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Arab Petroleum Investments Corporation

MENA ENERGY INVESTMENT OUTLOOK 2021-2025

Overcoming the Pandemic

May 2021

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About APICORP

The Arab Petroleum Investments Corporation (APICORP) is a multilateral development financial institution established in 1975 by an international treaty between the ten Arab oil exporting countries. It aims to support and foster the development of the Arab world's energy sector and petroleum industries. APICORP makes equity investments and provides project finance, trade finance, advisory and research, and its headquarters is in Dammam, Kingdom of Saudi Arabia. APICORP is rated 'Aa2' with stable outlook by Moody's and 'AA' with a stable outlook by Fitch.

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I. Executive Summary

The resurgence of the virus or its variants in several parts of the world and uneven access to vaccines is disrupting the recovery of the global economy and drawing different recovery paths. Following an estimated real GDP contraction of -3.3% in 2020, global GDP is expected to increase by 6% in 2021. The MENA region is expected to rebound by 4% in 2021 compared to a 3.4% drop in 2020. The more pertinent question is how sustainable this recovery will prove to be.

The path to recovery in most countries will continue to be supported by expansionary economic policies and fiscal tools. This path will be diverse, asynchronous and not necessarily sustainable for all. The most optimistic outlooks expect widescale access to vaccines by mid-2021. However, unbalanced realities exist between geographies in terms of the incidence of the virus and the related containment policies.

With the deployment of massive stimulus packages and subsequent widening public deficits and growing levels of public debt, concerns on sustainable recoveries are surfacing in several countries. In the United States, the public budget deficit reached 15% of GDP in 2020. By comparison, this figure in emerging markets such as MENA, non-OECD Europe and Latin America reached 10%, 6% and 11%, respectively, in 2020, and is expected to fall to 7%, 4% and 7%, respectively, in 2021.

Diverging health, economic and financial conditions and policy choices may lead to a K-shaped* global recovery characterized by diverging recovery paths. Certain sectors of the economy will experience a relatively swift V-shaped** recovery while others may suffer from a slower and more protracted L-shaped*** recession. With the weight of public debt threatening growth prospects over the medium and long terms, reducing high public sector-debt-to-GDP ratios looms as a major challenge. The recovery path for MENA economies will tread somewhere between the leading Asia-Pacific region – which is expected to drive the momentum as it positions itself as the engine of global economic recovery – and the trailing commodity-dependent emerging markets in Latin America. However, the recovery path in MENA will remain relatively sensitive to oil price fluctuations.

Barring unilateral technical adjustments or supply-side surprises, oil prices for the rest of 2021 will depend on how OPEC+ chooses to manage the market rebalancing. It is expected that uneven demand recovery across regions and sectors will emerge as China and India's heavy lifting loses steam. These factors, coupled with a weak dollar, will prompt major exporters to seek increased flexibility. As a result, the market will remain in backwardation for the short term, with a base case scenario for oil demand growth estimated at 5.5 MMB/D in 2021 and 2.5 MMB/D in 2022, and for Brent crude to average USD 50-60/ barrel during 2021-2022 with potential episodes of volatility.

* A K-shaped recovery occurs when, following a recession, different parts of the economy recover at different rates, times, or magnitudes.
** A V-shaped recovery is characterized by a quick and sustained recovery in measures of economic performance after a sharp economic decline.
*** A type of recovery characterized by a slow rate of recovery.

After the 2020 recession, the MENA region is expected to witness a delicate rebound in 2021, driven in most countries by commodity prices and exports. After a regionwide average of 3.4% contraction in 2020 – excluding Egypt's notable 3.6% GDP growth* – the region's economic growth is estimated to rise to 4% in 2021 and 3.7% in 2022.

Countries' external balances are under severe pressure in light of a drop in foreign revenues, slump in oil and tourism/Hajj revenues, and fall in personal remittances. As massive stimulus plans are being deployed, the resulting widening public deficit – which reached 10% of GDP regionwide in 2020 which is expected to drop to 7% in 2021 and 4% in 2022 – raises concerns on how sustainable the recovery will be, especially for countries with tight fiscal wiggle room. Only a handful of countries possess the ingredients in terms of governance, clear macroeconomic and fiscal policies and public finance management to translate those stimulus packages into productive debt. The varying degrees of success in the race to vaccinating the population illustrates the asynchrony and lack of integration between countries. Moreover, the pandemic had a mixed impact on economic diversification efforts despite large stimulus packages as less resilient non-oil sectors got pummeled, with the most severely impacted ones – like tourism, retail, and hospitality – witnessing bankruptcies and foreclosures .

For hydrocarbons producers, this decade might prove to be the last window for the low-cost producers to firmly re-establish their market share, particularly Saudi Arabia and Qatar. The diverging economic recoveries observed in the region in 2021 foretell a fragile financial sustainability for several MENA governments as they face the challenge of financing the growing debt and stimulus packages needed to accelerate the economic rebound in 2021 and beyond against worsening balance sheets.

Debt capital markets will remain the main tool through which diverse stimulus packages are financed. In 2020, GCC countries issued a record USD132.7 billion in international bonds and sukuk, more than half of which – USD66.3 billion – was in the form of sovereign bonds. Outside the GCC, Morocco successfully arranged its largest bond sale ever at USD3 billion in 7, 12 and 30-year tranches in late 2020, while Egypt issued a USD3.75 billion bond in 5, 10 and 40-year tranches in mid-February 2021. With more issuances of this size expected in the region, strict fiscal consolidation and painful structural reforms are likely to develop as key priorities in the coming years. The full impact of the 2020 crisis however remains highly uncertain at this stage at both country and regional levels, with widening inequalities and political instability emerging as additional risks which will skew economic growth to the downside.

On a positive note, 2020 was a record year for green financing. Since 2016, the MENA region issued a total of USD10.38 billion of green bonds, a record USD3.3 billion of which came in 2020. ESG commitments, standards and certifications are expected to remain atop national agendas from 2021 onwards in lockstep with the accelerating momentum towards green price premiums in energy, petrochemicals and other commodities.

* As per IMF April 2021 World Economic Outlook update

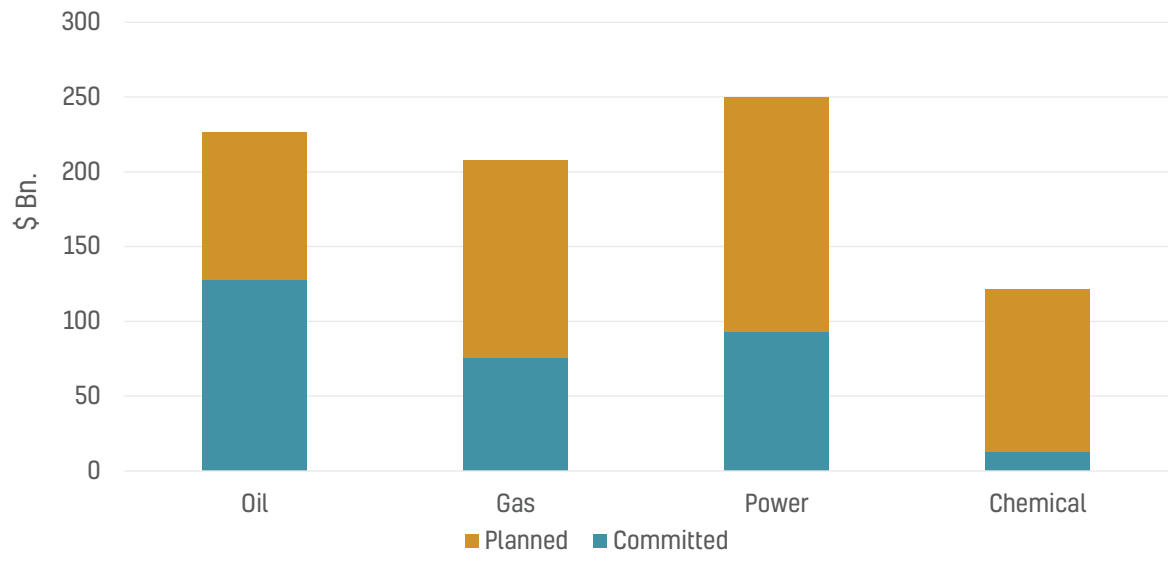
Following the unprecedented drop in energy demand, the 2020 drop in global energy investments is prompting possible long-term shortages. The record drop in oil demand, which reached 9% year-on-year (Y/Y) to 92.2 MMB/D in 2020, was echoed by a similarly unprecedented drop in oil and gas investments (including exploration and development) of -34% Y/Y. In 2021, the oil and gas industry announced planned investments of around USD300 billion in upstream activities, a figure which is unchanged from 2020 and is close to a 15-year low.

Highlights of APICORP's MENA Energy investments Outlook 2021-2025:

Total 2021-25 MENA energy investments register a modest increase of just USD13 billion over last year's 5-yr outlook – from USD792 billion to USD805 billion – a clear indication of the magnitude of the 2020 crisis' impact across MENA despite the region's relative resilience.

Sector-wise, investments in the power sector continue to surge throughout MENA, while investments in gas seem to be plateauing – notwithstanding Qatar's North Field Expansion (NFE) megaproject, the largest single LNG final investment decision (FID) in history. Although the region's upstream gains of 2020 are not featured in this year's outlook as recent discoveries are still being appraised, oil and gas (O&G) investments are expected to witness a healthy uptick in next year's outlook given the expected improvement in macro conditions.

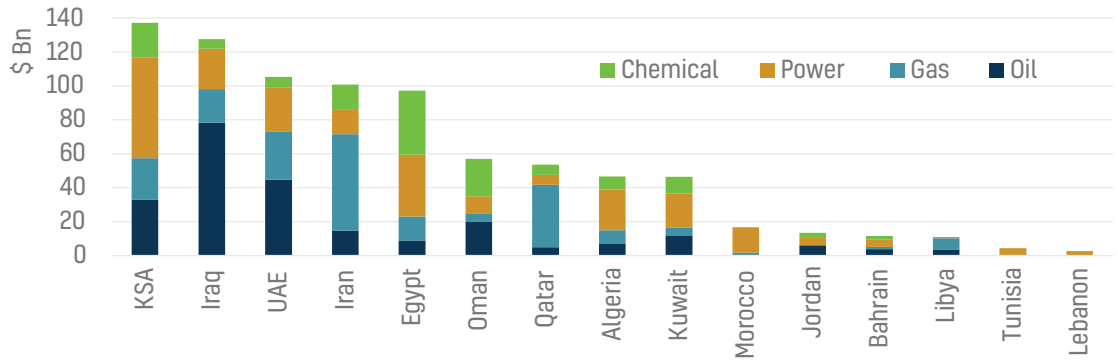
MENA Committed vs. Planned Energy Projects by Sector (2021-2025)*



Source: APICORP

* Planned investments are pre-final investment decision (FID); i.e. before the project owner/operator officially approves its execution. Committed investments are post-FID investments; i.e. projects which have entered the execution phase.

MENA 2021-25 Total Projects Value by Country & Sector



Source: APICORP

In oilfield services (OFS), a moderate sector growth is expected in traditional O&G equipment and services business in 2021, with the MENA region poised as a key activity area. US shale, on the other hand, is no longer a growth area.

For petrochemicals, the drive for further integration and rationalization continues. Reconfigurable petrochemical plants shifted to high- margin products during the pandemic (e.g., plastic packaging films and healthcare and hygiene products). For 2021, MENA petrochemical markets face tighter supplies, mainly due to shortage of shipping containers. With crude runs – including base oil – falling due to supply cuts and refinery runs improving on a y-o-y basis, the real question is how the petrochemical market growth will sustain in the next five years. Despite the region's strong appetite for directing more funds to petrochemicals, especially for planned commitments, it makes more sense under current market conditions to focus on enhancing cost and operating efficiencies rather than absolute expansion; in other words, favoring brownfield vs. greenfield projects. This is illustrated by the delays in several petrochemical megaprojects in North Africa as they await financial close.

A small drop is expected in MENA committed gas investments in 2021-2025 after the peak growth witnessed in 2020 due to the completion of several megaprojects. However, the overall outlook looks solid with an upside in planned investments, hinging mainly on ambitious unconventional gas developments across the region, in particular in Saudi Arabia, the UAE, Oman, and Algeria.

Power sector investments in MENA are expected to continue to flourish, characterized by an accelerating shift towards renewables. Collectively, the region is expected to add 3 GW of solar power in 2021, double the estimated 1.5 GW added in 2020, and nearly 20 GW over the next five years. However, given the intermittency of renewables and the lack of utility-scale grid storage solutions to date, fossil fuels and nuclear will remain indispensable in the power supply mix in the foreseeable future. Jordan and Morocco – and to a lesser extent Egypt - seem to be on track to hit their renewables targets, while the other MENA countries will need more scalable projects to hit theirs.

Regulations in MENA need to evolve to reflect the growing role and functions of energy storage in power networks, including leveraging flexibility from consumer aggregation or grid congestion.

Additional capacity – particularly from renewables – will make power trading a more commercially viable option in MENA. Currently, the main cross-country grids in the region show that almost all GCC and North-African countries have a surplus in power capacity, whereas several countries in the Levant region are suffering power deficits.

The combination of low-cost gas resources and renewable energy positions the MENA region as a strong candidate for becoming a major hydrogen-exporting region, whether it be blue or green. A few countries, such as Saudi Arabia and Morocco, have taken measurable steps to position themselves as low-cost exporters of blue and green hydrogen, in addition to net-zero ammonia and other low-carbon products.

II. Path to Economic Recovery*

1. How will the Global and MENA Economies Fare?

The resurgence of the virus or its variants in several parts of the world and uneven access to vaccines is disrupting the recovery of the global economy and drawing different recovery paths. As detailed in our *MENA Energy Investment Outlook 2020-2024* published last year, the global economy has been undergoing a triple crisis – health, economic and financial – that left the future global recovery highly uncertain. Sluggish domestic demand, rising inflation, a weak dollar, a stack of debt, and deployed stimulus packages are expected to lead to a rebound in 2021 in several countries, but the question is how sustainable this recovery will prove to be. Following an estimated real GDP contraction of 3.3% in 2020, the IMF forecasts global GDP is expected to increase by 6% in 2021. MENA region is expected to rebound to a 4% growth in 2021 compared to a 3.4% drop in 2020.

In most countries, the path to recovery during this outlook period 2021-2025 will continue to be supported by expansionary economic policies, namely via monetary accommodation (e.g. central banks purchasing securities, lowering reserve ratios and interest rates) and fiscal tools (e.g. reducing taxes and increasing government spending via large stimulus packages). The implementation of such policies will profoundly widen public deficits and increase fiscal pressures on the world's economies. Consequently, the recovery will be diverse, asynchronous and not necessarily sustainable for all.

i. Global Economy: Common Trends and Diverging Recovery Paths

Pandemic Management, Containment Measures and Vaccine Accessibility

The most optimistic outlooks expect widescale access to vaccines by mid-2021. This would allow commercial and industrial sectors to recover and international travel to resume, a boon for energy demand recovery. However, unbalanced realities exist between geographies in terms of the incidence of the virus and the related containment policies.

The 2020 crisis caused the trade of goods and services to nosedive, exacerbated by high uncertainties stemming from geopolitical tensions and change, including the US elections, US-China relations, post Brexit UK-EU agreement, among others. The return to its previous levels is not expected to be as swift due to the anticipated prolonged recovery process of industrial production as global output is expected to plateau amidst continued supply disruptions.

With the deployment of massive stimulus packages and the resulting widening public deficits, concerns on sustainable recoveries are surfacing in several countries. Public budget deficit of the US reached 15% of GDP in 2020. By comparison, this figure in emerging markets such as MENA, non-OECD Europe and Latin America was 10%, 6% and 11%, respectively, in 2020, and is expected to fall to 7%, 4% and 7%, respectively, in 2021.

* This section was contributed to by Imane Gilles, Non-resident research advisor

Extraordinary support-policies – including asset purchases, credit facilities, liquidity programs, and regulatory forbearance – are led by the Fed's average inflation-targeting-policy at 2%. This policy was adopted not only by major central banks – e.g. European Central Bank, The Bank of England, and the Bank of Japan – but emerging economies pegged to the US dollar as well – e.g. MENA region. In these cases, interest rates are expected to remain low in the short to medium term.

Different Recovery Timelines

Diverging health, economic and financial conditions as well as differing policy choices – e.g. scale of containment measures, economic and social support – might lead to a K-shaped global recovery, characterized by a divergence in the recovery paths. Certain sectors of the economy will experience a relatively swift V-shaped recovery while others may suffer from a slower and more protracted L-shaped recession. With the weight of public debt threatening growth prospects over the medium and long terms, reducing high public sector-debt-to-GDP ratios looms as a major challenge.

China, which had fully recovered by 2Q2020 and quickly followed by Taiwan and Vietnam in 3Q2020, is expected to be the prime engine of the global economic recovery. Collectively, the Emerging & Developing Asia region is expected to grow by 8.6% in 2021 and may account for more than half of the global growth in this decade.

Western economies on the other hand were severely affected by the resurgence of the virus, with the resulting second wave of recessions expected to induce slower recoveries as unemployment rises and inflation and interest rates remain low. Western Europe was particularly hit hard, yet there is a sense of optimism to make a relatively fast recovery – fueled primarily by the successful vaccination rollout, yet full recovery for developed economies is not expected before 2023-2024. The United States' massive USD900 billion federal stimulus package in 2020 led to a public deficit reaching 15% of GDP, and at the time of writing, President Biden's USD1.9 trillion stimulus plan just got approved and moved to execution.

Sub-Saharan Africa witnessed a real GDP contraction at an estimated 1.9% in 2020, the region's first such contraction since 1993. Most of these countries' public finances is quite concerning, as the massive healthcare spending needed to manage the pandemic sent the public sector debt soaring. Largely below the global average, the region is expected to grow at approximately 3.4% in 2021, conditioned by several factors such as socio-political stability, tourism revival and commodity prices.

As for MENA economies, the recovery path will tread between the leading Asia-Pacific region and the trailing hydrocarbon and commodity-dependent emerging markets in Latin America. The recovery path in MENA will remain relatively sensitive to fluctuations in oil prices.

ii. Developments of global oil prices

The freezing temperatures of the 2021 winter and large upstream, power and refinery disruptions exacerbated the tightening of the global crude market, settling the Brent and WTI in the USD55-65/barrel range during the month of February. Barring unilateral technical adjustments or supply-side surprises, OPEC+ renewed cooperation to manage the market rebalancing for the rest of 2021, especially in this current environment of uncertain demand recovery. However, as the priorities of the new US administration are particularly fixed on Iran's nuclear program, uneven demand recovery across regions and sectors will emerge as China's and India's heavy lifting loses steam.

These factors, coupled with a weak dollar, will drive major exporters to seek increased flexibility. As a result, the market will remain in backwardation for the short term.

With global GDP growth rates expected to rebound by 6% in 2021 and 4.4% in 2022, this will see the global oil demand outlook converging towards a speedy regain during the second half of 2021 as effective vaccines and fiscal support programs are deployed. The base case scenario for oil demand growth is expected to be around 5.5 mbpd in 2021 and 2.5 mbpd in 2022, and for Brent to average USD50-60 per barrel during 2021-2022. Potential episodes of volatility driven by geopolitics, market fundamentals and investor speculation may occur during this period.

iii. The Middle East and North Africa: divergent recoveries, divergent opportunities

The multifaceted impact of the unprecedented 2020 triple crisis – health, economic and financial – across the region has widened income and productivity gaps between and within countries. While few countries in the region face difficult yet manageable trade-offs, others face rather daunting choices.

Regional trends and highlights

The region-wide 3.4% drop in real GDP in 2020 was the result of the severe pressures put on countries' external balances which saw their foreign revenues plummet due to the pandemic and slump in oil revenues, as well as a major drop in international and regional FDIs and other key non-oil sources of foreign revenues. The pandemic-related disruption to travel battered the tourism sector, a key industry in most MENA countries such as Tunisia, Morocco, Jordan, and Bahrain, and affected the Hajj and Umrah season in Saudi Arabia, leading to a 1.5% decline in GDP in 3Q2020. Another contributing factor was the drop in personal remittances from GCC and Western countries to other MENA states – an essential revenue stream for countries such as Lebanon and Egypt – which fell by 20%.

As massive stimulus plans are being deployed, a ballooning public deficit raises concerns on how sustainable the aforementioned recovery will be. Most countries implemented monetary easing policies and rolled out large-scale stimulus packages to counter the direct and indirect effects of the pandemic, including tapping existing reserves, debt capital markets, multilateral and bilateral financing, and foreign aid (e.g., UAE's USD27 billion stimulus plan, Egypt's USD6 billion economic relief plan, and Qatar's USD23 billion support package).

These measures saw MENA deficits climbing to 10% of GDP in 2020, a level which is expected to drop to 7% in 2021 and 4% in 2022. Egypt's deficit for example is expected to reach 9.8% of GDP in 2021 before declining to 8% in 2022. Countries with tight fiscal wiggle room such as Tunisia, however, might find themselves in dire fiscal situations as public debts soar to 90% of GDP at the end of 2020. Following the lead of their Western counterparts, central banks in the region replicated the Fed's reduced rate policy (e.g. UAE's Central Bank current repo rate stands at 0.75%).

Except for conflict-ridden states, higher commodity prices and exports will see the economies of MENA countries rebound by an average of 4% and 3.7% in 2021 and 2022, respectively. In the GCC, GDP growth in Saudi Arabia, Bahrain, and the UAE is expected to hover around 3% in 2021, while Qatar is expected to be slightly lower at 2.5%. Higher commodity prices will have an even more profound impact on economies such as Algeria and Iraq, In North Africa, Morocco and Tunisia are forecast to have a 2021 GDP growth of 4.5% and 3.8% - despite the recent downgrade of Morocco's credit rating to "BBB-" yet with a 'stable' outlook - Algeria and Egypt follow with 2.9% and 2.5% as per IMF's global economic outlook April update.

Real GDP forecasts (%) as per the IMF April 2021 update

Country	2020	2021	2022
Algeria	-6.0	2.9	2.8
Bahrain	-5.4	3.3	3.1
Egypt	3.6	2.5	5.7
Iraq	-10.9	1.1	4.4
Jordan	-2.0	2.0	2.7
Kuwait	-8.1	0.7	3.2
Lebanon	-25.0	n/a	n/a
Morocco	-7.0	4.5	3.9
Oman	-6.4	1.8	7.4
Qatar	-2.6	2.4	3.6
KSA	-4.1	2.9	4.0
Sudan	-3.6	0.4	1.1
Tunisia	-8.8	3.8	2.4
UAE	-5.9	3.1	2.6

Source: IMF

Regional K-shaped recovery paths prospects

On aggregate, only a few countries possess the ingredients in terms of governance, clear macroeconomic and fiscal policies, and public finance management to be able to translate the aforementioned stimulus packages into productive debt. As a result, very few energy producers will emerge as winners post-COVID and income gaps between countries will widen.

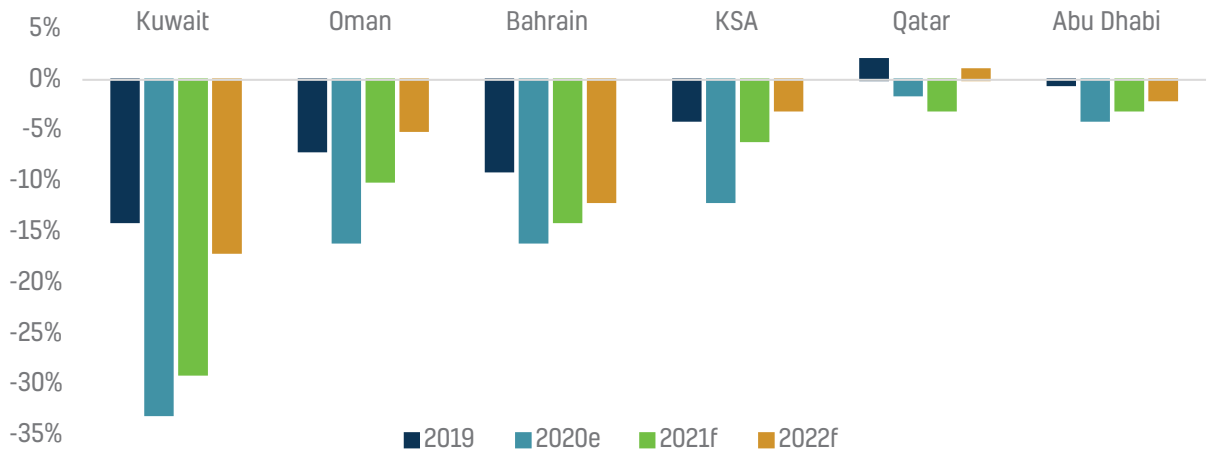
The cost of mitigating the impact of COVID-19 varies from country to country in MENA due to differing levels of healthcare infrastructure and unbalanced access to vaccines, as well as the differing socioeconomic conditions which dictated the nature of the containment measures (e.g. Egypt's informal economic sector made the implementation of a Europe-style lockdown an impossibility).

The ongoing race to vaccines illustrates the asynchrony and lack of integration that characterize most MENA countries during the pandemic. The beginning of 2021 saw GCC countries, led by the UAE, largely outperforming their regional counterparts in terms of vaccination rollout. Since then, a few countries –have managed to catch up thanks to expedited deployment plans (e.g. Morocco), while others have not yet even received their first batch of vaccines (e.g., Tunisia expects to receive its first batch by end of 1Q2021). It may take the latter countries years to vaccinate their entire population, but the situation remains highly fluid as breakthroughs in access to vaccines and vaccination rates are expected.

For hydrocarbons producers, this decade might prove to be the last window of opportunity for the low-cost producers to firmly re-establish their market share, particularly Saudi Arabia and Qatar. In other countries, the levels of hydrocarbons exports remains highly dependent on the recovery of oil and gas prices. Going back to 2019, hydrocarbon revenues comprised 90% of Iraq's budget, 70% of Bahrain's total revenues, and 96% of Algeria's total exports.

The pandemic had a mixed impact on economic diversification efforts. Countries with large foreign reserves and relatively efficient governance might be able to pursue – if not accelerate – their strategic transformation plans

Lower oil prices will increase fiscal deficits to varying degrees (Government Fiscal Deficit as % of GDP):



Source: Moody's Investors Service

(e.g. Saudi Vision 2030, Qatar National Vision 2030), while other countries such as Algeria and Iraq will have to implement structural reforms to secure a sustainable economic future. The level of sovereign wealth funds' coverage of debt stocks will fall significantly for countries such as Saudi Arabia and Oman, while those with larger stock assets and smaller financing requirements such as Qatar and the UAE will be relatively insulated. By and large, reserve adequacy remains comfortable for most GCC currency pegs except for Oman and Bahrain.

The MENA region has the promising advantages of the few winners who will emerge post-COVID-19. The region boasts a high concentration of low-cost and low-carbon producers in the oil and gas value chain and in the utilities and renewables sectors. Countries such as Saudi Arabia, UAE and Morocco are already positioning themselves as low-cost exporters of blue and green hydrogen, net-zero ammonia, and other low-carbon products. In parallel, Saudi Arabia is pushing large regional development programs to attract FDIs in these sectors. As for hydrocarbon importers, much will depend on their ability to quickly capture the opportunities of the post-COVID-19 world - namely the restructuring of certain global value chains and the capacity to pursue structural reforms (e.g., Morocco, Tunisia).

2. Bridging the fiscal gap: financing the growing debt in MENA

The differentiated economic recoveries observed in the region in 2021 imply fragile financial sustainability for several MENA governments as they reckon with the challenge of financing and managing the growing debt and stimulus packages for the economic rebound in 2021 and beyond against a backdrop of worsening balance sheets.

