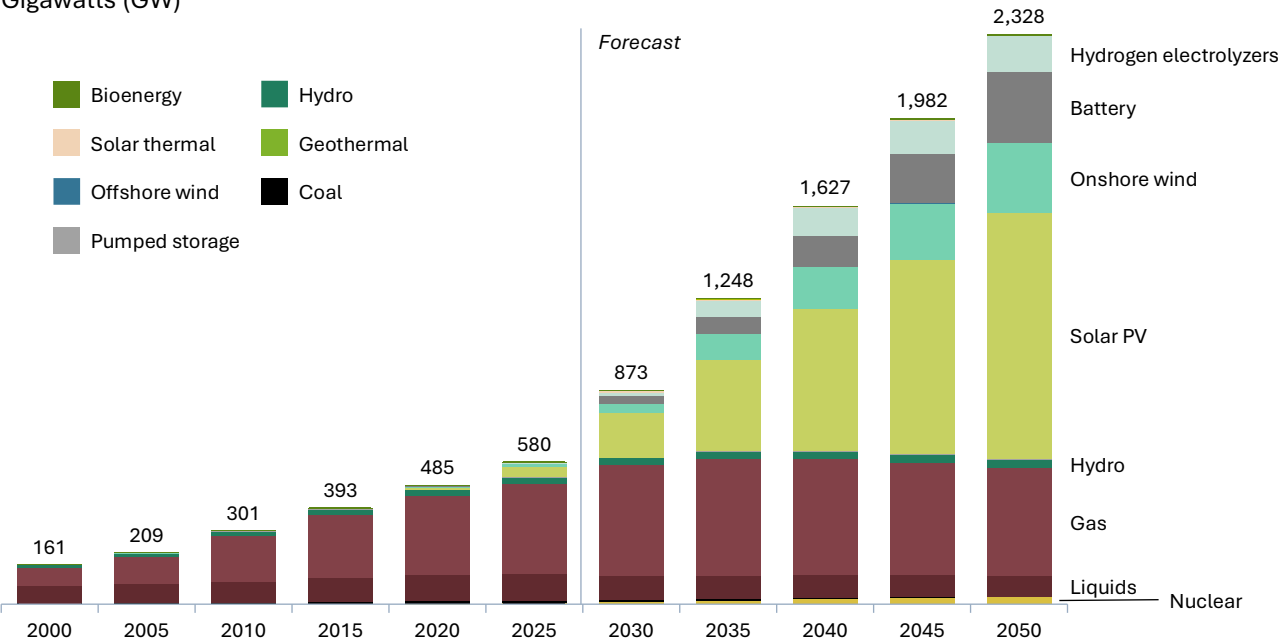
Total installed capacity is expected to surpass 2,300 GW by 2050, four times the level seen in 2025, with clean energy accounting for most of that growth. Solar PV leads the buildout and is expected to reach 176 GW by 2035, from under 40 GW as at end-2025, on the back of falling technology costs, competitive auction pricing and firm national targets. Onshore wind will follow a similar curve from a smaller base and is forecast to grow from 9 GW at the end of 2025 to 108 GW by 2035. Meanwhile, battery storage is moving from supporting core grid infrastructure, with close to 60 GWh already announced across the region.

This capacity is required to firm up variable output and enable round-the-clock delivery of clean power. Green hydrogen is a longer-term growth avenue, with the region emerging as a potential exporter. Most projects remain at an early stage, but could add significant capacity in the long term.

This shift is already showing up in the generation mix. Intermittent renewables' share of MENA power generation is expected to rise from 5.4% in 2025 to around 20% by 2030 and close to 70% by 2050

As a result, gas capacity will continue to expand in absolute terms through 2035 and beyond. However, its share of new capacity additions will decline steadily as solar, wind, storage and hydrogen jointly drive the bulk of growth through 2050. While MENA spent the first quarter of the century building a gas-centric power system, the next quarter is set to add clean energy capacity without displacing its existing gas fleet, building a flexible and balanced grid infrastructure.

Installed capacity forecast by energy source
Gigawatts (GW)



Source: Rystad Energy Power Macro Solution

Energy transition to accelerate in the region, solar and wind to reshape electricity mix

Historically known for its abundant oil and gas reserves, MENA still generates around 85% of its power from fossil fuels. Natural gas plays a dominant role in many MENA countries, contributing over 1,500 TWh or 71% of the region’s generation currently. The energy source also accounts for over 75% of the power generation mix in Algeria, Egypt and Iran, and nearly two-thirds of the power mix in Saudi Arabia and the UAE.

