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Arab Petroleum Investments Corporation
الشركة العربية للاستثمارات البترولية

APRIL 2019

MENA ANNUAL ENERGY INVESTMENT OUTLOOK 2019

CONTENTS

LETTER FROM THE CHIEF ECONOMIST

APICORP's Energy Investment Outlook (EIO) provides a much-needed cross-sectoral view of committed and planned investments in energy across the Middle East and North Africa (MENA).

We focus on a five-year horizon deliberately. All scenarios are uncertain but actual investment commitments provide a more precise outlook for the energy community on future capacity and possible production levels in the MENA region. They also provide an additional angle on each country's energy policies. A five-year horizon enables us to capture lead times and planning cycles for most parts of the energy supply chain. For the financial community, including APICORP and our partners, our characterisation of planned investments enables us to identify projects where funding support is still needed. Also, this enhances the understanding of the risks associated with these projects, political, commercial, industrial, technological and climate change-related.

The investment outlook is at the heart of APICORP's mandate. Our role is to develop and facilitate private sector involvement and financing in the energy sector. MENA countries have large financial reserves (nearly USD 1 trillion) and some are underleveraged thanks to an extended period of high oil prices. The energy sector now finds itself competing with governments' multiple priorities. This year's outlook shows that its five-year investment needs to match current reserves, implying a substantial input is required from the private sector.

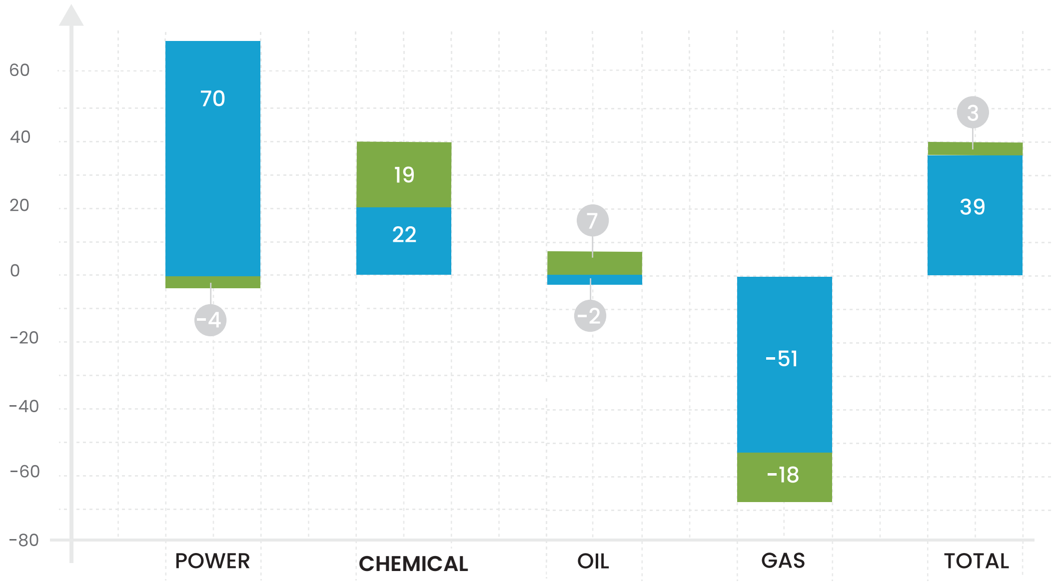
The Investment Outlook is a living, open platform, fed with the insights of an engaged community. It is produced in support of APICORP's corporate strategy and is published as a neutral fact-based contribution to the energy debate. Please feel free to share your comments and feedback with us, in addition to projects or investment opportunities you would like us to showcase in the upcoming sectoral deep-dives this year and in future annual outlooks.