Capital debt markets as the main tool to finance the economic recovery

As illustrated in APICORP's paper *"Beyond Energy: How MENA Economies Emerge Post-2021"*, debt capital markets are the main tool through which stimulus packages are financed. In 2020, GCC countries tapped a record USD132.7 billion in international bonds and sukuk, more than USD 66.3 billion in the form of sovereign bonds. The UAE topped the region with USD15 billion in issuances, followed by Saudi Arabia and Qatar at USD12 billion and USD10 billion, respectively. Dubai raised USD2 billion through a dual-tranche bond offering in September after a six year

absence on public debt markets. GCC countries started 2021 with a splash on the debt capital markets front, with Saudi Arabia, Oman and Bahrain selling multiyear-tranche bonds worth USD 5 billion, USD3.25 billion, and USD2 billion, respectively, in January. Beyond the GCC, Morocco successfully arranged its largest bond sale ever – USD 3 billion – in late 2020 of 7, 12 and 30-year debt, while Egypt in mid-February 2021 issued a USD3.75 billion bond of 5, 10 and 40-year tranches. Further sizeable issuances are shortly expected in the region (e.g. Tunisia).

Divergent conditions, divergent risks

MENA countries such as Algeria and Kuwait which are still reticent to go the foreign debt issuance route may eventually have no other choice as their budgetary situations and liquidity crunches worsen in the coming years. Other MENA countries are struggling with the increasing bond yields and credit rating downgrades due to the challenging global financial conditions brought about by the pandemic. In 2020, Fitch Ratings downgraded Bahrain, Morocco, Oman, Tunisia, and Lebanon (in default since March 2020). As a result, one-third of the 15 Fitch-rated MENA countries currently carry a negative outlook.

MENA countries that are able to tap their large existing and future reserves and debt issuance – mainly coming from past and future hydrocarbon revenues – are likely to secure better positions than countries with smaller foreign revenue streams and tight fiscal space (e.g., Tunisia). As oil prices recover, most GCC countries, as well as Iraq and Algeria, might expect a stabilization of their fiscal balance. Saudi Arabia is expected to issue new debt at the end of 2021 which will raise the country's total public debt to USD250 billion – around 33% of GDP. An increase in oil and non-oil revenue will help boost FX reserves, but they are likely to remain below the USD500 billion mark. In April's update of the world economic outlook, the IMF stipulated that the public financing requirements for most MENA countries are expected to remain above 15% of GDP till Q4 2022 - pushing the financing needs for the region to more than USD900 Bn, two-thirds of which are needed by the non-GCC countries.

In light of these conditions, strict fiscal consolidation and painful structural reforms are likely to emerge as key priorities in the coming years as budget pressures intensify and foreign debt levels heighten. Climbing debt servicing costs due to possible future sovereign rating downgrades will further add to the pressure. This will leave a few countries in very precarious positions despite whatever foreign support they receive to keep them functioning (e.g. advanced countries' central banks' favorable policy rates, multilateral programs, IMF aid programs in Tunisia and Egypt).

All in all, the full impact of the 2020 crisis at both the country and regional levels remains highly uncertain, with widening inequalities, political instability emerging as additional risks skew economic growth to the downside.

III. 2021-2025 MENA Energy Investment Outlook

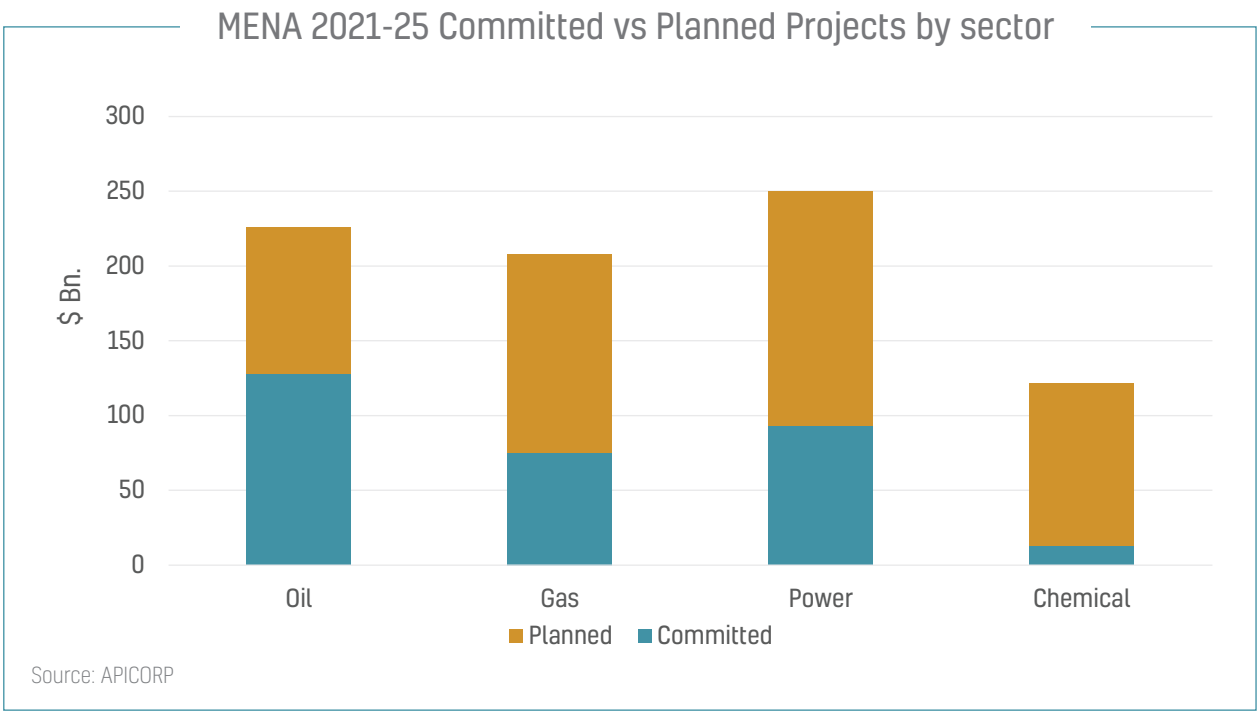
1. Global and MENA energy investment highlights

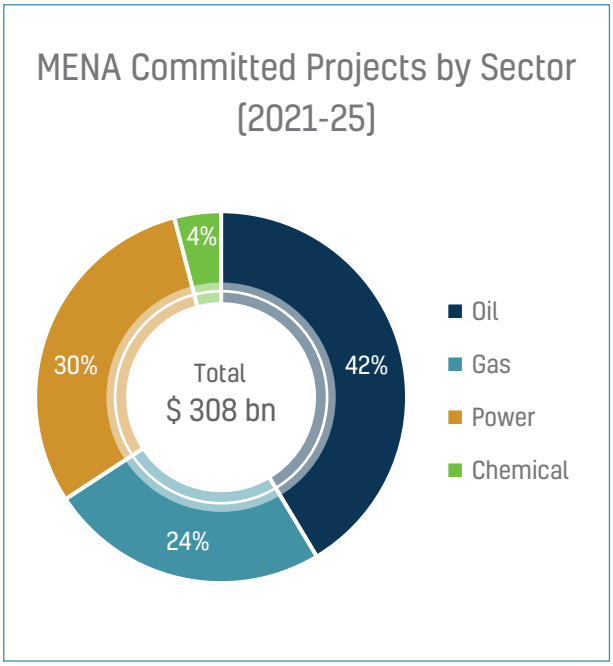
Potential long-term shortages due to the significant drop in investments in 2020

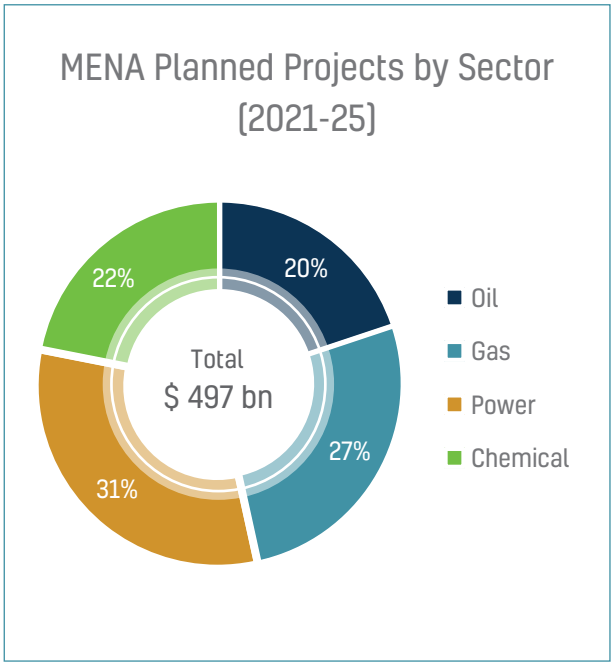
The entire energy value chain – particularly oil and gas – witnessed an unprecedented 34% y-o-y drop in investments in 2020, while global oil and gas companies lost around USD1.8 trillion in revenues because of the triple crisis. If investments do not pick up, the oil and gas supply chains will face additional pressures in the form of diminished delivery efficiencies, heightened price volatility, and new super cycles. According to Rystad Energy, the world needs to explore and find 139 billion new barrels of liquids by 2050, with an estimated upstream expenditure of USD3 trillion over the next 30 years. According to energy advisory firm Wood Mackenzie, the industry announced that it plans to invest around USD300 billion in upstream oil and gas in 2021, the same as what it had pledged in 2020 and close to a 15-year low.

APICORP's Top Picks 2021 report published in February 2021 notes that, as is the case worldwide, the MENA energy sector looks to be set for divergent recovery paths that will be largely shaped by policies related to fiscal and monetary accommodation and oil production management. While a recovery is expected in 2021, how sustainable it will prove to be remains unclear at this stage.

2021-2025 MENA Energy Investments Highlights:

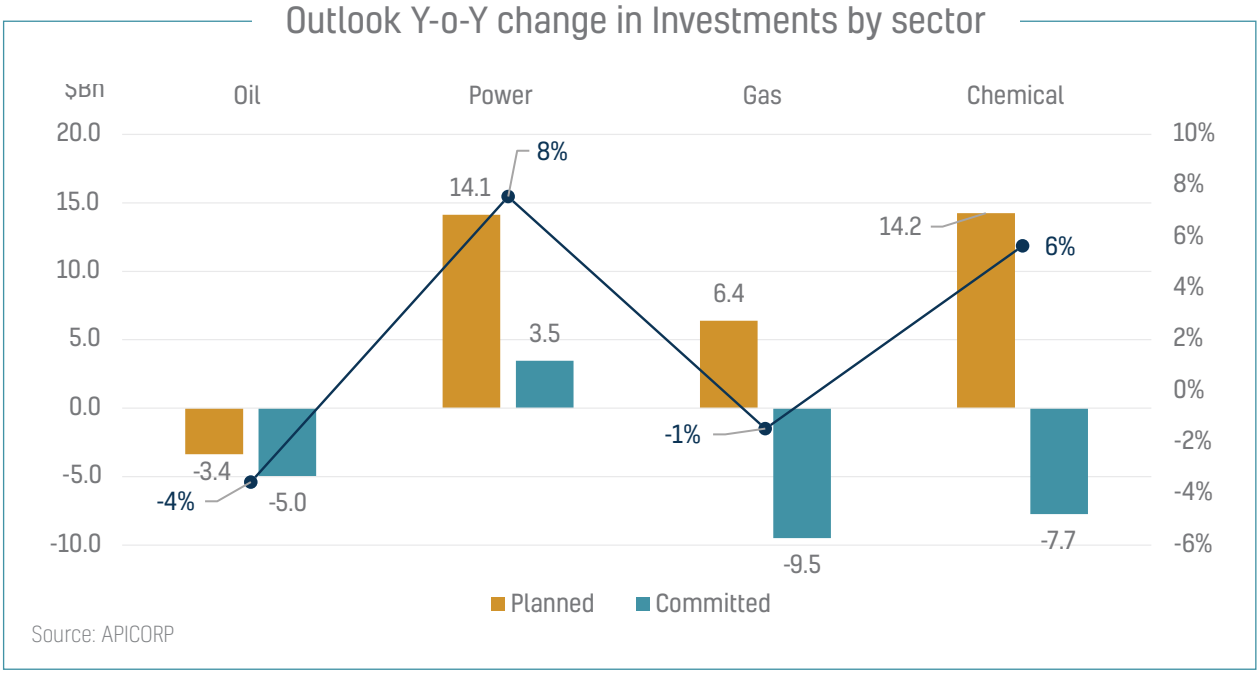






Recovery of energy investments

The energy investments' recovery to its pre-2020 levels is expected to take longer than the post-2014 oil price collapse. This is mainly due to the weaker fiscal position of countries across the region, some of which have resorted to high levels of debt as their liquid assets dropped (e.g. Oman, Algeria, Kuwait), in addition to the weak global energy sector fundamentals (e.g. oversupply, low prices for extended periods, varied and fragile global economic recovery). Consequently, the energy sector is undergoing a major transformation and a 'Global Reset' that will likely result in industry consolidations, mergers and acquisitions, and strategic jostling and repositioning by industry players.



Source: APICORP

The current vicious circle of low revenue, low investment, low output needs to be broken, and a virtuous cycle of investments in lower cost, lower carbon, sustainable assets need to be induced. This gives low-cost oil and gas and low-carbon power producers a substantial advantage and positions them to be among the few energy producers who will emerge as clear winners in the post-Covid-19 world.

Except for the power sector, which is expected to play a key role in driving economic recovery and lead the energy transition with increased expansion and integration of renewables projects and further electrification of economies, all other energy sectors witnessed a decline over the previous year's outlook, as detailed below:

- Oil:

Committed investments in oil projects declined slightly by USD5 billion Y-o-Y to USD127 billion. This drop can be attributed to the completion of several large downstream projects across the region in 2020 (e.g. Jazan in KSA, Al-Zour in Kuwait, and Mostorod Refinery in Egypt), and the slowing pace of development of Iraqi oilfields due to the 2020 crisis as Baghdad and its IOC partners slashed their 2021/20222 budgets and mothballed a few capacity increase projects given the country's record-high deficit of USD43.4 billion in 2021. OPEC+ export quotas and higher macro risks for Iraq (e.g. worsening security situation in the south and central regions, escalating tensions with Iran affecting the Iraq-Iran oil export pipeline) also contribute to the downforce. The UAE's strong oil capacity expansion masterplan – to 5 Mbopd by 2030 – and the launch of its Murban crude as a flagship benchmark, helped offset the decline in committed investments elsewhere in the region.

Similarly, planned oil investments saw a modest decrease by USD3.4 billion Y-o-Y to around USD99 billion, again due to postponed investments in Iran and Iraq. The additional USD10 billion committed by Libya for the period 2021-25 that was absent from last year's 2020-24 outlook, and the oil production stabilization projects in Algeria and Oman – and possibly Egypt which is mulling several tenders to arrest production declines in its aging oilfields, were not enough to offset that amount. In the upstream side, the UAE, Oman, and Egypt wrapped up successful bid rounds that saw Chevron becoming the latest supermajor to join the East Med offshore club and EOG Resources increasing its exposure to Oman's unconventionals by acquiring more acreage into the country's Block 49. It is important to note here that the new oil discoveries in Saudi Arabia (Al-Rish Field), Kuwait (Huma and Al-Qashaniya fields), and the UAE (Jebel Ali unconventional gas field being the largest) are all still being appraised, and therefore have not been accounted for in this outlook's planned investments calculations.

- Gas:

Committed gas investments fell by USD9.5 billion to USD75 billion. This decline, which came despite the award of the mammoth North Field East project in Qatar, is attributed to several developments that occurred over the past year, namely the completion of several gas megaprojects in the UAE, Egypt and Saudi Arabia, and secondly the stalling of several projects due to the triple crisis; chief among them Iraq's Basrah Gas Co. (USD15.65 billion) and Jafurah (USD3.7 billion), Algeria (USD3 billion of project spend deferred to 2021), Iran's National Iranian Gas Company's Iran-Iraq-Syria Gas Pipeline (USD2 billion) and Iran gas Trunkline (USD6.3 billion), and the cancellation of UAE's Hail-Ghasha-Delma project and Iraq's Mansuriya project (a combined USD2.7 billion). Overall, the recovery of committed investments in gas post 2021 – except for Qatar's NFE – will hinge on unconventional developments in Saudi Arabia and the UAE if they go forward as planned.

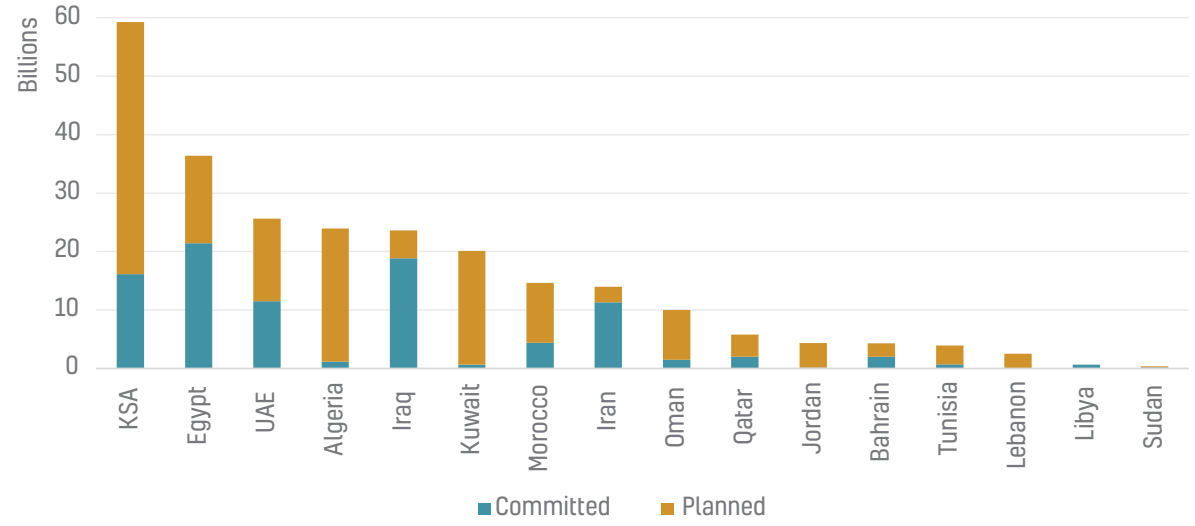
Planned investments stand at around USD133 billion, a slight increase of USD6.4 billion compared to previous year's outlook. This projection, however, is contingent upon numerous what-if scenarios, including how successful Algeria's new hydrocarbon law will be in attracting the needed investments to revamp its upstream sector, Iraq's resumption of its stalled gas-to-power projects, and Oman's plateau extension which also involves increased development and contribution of tight gas. The potential of a future Zohr-like discovery offshore Egypt and a full-force multi-billion-dollar Libyan comeback in revived upstream investments are not included in this 2021-25 planned investments, but may be part of next years' outlooks depending on how the above prospects pan out.

- Power:

Investments in power remain robust compared to the 2020-24 outlook. In fact, the combined committed and planned investments with a total of USD 250 billion – USD93 billion committed and USD157 billion planned – is the highest of all energy sectors. Compared to the 2017-20 period, investments in the 2021-25 period are expected to give increased allocations to the transmission and distribution sides of the value chain while maintaining investments in generation to accomodate the growth in power demand. A major driver behind this trend is the need for more investments in grid reinforcements and enhanced flexibility with the rising share of renewables in the energy mix. As power demand recovers in the medium to long term, additional capacities will be needed to cater for the growing demand and shifting demand patterns, while at the same time ensuring power system resilience, reliability and flexibility, and opening new opportunities for increased cross-border power trade. More on this in Section IV of this report, "MENA Power Sector".

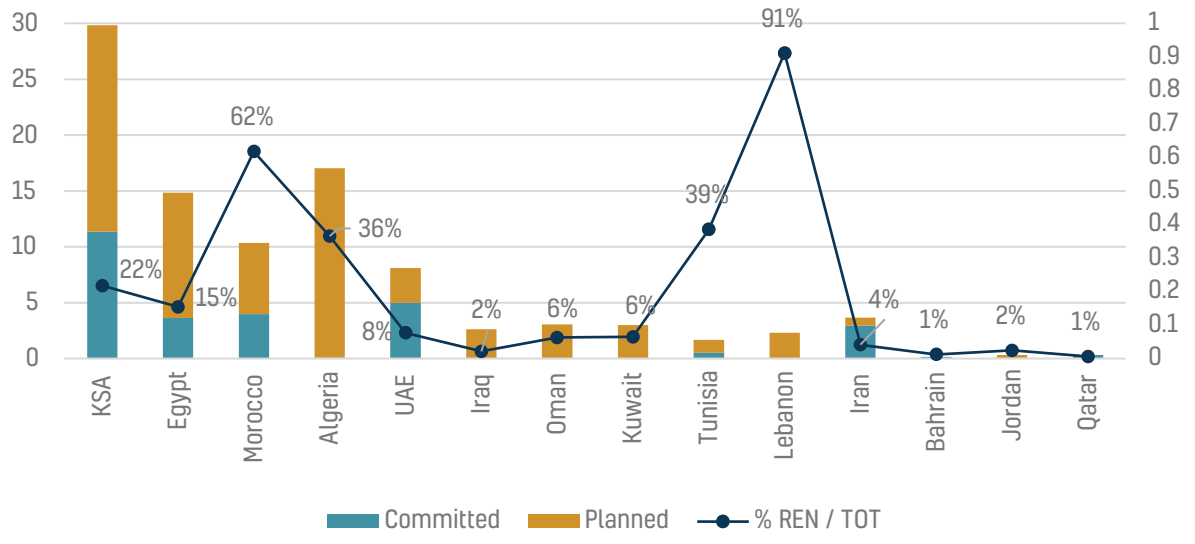
As shown in the following graph, renewables make up a large share of the total MENA power sector investments for 2021-25. In Saudi Arabia, REPDO and PIF-led projects progressed in 2020 (*see APICORP MENA POWER INVESTMENT OUTLOOK 2020-2024*). In April 2020, Power Purchase Agreements (PPAs) for seven solar energy projects were announced with Shuaibah solar PV (600 MW) - part of REPDO Category B projects - setting a new record-low tariff at 1.04 cents/kWh. The Suadiar solar PV (1.5 GW) - with a project value estimated at USD 907 Mn - set a second-lowest tariff at 1.24 cents/kWh. Algeria recently established an indepednent regulatory authority to oversee the development of its renewables program while having a promising pipeline of planned power investments. Egypt's renewables ambitions remain high but still await the resolution of regulatory issues related to its stalled wheeling scheme and the unbundling of its power market.

MENA 2021-2025 Power Investments



Source: APICORP

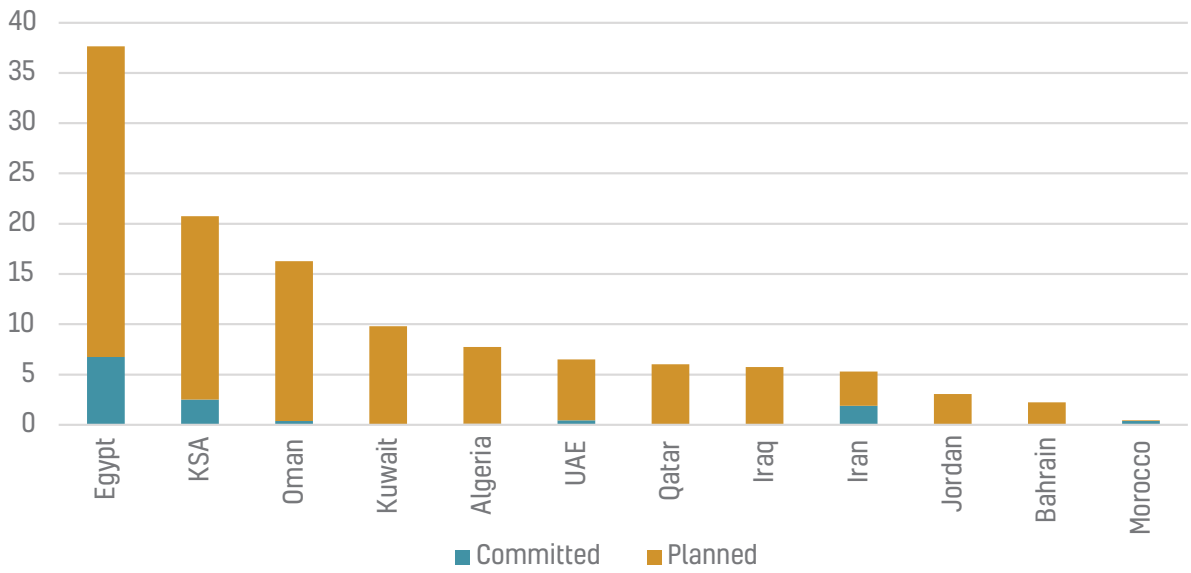
Renewable Projects Value by Country & Status and Share of Renewables to Total Projects



Source: APICORP

- Petrochemicals:

Planned investments in petrochemicals projects reached almost USD109 billion, a USD14.2 billion increase compared to last year's outlook. By contrast, committed investments projects fell by USD7.7 billion to USD12.5 billion due to the completion of several sizeable projects in 2020.



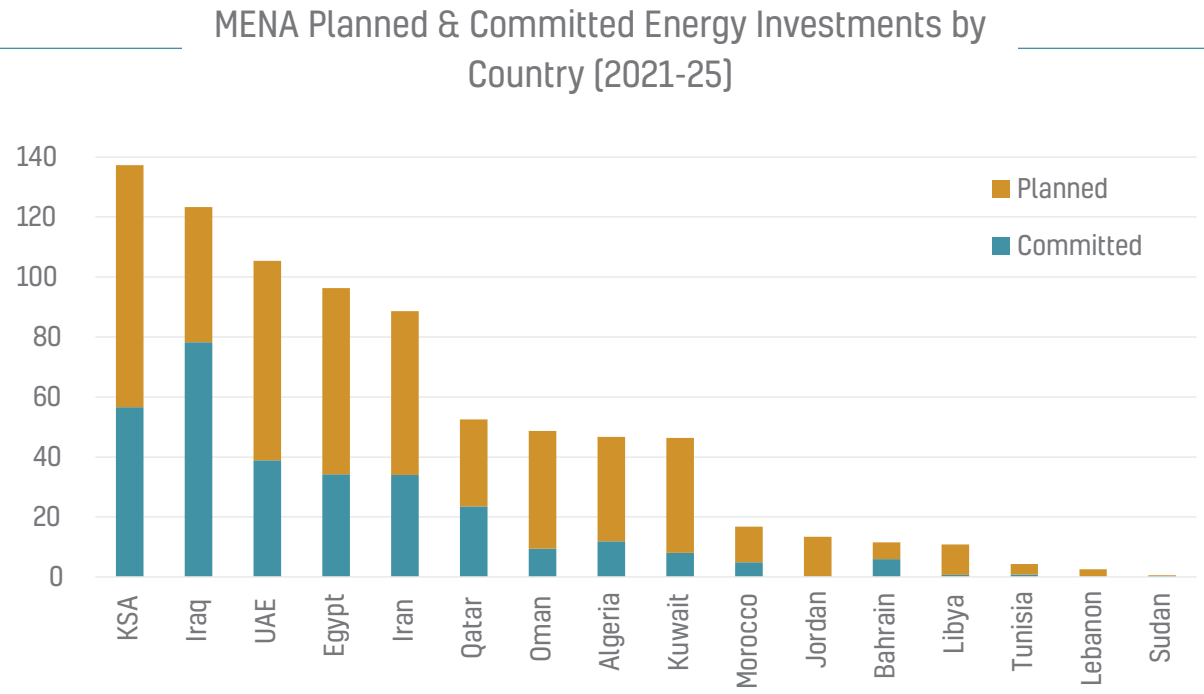
Source: APICORP

Despite MENA and Asian petrochemical markets seeing an overall improvement in demand as the rollout of vaccinations and recovering economies will increase consumption of basic materials, MENA committed petrochemical investments are going through a serious rationalization phase (e.g. Aramco-SABIC Yanbu COTC and foreign investments in Reliance's downstream business in India, UAE's Borouge 5 expansion, despite sanctioning phase I of the Ruwais Derivatives megaproject for USD5 billion by the ADNOC-ADQ JV, targeting operations start in 2025 and Borouge 4 expansion, including the 440 thousand tpa PP5 polypropylene project), as well as stalled projects in Iraq and Egypt (Nebras and Tahrir, respectively). The increase in planned investments indicates the strong regional ambitions of further downstream integration and industrial growth, particularly in North African countries (Algeria, Egypt).