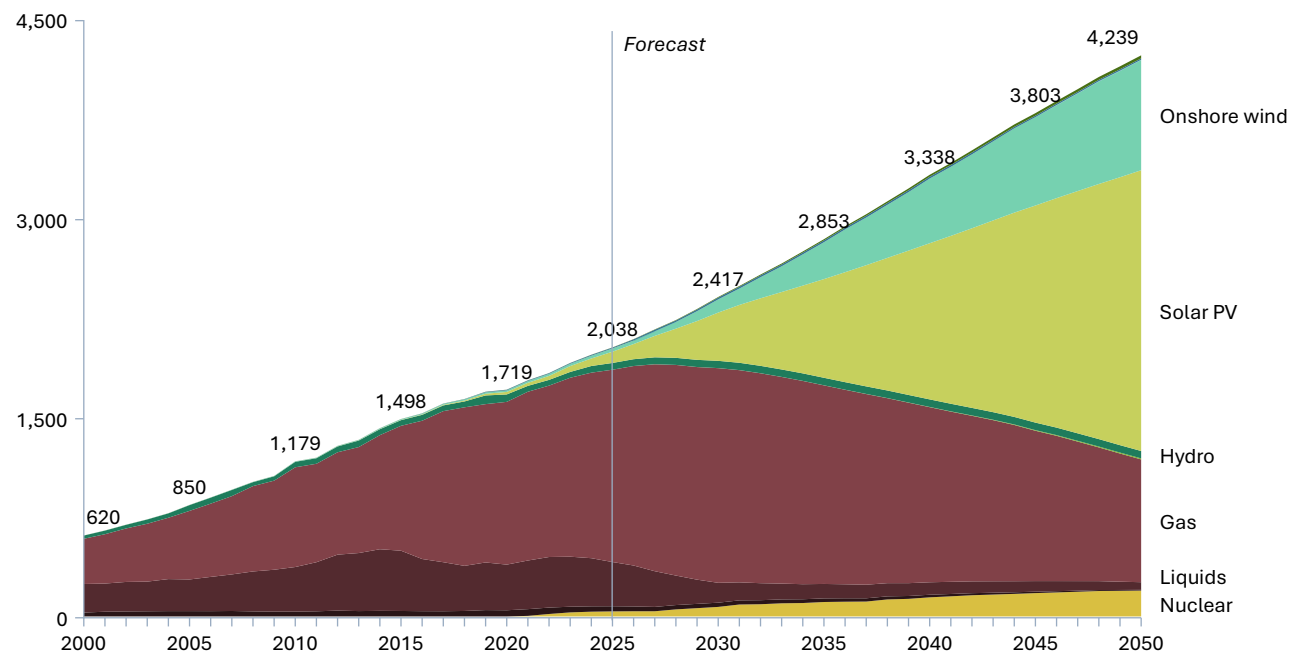
Natural gas will play a pivotal transitional role in the MENA region’s electricity sector as countries shift towards cleaner energy systems. While the region is aggressively expanding renewables such as solar and wind, gas remains essential for energy security and grid stability. This is particularly important given the intermittency of renewable sources. Gas-fired power plants provide flexible and reliable backup to balance variable renewable generation, which helps the region meet its rapidly growing electricity demand and support economic development. Apart from natural gas, the region also taps into other energy sources – such as oil, renewables and nuclear – to varying extents.

Fossil fuels currently account for over 85% of the region’s power generation. Renewables and nuclear make up the remainder of the power generation mix, with renewables responsible for almost 10% of the region’s overall power generation.

Nuclear power generation in the region is currently concentrated in the UAE and Iran, accounting for around 3% of the overall energy mix. It is also emerging as a key source in the region’s energy landscape, offering a sustainable alternative to conventional fossil fuels. Meanwhile, hydropower accounts for just over 2% of the region’s renewable power generation currently, led by Iran, Egypt and Sudan.

Solar and wind are rapidly reshaping the electricity landscape in the region, driven by abundant solar and wind resources, ambitious government targets, and falling technology cost as countries seek to diversify their energy portfolios and reduce their dependence on fossil fuels. These are expected to make up nearly 20% of the region’s power generation mix by 2030, up from almost 6.7% currently.