Saudi Aramco's USD15 billion investment in Reliance Industries' refining & petrochemicals business was postponed from 2020 and has yet to be decided. Some projects are being re-evaluated based on the shift in global energy dynamics, diminishing margins and higher capital and operating efficiency needs favoring brownfield economics over new greenfield developments.

In the sustainability and circular economy dimension, the MENA region is progressing steadily. Egypt ratified the feed-in-tariff for waste-to-energy in 2020, while Abu Dhabi launched a tender for a 900 mTon/Yr waste-to-energy plant in January 2021 that is expected to reduce CO2 emissions by up to 1.5 mTon/Yr, equivalent to eliminating emissions from 300,000 cars. Dubai also announced a USD1.1 bn waste-to-energy facility in Warsan that will convert 45% of of Dubai's municicpal waste to 200 MW of renewable electricity. In Kuwait, a USD900 million tender was issued for oilfield pollution reduction

Key trends of committed and planned investments



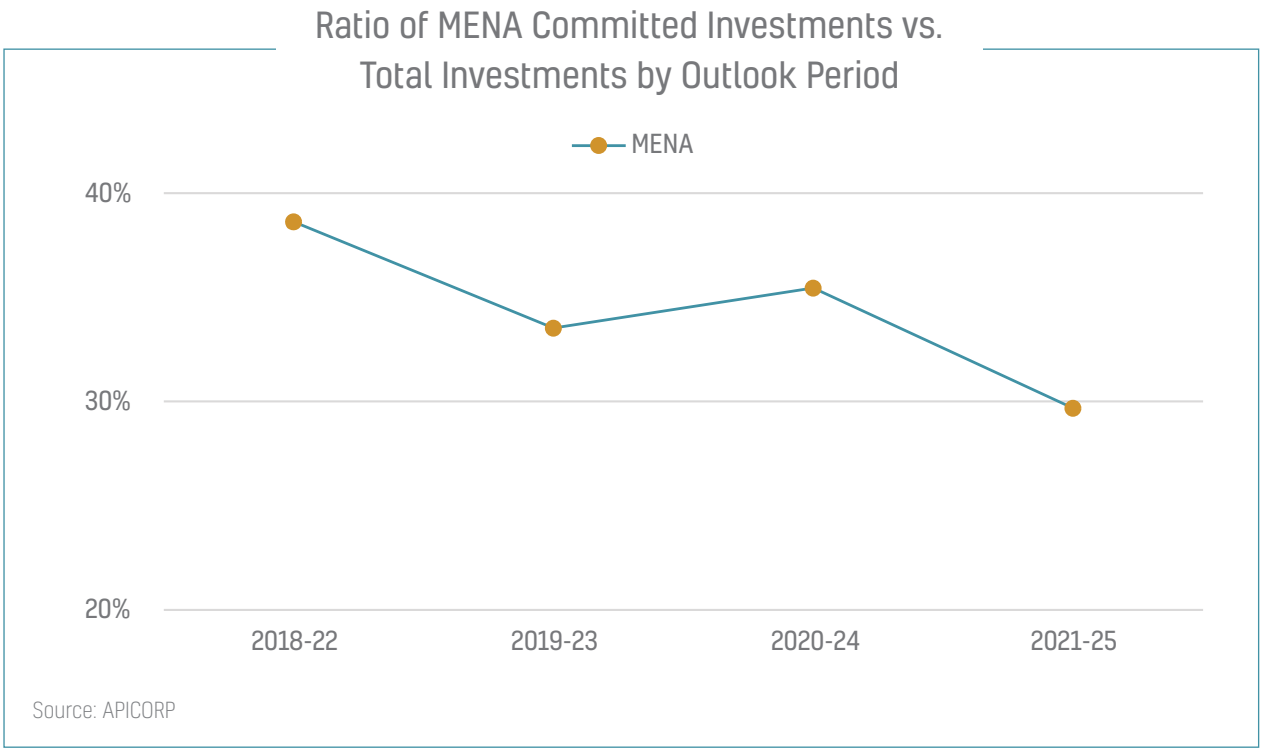
Saudi Arabia, UAE, and Egypt – have ambitious integrated energy transition and industrialization plans involving all sub-sectors. With the country's non-oil contribution to GDP hitting a record high in 2020, Saudi Arabia is sprinting towards achieving Vision 2030's goal of weaning its economy off oil by boosting the private sector's role and developing industrialization and tourism through flagship megaprojects. Similarly, the UAE is progressing towards its 5 MMB/D oil capacity by 2030 target and achieving gas self-sufficiency. The completion of the remaining phases of Al-Barakah nuclear power and Hamrawein IPP coal power plant are key projects in the UAE. Egypt enters 2021 with a good fiscal position while managing to keep a healthy pipeline of energy investments owed to the materialization of the East Med Gas Forum (EMGF), including the resumption of LNG exports from Damietta plant, solidification of its energy transit/trade status with SUMED and Al-Hamra Port expansions, petrochemicals development ambitions (mainly for imports substitution), and new infrastructure megaprojects (high-speed rail and EV manufacturing).

Even though Iraq comes 2nd in the MENA region in terms of total committed energy investments, a considerable portion is highly uncertain as the country – including Kurdistan Regional Government – struggles with mounting fiscal pressures and socioeconomic, legislative, and security issues that are difficult to address with budget cuts and projects portfolio rationalizing. Higher oil prices would definitely help the country meet its financial commitments should their 1Q2021 levels sustain into 2022.

Algeria has a plethora of projects in the planned phase awaiting the implementation of the legislative reforms related to the complete restructuring of its energy sector and the necessary FDIs to sanction these projects.

Kuwait, Oman, and Bahrain record a committed projects trough in this year's outlook as the three countries reel under the ramifications of the 2020 triple crisis. Investments in Libya – almost USD10 billion – were factored into this outlook after the country was finally able to form a unity government in January 2021 for the first time in years. The figure may as much as quintuple for the 2022-2026 period provided the country solidifies its political breakthrough and progresses with governmental consolidation and legislative reforms.

Despite strong fiscal tightness in government spending, Morocco's projects are buoyed by having the highest percentage of private sector investments in MENA and a strong private sector. Tunisia meanwhile joined Lebanon in an economic vertigo, albeit on a smaller magnitude. That said, the Tunisian energy sector fared better than expected in 2020 and is expected to be able to recover from stalemate in the medium term if the political standoffs are resolved.



Despite the MENA region's resilience in terms of an absolute Y-o-Y increase in total investments – as indicated by last year's USD792 billion to this year's USD805 billion – the ratio of committed investments to total investments fell to its lowest level over the past three five-year outlook periods, a clear sign of the magnitude of the 2020 crisis. Qatar's NFE project remains the region's single biggest 'confirmed' energy megaproject spend for 2021-25, and makes it the only country in the region whose 2021-25 committed spend tops its 2020 and 2019 outlooks.

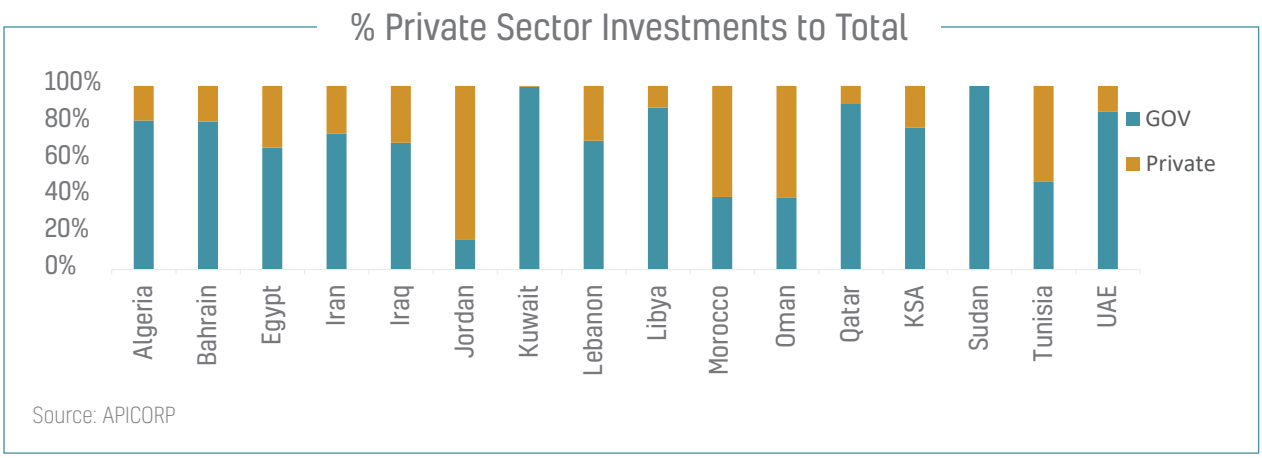
2. The Role of Private and Public Sectors

Historically, the private sector's participation has been higher in net energy importers. However, this trend has been changing since 2019, as evidenced by Oman which ranks highly on par with the regional leaders in private sector investments - Jordan, Morocco and Tunisia.

Saudi Arabia's and UAE's growing private sector participation is dwarfed by the size of their respective energy investments portfolio, but a trend analysis shows an increasing share of the non-governmental sector that echoes the huge strides taken by the two countries' governments to strengthen their non-oil economies.

Compared to last year's outlook, the share of private investments in MENA committed and planned projects for 2021-25 increased noticeably from 8.5% to 27%. In the GCC, this figure is 21%, up from 12% for last year's investment outlook. a testament to the increased privatization drive to unlock value from the strong asset portfolios. Notable recent developments in this regard include UAE-based Taqa increasing the limit of foreign ownership to 49% and Aramco Oil Pipeline Co. leasing 49% of ownership to a private sector consortium led by global investment house EIG, in April 2021. In addition, Oman's plans to further leverage Petroleum Development Oman (PDO) for USD3 billion of debt and a possible stock market listing for OQ sometime in 2021/2022, after announcing plans to invest in green energy as part of OQ's new alternative energy business line in a bid to decrease the sultanate's GHG footprint and enhance its green credentials. Qatar's flagship NFE is also expected to attract private sector investment given its favorable economics and green credentials - featuring a state-of-art CCS facility to capture CO2 emissions from the project. The CCS facility will be the largest in the global LNG industry, and itself will run on renewable power through a 800 MW solar plant, further reducing the project's carbon footprint. QP are also buidling a new super fleet of low-emmisions LNG carriers. In addition to all the previously-mentioned developments, the cost of financing for petrochemicals and oil value chain projects increased in 2020 due to growing risks and fragile outlooks, prompting financially stressed projects to opt for debt-to-equity conversion as a way to restructure legacy high-margin loan tranches.

As for the power sector, the role of the private sector and financing is still largely dependent on sector reforms and government guarantees. Most MENA countries follow the Single-Buyer Model with IPP projects anchoring long term PPAs. For the most part, highly leveraged power projects in the region are financed based on non-recourse or limited recourse structure, with typical debt-equity (D/E) ratios in the 60:40 to 80:20 range, while lower risk projects backed by strong government payment guarantees can go as low as 85:15 D/E ratio. However, regulatory reforms to support renewables and the impact of the 2020 crisis might affect this pre-established balance.



3. The rise of sustainable financing

According to BloombergNEF (BNEF), issuances of sustainable debt reached a global record of USD732 billion in 2020, up 29% from the previous year. The growth trend is expected to continue in 2021 to reach USD900 billion as more private and public investors account for sustainability constraints. Companies and businesses are keeping a competitive advantage as new and impending regulations in major export markets – EU, Japan, South Korea, Canada, and in future the US – will request compliance of supply chains and imports to fulfill net-zero and sustainability targets. BNEF also expects to see global carbon offset issuance to double in 2021 from the 136 MTnCo2e recorded in 2020. With all the companies that have set emissions reduction targets, there is plenty of unserved demand in the market. Many of these companies are in hard-to-abate sectors and have limited alternative, affordable and/or saleable ways of reducing their CO2, apart from buying offsets.

In light of these factors, ESG commitments, standards and certifications are expected to top agendas from 2021 onwards as the trend toward green price premiums in energy, petrochemicals, metals and other commodities accelerates given the new EU energy transition regulations, tax legislations on non-recyclable plastics, and the US rejoining the Paris Agreement and its pledge for a net-zero 2050.

In MENA, Morocco became the regional pioneer in green debt bonds when it issued its first such bonds in 2016. Since then, the region has issued a total equivalent of USD10.38 billion of green bonds, peaking at USD3.3 billion in 2020.

Issuer	Country	Sector	Type	Val. In USD Mn.	Maturity Date	Coupon Rate
FAB	UAE	Banking	Private	96.7	2025	2.17 %
Egypt	UAE	Gov	Public	750	2025	5.25 %
SEC	KSA	Utilities	Public	650	2025	1.74 %
SEC	KSA	Utilities	Public	650	2030	2.413 %
QNB	Qatar	Banking	Public	600	2025	1.625 %
Etihad Airways	UAE	Transport	Public	600	2025	NA
TOTAL				**3346.7**		

Source: "GREEN DEBT MARKET IN THE MENA REGION", Clean energy Business Council MENA, Nov 2020

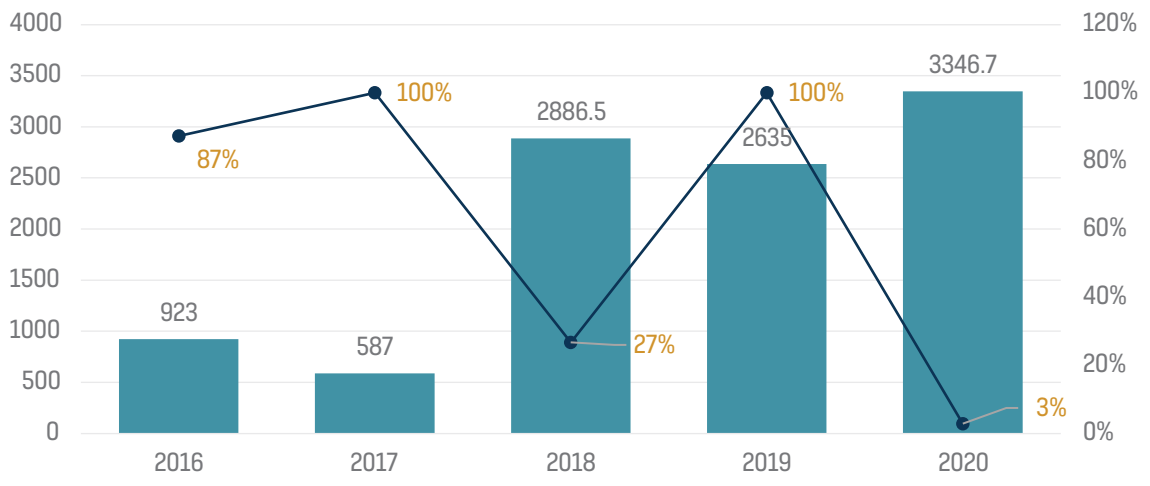
A noticeable trend is the intense activity of public issuers in the green debt market in 2020 which had been traditionally dominated by private sector players. This trend can be attributed to the 2020 tightness in global credit markets and the increased drive in ESG financing that public entities started to capture, which has prompted six MENA countries to expedite regulatory frameworks for sustainable finance practices: Egypt, Jordan, Morocco, Bahrain, UAE, and Saudi Arabia. These practices underscore the region's biggest economies' ongoing efforts to integrate environmental and social considerations into their financial sector framework as a means to formalize and scale up sustainable finance, with the aim of promoting responsible investment and financing the transition to more resilient and greener economies in accordance with the UN 2030 sustainable development goals (SDGs).

Saudi Arabia is making huge strides in this area with several megaprojects (NEOM and REPDO), but still has few checkboxes to tick with regards to frameworks, guidelines and financial market instruments. The green financing market is expected to continue booming in the MENA region as it undergoes the energy transition, as projects related to renewable energy, recycling, energy efficiency, and emission reduction can be financed by tapping the new and lucrative channels.

	KSA	Bahrain	UAE	Jordan	Egypt	Morocco
Sustainable Developments/Green Growth Agenda	√	√	√	√	√	√
Sustainable Finance Framework		√	√	√	√	√
ESG Guidelines		√	√	√	√	√
Sustainability/ESG Reporting		√	√	√	√	√
Financial Market Innovations: Green Bonds			√	√	√	√
Financial Market Innovations: Islamic Bonds (conventional sukuks)	√	√	√		√	√
Sustainable Finance Awareness and Education Initiatives		√	√	√	√	√
Supportive Regulatory Framework: PPP Laws	√		√	√	√	√

Source: "Promoting Sustainable Finance and Climate Finance in the Arab Region" United Nations Environment Program, Jan 2021

MENA Green Bond .Issuances in $ Mn & Private Sector %



Source: "GREEN DEBT MARKET IN THE MENA REGION", Clean Energy Business Council MENA, Nov 2020

IV. MENA Sectoral Deep Dives

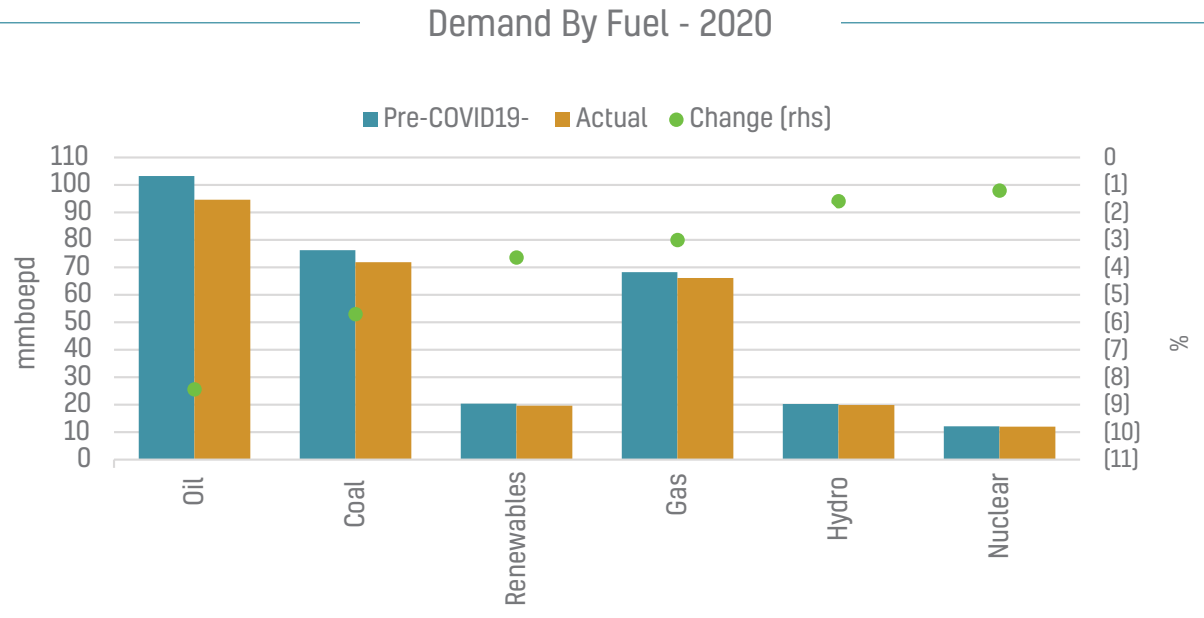
1. Oil, Gas & Petrochemicals sectors in MENA

i. Prospects of Oil, Gas/LNG and OFS

Oil

Global consumption of crude oil and liquid fuels crashed by 9% to 92.2 mmbpd in 2020. The U.S. Energy Information Administration (EIA) stated that the decline was the sharpest in EIA's series since 1980. The EIA expects that global liquid fuels consumption will increase by 5.6 mmbpd this year (6 % compared to 2020) and grow by another 3.3 mmbpd in 2022.

Oil markets in 2021 will be dominated by the speed and extent of economic recovery as a response to the rate – and success – of COVID19 vaccination process, in addition to OPEC+ management of the market and degree of compliance. U.S. production growth will not be significant before 2023, as producers focus on returning value to shareholders and debt repayment at the expense of volume growth. With crude prices back above USD50/bbl, markets are poised for continued re-balancing and normalization of stocks, with negative news on vaccines and on the relaxation of economic restrictions posing a downside risk to prices.



Source: S&P, APICORP

Due to weak and uneven demand recovery in road and aviation fuels, refining margins will continue to be fragile throughout 2021, which may force some plants in high-cost regions to close. 2020 global refinery runs decreased to 76.9 mmbpd and are expected to increase to 78.9 mmbpd. In the MENA region, Saudi Arabia's refinery runs are expected to increase to 77% in 2021 vs. 68% recorded in 2020.

Gas:

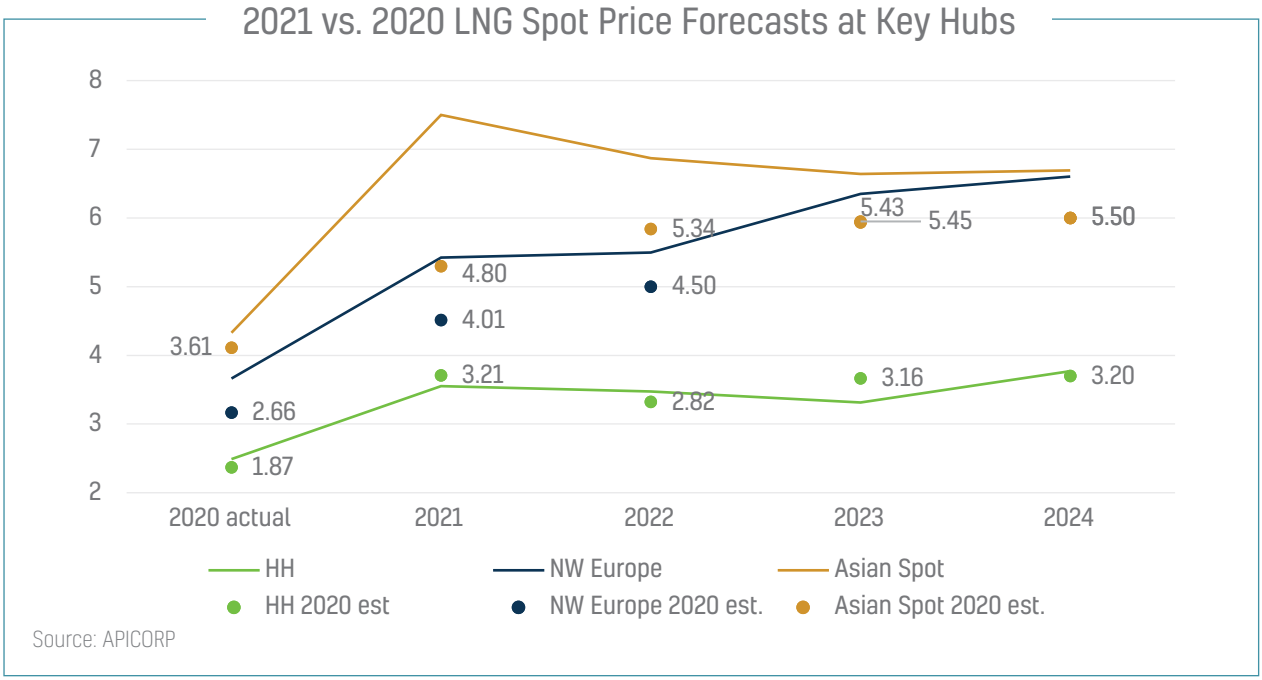
Global gas markets also experienced their largest recorded drop in 2020, with an estimated 2.5% Y-o-Y decrease in consumption – equal to around 100 bcm). This decline was triggered by exceptionally mild weather in the early winter months and the onslaught of the COVID-19 pandemic. The brunt of the impact was concentrated in H1 2020 which saw a 4% y-o-y decline in global gas demand. The second half of the year witnessed a gradual recovery with the easing of lockdowns eased and arrival of the winter season, which pushed electricity demand and spot gas prices upwards. The icy December 2020 temperatures rallied spot gas prices amid tightening of LNG supply, with spot LNG prices in Asia more than tripling to more than USD 30/MMBtu by the start of 2021, exceeding the record price levels reached after the Fukushima nuclear accident in 2011.

The January 2021 spike was combination of supply, demand and storage factors. LNG demand in northeast Asia increased 10% y-o-y between mid-December 2020 and early January 2021 due to colder than average winter temperatures, exacerbated by lower nuclear availability in Japan and limits on coal-fired generation in Korea. The spike in LNG demand in Asia was followed by a very cold spell in the US Midwest that plunged temperatures below zero, halting production in gas fields and causing severe power outages due to out-of-service gas-fired and nuclear power plants and disruptions in renewable power generation due to lack of proper winterization measures.

The Panama Canal also witnessed a congestion in LNG carriers which sent shipping charter rates soaring to more than USD 300,000/day. Even though these price spikes lasted only for the month of January while hub price forecasts were slightly revised upwards for the medium term as the market fundamentals for 2021-2022 remained weak, they nonetheless served as a reminder for both exporters and importers on the prominence of Brent-linked LNG contracts. The spike also underscored the rising importance of storage and cross-border interconnectivity given that the majority of global gas trade is still done via pipelines.

The IEA forecasts global natural gas demand to grow 2.8% y-o-y in 2021 (around 110 bcm), thus restoring it to its 2019 level, well below the 7.5% y-o-y recovery experienced in 2010 post the 2009 financial crisis.

The IEA forecast comes with two caveats. The first is that different markets around the globe will see different gas market recovery paths, with emerging markets fueling demand growth in 2021 following the world-leading demand declines by mature markets in 2020. Fast-growing markets in Asia, Latin America, and MEN – and to a lesser extent sub-Saharan Africa – are projected to account for about 70% of global demand growth in 2021. Mature markets are likely to see a more gradual demand recovery, though some may not return to the 2019 levels. The second caveat is that sectoral pillars of gas market growth are subject to some uncertainties. Gas-fired power generation is expected to be hampered by slow electricity demand growth and increasing inter-fuel competition as gas prices recover from their 2020 lows. Gas consumption in the industrial sector is very much dependent on economic recovery, especially for Asia's export-reliant industries. On aggregate, global gas demand recovery in the medium-term (2021-2025) is expected to be very gradual with price forecasts of key hubs averaging below USD6-7/mmbtu.

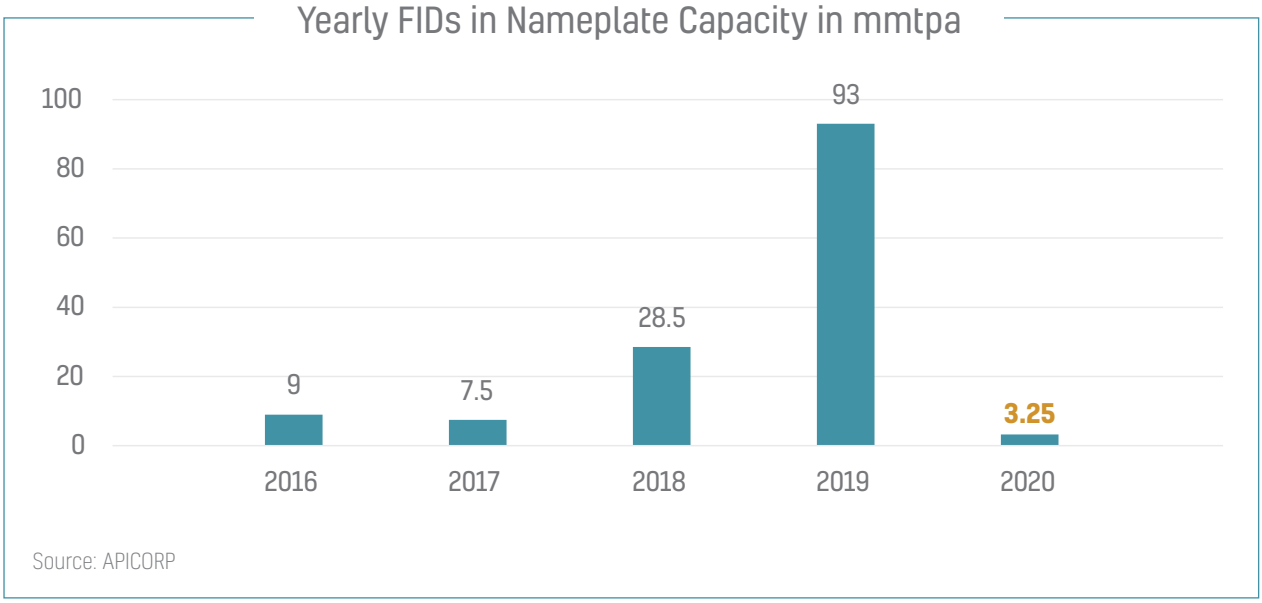


Source: APICORP

Global LNG:

2020 has been a slow year for new LNG projects, withapproximately 97 mmtpa (200 bcm) put on hold and only one project – the 3.25 mmtpa Costa Azul Plant in Mexico – reaching FID, a 5-yr low in greenfield liquefaction capacity.

Other than Qatar's 33 mmpta NFE project, which officially awarded the EPC contracts in 2021, the only other progress in the global LNG megaprojects landscape was the financial closure of the 13.1 mmtpa Mozambique LNG after Total announced in November 2020 the signing of a USD14.9 billion – out of a total FID cost of USD20 billion – senior debt financing agreement which includes direct and covered loans from 8 Export Credit Agencies (ECAs), 19 commercial bank facilities, and a loan from the African Development Bank.



Source: APICORP

China and India will remain the key drivers for global gas demand growth for the period 2021-2025 and the rest of the decade, offsetting a decline in European consumption growth. As a base case, Europe's balancing role in the global gas market with its advanced infrastructure – including storage – and its expansive network of interconnections, retains its position as an important gas market into the next decade. The critical issue is the green credentials requirements of LNG coming into Europe. One proposal that is being studied now by EU regulators is to 'green' the LNG once it reaches Europe such that European consumers pay the additional premium on the original price as a way to finance the 2035 net-zero objectives.

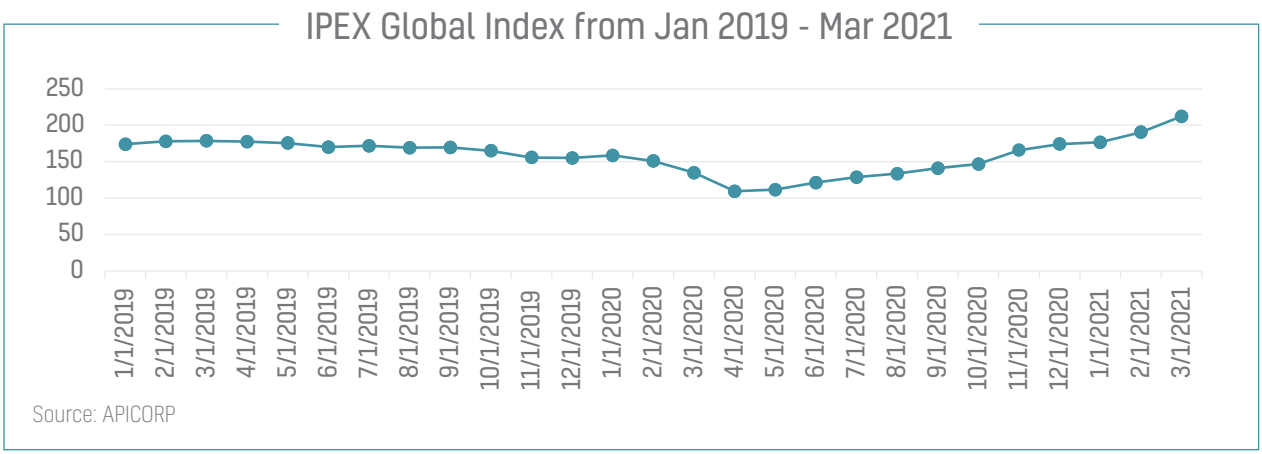
Global LNG supply output will grow along with global LNG trade to reach 375 Mn tons, a 6% Y-o-Y increase from the meager 0.9% growth it recorded in 2020. Emerging markets, particularly in South Asia, will see LNG demand rise. Bangladesh for example is set to increase its LNG imports by approximately 33% in 2021 after switching from oil-fired and coal-fired power by upgrading legacy plants to cleaner CCGTs. The supply market will be dominated by the U.S., Russia, Qatar, and Australia, with new players like Mozambique adding 20mmtpa of capacity operational in 2025.

Oilfield services (OFS),

The sector is expected to see moderate sector growth in the traditional oil and gas equipment and services business in 2021, with the US shale no longer an area of growth. MENA, Brazil, and west Siberia are poised to continue acting as key activity areas. After the substantial 2019 and 2020 unconventional gas discoveries in Bahrain (Permian-like), Saudi Arabia (Jafura, Tuwaiq, South Ghawwar) and the UAE (Jebel Ali), the MENA region is poised to become a global player in unconventionals and OFS companies with experience in US shale are expected to play a key role in developing the regional discoveries in MENA.

Petrochemicals

During 2020, reconfigurable petrochemical plants allowed their producers to shift to high- margin products as dictated by market shifts (e.g. plastic packaging films, healthcare and hygiene products, etc.). A stronger crude oil market and recovering volume demand gradually pushed petrochemical prices higher in the second half of 2020, allowing the ICIS Global Petrochemicals Products Index (IPEX) to rebound to its 2019 pre-COVID-19 levels in 1Q2021. However, the real question on the 2021-2025 petrochemicals outlook is how long the market growth will last given the new sustainability regulations – particularly the new EU virgin plastics tax and lower carbon intensity limits – which will put pressure on future demand growth.



Source: APICORP

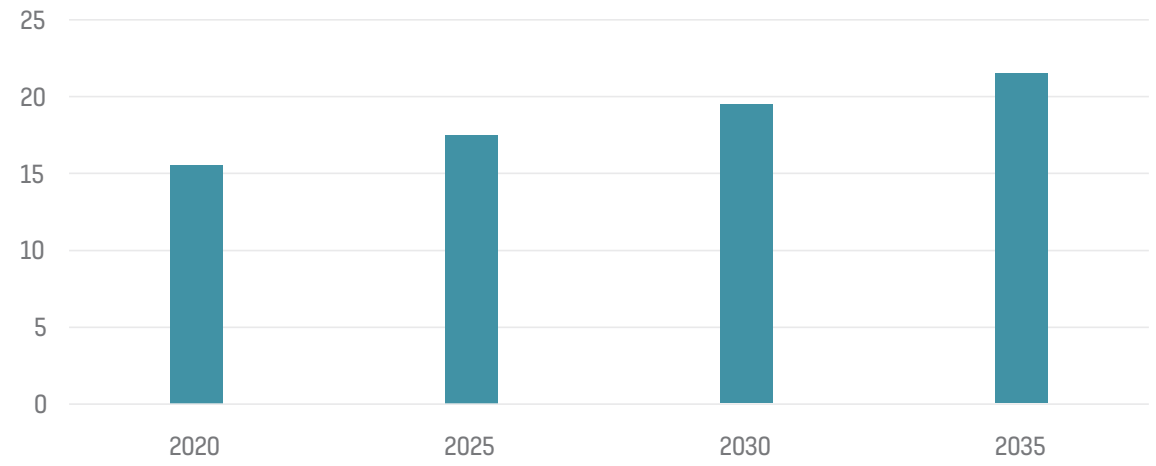
In MENA, the petrochemical markets started 2021 with a tight supply, mainly due to container and shipping shortages that may not be eased until Q2 with the ongoing US sanctions imposed on Iran. OPEC+ supply constraints have reduced base oils, with some producers still feeding a long backlog of contractual quantities. Methanol, PE/ PET and PP markets are bullish. Healthy demand for methyl tertiary butyl ether (MTBE) while methanol demand is expected to improve by Q2 at the earliest.

Markets such as the UAE are most affected by oversupply, especially in insulation and building materials, while other markets such as Saudi Arabia, Qatar, and Egypt are still considered by market players to be growing due to ongoing Saudi infrastructure projects. Libya is also poised to increase demand on raw materials and construction petrochemicals in the medium to long term, capitalizing on political stability and resumption of economic activity that will accelerate to compensate for nearly a decade of stalemate. Polymeric methylene diphenyl diisocyanate (PMDI), used in insulation materials, as well as PE pipe black 100 will face mixed demand across the regional countries, with some offsetting the fall in others. The resilient packaging sector will continue to perform well.

In the automotive and transportation sectors, Egypt will strengthen demand on specialty chemicals as a partnership agreement has been signed with China's Dongfeng to produce EVs locally targeting first production in 2023. The country's high-speed rail megaproject may also increase demand in some specialty chemicals.

The global energy transition is shifting oil demand towards petrochemicals. This confirms the rationale behind crude-to-chemicals schemes and downstream integration strategies in MENA. As detailed in *APICORP's MENA Gas Investment Outlook 2020-2024*, the increase in petrochemicals investments is part of efforts to further integrate the hydrocarbon supply chain – including refining – and maximize the value of each crude oil barrel. As noted in previous reports, most of the growth in oil demand will come from the petrochemicals sector by the end of this decade. The headwinds for 2021-2025 and beyond for petrochemicals will come from the impending environmental and sustainability regulations, including net-zero commitments and plastics recycling.

Global liquids demand for Petchems in mmbpd: 2020-2035



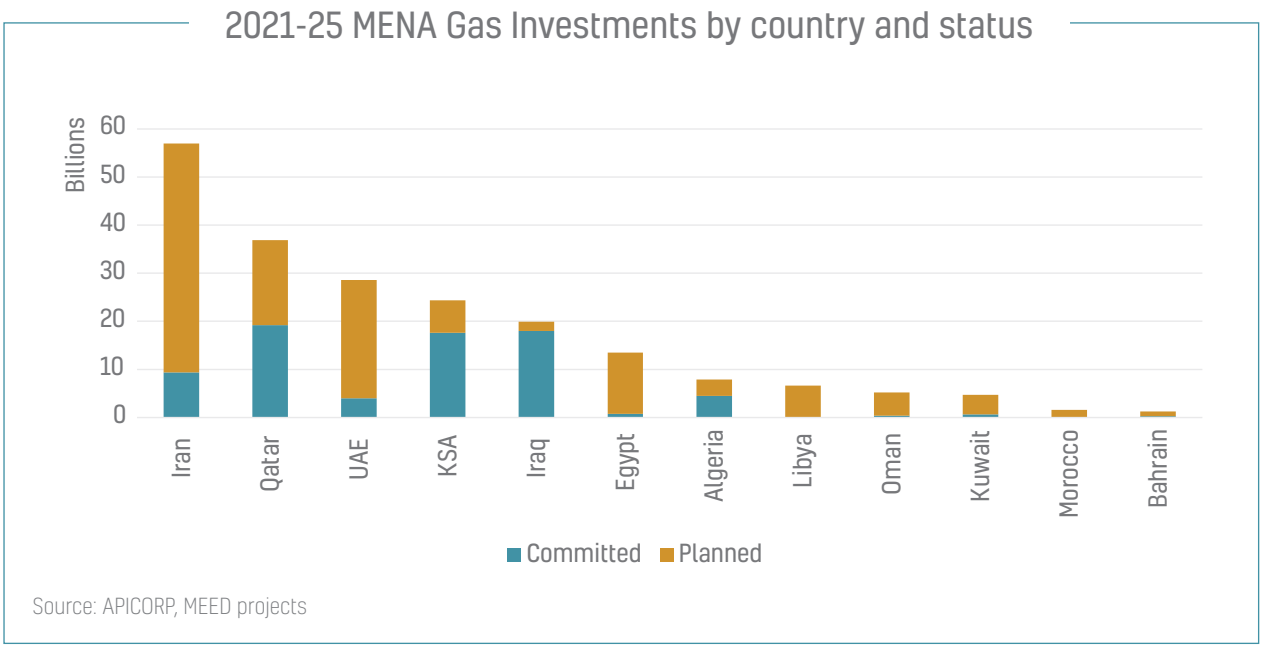
Source: APICORP

Europe, the leader in the energy transition, is formulating legislative measures to accelerate the realization of the net-zero 2035 target. Its chemical sector already faces a carbon tax of around €1bn in 2021 amid a ramp up in regulatory measures (unrecycled plastic will be taxed at EUR 800/mTon starting from Jan '21). Its carbon prices meanwhile rose from €25/tonne in October 2020 to €35/tonne on the date of announcing the new carbon tax legislation, with a possibility to increase to €50/tonne as the market restructures and tightens.

On the other hand, the new US administration is not expected to introduce national carbon controls this year. In another sign of a paradigm shift, the state of Washington denied a permit for a proposed methanol plant based on poor environmental credentials related to concerns about greenhouse gas (GHG) emissions, which could lead to its failure in meeting its own greenhouse-gas targets. Japan and South Korea have pledged a net-zero 2050 target in 4Q2020. This was followed by China – the largest global energy consumer – pledging the same by 2060 and also announcing its long-awaited – and world's largest – emissions trading scheme (ETS). However, the latter is yet to be implemented.

ii. MENA Gas and Petrochemicals Projects and the Energy Transition

Gas investments continue



Source: APICORP, MEED projects

Committed gas investments for 2021-2025 dipped slightly compared to APICORP's MENA Gas Investment Outlook 2020-2024 – from USD87 billion to USD78 billion due to the completion of several megaprojects and the cautious stance towards committing to new projects in an era of overcapacity in most MENA countries. Planned investments on the other hand more or less maintained their 2020 level, indicating the strong appetite of the region for continuing its natural gas capacity build-up once macro conditions improve and global gas markets clear the long-term oversupply.

Qatar, Saudi Arabia, and Iraq pace the MENA region in terms of committed gas investments. This is owed to the giant NFE expansion project in Qatar, the continued gas-to-power drive in Saudi Arabia and its massive Jafurah unconventional gas development, that is poised to give the Kingdom a pioneer status as a key blue hydrogen exporter as per Aramco announcement in Q1 2021.

As for Iraq, the country is still trying to push ahead with its necessary associated gas capture and processing projects to accomplish two main goals. The first goal is to eliminate flaring by 2025, though this target is likely be pushed to 2026-2027 due to mounting delays. The second goal is to feed power generation through the still-stalled Basra Gas project, especially after Iran's decision to halt its gas imports to the country – which peaked at 15 bcm – in the face of overdues owed to it amounting to a whopping USD 5 billion. The Iraqi government succeeded in materialising two breakthroughs in March and April 2021: 1st by signing a heads of a multi-billion- dollar agreement with Total for gas-to-power generation that will capture 600mmcfpd of associated gas from southern oilfields Majnoon, Artawi, WQ-2, Tuba and Luhais, converting it to electricity, and the 2nd is awarding the delayed Mansuriya gas field development.

Gas investments in Iran continue to show strong activity as the South Pars development program proceeds and petrochemicals feed is maximized. The country also has a large pipeline of petrochemicals projects and saw its giant USD3.45 Bn gas-fed Bidboland petrochemicals plan come online in 2020.

The total planned investment for Qatar's North Field East (NFE) was revised from USD22 billion in 2020-24 to USD25 billion to reflect the official figures announced during the project award announcement in February 2021. Qatar is also pledging green credentials in its LNG expansion by including state-of-the-art carbon/CO2 and GHG capture and separate production trains, which also boost the megaprojects economics as it markets industrial quantities of helium, sulphur and ammonia. This is almost the same figure allocated to the UAE's continued gas development masterplan realization, including unconventional/sour gas development.

In terms of committed petrochemical investments, Egypt is the regional leader followed by Iran and Saudi Arabia, owed to its drive to localize its specialty chemical industries and feedstocks import substitution. The country also saw a USD10 billion uptick in planned gas activities, mostly related to recently awarded offshore blocks (Chevron, bp, and Noble).

LNG exports bcm	2020	2020/2019
Algeria	10.3	-15 %
Egypt	1.5	-60%
Oman	9.6	-2 %
Qatar	78.5	2.5 %
UAE	5.8	3.5%

Due to the extreme fiscal pressures on the public and private sectors put on by the current downturn, a few committed projects are expected to face strong headwinds in terms of payments and/or supply chain issues and potentially get delayed. Planned projects will be further scrutinized due to the expected slow global economic recovery. According to Joint Organizations Data Initiative gas data, 2020 MENA LNG exports fell compared to 2019, except for Qatar and the UAE which benefited from the COVID-19-related drop in domestic gas demand to export additional LNG to Asia.

Revisiting the indicative LNG exporters' netback calculation highlighted in *APICORP's MENA Gas and Petrochemicals Outlook 2020-2024* based on the slight upward revision of hub prices due to market tightness,

Algeria got a boost in both its revenue and its negotiating position on renewing its expiring contracts – along with the region's other LNG exporters, Qatar and Oman, with a wave of LNG contracts expiring in 2021-25. However, the biggest winner from the rise in spot prices was Egypt, which has comparatively higher upstream costs since most of its LNG capacity is uncontracted. This was boosted by the restarting of the Damietta SEGAS plant operations in February 2021 after years of hibernation.

Indicative LNG Netback	Egypt Average			Algeria Average		
	NW Europe	**NE Asia**	**S Asia**	**NW Europe**	**NE Asia**	**S Asia**
Upstream	4.5	4.5	4.5	4.13	4.13	4.13
Liquefaction	1.2	1.2	1.2	0.8	0.8	0.8
FOB cost	5.7	5.7	5.7	4.93	4.93	4.93
Shipping	0.45	1.2	0.6	0.33	1.6	0.9
Delivered costs	6.15	7.2	6.3	5.23	6.63	5.83
Hub spot gas price	5.5	8	6	5	10	6
Net back	**-0.65**	**2.8**	**-0.3**	**-0.23**	**3.37**	**-0.17**

Source: APICORP 2020. NW Europe = UK/ Netherlands; NE Asia = Japan/S Korea/Taiwan; S Asia = India/Pakistan/Bangladesh

Algeria's LNG profitability will also increase, but the caveat is that most of Algeria's LNG is contracted while Egypt's majority of LNG capacity is spot based:

Export country	Loading point	Seller	Buyer	ACQ (mmtpa)	Duration
Algeria	Skikda-Bethioua	Sonatrach	Botas	4	1994/2024
	Skikda-Bethioua	Sonatrach	Cepsa Gas	0.77	2002/2022
	Skikda-Bethioua	Sonatrach	DEPA	0.72	2000/2021
	Skikda-Bethioua	Sonatrach	Enel	0.15	1999/2022
Egypt	Damietta	SEGAS	BP	1	2005/2025
	Idku	ELNG T1	Total	3.6	2005/2025
Oman	Qalhat	Oman LNG	BP	1.13	2018/2024
	Qalhat	Oman LNG	Itochu	0.7	2006/2025
	Qalhat	Oman LNG	KOGAS	4.06	2000/2024
	Qalhat	Oman LNG	Osaka Gas	0.66	2000/2024
	Qalhat	Qalhat LNG	Union Fenosa Gas	1.65	2006/202
Qatar	Ras Laffan	Qatargas I	Group of Japanese Utilities	2	1998/2021
	Ras Laffan	Qatargas I	JERA	4	1997/2021
	Ras Laffan	Qatargas I	JERA	1	2012/2021
	Ras Laffan	Qatargas I	Naturgy Energy Group	0.75	2005/2024
	Ras Laffan	Qatargas I	Naturgy Energy Group	0.75	2006/2025
	Ras Laffan	Qatargas I	Shizuoka Gas	0.2	2016/2021
	Ras Laffan	Qatargas III	RWE Supply & Trading	1.1	2016/2023
	Ras Laffan	Qatargas IV	Centrica	2	2014/2023
	Ras Laffan	Qatargas IV	Petronas	1.1	2014/2023
	Ras Laffan	Qatargas IV	Shell	1.1	2019/2023
	Ras Laffan	RasGas I	Endesa	0.75	2005/2025
	Ras Laffan	RasGas I	KOGAS	4.92	1999/2024
	Ras Laffan	RasGas II T3	EDF Trading	2	2017/2021
TOTAL	**24 contracts**		*(equivalent to):*	**40.1**	

It is worth mentioning that in February 2020, QP entered into a long-term agreement with commodity trader Vitol to supply Bangladesh with 1.25 mmtpa as the country switches from coal to gas for power generation. In March, QP signed another 3 mmtpa 10-yr supply contract with Pakistan that runs from 2022-2032. The significance is that the pricing of the contract is about 30% cheaper than the legacy 3.75 mmtpa 2015-2030 contract between the two nations, demonstrating a more 'balanced' approach possibly emerging between major LNG producers and consumers, influenced by the violent swings in spot prices over 2020 - Q1 2021 and underscoring the perils of long term contracts as a more stable option for both exporters and importers.

Iraq is endeavoring to continue the development of its gas sector despite dire liquidity issues. In January 2021, South Gas Company awarded Baker Hughes a contract for the FEED+EPC of a 200 mmscfd gas processing facility. The project, which aims to capture more than 1.8 bcfd of associated gas from the Gharaf and Nasiriya oil fields from 2021-25 gas, is a considerable step towards reducing flaring in one of the region's highest GHG emitters.

Another regional success was the start of production from the UAE's Ruwais-Diyab unconventional gas in November 2020. Abu Dhabi is putting its weight behind this project after canceling the Hail-Ghasha-Dalma offshore sour gas development in 2020. Despite its unconventional nature, the onshore Ruwais-Diyab enjoys the proximity to world-class procession facilities in Ruwais and a high associated liquids yield. On a more modest scale, Sharjah National Oil Company (SNOC) and partner Eni announced in January 2021 the start-up of the Mahani gas field with a development plan to drill several wells in 2022-24, the biggest upstream development for the small emirate in more than four years.

iii. MENA unconventional gas developments re-assessed

The UAE is also expected to reassess whether the costly unconventional gas fields Hail and Ghasha – and Dalma – would be more commercially viable than the recent Jebel Ali unconventional onshore discovery (not included in this outlook as it still being appraised). Yet while slower-than-anticipated domestic demand, particularly since the commissioning of the 5.3-GW Baraka Power Plant, gives Abu Dhabi the luxury to re-rank gas developments, the country's target of gas self-sufficiency is of strategic and long-term value and is not expected to change with the abundance of surplus capacity in neighboring states.

Bahrain meanwhile is expected to continue to struggle in finding a private partner willing to develop its offshore unconventional deposits which, despite their massive size, will require very high development costs and pose technical challenges that make the find commercially unviable. However, Bahrain is conducting further studies with international OFS companies on the hopes of coming up with a cost-saving solution.

Algeria's new hydrocarbon law which was passed in 2020 still has to prove its efficacy in attracting the FDI sorely needed to revamp the country's ailing upstream industry (much-hyped shale gas for example has been in the pipeline for nearly a decade but only limited studies have been carried out to date). Jordan is also trying to resuscitate its oil shale ambitions, betting on new technologies and its well-developed renewable energy infrastructure to assist unconventional production techniques and lower the cost per barrel.

For Saudi Arabia's Jafurah shale gas project (approximately 200 Tcf of wet gas), the economics look more promising; the terrain, magnitude of reserves and associated liquids yield, and proximity to the expansive facilities of Ghawar will boost the commercial feasibility of the costly development. In a push to enhance the project's sustainability, Aramco is testing whether or not the nearby seawater can be used in hydraulic fracking so as not to deplete

precious underground freshwater reservoirs. If the technique proves successful, Saudi Arabia will have gifted the world a breakthrough in developing vast quantities of stranded shale deposits.

On a related noted, the Saudi Ministry of Energy also announced the possibility of constructing an ultra-efficient reverse-osmosis desalination plant on the Gulf coast near the Jafurah field to supply the necessary freshwater quantities for fracking. Although Aramco plans to start production in 2024, a more realistic date would be 2025-2026. The development of Jafurah may bring with it gas price reforms as the kingdom still has one the lowest gas prices in the GCC[1].

In 2017, Oman became the first country in the region to start commercial production of unconventional gas. Operated by BP, its tight gas field Khazzan (10 tcf of recoverable reserves) is currently producing circa 1 bcfpd and is expected to reach 1.5 bcfd in 2022-2023. US Shale veteran EOG Resources has increased its stake in Oman's unconventionals by farming in Tethys' onshore Block 49.

Unconventional MENA O&G prospects ranked

Country	Project	Status	Hydrocarbon	Terrain	Budget (est.)	Development $/ mmbtu(est.)	Comments
KSA	Jafurah	Planned	Gas Condensate	Desert	$100 Bn	$ 5/mmbtu	Aramco announced that Jafurah gas will be converted to Blue hydrogen.
KSA	Tuwaiq	Study	Gas	Mountain	NA	$3-$4/mmbtu	
KSA	S Ghawwar	Study	Gas	Desert	NA	$3 - $4/mmbtu	
Bahrain	Permian	Study	Gas Condensate	Deep Onshore	NA	N/A	
UAE	Ruwais - Diyab	Execution	Gas Condensate	Offshore shallow	25 Bn	$ 4-5/mmbtu	Production started Nov '20
Oman Tight Gas	Khazzan - Ghazeer	Execution				$2.4/mmbtu	Progressing to Phase 2 of Development
Algeria	South West	Pre-study	Gas Condensate	Desert	NA	NA	Prospective

Source: APICORP 2021, BP Oman, The Arab Gulf States Institute in Washington whitepaper: "Looming Peak Oil Demand Triggers Gulf Race for Natural Gas" Kate Dourian, Jul 2020

[1] Reference: "The Prospect of Unconventional Gas Development in Saudi Arabia" KAPSARC, March 2020

UAE's long oil bid: Flagship Murban benchmark starts trading, Fujairah triples capacity by 2024:

Reforms undertaken by Abu Dhabi are set to positively loosen state controls on the region's oil market, driving it closer to a free-market system. In March 2021, Abu Dhabi launched its new Murban flagship crude through the newly established IFAD (Intercontinental exchange Abu Dhabi) exchange, with global partners: BP, Shell, Total and Vitol along with GS Caltex, Inpex and ENEOS, PetroChina and PTT. Abu Dhabi's objective is establishing Murban grade as a key benchmark for oil trade as it solidifies its position as a key global oil heavyweight pushing towards its 2030 target of 5 Mbopd of crude capacity.

In production since 1959, Murban is Abu Dhabi's main crude grade, with current capacity circa 1.5 Mbopd and plans to increase to +2.5 Mbopd by 2030 (50 % of UAE's 2030 production capacity). Popular with Asian refineries favoring light sour crudes, Murban competes with Saudi crude, Russian ESPO, and relatively with Brent.