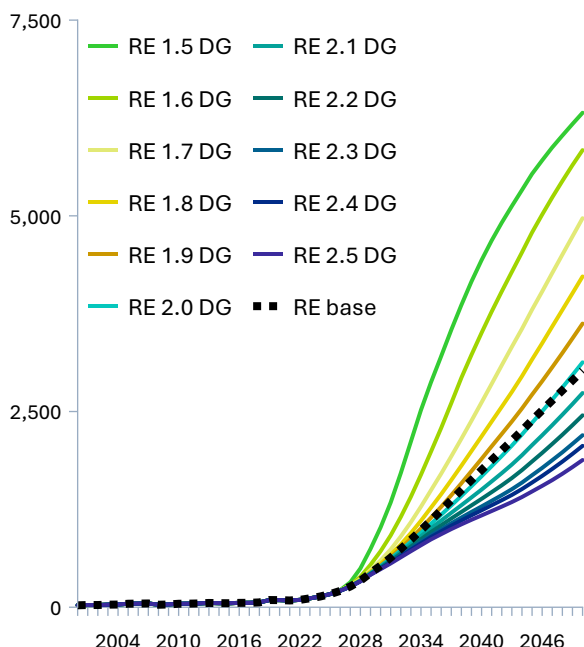
Power generation mix forecast by energy source
Terawatt-hours (TWh)



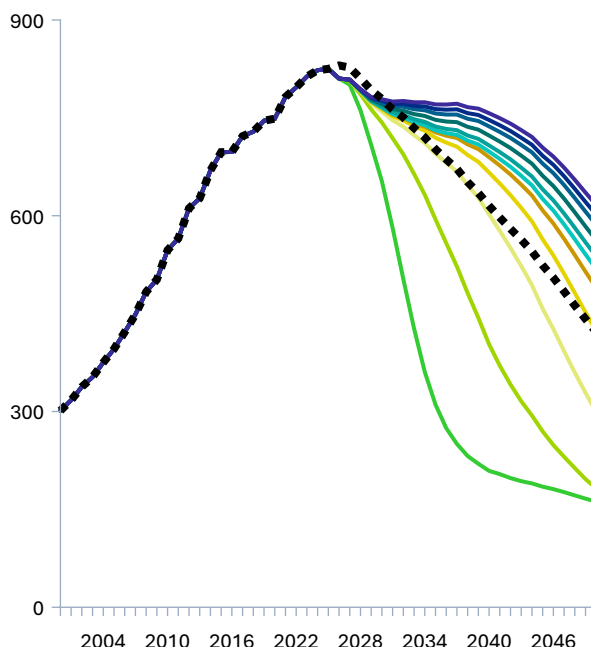
Source: Rystad Energy Power Macro Solution

MENA's base case tracks a 2.0-degree pathway as scenarios diverge

Renewable generation by scenarios
Terawatts-hours (TWh)



Power sector direct emissions
Million tonnes of CO₂-equivalent



Rystad Energy's base scenario represents our most realistic forecast for the region, drawing on a combination of factors such as historical data, capacity pipelines, current policy, most likely policy development, power demand growth, resource potential and economics. Rystad Energy's various degree (DG) scenarios, by contrast, are climate scenarios compliant with greenhouse gas emission budgets set out in the IPCC AR6 climate report, each corresponding to global warming limited to a specific degree Celsius threshold with a 50% probability of being achieved.

The chart on the left shows the evolution of total renewable electricity generation by scenario. Based on MENA's current trajectory, we project an annual renewable generation of 531 TWh by 2030 and 3,024 TWh by 2050. In 2050, the closest climate trajectory to the base case scenario is the 2.0 DG scenario for MENA.

This pattern reflects electrification rather than economic growth alone. To reach the more ambitious climate trajectories, MENA will need to develop significantly more non-fossil generation and expand battery storage capacity, alongside faster

electrification of transport, heating and industry. These will all push up power demand even as the broader energy system decarbonizes. Under less ambitious scenarios, the lack of sufficient storage capacity or other firm, clean power sources – such as nuclear – means that more dispatchable fossil fuel generation is needed to compensate for renewable intermittency.

That divergence flips entirely on the emissions side. All scenarios track an almost identical rise in power sector emissions from roughly 300 million tonnes of CO₂-equivalent in 2000 to a peak of nearly 830 million tonnes in 2026, reflecting the region's historically gas- and oil-heavy generation mix. From that peak, trajectories diverge sharply, with the 1.5 DG scenario showing the steepest decline to about 160 million tonnes by 2050.

Beyond 2026, the gap between scenarios widens, signaling how near-term policy and investment choices – particularly around gas-fired capacity additions, storage deployment and renewable integration – are key factors in shaping the region's long-term emissions path.

Source: Rystad Energy Power Macro Solution

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