Historically, Murban – like most other middle east crudes - had destination restrictions, Abu Dhabi's introduction of the Murban benchmark in March 2021 involved removing destination restrictions (as Oman did more than a decade ago) and listing a physically-delivered futures contract for the flagship crude. Furthermore, Upper Zakum, Das and Umm Lulu crude grades will also be sold through the new IFAD without any destination restrictions starting from June 2021 and priced based on Murban (which itself was previously priced based on Platts Dubai). ADNOC moved to forward pricing of its crude since March 2021. In April 2020, the Dubai Mercantile Exchange (DME), which lists the Oman crude futures contract, also launched the Alternative Crude Ecosystem (ACE), a new bilateral trading platform that enables trading multiple MiddleEast crude grades and attract more participants through the exchange: Dubai, Upper Zakum, Murban, Basrah Light, Basrah Heavy, Al Shaheen and Oman can be traded versus the DME Oman Sour Crude Benchmark futures, further boosting oil market risk management options and increasing trading liquidity of key middle east crudes

Fujairah hub expansion:

One key advantage for Murban is that it is exported through Fujairah on the Arabian sea bypassing the strait of Hormuz chokepoint (as it is transported via the Habshan-Fujairah pipeline linking Abu Dhabi's onshore fields to the Arabian Sea). Fujairah port (the world's 3rd largest bunkering hub) will have its oil storage capacity triple to 12 mmcm by 2024 as ADNOC and private terminal operators like BPGIC and ECOMAR expand their facilities to be able to store 42 Million barrels of oil. Altogether, these upgrades will increase the market appeal of Murban and enhance its trade liquidity.

Refinery Reconfigurations:

Ahead of launching Murban as a crude, ADNOC had to reconfigure their refineries and petchem plants to accommodate variable feedstock from its different crude grades in order to free up a threshold marketable volume of Murban (a floor of 1 Mbopd). These midstream/downstream enhancement projects culminated in 2020, but the company is expected to continue its feedstock optimisation to achieve the best commercial utilization of it crude grades driven by market dynamics.

2. Power sector in MENA

i. Global and MENA Power Outlook: Ripple Effects of the Pandemic

Global electricity demand is estimated to have dropped by around 2% in 2020 compared to 2019, as recently reported by the IEA. This is a revision from the previous 5% estimate due to a rebound recovery driven mainly by China. Major consumers including the United States, India, Europe, Japan, South Korea, and Southeast Asia all experienced declines for the year 2020.

The varying levels of demand decline between countries can be attributed to the disparities in their respective power market structures and consumption mix. Broadly however, national demand power profiles witnessed an increase in the share of the residential sector's electricity consumption against a decline in industrial and commercial sectors as factories and businesses reduced their operations and people spent more time at home due to lockdowns. Hence, the overall power demand drop was somewhat mitigated in markets such as the MENA region where the residential sector already constituted a large share of the power demand mix.

Overall, the residential sector represents around 41% of MENA's total power demand, followed by the industrial sector (21%) and commercial sector (20%), whereas the remaining 18% is comprised of agriculture and transport, as well as network losses (18%)[2] . From 2019 to 2020, total power demand in Saudi Arabia dropped 2.3% while the residential sector's share increased 3%. Similarly, Egypt's total power demand dropped 1.6% against a 2.1% increase in residential power demand, and in the UAE by 2% and 1.8%, respectively.

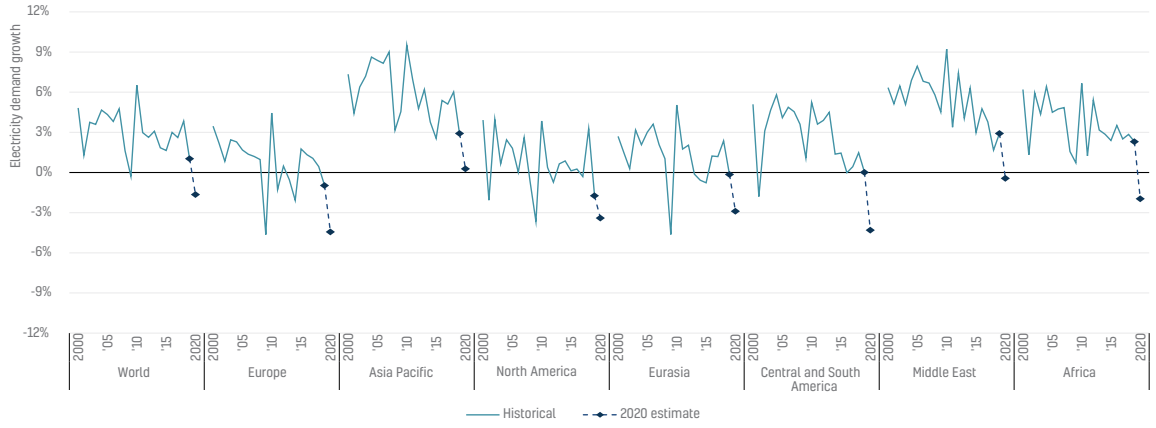
At prima facie, the COVID-19 pandemic may have caused a slew of underlying changes to the power load profiles, a shift that will reverberate for years to come depending on market dynamics and consumer behaviors – particularly in the residential and commercial sectors – and the response of system operators. All energy-intensive sectors in MENA will take time to evolve depending on their energy efficiency levels, use of captive generation, and fuel switching possibilities. The rebound in power demand will be highly dependent on the pace by which the vaccines are deployed in 2021 and the efficacy of the government fiscal stimulus packages to those sectors.

Compared to other regions, the MENA power sector has come out relatively unscathed from the 2020 pandemic compared to other energy sectors, and is expected to play a vital role in driving and accelerating the recovery process despite the fact that several national utilities faced a deteriorating financial situation due to lower payments.

Among other variables, the power market structure and regulatory reforms were affected differently within countries. In all cases however, policy efficiency and the digitalization of the sector weigh in as the most influential factors in shaping the future of power demand.

[2] Arab Union of Electricity, Statistical Bulletin, 2018

Historical electricity demand variation by region, 2000-2020



Source: IEA

Beyond 2020

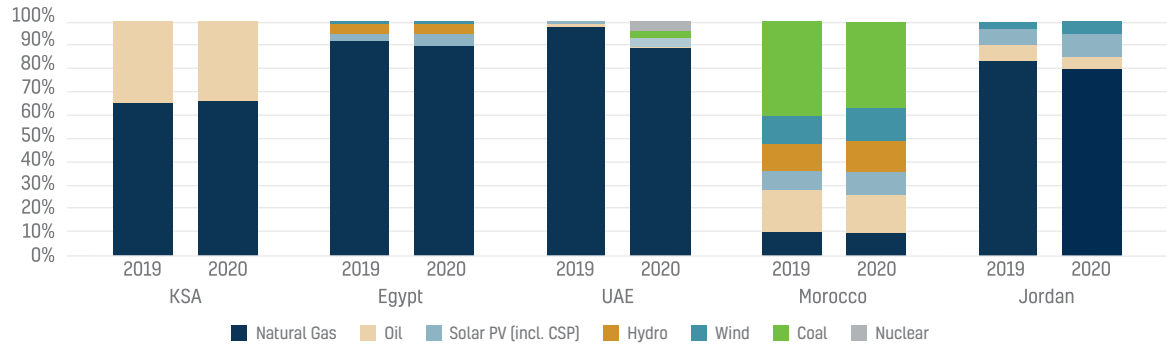
According to the IEA, global electricity demand is expected to grow by around 3% in 2021, driven by emerging and developing economies led by China and India. Wind and solar PV are expected to continue to set record in terms of capacity additions in 2021, building on the expansion of their market share to nearly 30% in 2020.

The need for must-run technologies such as nuclear and renewables will shrink the available space for fossil fuel generation. Globally, nuclear generation in 2021 is set to increase by 2.5% compared to 2020, coal-fired generation by 3%, and gas-fired generation by 1% due in part to an expected rise in natural gas prices in 2021[3]. In large emerging power markets, growth in power demand is expected to surpass the capacity additions in renewables, leaving room for coal and gas generation, and leading to a 2% rise in CO2 emissions in 2021.

ii. Renewables gaining traction in MENA with ambitious targets:

In centralized systems, power dispatching is prioritized as a function of several factors including power plants' cost curves and power availability. As the chart below illustrates, the contribution of must-run technologies such as nuclear and renewables during 2020 started to claim a higher share in the power supply mix in several MENA countries such as Egypt, UAE, Morocco, and Jordan.

The Power Generation Mix in Select MENA Countries in 2020 vs. 2019

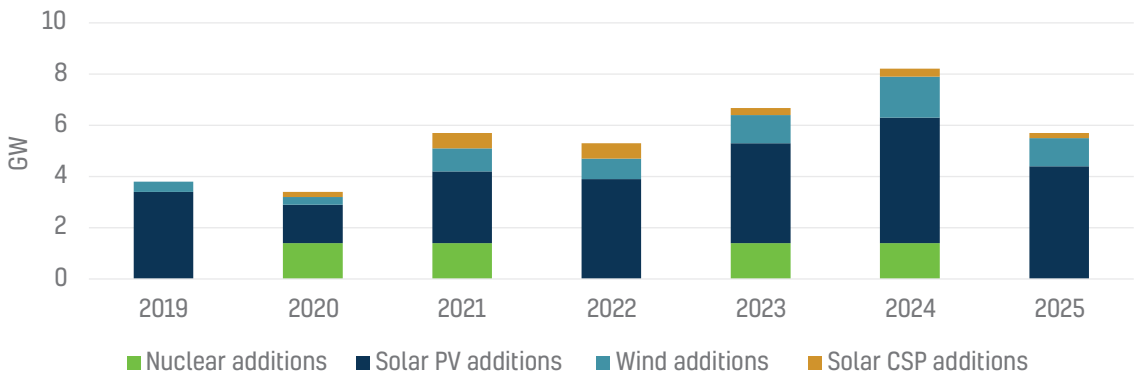


Source: APICORP

[3] Electricity Market Report: December 2020 - IEA

The increase in renewables was driven mainly by wind power, solar PV, and other sources such as hydropower. As a whole, the MENA region added an estimated 1.5 GW of solar power in 2020, with a further 3 GW during 2021 and almost 20 GW expected to be added over the next five years.

Additions of low-carbon energy carriers for electricity by installed capacity in MENA (2019-2025)



Source: APICORP

Key drivers

Due to the intermittency of the renewable power sources and the lack of utility-scale grid storage solutions to date, fossil fuels and nuclear will remain indispensable in the power supply mix in the foreseeable future. Despite the high potential, the rate of propagation of renewables in MENA will highly depend on the evolution of policies, removal of subsidies and development of appropriate regulations.

The unprecedented cost declines and lofty national renewable energy targets – which range from 13% to 52% of installed capacity by 2030 – are the two key accelerators currently fueling renewables penetration in the MENA region.

Several MENA countries are integrating renewables as an indispensable part of the generation mix as part of their shared policy objective to diversify the supply mix and ensure the security of supply. For hydrocarbon net-importing countries with robust renewables potential, the goal is to reduce dependence on fossil fuel imports and integrate low-cost renewables into their domestic grids, while for hydrocarbon net-exporters the priority is freeing up export volumes to finance the hefty fiscal stimulus packages rolled out in 2020.

When assessing the progress towards achieving renewables policy targets, Jordan and Morocco – and Egypt to a lesser degree - seem to be on track to realizing their renewables targets. As for other MENA countries, more scalable projects are needed for their renewables targets to materialize.

In the UAE, renewables constitute around 6% of total installed capacity versus 3% of generation as of 2020. Although UAE's renewable short-term targets might be missed, solar capacity is projected to grow the fastest with nearly 5 GW of projects (including CSP) in the pipeline. In Dubai, Shuaa Energy 2—an IPP JV between Masdar

and France's EDF (40% private)—is commissioning an 800 MW PV phase 3 of the Mohammed bin Rashid Solar Park, while the Noor Energy 1 IPP—owned 51% by DEWA and 49% by Saudi ACWA Power and Chinese Silk Road Fund—is building phase 4 (700 MW CSP and 250 MW PV). ACWA Power also closed financing on the MBR solar park phase 5 (900 MW of PV). In Abu Dhabi, EWEC signed, in July 2020, a PPA with an IPP consortium—60% owned by TAQA and Masdar and 40% by EDF and JinkoPower—for the Al Dhafra PV project (2 GW).

In Saudi Arabia only 330 MW of utility-scale solar PV projects and only one 2.5 MW wind demonstration project developed by Saudi Aramco (in partnership with GE) were operational as of 2020. In April 2021, the launch of the Sakaka solar PV power plant (300 MW) and the signature of seven PPAs of several solar PV plants across various regions of the Kingdom were announced. The projects include:

- Qurayyat (200 MW) and Shuaibah (previously known as Faisaliyah, 600 MW) - ACWA Power, Gulf Investment, Al Babtain Contracting
- Rafha (20 MW) and Al-Madinah (50 MW) - Al Blagha, Alfanar, Desert Technologies
- Rabigh (300 MW) - Marubein, Aljumaih
- Sudair (1,500 MW) - Co-owned by PIF and ACWA Power
- Jeddah (300 MW) - Masdar, EDF, Nesma

Each project is granted under a 25-year PPA with the national offtaker and developed under a build, own, and operate (BOO) model.

The total capacity of these projects, in addition to the Sakaka solar PV and Dumat Al Jandal wind project, amount to roughly 3.7 GW, leaving a 23.6 GW gap between operational projects and the five-year target.

As for Oman, despite the ongoing procurement of large scale utility projects, it is still far from achieving its short-term target with an installed capacity of nearly 155 MW installed by end of 2020, with only a 105 MW utility solar PV project and a 50 MW onshore wind project comissioned over the past two years. A 500 MW solar PV project tendered by OPWP (Oman Power and Water Procurement Company) was won by a consortium led by ACWA Power under a 15-year PPA is currently under construction. OPWP received final bids for two 500 MW solar PV plants in Manah back in July 2020, but the winners are yet to be disclosed. As for wind potential, OPWP plans to procure two additional projects with a combined capacity of 300 MW targeting commercial operation in 2023.

Jordan went from generating just 1% of its energy from renewables in 2012 to nearly 20% -- nearing its 2020 target – thanks to its efforts in fast-tracking the renewable program after Egypt cut gas supplies in 2012. Jordan's total installed capacity of renewables amounts to approximately 1.8 GW, including 1.3 GW of PV and 0.5 GW of onshore wind. Jordan has two wind projects in the pipeline for a total of 104 MW and 290 MW of large-scale PV projects under construction. The wind projects, contracted through direct proposals, are expected to come online in 2021. Masdar is building the 200 MW Baynouna PV project, the largest utility-scale renewable project to date in Jordan. Another UAE-based IPP, AMEA Power, is the lead developer in two projects: Al Husainiyah PV (50 MW (AC)) and El-Abour wind (51.75 MW).

As for Egypt, the total installed capacity of renewables amounts to approximately 2.3 GW, including 1 GW of PV and 1.3 GW of onshore wind. There are currently 213 MW of solar PV IPP projects under construction, one 250 MW wind IPP project under construction, and 120 MW of wind capacity being built by the NREA (Renewable Energy Authority). Advanced pipeline projects include about 2 GW of wind and 1 GW of solar PV, mostly under IPP contracts.

In Morocco, 4 GW of renewables (wind, solar and hydro) constitute around 37% the total generation mix versus 40% of installed capacity. Solar, wind, and hydropower projects make up almost 90% of the current 3.5 GW in the project pipeline, including 402 MW currently under construction. As part of the country's hydropower development program, the National Office of Electricity and Drinking Water (ONEE) is planning a 350 MW pumped hydropower project at Abdelmoumen and several small hydropower plants (220 MW) are also in the works. The Integrated Wind Program features 1.3 GW of onshore wind projects. As for solar projects, declining PV costs are shifting the focus from CSP to PV—and account for most of the solar additions in this outlook. Solar PV currently accounts for a small portion of the solar operational capacity, but several projects, and more importantly conducive regulations and institutional reforms, are in the pipeline.

Iraq's strategic plan is to reach a solar power generation capacity of 10 GW by 2030 with 20% of its electricity production coming from solar. The country's first solar bid round was announced in May 2019 and bids of short-listed companies were disclosed in Septmeber 2020. The 755 MW solar projects are distributed across seven sites, all of which are located in the southern part of the country where solar irradiation is the highest (1.9 MWh/m2). The two biggest projects are Karbala (300 MW) and Iskandariyah (225 MW) with bids expected to be in the range of USC 3.5/kWh to USC 4/kWh respectively. The remaining projects - with installed capacities ranging between 30 MW and 50 MW - bids are expected to range from USC 4/kWh and USC 5/kWh.

Progress towards renewable energy policy targets in selected MENA countries

Country	RE policy targets	Year	Progress '20
UAE	Dubai: 7% renewable energy generation by 2020, 25% by 2030, and 75% by 2050 Abu Dhabi: 7% of installed capacity by 2020 Federal: 44% of generation mix by 2050	2020, 2030 & 2050	≈ 3% of generation, ≈ 6% of installed capacity
Saudi Arabia	27.3 GW of installed capacity by 2024, and 58.7 GW by 2030	2024 & 2030	< 1% of installed capacity
Oman	10% of generation mix by 2025, 20% by 2030; 35%-39% by 2040	2025, 2030 & 2040	< 1% of generation, < 1.5% of installed capacity
Jordan	21% of generation mix by 2020, 31% by 2030	2020 & 2030	≈ 20% of generation
Egypt	20% of electricity generation by 2022 and 42% by 2035	2022 & 2035	≈ 9% of generation, ≈ 11% of installed capacity
Morocco	42% of installed capacity by 2020, 52% by 2030	2020 & 2030	≈ 40% of installed capacity
Iraq	20% of electricity generation by 2030	2030	< 1% of generation

Source: APICORP

iii. An inbound paradigm shift driven by Renewables ambitions

The rise of renewables is driving a paradigm shift in the structure of the traditional power value chain. Thermal-based generation is opening up avenues for smaller-scale renewable generation. In the short term, existing conventional generators need to become more flexible, with an improved ability to provide a faster ramping capacity to react to the increasing volatility of peak load and the increased penetration of intermittent renewables. In the long term, flexibility will also come from demand management and increased grid interconnectivity. As for transmission and distribution, the traditional pattern of predicting the load and providing the available capacity to balance supply and demand will become unsustainable with the integration of renewables and the evolution of power consumers into power prosumers[4].

As battery technology is becoming increasingly affordable, distribution grid operators are turning to midscale batteries. Also, power-to-X applications are emerging that support sector coupling (power-to-heat and power-to-hydrogen), with great potential to store energy in different forms.

The MENA power markets are variants of the single buyer model (SBM) organized around vertically integrated state-owned utilities that own and manage the power value chain. Private investment in generation mainly follows an IPP/IWPP[5] model anchoring long term PPAs[6].

The power market transition begins with the structural unbundling of the key functions of the power value chain. The objective is to ensure that access to the grid is regulated and not negotiated, hence generators can compete on the same level playing field. Non-discriminatory open access to the grid and third-party sales are both essential for improving competitiveness and market liquidity at national and transnational levels.

MENA countries with a developed level of unbundling in the power value chain can progress towards a wholesale and retail competition market governed by enabling regulations, spot pricing and futures/forwards contracts markets. Future market designs will need to be adapted to provide greater flexibility and trading opportunities closer to the point of dispatch. A certain degree of compatibility in regulatory frameworks is required for integrated electricity markets to function effectively.

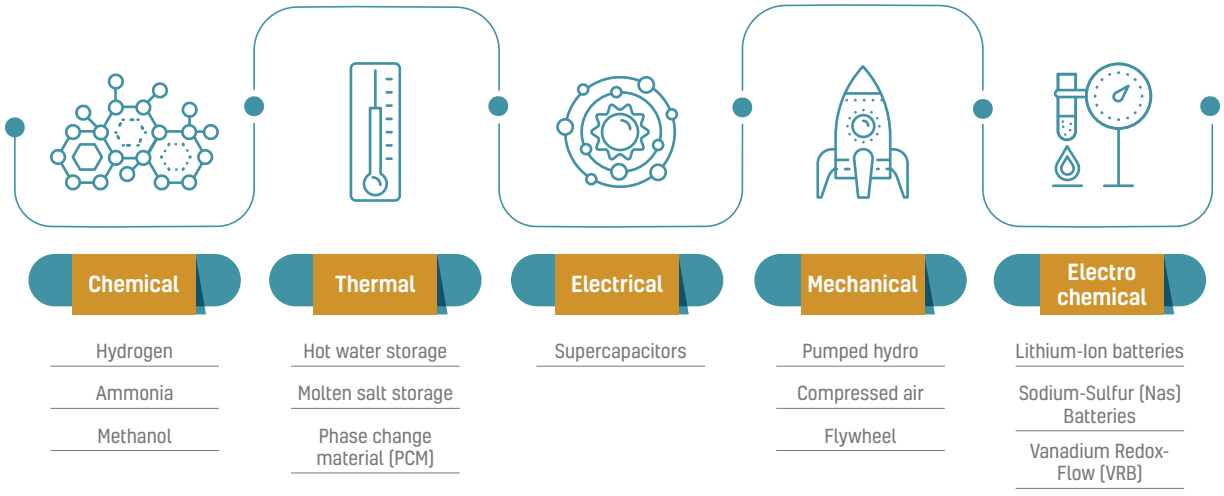
iv. The caveat in Renewables: energy storage

Clean energy technologies are playing a critical role in the decarbonization process and are accelerating the MENA region's shift towards renewables-based generation – mainly via solar and wind. However, to be able to achieve these targets, scaling up renewables projects and investing in upgrading utility networks are required. The expanding share of renewables, growth in power demand, and balancing supply and demand on a real-time basis necessitates the integration of energy storage solutions.

A key driver of growth in energy storage is optimizing the location of renewable energy production facilities with energy storage assets, which stabilizes production and ensures firmer capacity during peak demand periods. It is important to highlight the fact that energy storage is one option to increase the power system flexibility. Optimizing other features of the network such as demand response, smart-grids and power plant upgrades is also essential before integrating an energy storage solution.

[4] A prosumer is an individual who is both a consumer and a producer
[5] Independent water & power producer
[6] Power purchase agreements

Energy storage landscape based on existing technologies



Source: APICORP

Costs of batteries have fallen precipitously over the past decade, from approximately USD 1,000/kWh in 2010 to almost USD 150/kWh in 2019. Although Li-ion batteries will dominate over the next decade, other battery technologies will have a role to play but need to scale since long-term bulk and long-duration storage from a diverse technology range is needed. From an LCOS[7] basis, zinc-based systems are in the strongest position to compete with Li-ion batteries.

The region might emerge as an attractive spot for energy storage but the role of storage in networks remains very limited, and regulations will need to evolve to reflect its new functions, including leveraging flexibility from consumer aggregation or grid congestion.

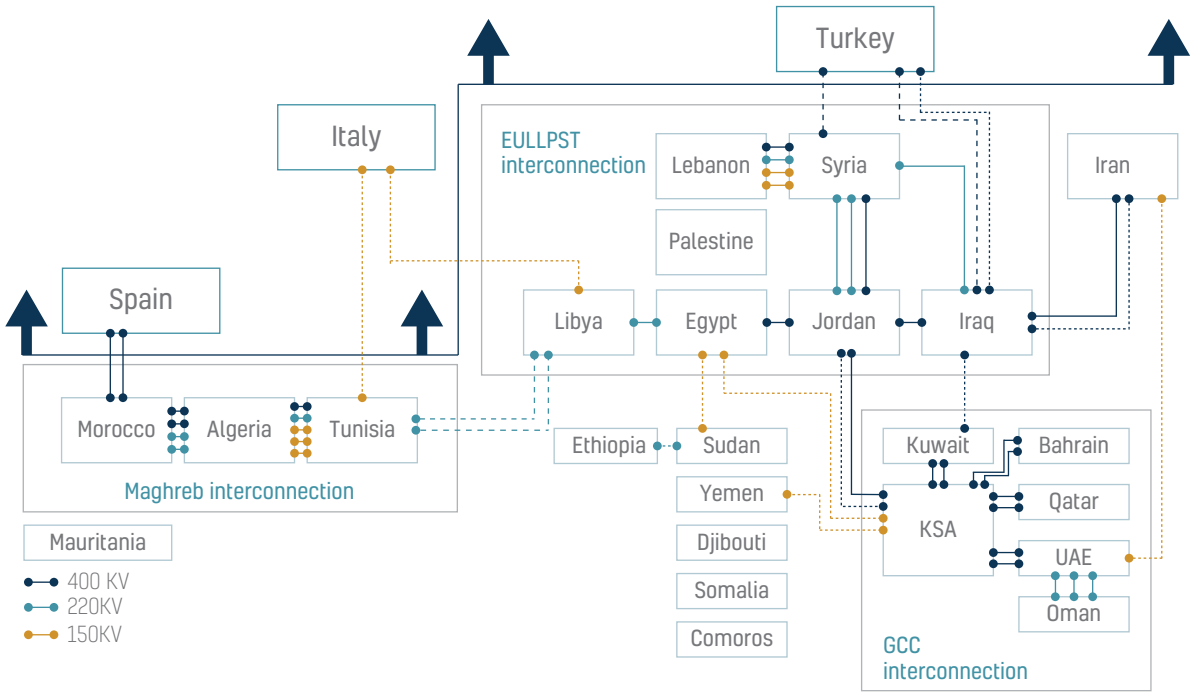
v. Regional interconnectivity: From underutilization to optimization

Power imports through regional interconnections improve system reliability, reduce reserve margins, exploit daily and seasonal peak load disparities, alleviate supply constraints, and cut the amount of investment needed for new capacity additions. Currently, three cross-country power grids exist in the MENA region:

- **Maghreb interconnection:** connecting Algeria, Morocco, and Tunisia with the EIJLLPST interconnection to the east and the European grid to the west through Spain.
- **EIJLLPST interconnection:** connecting Egypt, Libya, Jordan, Iraq, Syria, Palestine and Lebanon. Iran and Turkey are connected to this grid through Iraq and Syria.
- **GCC interconnection:** connecting the power markets of the Gulf Cooperation Council via the 400 kV Gulf Cooperation Council Interconnection Authority (GCCIA) transmission link.

[7] Levelized cost of storage

Existing and planned grid interconnections in the Middle East



Source: Adapted from "Journal of Modern Power Systems and Clean Energy" [8]

Although power trade between GGCIA members has been rising since 2016, the interconnection has a utilization rate below 10% owing to it being used for emergency and reserve sharing through bilateral contracts.

Since Saudi Arabia's power system operates at a frequency of 60 hertz (Hz) while the other five systems are at 50 Hz, the interconnection includes back-to-back HVDC converter stations to connect Saudi Arabia's 380 kV 60 Hz system to the 400 kV 50 Hz power systems. The Power Exchange and Trade Agreement and the Interconnector Transmission Code are key legal frameworks. However, the harmonization of rules and operational criteria is still in progress. A pilot project for a spot market took place in late 2017.

Power trade remains modest in the three interconnections due to lack of enabling regulations and proper market signals. For the Maghreb interconnection, institutional and regulatory reform should be put forward as the power trade between the north African countries is limited. For the EIJLLPST interconnection, the transmission and distribution infrastructures need to be reinforced to augment trading capacities given the power deficits in several countries within this grid. As for the GCC interconnection, power is traded at prices higher than the subsidized domestic power prices. The different local regulations and different levels of energy subsidies in each country should be addressed to enhance the level of power trading.

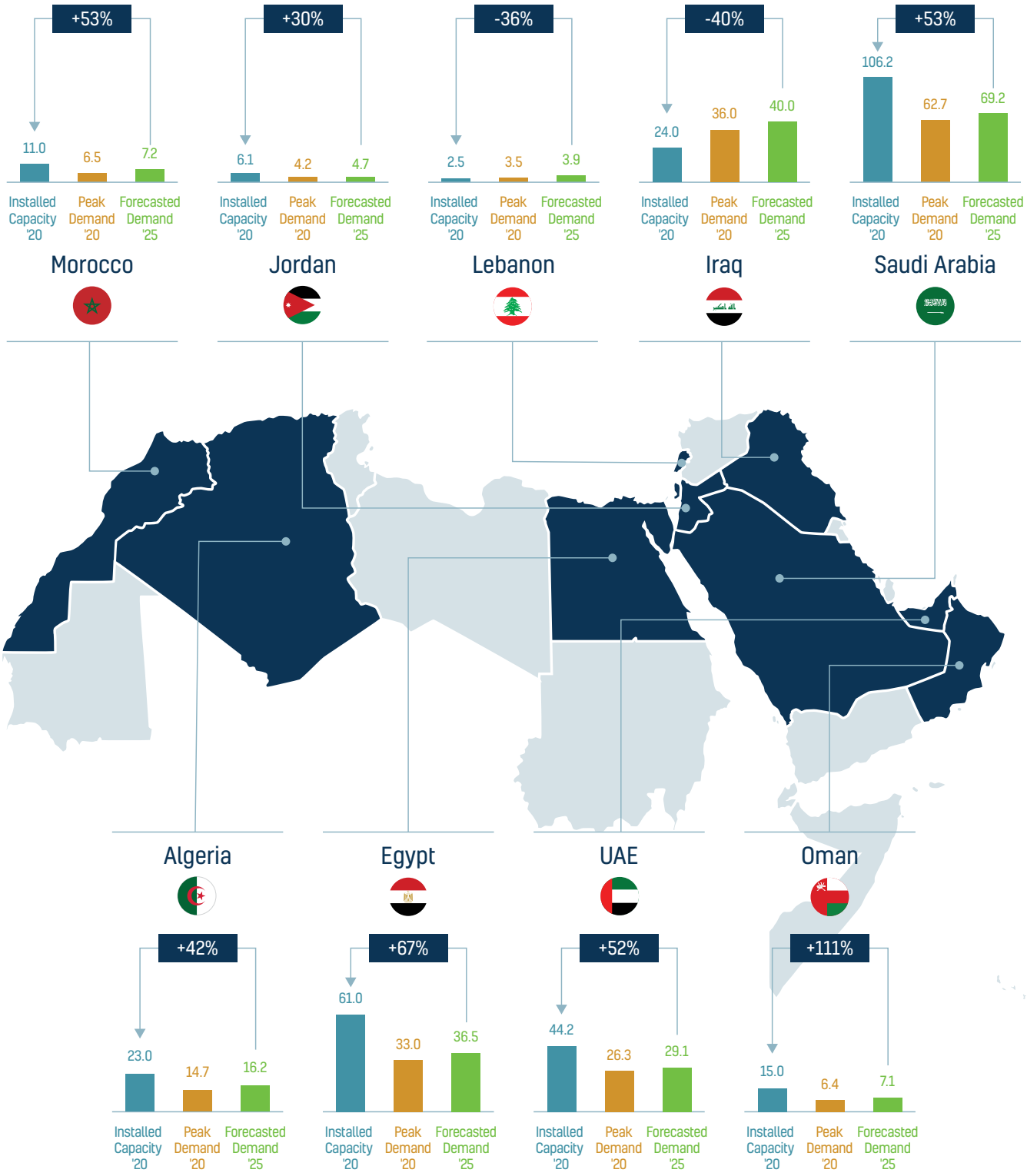
Additional power capacity particularly from renewables will make the case for trading a more commercially viable option as demonstrated in *APICORP's MENA Power Investment Outlook 2020-2024*.

[8] Zhang, X.P., OU, M., Song, X. (2017) "Review of Middle East energy interconnection development", J. Mod. Power Syst. Clean Energy (2017) 5(6): 917-935. Note: the solid line represents "existing", the dashed line represents "not operational/island operation", the dotted line represents "under-consideration, -study, -construction".

GCC power exchange has grown over the past years, but this is driven mainly by unscheduled outages and not due to commercial trading. The 3,000 MW Saudi-Egyptian link is the largest planned project for the region. The 500 MW first phase of power grid interconnection between GCCIA and Iraq has been postponed to summer 2022. Work on the interconnection in Kuwait entails construction of a 310 km, 400kV power link with a capacity to carry 1,200 MW of electricity from the GCC common power market to Iraq.

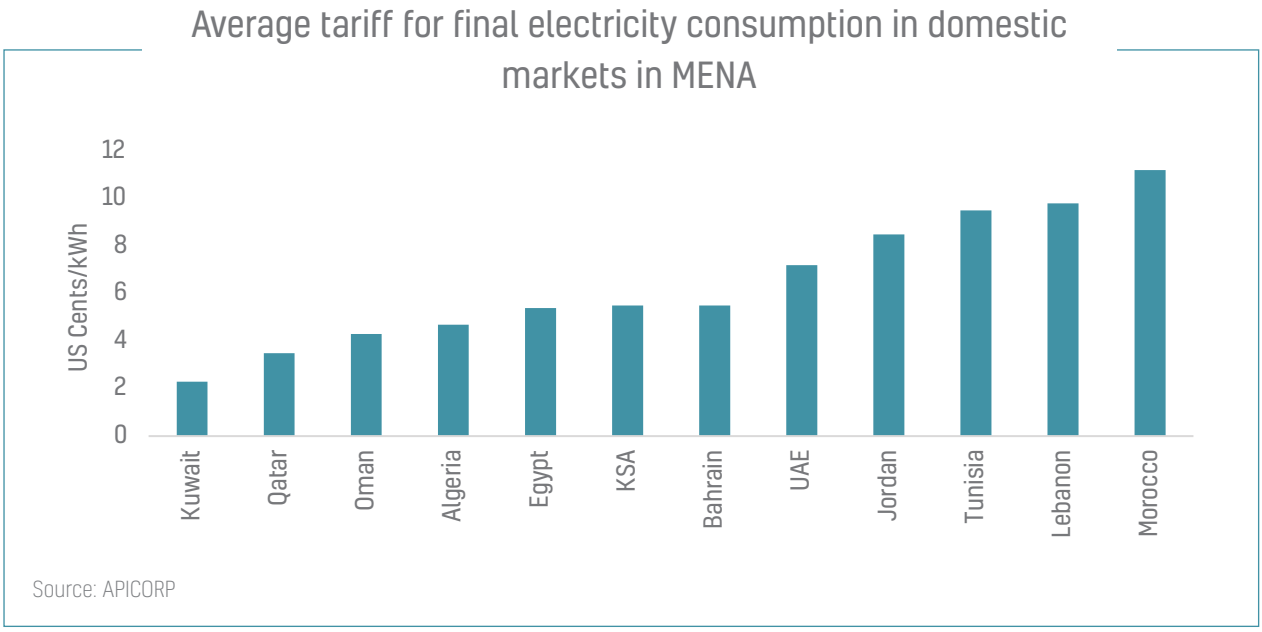
Iraq signed another interconnection agreement in 2020 with Jordan to receive up to 1 TWh per year of electricity under a first phase. Construction has also begun on the 400kV Qaim substation close to the Syrian border. Both Amman and Baghdad optimistically envision themselves becoming hubs for a larger regionally integrated power system.

Power Supply & Demand Balance of Selected MENA Countries (GW)



As shown in the previous chart, almost all GCC and North-African countries are currently experiencing a power capacity surplus, whereas several countries in the Levant region – namely Lebanon and Iraq – are suffering from a power deficit amid surging demand. Power exports from the GCCIA network could feed into the power-hungry EIJLLPST grid while the Maghreb grid can export electricity to Europe if the prices are competitive. Egypt plays the role of a strategic power link between the Maghreb grid, EIJLLPST and the GCCIA grids while positioning itself as a power exporting hub given its ample overcapacity.

However, at the current tariff structures, electricity imports via the three grids are more expensive than domestic generation from conventional and renewable energy sources. The average trading tariff across the three regional grids is between USC 12/kWh and USC 16/kW, with the GCC grid having the lowest tariff and EIJLLPST having the highest. Hence, with the increase in low-cost renewables generation, a price reform - epitomized in a drop in power trade tariffs – will be a key driver for prompting increased power trade within the three MENA cross-country grids.



Source: APICORP

vi. The race towards hydrogen and ammonia

The combination of low-cost gas resources and renewable energy positions the MENA region as a strong candidate for becoming a major hydrogen-exporting region, whether it be blue or green. A few countries, such as Saudi Arabia and Morocco, have taken measurable steps to position themselves as low-cost exporters of blue and green hydrogen, net-zero ammonia, and other low-carbon products.

Saudi Arabia is testing different approaches. Saudi Aramco, in partnership with SABIC with the support of the Japanese Ministry of Economy, Trade and Industry, exported a 40-ton demonstration shipment of blue ammonia to Japan, a country that can generate about 10% of its power from 30 million tons of this product.

[9] The calculated power tariffs are the average tariffs for electricity consumption for residential, commercial and industrial end-users

To make blue ammonia, Saudi Arabia is using domestically produced natural gas to make blue hydrogen, which is then mixed with nitrogen. The associated carbon dioxide generated during natural gas processing is captured and used for enhanced oil recovery at Saudi Aramco's Uthmaniyah field and production of methanol at SABIC's Ibn Sina facility.

On a larger scale, Air Products announced in July 2020, a USD 5 billion joint green hydrogen project with ACWA Power in the futuristic Saudi city of NEOM powered by 4 GW of renewable energy. The plant will use solar and wind power to produce hydrogen from water then mix it with nitrogen from the air to produce 1.2 Mtpa of ammonia as a carrier for green hydrogen. Air Products also plans to invest USD 2 billion in distribution infrastructure, including depots to turn the ammonia back into hydrogen for buses, trucks and cars. The project is expected to start operating by 2025.

Capitalizing on Europe's hydrogen strategy, Morocco is pursuing an aggressive route that aims to build a 'power-to-X' industry using renewable electricity to create green hydrogen, synthetic gas, ammonia for fertilizers and industrial liquids. With 20,000 MW of potential solar PV capacity and 6,500 MW for wind versus an installed renewable capacity of 3,685 MW -- including 1,770 MW hydro, 1,215 MW solar and 700 MW wind -- the country is essentially communicating on its green hydrogen potential, as demonstrated by the MoU signed in July 2020 with Germany to build Africa's first industrial green hydrogen plant. However, it is still uncertain whether the country will opt to become fully dependent on renewables, or if it will be open to a more flexible strategy to produce blue hydrogen and ammonia using natural gas.

Other MENA countries are at various stages of progress. For example, the Abu Dhabi Department of Energy signed an MoU in January 2020 with Japan's Marubeni to study the feasibility of hydrogen production using renewable energy. This was quickly followed by an MoU between DEWA and Siemens in February to build a pilot project for the region's first solar-powered hydrogen facility in Dubai's MBR Solar Park.

VI. APPENDIX

TOP 10 projects in each country by sector; committed & planned ($ Bn):

Country	Project	Oil	Power	Gas	Chem.	Total
Iraq	BGC - South Gas Utilization Project	0.0	0.0	15.3	0.0	15.3
	MoE - Gas-Fired Power Plants Program 11 GW in Iraq	0.0	12.5	0.0	0.0	12.5
	Eni/Oxy/Kogas / MOC/SOC - Zubair Field Development	12.4	0.0	0.0	0.0	12.4
	SRC - Basra Refinery Upgrade	10.1	0.0	0.0	0.0	10.1
	MoO - Iraq Strategic Crude Oil Export Pipeline: Haditha - Aqaba Pipeline	7.9	0.0	0.0	0.0	7.9
	SCOP - Iraq Strategic Crude Oil Export Pipeline: Najaf - Aqaba Pipeline	5.9	0.0	0.0	0.0	5.9
	MoIM - Nebras Petrochemical Complex	0.0	0.0	0.0	5.7	5.7
	KRG/MoNR - Atrush Oil Field: Erbil Oil Refinery	4.7	0.0	0.0	0.0	4.7
	MoO - Al Faw Oil Refinery	4.1	0.0	0.0	0.0	4.1
	MoO - Iraq Strategic Crude Oil Export Pipeline: Basra - Haditha Pipeline	3.9	0.0	0.0	0.0	3.9
Egypt	AtomStroyExport - El Dabaa Nuclear Power Plant 4800 MW	0.0	10.8	0.0	0.0	10.8
	ECHEM - Alamein Petrochemical Complex	0.0	0.0	0.0	8.5	8.5
	MoP - Salamat Field	0.0	0.0	7.9	0.0	7.9
	ECHEM - Crude Oil Refining and Petrochemical Complex in Suez	0.0	0.0	0.0	7.4	7.4
	MoP - Suez Oil Refining and Petrochemical Complex	0.0	0.0	0.0	4.5	4.5
	EEHC/Terra Sola/Terra Nex - 2000 MW PV Power Plant (FIT Model)	0.0	3.5	0.0	0.0	3.5
	EETC - Photovoltaic Power Plant (3,000 MW) in Asyut	0.0	3.4	0.0	0.0	3.4
	MoP - Petrochemical complex in Suez	0.0	0.0	0.0	3.0	3.0
	TBEA Sunoasis - Photovoltaic Panels Manufacturing Plant	0.0	2.0	0.0	0.0	2.0
	ECHEM - Suez Aromatics Complex	0.0	0.0	0.0	1.9	1.9
UAE	ADNOC Offshore - Upper Zakum Full Field Development	15.9	0.0	0.0	0.0	15.9
	ADNOC Offshore - UZ1000 Expansion: Development of Surface Facilities	7.0	0.0	0.0	0.0	7.0
	ADNOC - Hail and Ghasha Sour Gas Development: Package 4	0.0	0.0	5.0	0.0	5.0
	Borouge - Borouge 4 Petrochemical Complex	0.0	0.0	0.0	3.4	3.4
	ADNOC - Hail and Ghasha Sour Gas Development: Package 1	0.0	0.0	3.0	0.0	3.0
	TAPCO - Taweelah B Independent Water and Power Plant (IWPP) Upgrade	0.0	3.0	0.0	0.0	3.0
	ADNOC Offshore - Lower Zakum Long-Term Development Plan: Phase-1	3.0	0.0	0.0	0.0	3.0
	ADNOC/DUSUP – Jebel Ali Gas Reservoir Project	0.0	0.0	2.3	0.0	2.3
	FEWA - Coal Fired IPP 1800 MW in RAK	0.0	2.2	0.0	0.0	2.2
	ADNOC - Hail and Ghasha Sour Gas Development: Package 2	0.0	0.0	2.0	0.0	2.0
	ADNOC - Hail and Ghasha Sour Gas Development: Package 3	0.0	0.0	2.0	0.0	2.0
Iran	NIOC - Kish Gas Field Development	0.0	0.0	6.8	0.0	6.8
	NIGC - IGAT Gas Trunkline	0.0	0.0	6.2	0.0	6.2
	POGC - North Pars Gas Field Development: Offshore	0.0	0.0	5.9	0.0	5.9
	MISPC - Masjed-e Soleiman Fertilizer Complex	0.0	0.0	0.0	5.2	5.2
	NMDC - Chabahar Petrochemical Complex (Mokran)	0.0	0.0	0.0	4.4	4.4
	ICOFC - Tous Gas Field Development	0.0	0.0	4.4	0.0	4.4

Country	Project	Oil	Power	Gas	Chem.	Total
	AEOI - Bushehr Nuclear Plant Unit 2	0.0	3.2	0.0	0.0	3.2
	AEOI - Bushehr Nuclear Plant Unit 3	0.0	3.2	0.0	0.0	3.2
	Abadan Oil Refining Company - Abadan Refinery Upgrade	3.0	0.0	0.0	0.0	3.0
	POGC - North Pars Gas Field Development: Onshore	0.0	0.0	3.0	0.0	3.0
KSA	REPDO - Renewable Energy Program: Round 3	0.0	8.1	0.0	0.0	8.1
	REPDO - Renewable Energy Program: Round 2	0.0	6.8	0.0	0.0	6.8
	SATORP – Amiral Complex: Ethylene & Propylene Plant	0.0	0.0	0.0	5.0	5.0
	KA-CARE - Nuclear Power Reactor: Package 1	0.0	4.4	0.0	0.0	4.4
	Saudi Power Procurement Company - 3.5GW Gas Fired Power Plant in Taiba (IPP)	0.0	4.0	0.0	0.0	4.0
	Saudi Power Procurement Company - 3.5GW Gas Fired Power Plant in Al-Qassim (IPP)	0.0	4.0	0.0	0.0	4.0
	Petro Rabigh - Rabigh Bottom of the Barrel Project	3.5	0.0	0.0	0.0	3.5
	REPDO - Renewable Energy Program: Round 1	0.0	3.0	0.0	0.0	3.0
	Saudi Aramco - Berri Field Development: GOSP	0.0	0.0	2.9	0.0	2.9
	Saudi Aramco - MFD: Offshore GOSP4 Development: Package 1	2.8	0.0	0.0	0.0	2.8
Qatar	Qatargas - LNG Processing Trains (EPC-1)	0.0	0.0	16.1	0.0	16.1
	Q-Chem - Ras Laffan Petrochemical Complex	0.0	0.0	0.0	5.0	5.0
	KAHRAMAA - Facility E IWPP	0.0	3.0	0.0	0.0	3.0
	Qatargas/ExxonMobil - Barzan Gas Development: Onshore (Phase 3)	0.0	0.0	2.9	0.0	2.9
	Qatargas - North Field South Development	0.0	0.0	2.2	0.0	2.2
	Qatargas - NFPS: Drilling and Production Platforms	0.0	0.0	2.0	0.0	2.0
	Qatargas/ExxonMobil - Barzan Gas Development: Onshore (Phase 2)	0.0	0.0	1.9	0.0	1.9
	Qatargas/ExxonMobil - Barzan Gas Development in Qatar	0.0	0.0	1.7	0.0	1.7
	Qatargas - Lean LNG Storage and Loading Expansion (EPC-2)	0.0	0.0	1.5	0.0	1.5
	Qatargas - North Field East Development: Onshore	0.0	0.0	1.2	0.0	1.2
Oman	SIS - Sur Refinery And Petrochemicals Complex	0.0	0.0	0.0	7.4	7.4
	PDO - Habhab Field Service Contract (C311790)	5.0	0.0	0.0	0.0	5.0
	OQ/KPI - Duqm Petrochemical Complex: Steam Cracker (Package 1)	0.0	0.0	0.0	3.5	3.5
	OQ/KPI - Duqm Petrochemical Complex	0.0	0.0	0.0	2.9	2.9
	OPWP - 2700 MW Power Plant	0.0	2.9	0.0	0.0	2.9
	SAGE - Middle East to India Deepwater Pipeline (MEIDP)	0.0	0.0	2.9	0.0	2.9
	Mingyuan Holdings Group - SEZAD: Methanol to Olefins (MTO) Plant	0.0	0.0	0.0	2.7	2.7
	OQ/KPI - Duqm Petrochemical Complex: Offsite & Utilities (Package 2)	0.0	0.0	0.0	2.5	2.5
	Salalah Refinery LLC - Salalah Refinery	2.3	0.0	0.0	0.0	2.3
	OQ/KPI - Duqm Refinery	1.6	0.0	0.0	0.0	1.6
Kuwait	KAPP - Al Zour North IWPP	0.0	6.4	0.0	0.0	6.4
	KIPIC - Al Zour Refinery Expansion	5.5	0.0	0.0	0.0	5.5
	KIPIC - Al Zour Petrochemical Complex: Package 1	0.0	0.0	0.0	4.0	4.0
	KIPIC - Al Zour Petrochemical Complex: Package 2	0.0	0.0	0.0	4.0	4.0
	KAPP - Al Zour North IWPP: Phase 2 & 3: Power Plant	0.0	2.2	0.0	0.0	2.2

Country	Project	Oil	Power	Gas	Chem.	Total
	KNPC - Mina Al Ahmadi Refinery Gas Fractionation Train 6 & 7	0.0	0.0	1.9	0.0	1.9
	KAPP - Doha East Power & Desalination Plant (IWPP)	0.0	1.5	0.0	0.0	1.5
	KIPIC - Al Zour Petrochemical Complex: Package 3	0.0	0.0	0.0	1.5	1.5
	MEW - Nuwaiseeb Power and Water Desalination Plant: Phase I	0.0	1.4	0.0	0.0	1.4
	MEW - Shuaiba South Power and Desalination Plant	0.0	1.3	0.0	0.0	1.3
Algeria	Sonatrach - Bled El-Hadba Phosphate Plant in Tebessa	0.0	0.0	0.0	4.5	4.5
	Sonatrach/Sonelgaz/AME – 22 GW Renewable Energy Program (4050 MW) – Algeria	0.0	4.3	0.0	0.0	4.3
	Sonelgaz - 22000MW Renewable Energy Program	0.0	4.1	0.0	0.0	4.1
	Sonatrach - Hassi Messaoud Refinery	3.6	0.0	0.0	0.0	3.6
	AME - Tafouk 1 Solar PV Power Plants Program	0.0	3.6	0.0	0.0	3.6
	Algeria MEM / Qatar MEI - Oued Keberit Fertiliser Plant	0.0	0.0	0.0	2.0	2.0
	ANESRIF - Es Senia - Ain Temouchent Beni Saf Rail Line Electrification	0.0	2.0	0.0	0.0	2.0
	Sonatrach - Tinrhert Gas Field Development	0.0	0.0	2.0	0.0	2.0
	ANESRIF - Ain Safra - Bechar Electrification	0.0	1.9	0.0	0.0	1.9
	Sonatrach / Partex / Total / Fascon Oil - Ahnet Field Development Project	0.0	0.0	1.8	0.0	1.8
Jordan	Private Developer - Maan Crude Oil Refinery	3.8	0.0	0.0	0.0	3.8
	Private Developer - Maan Petrochemical Complex	0.0	0.0	0.0	3.0	3.0
	Questerre - Jordan Oil Shale Project	0.0	2.9	0.0	0.0	2.9
	JPRC / Infra Mena - Zarqa Refinery Phase 4	1.6	0.0	0.0	0.0	1.6
	JAEC/KAERI - Nuclear Power Plant 220 MW	0.0	0.8	0.0	0.0	0.8
	Karak International Oil - El Lejjun Area Oil Shale Development	0.6	0.0	0.0	0.0	0.6
	MEMR - Jordan Renewable Energy Round 3: 200MW Photovoltaic Solar Plant	0.0	0.2	0.0	0.0	0.2
	APC - Ghore Al Safi Steam And Power Generation Plant	0.0	0.2	0.0	0.0	0.2
	NEPCO - Iraq-Jordan Power Connection	0.0	0.1	0.0	0.0	0.1
	Attarat Power Company - Oil Shale Fired Power Station at Attarat Um Ghudran	0.0	0.1	0.0	0.0	0.1
Libya	Government of Libya - Tobruk Oil Refinery	2.5	0.0	0.0	0.0	2.5
	MOG - New Production Platform: Structure E (PPE)	0.0	0.0	1.9	0.0	1.9
	MOG - Offshore Platform & Onshore Gas Production Upgrade: Structure A	0.0	0.0	1.9	0.0	1.9
	MOG - Mellitah Complex Expansion & CO2 Management Integrated Development Project	0.0	0.0	1.8	0.0	1.8
	WOC – NC-98 Gas Field Development	0.0	0.0	0.5	0.0	0.5
	WOC - North Gialo Field Development	0.5	0.0	0.0	0.0	0.5
	Mellitah Oil & Gas BV (MOG) - Bahr Essalam Development Project Phase II	0.0	0.0	0.5	0.0	0.5
	NOC - Erawin Field Development: Pipeline Package	0.3	0.0	0.0	0.0	0.3
	GECOL - 650 MW Open Cycle Power Plant in Misrata	0.0	0.3	0.0	0.0	0.3
	GECOL - 671MW Open Cycle Power Plant in Tripoli West	0.0	0.3	0.0	0.0	0.3
Morocco	MASEN - Moroccan Solar Plan: Foum Al Ouad Solar Power Plant	0.0	2.1	0.0	0.0	2.1
	Brookstone Partners - Harmattan Wind Farm 900 MW in Dhakla	0.0	1.6	0.0	0.0	1.6
	ONEE - Gas to Power Project	0.0	1.1	0.0	0.0	1.1

Country	Project	Oil	Power	Gas	Chem.	Total
	ONEE - Morocco - Portugal Interconnection Project	0.0	0.9	0.0	0.0	0.9
	MASEN - Moroccan Solar Plan: Noor Midelt IPP (Noor M1)	0.0	0.8	0.0	0.0	0.8
	MASEN - Moroccan Solar Plan: Noor Midelt IPP (Noor M2)	0.0	0.8	0.0	0.0	0.8
	ONEE - Undersea Electricity Cable Transmission Line	0.0	0.8	0.0	0.0	0.8
	ONEE - Gas to Power Project: LNG Import Terminal	0.0	0.0	0.8	0.0	0.8
	GDTC - Complexe des Energies Renouvelables au Royaume du Maroc (CERRM) Project	0.0	0.7	0.0	0.0	0.7
	ONEE - Gas to Power Project: Gas Pipelines	0.0	0.0	0.6	0.0	0.6
Bahrain	Bapco - Modernization Programme: Sitra Oil Refinery Expansion	2.2	0.0	0.0	0.0	2.2
	GPIC - Sitra Ammonia and Urea Plant Expansion	0.0	0.0	0.0	1.7	1.7
	Bapco - Modernization Programme	1.5	0.0	0.0	0.0	1.5
	MEW - Al Dur 2 IWPP	0.0	1.2	0.0	0.0	1.2
	MoWMU - Askar Waste to Energy Plant	0.0	1.0	0.0	0.0	1.0
	MEW - Addur 3 Power Plant	0.0	0.8	0.0	0.0	0.8
	NOGA - LNG Distribution Centre	0.0	0.0	0.6	0.0	0.6
	Gulf Petrochemical Industries Company (GPIC) - Aromatics Complex	0.0	0.0	0.0	0.5	0.5
	Tatweer Petroleum - Installation of Remote Gas Dehydration Units	0.0	0.0	0.3	0.0	0.3
	MEW - 220kV & 66kV Transmission Development (2012-2016)	0.0	0.2	0.0	0.0	0.2
Tunisia	Nur Energie Ltd / Top Oil Fields Services - TuNur Subsea Cable Project	0.0	2.0	0.0	0.0	2.0
	STEG - Nabeul: 200 MW Wind Power Plant	0.0	0.3	0.0	0.0	0.3
	STIR - Rehabilitation of LPG Gas Processing Unit in Bizerte Refinery	0.2	0.0	0.0	0.0	0.2
	STEG - Electricity Transmission Network : AIS Substation	0.0	0.2	0.0	0.0	0.2
	TMIESME - Solar PV IPP 500MW: 200MW in Tataouine	0.0	0.2	0.0	0.0	0.2
	STEG - Sidi Bouzid: 100MW Solar Power Plant	0.0	0.2	0.0	0.0	0.2
	STEG - Kebili: 100MW Wind Power Plant	0.0	0.1	0.0	0.0	0.1
	STEG - Tataouine: 50MW Solar Power Plant	0.0	0.1	0.0	0.0	0.1
	STEG - Electricity Transmission Network: Overhead Lines	0.0	0.1	0.0	0.0	0.1
	STEG - Medenine 50MW Solar Power Plant	0.0	0.1	0.0	0.0	0.1
Lebanon	Lebanese Center for Energy Conservation - Lebanon Wind Power Program Round 2	0.0	0.9	0.0	0.0	0.9
	LCEC - Concentrated Solar Power Plant 50 MW in Hermel	0.0	0.3	0.0	0.0	0.3
	MEW - 300MW Solar photovoltaic Farms (Energy Storage)	0.0	0.3	0.0	0.0	0.3
	Lebanese Center for Energy Conservation - Sustainable Akkar Wind Farm 90.75MW	0.0	0.2	0.0	0.0	0.2
	MEW - 220kV Marina Dbayeh Substation	0.0	0.2	0.0	0.0	0.2
	Lebanese Center for Energy Conservation - Lebanon Wind Power 68.30 MW	0.0	0.1	0.0	0.0	0.1
	MEW - 100 MW Wind Power Project in Mount Lebanon	0.0	0.1	0.0	0.0	0.1
	MEW - 100 MW Wind Power Project in Akkar	0.0	0.1	0.0	0.0	0.1
	MEW - 100 MW Wind Power Project in Beqaa	0.0	0.1	0.0	0.0	0.1
	Lebanese Center for Energy Conservation - Lebanon Wind Power Program Round 1	0.0	0.1	0.0	0.0	0.1
Grand Total		**115.5**	**130.9**	**113.6**	**94.2**	**454.3**

Source: MEED Projects

Top 10 Oil Projects by Country and Status ($ Bn):

Country	Project	Committed	Planned	Total
Iraq	Eni/Oxy / Kogas / MOC/SOC - Zubair Field Development	12.4	0.0	12.4
	SRC - Basra Refinery Upgrade	10.1	0.0	10.1
	MoO - Iraq Strategic Crude Oil Export Pipeline: Haditha - Aqaba Pipeline	0.0	7.9	7.9
	SCOP - Iraq Strategic Crude Oil Export Pipeline: Najaf - Aqaba Pipeline	0.0	5.9	5.9
	KRG Ministry of Natural Resources - Atrush Oil Field: Erbil Oil Refinery	0.0	4.7	4.7
	MoO - Al Faw Oil Refinery	0.0	4.1	4.1
	MoO - Iraq Strategic Crude Oil Export Pipeline: Basra - Haditha Pipeline	0.0	3.9	3.9
	SRC - Basra Refinery Upgrade: FCC Unit	3.6	0.0	3.6
	PetroChina/SOC/Petronas/Total - Halfaya Project Surface Facility(HPSF)	2.9	0.0	2.9
	Petronas/Japex/NOC - Garraf Oil Field Development	2.9	0.0	2.9
UAE	ADNOC Offshore - Upper Zakum Full Field Development	15.9	0.0	15.9
	ADNOC Offshore - UZ1000 Expansion: Development of Surface Facilities	0.0	7.0	7.0
	ADNOC Offshore - Lower Zakum Long-Term Development Plan: Phase-1	0.0	3.0	3.0
	ADNOC Offshore - Umm Shaif Field Long-Term Development Plan: Phase 2	0.0	2.0	2.0
	Al Dhafra Petroleum - Haliba Oil Field Development	0.0	1.5	1.5
	ADNOC Onshore - 1.8 MMBPD Onshore Oil Field Development Development project	1.5	0.0	1.5
	ADNOC Refining - Ruwais Refinery Upgrade: Crude Flexibility Project	1.1	0.0	1.1
	ADNOC Offshore - Abu Dhabi Das Island Crude Oil Tank Farm	0.0	1.0	1.0
	ADNOC - Al Mandous Underground Cavern Oil Storage Facility in Fujairah	0.7	0.0	0.7
	ADNOC Refining - Unleaded Gasoline and Low Sulphur Gas Oil (ULG)	0.0	0.7	0.7
KSA	Petro Rabigh - Rabigh Bottom of the Barrel Project	0.0	3.5	3.5
	Saudi Aramco - MFD: Offshore GOSP4 Development: Package 1	2.8	0.0	2.8
	Saudi Aramco - Marjan Field Development	2.7	0.0	2.7
	Saudi Aramco - Berri Field Development Project	1.9	0.0	1.9
	Saudi Aramco - ZCPF: Hydrocarbons Processing Facilities: Package 1	0.0	1.5	1.5
	Saudi Aramco - MFD: Tanajib Onshore Oil Facilities: Pkg 6	1.4	0.0	1.4
	Saudi Aramco - MFD: TGP: Onshore Utilities, Flare and Pipe Rack: Pkg 12	1.2	0.0	1.2
	Saudi Aramco - MFD: Offshore: Water Injection: Package 3	1.1	0.0	1.1
	Saudi Aramco - Abqaiq Plant Revamp Project	0.0	1.0	1.0
	Saudi Aramco - MFD: Offshore Oil Facilities: Package 2	1.0	0.0	1.0
Oman	PDO - Habhab Field Service Contract (C311790)	0.0	5.0	5.0
	Salalah Refinery LLC - Salalah Refinery	0.0	2.3	2.3
	OQ/KPI - Duqm Refinery	1.6	0.0	1.6
	OTTCO - Ras Markaz Crude Oil Park	1.5	0.0	1.5
	CBH - Low-Sulphur Fuel Oil (LSFO) Refinery in Duqm	0.0	1.5	1.5
	Total - Sohar LNG Bunkering Facility	0.0	1.0	1.0

Country	Project	Committed	Planned	Total
	OQ/KPI - Duqm Refinery: Process Unit (EPC 1)	0.8	0.0	0.8
	OQ/KPI - Duqm Refinery: Offsite & Utilities (EPC 2)	0.7	0.0	0.7
	OQ - Underground Oil Storage Facility in Duqm SEZ	0.0	0.5	0.5
	Trescorp - Oil Storage and Bunker Services in Sohar port: Phase II	0.0	0.4	0.4
Iran	Abadan Oil Refining Company - Abadan Refinery Upgrade	3.0	0.0	3.0
	PEDEC - Azadegan Oil Field Development	2.0	0.0	2.0
	PEDEC - South Azadegan Field Development : Phase 2	0.0	1.7	1.7
	PEDEC/NISOC - Yadavaran Oil Field Development	1.2	0.0	1.2
	EORC - Esfahan Refinery Upgrade	0.9	0.0	0.9
	Arvandan Oil & Gas Company - Sousangerd Oilfield Development	0.0	0.9	0.9
	Tabriz Oil Refining Co - Tabriz Refinery Upgrade	0.9	0.0	0.9
	National Iranian South Oil Co – Parsi and Paranj Oilfields Development	0.8	0.0	0.8
	PEDEC - South Azadegan Field Development	0.6	0.0	0.6
	Petrochina Pars - Chabahar Ultra Heavy Oil Refinery	0.0	0.5	0.5
Kuwait	KIPIC - Al Zour Refinery Expansion	5.5	0.0	5.5
	KNPC - Local Marketing Depot At Matlaa	0.0	0.8	0.8
	KOC - Gathering Centre 34	0.0	0.8	0.8
	KOC – Gathering Centre 35	0.0	0.8	0.8
	KOC - Gathering Centre 33	0.0	0.8	0.8
	KPC - Kuwait to Indian Ocean Crude Oil Pipeline Project	0.0	0.6	0.6
	KOC - 11 Patterns Well Hook-up Installation & Associated Works	0.4	0.0	0.4
	KOC - Gathering Centres 1 & 2 Upgrade at Burgan & Magwa	0.0	0.2	0.2
	KOC - Gathering Centre 32 SEK at Burgan Field	0.2	0.0	0.2
	KOC - Flowlines & Associated Works for New Oil Field Wells in West Kuwait Area	0.0	0.2	0.2
	KOC - Installation of Flowlines and Associated Works in Burgan & Magwa Area	0.0	0.2	0.2
Egypt	ASORC - Assuit Oil Refinery Upgrade: Hydrocracking Complex	1.9	0.0	1.9
	AMOC - Mazut Refining and Distillation Complex	0.0	1.5	1.5
	MIDOR - Alexandria Refinery Expansion 2	1.3	0.0	1.3
	Ain Sokhna Refining & Petroleum Company - Ain Sokhna Petro-Refinery	1.1	0.0	1.1
	ASORC - Assuit Oil Refinery Upgrade	1.0	0.0	1.0
	APC - Alexandria Refinery Green Project	0.0	0.6	0.6
	Suez Oil Processing Company - New Lubrication Oil Complex	0.0	0.5	0.5
	Amreya Petroleum Refining Company - Amreya Refinery Modernization	0.0	0.4	0.4
	El Nasr Company For Coke - Coke Production Plant	0.0	0.1	0.1
	Total/OLA Energy - Alexandria Petroleum Products Terminal (APPT)	0.0	0.1	0.1
Algeria	Sonatrach - Hassi Messaoud Refinery	3.6	0.0	3.6
	Sonatrach/Cepsa/Alnaft - Redevelopment of Rhoude el Krouf (RKF) Oilfield	0.0	1.0	1.0
	Sonatrach - South West Gas Fields Development: 3 Central Processing Facilities	0.9	0.0	0.9
	Sonatrach - Tinrhert Gas Field Development : Central Processing Plant	0.5	0.0	0.5

Country	Project	Committed	Planned	Total
	Groupement - Bir Seba Field Phase 2 and MOM Development	0.4	0.0	0.4
	SONATRACH/PTTEP - Hassi Bir Rekaiz Oilfield Development: Phase I	0.2	0.0	0.2
	Sonatrach/Pertamina/Talisman JV - Menzel Ledjmet North (MLN) Oil Field: Phase 4	0.2	0.0	0.2
	Sonatrach - Hassi Messaoud South Peripheral Field Development	0.1	0.0	0.1
	SONATRACH - Installation of High Pressure Water Reinjection Turbo Pumps	0.1	0.0	0.1
	Sonatrach/Pertamina/Talisman-Menzel Ledjmet North Field:Phase 4:Gas Reinjection	0.0	0.0	0.0
Jordan	Private Developer - Maan Crude Oil Refinery	0.0	3.8	3.8
	JPRC / Infra Mena - Zarqa Refinery Phase 4	0.0	1.6	1.6
	Karak International Oil - El Lejjun Area Oil Shale Development	0.0	0.6	0.6
	Private Developer - Maan Petroleum Refinery Complex	0.0	0.0	0.0
Qatar	NOC - Gallaf Production Project: Batch 3	0.0	1.2	1.2
	QP - Idd El Shargi South Dome Expansion	0.0	1.0	1.0
	QP - Idd El Shargi North Dome Expansion: Phase 5	0.9	0.0	0.9
	QP - Dukhan Crude Storage Tanks, MOL, Sludge Handling Facilities	0.0	0.4	0.4
	NOC - Al Shaheen Field: Gallaf Production Project	0.3	0.0	0.3
	North Oil Company - Al Shaheen Field Development: Phase 2	0.2	0.0	0.2
	NOC - Gallaf Production Project: Batch 2	0.2	0.0	0.2
	QP - Construction, Installation and Hook-Up of Well Flowlines in Dukhan Field	0.2	0.0	0.2
	QP - Dukhan Production Facilities Upgrade: Phase 1A	0.2	0.0	0.2
	QP - ISND Phase 5: Installation of Topsides and Subsea Pipelines	0.1	0.0	0.1
Bahrain	Bapco - Modernization Programme: Sitra Oil Refinery Expansion	2.2	0.0	2.2
	Bapco - Modernization Programme	1.5	0.0	1.5
	Tatweer Petroleum - Installation of Two New Well Manifold	0.0	0.1	0.1
	Tatweer Petroleum - De-Bottleneck Gas Distribution Network Phase 1	0.0	0.0	0.0
Libya	Government of Libya - Tobruk Oil Refinery	0.0	2.5	2.5
	WOC - North Gialo Field Development	0.0	0.5	0.5
	NOC - Erawin Field Development: Pipeline Package	0.0	0.3	0.3
	AGOCO - Replacement of Crude Oil Pipeline from Nafoora GOSP 06 to Zueitina 103A	0.0	0.1	0.1
	Arabian Gulf Oil Company - Water Disposal and Injection System	0.0	0.1	0.1
	AGOCO - Replacement of Trunkline from Satellite 13 to GOSP NC8	0.0	0.0	0.0
	NOC - Erawin Field Development: Early Production Facility (EPF)	0.0	0.0	0.0
	NOC - Erawin Field Development	0.0	0.0	0.0
Tunisia	STIR - Rehabilitation of LPG Gas Processing Unit in Bizerte Refinery	0.0	0.2	0.2
	Topic - Halk El Menzel Offshore Oil Concession Block	0.0	0.0	0.0
Morocco	Winxo - Jorf Lasfar Import Oil Terminal	0.1	0.0	0.1
Total		**100.3**	**82.4**	**182.7**

Source: MEED Projects

Top 10 Gas Projects by Country and Status ($ Bn):

Country	Project	Committed	Planned	Total
Iran	NIOC - Kish Gas Field Development	0.0	6.8	6.8
	NIGC - IGAT Gas Trunkline	6.2	0.0	6.2
	POGC - North Pars Gas Field Development: Offshore	0.0	5.9	5.9
	ICOFC - Tous Gas Field Development	0.0	4.4	4.4
	POGC - North Pars Gas Field Development: Onshore	0.0	3.0	3.0
	POGC - South Pars Gas Field Development	0.0	2.7	2.7
	NIOC - Kish Gas Field Development: Phase 3	0.0	2.5	2.5
	NIOC - Kish Gas Field Development: Phase 2	0.0	2.5	2.5
	Fateh Sanat Kimia - Gas To Propylene And Polypropylene Plant (GTPP)	0.0	2.5	2.5
	IOOC - Farzad B Gas Field Development: Offshore	0.0	2.3	2.3
Qatar	Qatargas - LNG Processing Trains (EPC-1)	16.1	0.0	16.1
	Qatargas/ExxonMobil - Barzan Gas Development: Onshore (Phase 3)	0.0	2.9	2.9
	Qatargas - North Field South Development	0.0	2.2	2.2
	Qatargas - NFPS: Drilling and Production Platforms	0.0	2.0	2.0
	Qatargas/ExxonMobil - Barzan Gas Development: Onshore (Phase 2)	0.0	1.9	1.9
	Qatargas/ExxonMobil - Barzan Gas Development in Qatar	0.0	1.7	1.7
	Qatargas - Lean LNG Storage and Loading Expansion (EPC-2)	0.1	1.4	1.5
	Qatargas - North Field East Development: Onshore	1.2	0.0	1.2
	Qatargas - RLTO and Offplot Facility (EPC-3)	0.0	1.2	1.2
	Qatargas - NFPS: Pipelines	0.0	1.0	1.0
UAE	ADNOC - Hail and Ghasha Sour Gas Development: Package 4	0.0	5.0	5.0
	ADNOC - Hail and Ghasha Sour Gas Development: Package 1	0.0	3.0	3.0
	ADNOC/DUSUP – Jebel Ali Gas Reservoir Project	0.0	2.3	2.3
	ADNOC - Hail and Ghasha Sour Gas Development: Package 3	0.0	2.0	2.0
	ADNOC - Hail and Ghasha Sour Gas Development: Package 2	0.0	2.0	2.0
	ADNOC - Hail and Ghasha Sour Gas Development	1.5	0.0	1.5
	ADNOC/Total/PetroChina/ENI - Umm Shaif Gas Cap Condensate Development: Phase 1	0.0	1.5	1.5
	ADNOC Gas Processing - Upgrade of Sales Gas Pipeline Network	0.0	1.5	1.5
	ADNOC Gas Processing - ASAB 1&2 Capacity Enhancement Project	0.0	1.5	1.5
	ADNOC - North West Development: Dalma Field: Package B	0.0	1.2	1.2
Iraq	BGC - South Gas Utilization Project	15.3	0.0	15.3
	CNOOC Iraq - Buzurgan Terminal (BUT) Upgrade	0.0	0.8	0.8
	PetroChina/SOC/Petronas/Total - HPSF: Phase 3: Gas Processing Plant	0.6	0.0	0.6
	MoO - Nahr Bin Omar Gas Utilisation Project	0.0	0.5	0.5
	BGC - LNG Production Train and Export Facility	0.0	0.5	0.5
	BGC - Basra New Gas Processing Plant	0.4	0.0	0.4
	Pearl Petroleum - Kurdistan Khor Mor Gas Field Expansion	0.4	0.0	0.4

Country	Project	Committed	Planned	Total
	SGC - Modular Natural Gas Liquids Plant	0.3	0.0	0.3
	Pearl Petroleum - Kurdistan Khor Mor Gas: First Train	0.3	0.0	0.3
	BOC - Majnoon Oil Field Development: Phase 2: Sour Gas Treatment Facility	0.2	0.0	0.2
KSA	Saudi Aramco - Berri Field Development: GOSP	2.9	0.0	2.9
	Saudi Aramco - SUGCP: Shedgum & Uthmaniya Gas Compression Plant: Package 1 & 2	0.0	2.5	2.5
	Saudi Aramco - Hawiyah Unayzah Gas Reservoir Storage Project	1.8	0.0	1.8
	Saudi Aramco - MFD: TGP: Onshore: Inlet, Storage & Compression: Pkg 9	1.4	0.0	1.4
	Saudi Aramco - MFD: Offshore Gas Facilities: Package 4	1.4	0.0	1.4
	Saudi Aramco - MFD: TGP: Onshore NGL Recovery and Fractionation: Pkg 11	1.4	0.0	1.4
	Saudi Aramco - MFD: Tanajib Gas Processing Plant	1.3	0.0	1.3
	Saudi Aramco - Jafurah Gas Plant	1.0	0.0	1.0
	Saudi Aramco - Haradh Gas Compression Plants	0.9	0.0	0.9
	Saudi Aramco - Master Gas System Expansion (MGSE): Phase 3	0.0	0.8	0.8
Egypt	Egypt Ministry of Petroleum - Salamat Field	0.0	7.9	7.9
	Egypt Ministry of Petroleum - Tanin, Merit, Aten, Tarsa, and Salmon Gas Fields	0.0	1.6	1.6
	BP/Dana Gas - El Matariya Onshore Concession (Block 3)	0.0	0.7	0.7
	Agiba/EGPC - Natural Gas Processing Plant in Western Desert	0.0	0.7	0.7
	EGAS - Egypt - Cyprus Gas Pipeline	0.5	0.0	0.5
	GASCO - Western Desert Gas Complex: Train D	0.0	0.5	0.5
	Egypt Ministry of Petroleum - West El-Brulus Offshore	0.0	0.4	0.4
	EGAS - South Seth and North Tort Gas Fields	0.0	0.3	0.3
	GASCO - EGAS Energy Efficiency Project: Sixth Train	0.0	0.3	0.3
	GASCO - EGAS Energy Efficiency Project: Fifth Train	0.0	0.3	0.3
	GASCO - EGAS Energy Efficiency Project: Seventh Train	2.0	0.0	2.0
Algeria	Sonatrach - Tinrhert Gas Field Development	0.0	1.8	1.8
	Sonatrach / Partex / Total / Fascon Oil - Ahnet Field Development Project	0.9	0.0	0.9
	Groupement Isarene - Ain Tsila Gas Condensate Field Development	0.8	0.0	0.8
	PTTEP/Sonatrach/CNOOC - Hassi Bir Rekaiz Field Development	0.0	0.5	0.5
	Sonatrach - Hassi R'mel Gas Field Debottlenecking	0.0	0.4	0.4
	Sonatrach/Total/Alnaft - Erg Issouane Gas Field Development	0.0	0.4	0.4
	Sonatrach - Tinrhert Gas Field Development: EPC-II package	0.4	0.0	0.4
	Sonatrach - Rhourde El Baguel LPG Plant	0.0	0.3	0.3
	Sonatrach - Tin Foye Tabankort Gas Field : Additional Works	0.2	0.0	0.2
	Sonartach - Tinhert Field Development EPC Package 1	0.0	1.9	1.9
Libya	MOG - New Production Platform: Structure E (PPE)	0.0	1.9	1.9
	MOG - Offshore Platform & Onshore Gas Production Upgrade: Structure A	0.0	1.8	1.8
	MOG - Mellitah Complex Expansion & CO2 Management Integrated Development Project	0.0	0.5	0.5
	WOC – NC-98 Gas Field Development	0.0	0.5	0.5
	Mellitah Oil & Gas BV (MOG) - Bahr Essalam Development Project Phase II	0.0	0.1	0.1
	MOGCO - Bouri Gas Utilization Project	0.0	0.0	0.0

Country	Project	Committed	Planned	Total
	WOC - NC-98 & North Gialo Fields Development	0.0	2.9	2.9
Oman	SAGE - Middle East to India Deepwater Pipeline (MEIDP)	0.0	1.0	1.0
	Occidental Oman - Central Processing Facility at Muradi Huraimah	0.0	0.5	0.5
	OQ - South Grid Debottlenecking Phase 2	0.0	0.5	0.5
	PDO - Marmul Gas Compression Station	0.2	0.0	0.2
	PDO - Al Burj Early Development Facility (EDF)	0.1	0.0	0.1
	Oman LNG - Debottlenecking of Qalhat Plant	0.0	0.0	0.0
	PDO - Yibal Khuff Sour Development Project: Offplot	0.0	0.0	0.0
	PDO - Khulud Tight Gas Field	0.0	0.0	0.0
	Occidental Petroleum- Oxy Oman	0.0	0.0	0.0
	OQ - Sur Light Industrial Area GSS Debottlenecking and OMIFCO Project	0.0	1.9	1.9
Kuwait	KNPC - Mina Al Ahmadi Refinery Gas Fractionation Train 6 & 7	0.0	0.9	0.9
	KOC - JPF 4 & 5 Off-plot Works & Production Facilities: Production Facilities	0.4	0.0	0.4
	KOC – New Strategic Gas Export Pipeline from North Kuwait to MAA	0.0	0.3	0.3
	KOC - Upgrade of Gas Booster Station 160	0.0	0.2	0.2
	KOC - Enhancement of Booster Stations BS-140 & BS-150	0.0	0.2	0.2
	KGOC/Chevron - Divided Zone Gas Sweetening Facility	0.1	0.0	0.1
	KIPIC - LNG Import and Regasification Terminal	0.0	0.1	0.1
	KOC - JPF 4 & 5 Off-plot Works & Production Facilities: North Area Off-plot Work	0.0	0.1	0.1
	KNPC - LPG Transfer Pipeline from Mina Abdullah to KOTC	0.0	0.1	0.1
	KOC - Jurassic Non Associated Oil & Gas Reserves Expansion: Phase 2	0.0	0.8	0.8
Morocco	ONEE - Gas to Power Project: LNG Import Terminal	0.0	0.6	0.6
	ONEE - Gas to Power Project: Gas Pipelines	0.0	0.2	0.2
	Sound Energy - Tendrara-Gazoduc Maghreb Gas Pipeline	0.0	0.6	0.6
Bahrain	NOGA - LNG Distribution Centre	0.0	0.3	0.3
	Tatweer Petroleum - Installation of Remote Gas Dehydration Units	0.2	0.0	0.2
	Tatweer Petroleum - Pre-Unayzah Gas Well Hook-Ups	0.1	0.0	0.1
	Tatweer Petroleum - Non-Associated Gas Compression Station in Bahrain	0.0	0.1	0.1
	Tatweer Petroleum - Well Head Compression For Non Associated Gas Wells	0.2	0.0	0.2
Tunisia	ETAP - Tataouine Gas Project: Gas Processing and LPG Bottling Unit	0.1	0.0	0.1
	ETAP - Tataouine Gas Project	0.0	0.0	0.0
	ETAP - Tataouine Gas Project: Nawara to Tataouine Pipeline	0.0	0.0	0.0
	STIR - Underground LPG Storage Tanks Farm at Bizerte Refinery	0.0	0.0	0.0
Jordan	Jordanian Egyptian Fajr For Natural Gas Transmission - North Gas Pipeline	0.0	0.0	0.0
Total		**61.2**	**105.7**	**166.9**

Source: MEED Projects

Top 10 Power Projects by Country and Status ($ Bn):

Country	Project	Committed	Planned	Total
KSA	REPDO - Renewable Energy Program: Round 3	0.0	8.1	8.1
	REPDO - Renewable Energy Program: Round 2	6.8	0.0	6.8
	KA-CARE - Nuclear Power Reactor: Package 1	0.0	4.4	4.4
	Saudi Power Procurement Company - 3.5GW Gas Fired Power Plant in Taiba (IPP)	0.0	4.0	4.0
	Saudi Power Procurement Company - 3.5GW Gas Fired Power Plant in Al-Qassim (IPP)	0.0	4.0	4.0
	REPDO - Renewable Energy Program: Round 1	3.0	0.0	3.0
	SEC - Shuqaiq Power Plant Expansion: Phase 1	0.0	2.5	2.5
	ACWA Power/NEOM/Air Products - NEOM HGF: Renewable Energy: Wind Power Park	0.0	1.7	1.7
	ACWA Power/NEOM/Air Products - NEOM HGF: Renewable Energy: Solar Power Park	0.0	1.6	1.6
	SEC - PP13 Combined Cycle Power Plant	1.5	0.0	1.5
Egypt	AtomStroyExport - El Dabaa Nuclear Power Plant 4800 MW	10.8	0.0	10.8
	EEHC/Terra Sola/Terra Nex - 2000 MW PV Power Plant (FIT Model)	0.0	3.5	3.5
	EETC - Photovoltaic Power Plant (3,000 MW) in Asyut	0.0	3.4	3.4
	TBEA Sunoasis - Photovoltaic Panels Manufacturing Plant	0.0	2.0	2.0
	Acwa Power - Luxor IPP	1.7	0.0	1.7
	EuroAfrica - Euro Africa Power Interconnection	1.5	0.0	1.5
	MHUUD - Solid Waste To Energy Facilities	0.0	1.5	1.5
	MoEE - 2400MW Hydropower Power Plant in Attaqa	1.3	0.0	1.3
	CEPC - West Cairo Steam Power Plant	1.2	0.0	1.2
	UEEPC - Asyut Steam Power Plant 650MW	1.1	0.0	1.1
Algeria	Sonatrach/Sonelgaz/AME – 22 GW Renewable Energy Program (4050 MW) – Algeria	0.0	4.3	4.3
	Sonelgaz - 22000MW Renewable Energy Program	0.0	4.1	4.1
	AME - Tafouk 1 Solar PV Power Plants Program	0.0	3.6	3.6
	ANESRIF - Es Senia - Ain Temouchent Beni Saf Rail Line Electrification	0.0	2.0	2.0
	ANESRIF - Ain Safra - Bechar Electrification	0.0	1.9	1.9
	Sonelgaz - 22 GW Renewable Energy Program: North & South PV Plants: Phase 3	0.0	1.3	1.3
	Sonelgaz-22 GW Renewable Energy Program:North & South PV Plants: Phase 1(1350MW)	0.0	1.3	1.3
	Sonelgaz-22 GW Renewable Energy Program:North & South PV Plants: Phase 2(1350MW)	0.0	1.3	1.3
	ANESRIF - Oued Tlelat - Redjem Demouche Rail Line Electrification	0.0	1.1	1.1
	ANESRIF - Ramdane Djamel (Sahki Ahmed) - Jijel Rail Line Electrification	0.0	0.9	0.9
Iraq	MoE - Gas-Fired Power Plants Program 11 GW in Iraq	12.5	0.0	12.5
	MoE - Al-Khairat Gas Fired Power Plant in Karbala	0.0	1.5	1.5
	MoE - Combined Cycle Power Station in Maysan 1000 MW	1.1	0.0	1.1
	MoE - Solar PV IPP at Karbala	0.0	0.9	0.9
	MoE - 1000MW Baghdad South Combined Cycle Power Plant	0.8	0.0	0.8
	Shamara Group - Rumaila Combined Cycle Power Plant in Iraq	0.7	0.0	0.7

Country	Project	Committed	Planned	Total
	MoE - Power Transmission Network Project	0.7	0.0	0.7
	MoE - Gas-Fired Power Plants Program 11 GW in Iraq (Phase 1)	0.6	0.0	0.6
	MoE - Solar IPP at Iskandariya	0.0	0.6	0.6
	MoE - 840 MW Combined Cycle Power Plant in Maysan	0.5	0.0	0.5
Kuwait	KAPP - Al Zour North IWPP	0.0	6.4	6.4
	KAPP - Al Zour North IWPP: Phase 2 & 3: Power Plant	0.0	2.2	2.2
	KAPP - Doha East Power & Desalination Plant (IWPP)	0.0	1.5	1.5
	MEW - Nuwaiseeb Power and Water Desalination Plant: Phase I	0.0	1.4	1.4
	MEW - Shuaiba South Power and Desalination Plant	0.0	1.3	1.3
	MEW / KISR - Shagaya Renewable Energy Complex: Phase II	0.0	1.2	1.2
	MEW / KISR - Shagaya Renewable Energy Complex: Phase III: 1150MW CSP Plant	0.0	1.2	1.2
	MEW – Nuwaiseeb Power and Water Desalination Plant: Phase II 3600 MW	0.0	0.7	0.7
	KAPP - Al Zour North IWPP: Phase 5: Power Plant	0.0	0.7	0.7
	KAPP - Al Zour North IWPP: Phase IV: Power Plant	0.0	0.6	0.6
UAE	TAPCO - Taweelah B Independent Water and Power Plant (IWPP) Upgrade	0.0	3.0	3.0
	FEWA - Coal Fired IPP 1800 MW in RAK	0.0	2.2	2.2
	ADNOC/ADPower - Sub-Sea Power Transmission Network	0.0	2.0	2.0
	DEWA - Mohammad Bin Rashid Al Maktoum Solar Park	1.8	0.0	1.8
	DEWA - 950 MW Mohammad Bin Rashid Al Maktoum Solar Power Plant CSP (Phase 4)	1.5	0.0	1.5
	SEWA - Hamriyah IPP	1.4	0.0	1.4
	DEWA - Hassyan Coal Fired IPP Phase 3	0.0	1.2	1.2
	ADPower - Abu Dhabi Third Solar IPP	0.0	1.1	1.1
	DEWA - Hassyan Coal Fired IPP (Phase 1 & 2)	1.0	0.0	1.0
	EWEC - Al Dhafra Second Solar IPP	1.0	0.0	1.0
Iran	AEOI - Bushehr Nuclear Plant Unit 2	3.2	0.0	3.2
	AEOI - Bushehr Nuclear Plant Unit 3	3.2	0.0	3.2
	IWPC - Bakhtiyari Hydro-Power Project	2.8	0.0	2.8
	Thermal Power Plants Holding Company - Hormozgan Thermal Power Plant (1,400 MW)	1.4	0.0	1.4
	Government of Iran/KEPCO - Chabahar Power Plant	0.0	1.0	1.0
	MoE - Tabriz Combined Cycle Power Plant	0.0	0.7	0.7
	MoE - Fasa Solar Power Plant	0.0	0.6	0.6
	AEOI - Darkhovin Nuclear Plant	0.3	0.0	0.3
	MoE - Torbat-e Heydarieh Combined Cycle Power Plant	0.0	0.2	0.2
	Thermal Power Plants Holding Company - Ramin Thermal Power Plant Upgrade	0.1	0.0	0.1
Morocco	MASEN - Moroccan Solar Plan: Foum Al Ouad Solar Power Plant	0.0	2.1	2.1
	Brookstone Partners - Harmattan Wind Farm 900 MW in Dhakla	0.0	1.6	1.6
	ONEE - Gas to Power Project	0.0	1.1	1.1
	ONEE - Morocco - Portugal Interconnection Project	0.0	0.9	0.9
	MASEN - Moroccan Solar Plan: Noor Midelt IPP (Noor M2)	0.8	0.0	0.8

Country	Project	Committed	Planned	Total
	MASEN - Moroccan Solar Plan: Noor Midelt IPP (Noor M1)	0.8	0.0	0.8
	ONEE - Undersea Electricity Cable Transmission Line	0.0	0.8	0.8
	GDTC - Complexe des Energies Renouvelables au Royaume du Maroc (CERRM) Project	0.0	0.7	0.7
	MASEN - Moroccan Solar Plan	0.6	0.0	0.6
	MASEN - Moroccan Solar Plan: Noor Midelt IPP 230MW (Phase 2)	0.0	0.5	0.5
Oman	OPWP - 2700 MW Power Plant	0.0	2.9	2.9
	OPWP - 1200MW Duqm Coal Fired IPP	0.0	1.2	1.2
	Oman Environmental Services Holding Co - Waste To Energy To Water Plant In Oman	0.0	0.7	0.7
	OPWP- 500MW Adam Solar IPP	0.0	0.5	0.5
	OPWP - Manah Solar 2 IPP	0.0	0.5	0.5
	OPWP - Manah Solar 1 IPP	0.0	0.5	0.5
	OPWP - 500 MW Solar 2022 Independent Power Plant(IPP)	0.0	0.5	0.5
	Hebei Electric / Ningxia Electric JV - SEZAD - 300MW Coal Power Plant	0.0	0.4	0.4
	OQ/GULF - Duqm Power and Desalination Plant	0.3	0.0	0.3
	OETC - 400kV North South Interconnection	0.3	0.0	0.3
Qatar	KAHRAMAA - Facility E IWPP	0.0	3.0	3.0
	KAHRAMAA- Qatar Transmission Phase 13 : Cables(GTC/736/2015)	0.4	0.0	0.4
	KAHRAMAA - Qatar Transmission Phase 13: Substations(GTC/735/2015)	0.4	0.0	0.4
	Siraj Solar Energy - 800 MW Solar PV Plant in Al Kharsaah (IPP)	0.3	0.0	0.3
	KAHRAMAA - Qatar Transmission Phase 13: Substation Package S8,9,12,13,14,15 & 16	0.3	0.0	0.3
	KAHRAMAA - Qatar Transmission: Phase 13: Cables,Substations	0.3	0.0	0.3
	KAHRAMAA - Facility E: Power Evacuation and IWPP	0.0	0.2	0.2
	KAHRAMAA - Qatar Transmission Phase 13: Packages S1,2,3,4,5,6,11,19,20	0.2	0.0	0.2
	KAHRAMAA - 400kV Current Limiting Reactors at Abu Nakhlah Substation	0.0	0.1	0.1
	QEWC - Waste to Energy Project	0.0	0.1	0.1
Jordan	Questerre - Jordan Oil Shale Project	0.0	2.9	2.9
	JAEC/KAERI - Nuclear Power Plant 220 MW	0.0	0.8	0.8
	MEMR - Jordan Renewable Energy Round 3: 200MW Photovoltaic Solar Plant	0.0	0.2	0.2
	APC - Ghore Al Safi Steam And Power Generation Plant	0.0	0.2	0.2
	NEPCO - Iraq-Jordan Power Connection	0.0	0.1	0.1
	Attarat Power Company - Oil Shale Fired Power Station at Attarat Um Ghudran	0.1	0.0	0.1
	WAJ - 24MW Solar PV Power Plant At Disi	0.0	0.0	0.0
	Majid Al Futtaim - 17MW Solar Power Park For Carrefour Stores in Amman	0.0	0.0	0.0
	Amea Power/Philadelphia Solar - 50 MW Solar project in Maan	0.0	0.0	0.0
	Xenel Industries - 50 MW Wind Power Project	0.0	0.0	0.0
Bahrain	MEW - Al Dur 2 IWPP	1.2	0.0	1.2
	MoWMU - Askar Waste to Energy Plant	0.0	1.0	1.0
	MEW - Addur 3 Power Plant	0.0	0.8	0.8
	MEW - 220kV & 66kV Transmission Development (2012-2016)	0.2	0.0	0.2

Country	Project	Committed	Planned	Total
	EWA - 100 MW IPP Solar PV Plant in Askar	0.1	0.0	0.1
	EWA - 132kV Substation: Civil Works	0.0	0.1	0.1
	MMUAP - Integrated Waste Energy Plant	0.0	0.1	0.1
	USACE - P-974 Electrical System Upgrade	0.0	0.1	0.1
	MEW - 66kV Submarine and UG Cable Works for Electricity Supply to Hawar Island	0.1	0.0	0.1
	EWA - 220kV OHTL from UAH to SITRA BSP Substations	0.0	0.1	0.1
Tunisia	Nur Energie Ltd / Top Oil Fields Services - TuNur Subsea Cable Project	0.0	2.0	2.0
	STEG - Nabeul: 200 MW Wind Power Plant	0.0	0.3	0.3
	STEG - Electricity Transmission Network : AIS Substation	0.2	0.0	0.2
	TMIESME - Solar PV IPP 500MW: 200MW in Tataouine	0.2	0.0	0.2
	STEG - Sidi Bouzid: 100MW Solar Power Plant	0.0	0.2	0.2
	STEG - Kebili: 100MW Wind Power Plant	0.0	0.1	0.1
	STEG - Tataouine: 50MW Solar Power Plant	0.0	0.1	0.1
	STEG - Electricity Transmission Network: Overhead Lines	0.0	0.1	0.1
	STEG - Medenine 50MW Solar Power Plant	0.0	0.1	0.1
	TMIESME - 500MW Solar PV IPP	0.1	0.0	0.1
Lebanon	Lebanese Center for Energy Conservation - Lebanon Wind Power Program Round 2	0.0	0.9	0.9
	LCEC - Concentrated Solar Power Plant 50 MW in Hermel	0.0	0.3	0.3
	MEW - 300MW Solar photovoltaic Farms (Energy Storage)	0.0	0.3	0.3
	Lebanese Center for Energy Conservation - Sustainable Akkar Wind Farm 90.75MW	0.0	0.2	0.2
	MEW - 220kV Marina Dbayeh Substation	0.0	0.2	0.2
	Lebanese Center for Energy Conservation - Lebanon Wind Power 68.30 MW	0.0	0.1	0.1
	MEW - 100 MW Wind Power Project in Mount Lebanon	0.0	0.1	0.1
	MEW - 100 MW Wind Power Project in Akkar	0.0	0.1	0.1
	MEW - 100 MW Wind Power Project in Beqaa	0.0	0.1	0.1
	Lebanese Center for Energy Conservation - Lebanon Wind Power Program Round 1	0.0	0.1	0.1
Libya	GECOL - 650 MW Open Cycle Power Plant in Misrata	0.3	0.0	0.3
	GECOL - 671MW Open Cycle Power Plant in Tripoli West	0.3	0.0	0.3
	GECOL - 740MW Tobruk Power Plant	0.1	0.0	0.1
Sudan	Sudan Ministry of Energy & Mining - 500MW Solar Power Plant	0.0	0.2	0.2
	Sudan Thermal Generation Company - Albagair Open Cycle Power Plant Phase 1 Sudan	0.2	0.0	0.2
Grand Total		**71**	**121**	**192**

Source: MEED Projects

Top 10 Petchem Projects by Country and Status ($ Bn):

Country	Project	Committed	Planned	Total
Egypt	ECHEM - Alamein Petrochemical Complex	0.0	8.5	8.5
	ECHEM - Crude Oil Refining and Petrochemical Complex in Suez	0.0	7.4	7.4
	MoP - Suez Oil Refining and Petrochemical Complex	4.5	0.0	4.5
	MoP - Petrochemical complex in Suez	0.0	3.0	3.0
	ECHEM - Suez Aromatics Complex	0.0	1.9	1.9
	SIDPEC - Alexandria Polypropylene Plant	0.0	1.7	1.7
	AQF/Helwan/Al Ahly - Methanol Factory: Phase 1	0.0	1.6	1.6
	Egyphos - Phosphate and Potassium Plant	0.0	1.6	1.6
	AQF/Helwan/Al Ahly - Methanol Factory: Phase 2	0.0	1.0	1.0
	SIDPEC - Propylene and Its Derivatives Plant	0.0	0.7	0.7
Oman	SIS - Sur Refinery And Petrochemicals Complex	0.0	3.5	3.5
	OQ/KPI - Duqm Petrochemical Complex: Steam Cracker (Package 1)	0.0	2.9	2.9
	OQ/KPI - Duqm Petrochemical Complex	0.0	2.7	2.7
	Mingyuan Holdings Group - SEZAD: Methanol to Olefins (MTO) Plant	0.0	2.5	2.5
	OQ/KPI - Duqm Petrochemical Complex: Offsite & Utilities (Package 2)	0.0	1.7	1.7
	Government of Oman/BP Global - Petrochemical Project: Acetic Acid Plant	0.0	1.0	1.0
	OMIFCO - Sur Urea Plant Debottlenecking	0.0	1.0	1.0
	Sebacic Oman Company - Duqm Sebacic Acid Plant	0.3	0.0	0.3
	Evergrow - Urea Plant at Salalah Free Zone	0.0	0.3	0.3
	Duqm Quarries - Soda Ash Production Facility	0.0	0.1	0.1
KSA	SATORP – Amiral Complex: Ethylene & Propylene Plant	0.0	5.0	5.0
	SATORP/INEOS - Amiral Complex: Jubail 2 Complex	0.0	2.0	2.0
	APC - Propane Dehydrogenation (PDH) & Polypropylene (PP) Complex	0.0	1.9	1.9
	Pan-Asia Saudi - Petrochemical & Chemical Fiber Integrated Project: Phase-2	0.0	1.2	1.2
	Pan-Asia Saudi - Petrochemical & Chemical Fiber Integrated Project: Phase-1	1.1	0.0	1.1
	ACWA Power/NEOM/Air Products - Helios Green Fuels Project: Ammonia Plant	0.0	1.0	1.0
	SATROP/INEOS - Jubail 2 Complex: Acrylonitrile Plant	0.0	0.8	0.8
	Pan-Asia Saudi - Petrochemical & Chemical Fiber Integrated Project: Phase-3	0.0	0.8	0.8
	Saudi Aramco/Total - New Polyisobutylene Plant in Jubail	0.0	0.8	0.8
	SATORP/INEOS - Jubail 2 Complex: LinearAlphaOlefin Plant	0.0	0.6	0.6
	SATORP/INEOS - Jubail 2 Complex: Poly Alpha Olefin Plant	0.0	0.6	0.6
Iran	MISPC - Masjed-e Soleiman Fertilizer Complex	0.0	4.0	4.0
	NMDC - Chabahar Petrochemical Complex (Mokran)	0.0	4.0	4.0
	Fanavaran Petrochemical Company - Petro Olefin Plant	0.0	1.5	1.5
	ZPC - Mehran Petrochemical Complex	0.0	0.4	0.4
	Dehloran Sepehr Petrochemical Industry Co - Petrochemical Complex (17th Olefins)	0.0	0.0	0.0
	Arya Sasol Polymers - Ethylene Plant	0.0	4.5	4.5
	PRTC - Mahshahr PVM Plant	0.0	2.0	2.0
	KPIC - Kermanshah Ammonia & Urea Plant: Phase 2	0.0	0.4	0.4

Country	Project	Committed	Planned	Total
	Morvarid Petrochemical Company - Expansion of 5th Olefins Plant	0.0	0.3	0.3
	IIPGC - Crystal Melamine Petrochemical Park	0.0	0.2	0.2
Kuwait	KIPIC - Al Zour Petrochemical Complex: Package 2	0.0	0.1	0.1
	KIPIC - Al Zour Petrochemical Complex: Package 1	0.1	0.0	0.1
	KIPIC - Al Zour Petrochemical Complex: Package 3	0.0	0.1	0.1
	KIPIC - Al Zour Petrochemical Complex	0.0	3.4	3.4
	EQUATE Petrochemicals/Green Carbon Company - Green Carbon Project	0.0	1.0	1.0
Algeria	Sonatrach - Bled El-Hadba Phosphate Plant in Tebessa	0.0	0.6	0.6
	Algeria MEM / Qatar MEI - Oued Keberit Fertiliser Plant	0.0	0.5	0.5
	STEP - Propane Dehydrogenation Polypropylene (PHD/PP) Plant	0.0	0.5	0.5
	Fertial SpA - Ammonia Plant Revamp	0.4	0.0	0.4
	Sonatrach - New MTBE Facility	0.0	0.1	0.1
	Sonatrach - Revamp of Skikda Ethylene Plant	0.0	0.0	0.0
	Sonatrach - Propane & Butane Production Unit in Hassi Messaoud	0.0	0.0	0.0
	Sonatrach/ENI - Debottelenecking Gas Project: Train 3 ROD	0.0	5.0	5.0
UAE	Borouge - Borouge 4 Petrochemical Complex	0.0	0.5	0.5
	Borouge - Borouge 4 Petrochemical Complex: Utilities & Offsites Package	0.0	0.5	0.5
	Cepsa/ADNOC - Linear Alkyl Benzene Lab Complex	0.0	0.0	0.0
	ADNOC/RIL - Ethylene Dichloride (EDC) Facility in Ruwais	0.0	5.7	5.7
	Shaheen Chem Investments - Chemical Complex in KIZAD	0.0	0.0	0.0
	Ghantoot Group - ESPC Petrochemical Project: Phase 1	0.0	1.5	1.5
	ADNOC/OCP - Ruwais Sulphur Production Plant Expansion	0.0	0.6	0.6
	AquaChemie - Petrochemical Terminal at Jebel Ali Port	0.5	0.0	0.5
	Borouge - Anteo Production Plant at Ruwais	0.0	0.4	0.4
Qatar	Q-Chem - Ras Laffan Petrochemical Complex	0.0	0.4	0.4
	QAFCO - QAFCO VII Expansion	0.3	0.0	0.3
	QAPCO - Poly Vinyl Chloride (PVC) Plant	0.0	0.3	0.3
	QAFAC - MTBE Plant Regeneration Gas Scrubber Project (RGS)	0.2	0.0	0.2
Iraq	MoIM - Nebras Petrochemical Complex	0.2	0.0	0.2
	SCPI - Chlorine Plant in Khor Al Zubair	0.0	0.1	0.1
Jordan	Private Developer - Maan Petrochemical Complex	0.0	3.0	3.0
	KEMAPCO - Ammonia Storage Tanks in Aqaba	0.0	0.0	0.0
	JPMC - Eshidiya Aluminum Fluoride Plant	0.0	0.0	0.0
Bahrain	GPIC - Sitra Ammonia and Urea Plant Expansion	0.0	1.7	1.7
	Gulf Petrochemical Industries Company (GPIC) - Aromatics Complex	0.0	0.5	0.5
Morocco	OCP - Sulphuric Acid Plants in Jorf Lasfar	0.2	0.0	0.2
	OCP - Sulphuric Acid Plant For Fertilizers in Jorf Lasfar	0.1	0.0	0.1
	ADNOC/OCP - Jorf Lasfar Sulphur Production Plant Expansion	0.0	0.1	0.1
	SCE - Chlor Alkali Plant in Jorf Lasfar Industrial Park	0.1	0.0	0.1
Grand Total		**8.2**	**101.6**	**109.8**

Source: MEED Projects

TOP 10 Projects in countries:

Country	Project	Committed	Planned	Total
Iraq	BGC - South Gas Utilization Project	15.35	0.00	15.35
	Ministry of Electricity - Gas-Fired Power Plants Program 11 GW in Iraq	12.46	0.00	12.46
	Eni/Oxy / Kogas / MOC/SOC - Zubair Field Development	12.41	0.00	12.41
	SRC - Basra Refinery Upgrade	10.13	0.00	10.13
	MoO - Iraq Strategic Crude Oil Export Pipeline: Haditha - Aqaba Pipeline	0.00	7.89	7.89
	SCOP - Iraq Strategic Crude Oil Export Pipeline: Najaf - Aqaba Pipeline	0.00	5.92	5.92
	Ministry of Industry & Minerals - Nebras Petrochemical Complex	0.00	5.74	5.74
	KRG Ministry of Natural Resources - Atrush Oil Field: Erbil Oil Refinery	0.00	4.71	4.71
	Ministry of Oil - Al Faw Oil Refinery	0.00	4.15	4.15
	MoO - Iraq Strategic Crude Oil Export Pipeline: Basra - Haditha Pipeline	0.00	3.94	3.94
Egypt	AtomStroyExport - El Dabaa Nuclear Power Plant 4800 MW	10.77	0.00	10.77
	ECHEM - Alamein Petrochemical Complex	0.00	8.50	8.50
	Egypt Ministry of Petroleum - Salamat Field	0.00	7.87	7.87
	ECHEM - Crude Oil Refining and Petrochemical Complex in Suez	0.00	7.36	7.36
	MoP - Suez Oil Refining and Petrochemical Complex	4.54	0.00	4.54
	EEHC/Terra Sola/Terra Nex - 2000 MW PV Power Plant (FIT Model)	0.00	3.50	3.50
	EETC - Photovoltaic Power Plant (3,000 MW) in Asyut	0.00	3.44	3.44
	Egypt Ministry of Petroleum - Petrochemical complex in Suez	0.00	2.98	2.98
	TBEA Sunoasis - Photovoltaic Panels Manufacturing Plant	0.00	1.98	1.98
	ECHEM - Suez Aromatics Complex	0.00	1.95	1.95
UAE	ADNOC Offshore - Upper Zakum Full Field Development	15.86	0.00	15.86
	ADNOC Offshore - UZ1000 Expansion: Development of Surface Facilities	0.00	7.00	7.00
	ADNOC - Hail and Ghasha Sour Gas Development: Package 4	0.00	5.00	5.00
	Borouge - Borouge 4 Petrochemical Complex	0.00	3.43	3.43
	ADNOC - Hail and Ghasha Sour Gas Development: Package 1	0.00	3.00	3.00
	TAPCO - Taweelah B Independent Water and Power Plant (IWPP) Upgrade	0.00	3.00	3.00
	ADNOC Offshore - Lower Zakum Long-Term Development Plan: Phase-1	0.00	2.99	2.99
	ADNOC/DUSUP – Jebel Ali Gas Reservoir Project	0.00	2.29	2.29
	FEWA - Coal Fired IPP 1800 MW in RAK	0.00	2.18	2.18
	ADNOC - Hail and Ghasha Sour Gas Development: Package 2	0.00	2.00	2.00
	ADNOC - Hail and Ghasha Sour Gas Development: Package 3	0.00	2.00	2.00
KSA	REPDO - Renewable Energy Program: Round 3	0.00	8.12	8.12
	REPDO - Renewable Energy Program: Round 2	6.78	0.00	6.78
	SATORP – Amiral Complex: Ethylene & Propylene Plant	0.00	5.00	5.00
	KA-CARE - Nuclear Power Reactor: Package 1	0.00	4.35	4.35
	Saudi Power Procurement Company - 3.5GW Gas Fired Power Plant in Taiba (IPP)	0.00	4.00	4.00

Country	Project	Committed	Planned	Total
	Saudi Power Procurement Company - 3.5GW Gas Fired Power Plant in Al-Qassim (IPP)	0.00	4.00	4.00
	Petro Rabigh - Rabigh Bottom of the Barrel Project	0.00	3.50	3.50
	REPDO - Renewable Energy Program: Round 1	2.96	0.00	2.96
	Saudi Aramco - Berri Field Development: GOSP	2.88	0.00	2.88
	Saudi Aramco - MFD: Offshore GOSP4 Development: Package 1	2.82	0.00	2.82
Qatar	Qatargas - LNG Processing Trains (EPC-1)	16.13	0.00	16.13
	Q-Chem - Ras Laffan Petrochemical Complex	0.00	4.97	4.97
	KAHRAMAA - Facility E IWPP	0.00	3.00	3.00
	Qatargas/ExxonMobil - Barzan Gas Development: Onshore (Phase 3)	0.00	2.92	2.92
	Qatargas - North Field South Development	0.00	2.24	2.24
	Qatargas - NFPS: Drilling and Production Platforms	0.00	2.00	2.00
	Qatargas/ExxonMobil - Barzan Gas Development: Onshore (Phase 2)	0.00	1.95	1.95
	Qatargas/ExxonMobil - Barzan Gas Development in Qatar	0.00	1.74	1.74
	Qatargas - Lean LNG Storage and Loading Expansion (EPC-2)	0.14	1.35	1.49
	Qatargas - North Field East Development: Onshore	1.20	0.00	1.20
Kuwait	KAPP - Al Zour North IWPP	0.00	6.38	6.38
	KIPIC - Al Zour Refinery Expansion	5.55	0.00	5.55
	KIPIC - Al Zour Petrochemical Complex: Package 1	0.00	3.96	3.96
	KIPIC - Al Zour Petrochemical Complex: Package 2	0.00	3.96	3.96
	KAPP - Al Zour North IWPP: Phase 2 & 3: Power Plant	0.00	2.24	2.24
	KNPC - Mina Al Ahmadi Refinery Gas Fractionation Train 6 & 7	0.00	1.95	1.95
	KAPP - Doha East Power & Desalination Plant (IWPP)	0.00	1.51	1.51
	KIPIC - Al Zour Petrochemical Complex: Package 3	0.00	1.49	1.49
	MEW - Nuwaiseeb Power and Water Desalination Plant: Phase I	0.00	1.44	1.44
	MEW - Shuaiba South Power and Desalination Plant	0.00	1.29	1.29
Algeria	Sonatrach - Bled El-Hadba Phosphate Plant in Tebessa	0.00	4.48	4.48
	Sonatrach/Sonelgaz/AME – 22 GW Renewable Energy Program (4050 MW)	0.00	4.27	4.27
	Sonelgaz - 22000MW Renewable Energy Program	0.00	4.10	4.10
	Sonatrach - Hassi Messaoud Refinery	3.60	0.00	3.60
	AME - Tafouk 1 Solar PV Power Plants Program	0.00	3.60	3.60
	Algeria MEM / Qatar MEI - Oued Keberit Fertiliser Plant	0.00	2.00	2.00
	ANESRIF - Es Senia - Ain Temouchent Beni Saf Rail Line Electrification	0.00	2.00	2.00
	Sonatrach - Tinrhert Gas Field Development	1.98	0.00	1.98
	ANESRIF - Ain Safra - Bechar Electrification	0.00	1.85	1.85
	Sonatrach / Partex / Total / Fascon Oil - Ahnet Field Development Project	0.00	1.76	1.76
Oman	PDO - Habhab Field Service Contract (C311790)	0.00	5.00	5.00
	OQ/KPI - Duqm Petrochemical Complex: Steam Cracker (Package 1)	0.00	3.47	3.47
	OQ/KPI - Duqm Petrochemical Complex	0.00	2.95	2.95

Country	Project	Committed	Planned	Total
	OPWP - 2700 MW Power Plant	0.00	2.92	2.92
	SAGE - Middle East to India Deepwater Pipeline (MEIDP)	0.00	2.85	2.85
	Mingyuan Holdings Group - SEZAD: Methanol to Olefins (MTO) Plant	0.00	2.75	2.75
	OQ/KPI - Duqm Petrochemical Complex: Offsite & Utilities (Package 2)	0.00	2.48	2.48
	SIS - Sur Refinery And Petrochemicals Complex	0.00	1.70	1.70
	OQ/KPI - Duqm Refinery	1.59	0.00	1.59
	OTTCO - Ras Markaz Crude Oil Park	1.54	0.00	1.54
Libya	Government of Libya - Tobruk Oil Refinery	0.00	2.45	2.45
	MOG - New Production Platform: Structure E (PPE)	0.00	1.85	1.85
	MOG - Offshore Platform & Onshore Gas Production Upgrade: Structure A	0.00	1.85	1.85
	MOG - Mellitah Complex Expansion & CO2 Management Integrated Development	0.00	1.80	1.80
	WOC – NC-98 Gas Field Development	0.00	0.50	0.50
	WOC - North Gialo Field Development	0.00	0.50	0.50
	Mellitah Oil & Gas BV (MOG) - Bahr Essalam Development Project Phase II	0.00	0.45	0.45
	NOC - Erawin Field Development: Pipeline Package	0.00	0.30	0.30
	GECOL - 650 MW Open Cycle Power Plant in Misrata	0.26	0.00	0.26
	GECOL - 671MW Open Cycle Power Plant in Tripoli West	0.26	0.00	0.26
Grand Total		**129.21**	**234.05**	**363.26**

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