Leila Benali
Chief Economist
Energy Economics, Strategy & Sustainability

Lead Author
Mustafa Ansari
Senior Economist
Energy.research@apicorp.org
www.apicorp.org

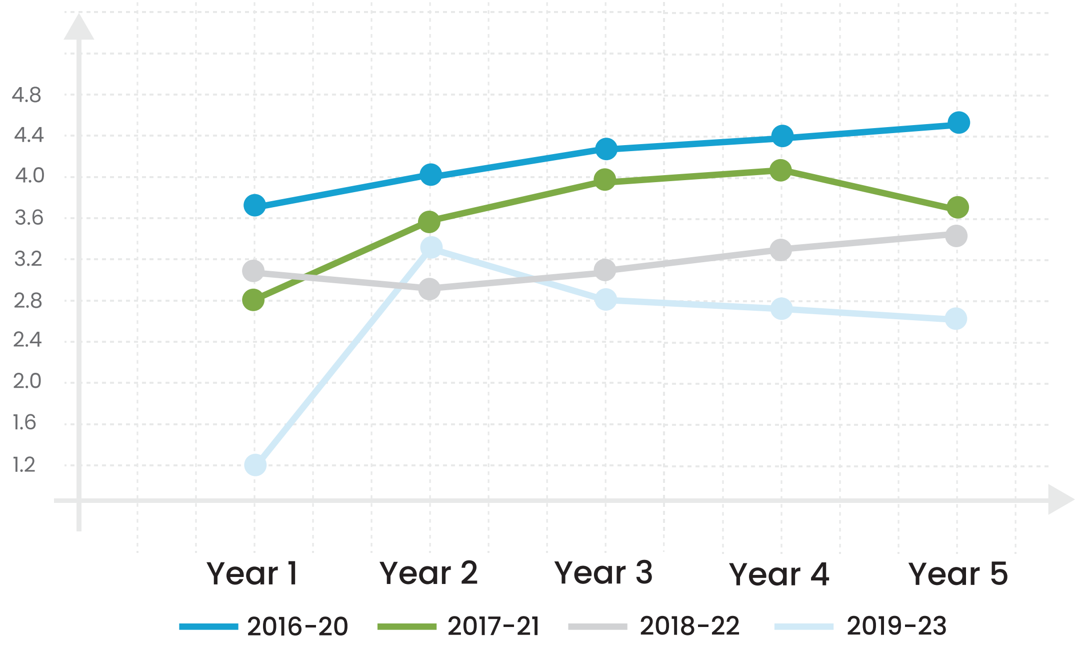
EXECUTIVE SUMMARY

Net Change in Total Investments For The Period 2019-23 (USD Billion)



SOURCE: APICORP

MENA 5-year GDP growth (%) vs. Historical Forecasts



SOURCE: APICORP

Total Reserves Excluding Gold (USD billion)

COUNTRY	Algeria	Bahrain	Egypt	Iran	Iraq	Jordan	Kuwait	UAE
2017	98	2	37	74	45	14	34	25
COUNTRY	Lebanon	Libya	Morocco	Oman	Qatar	Saudi	Tunisia	
2017	44	70	25	16	14	489	6	

Source: IMF, IHS

- ***Global growth struggles to hit softer expectations, while MENA economies are slightly picking up, despite downward revisions.*** With oil market fundamentals rebalancing, our base case is for Brent trading between USD 60 per barrel (b) and USD 70/b towards the second half of 2019, barring a sharp global economic slowdown. Global and regional gas demand is growing steadily

- ***Total MENA planned and committed investments for 2019-23 near one trillion dollars***, a 5% increase on APICORP's 2018 outlook. However, total investment in the GCC has shrunk 11% year-on-year (y-o-y), driven by a sharp fall in planned projects and a second year of reduced committed investments.

- ***The share of non-government led investments increased again - to 22% this year*** - as the private sector continues to support the investment outlook in countries with weaker fiscal reserves and/or higher share of power sector projects. We note a revival in IPO activity, restructuring and unbundling of state-owned entities, sector reforms, privatisations, and bond issuances.

- ***The power sector constitutes 36% of total investment*** as electricity demand rises and momentum for renewables continues, accounting for 34% of total power investments, with more than half the investments in North Africa.

- ***The oil sector (upstream, midstream, refining) remains important, at USD 304 billion, with just under half of projects now committed***. The financing solutions are gradually adjusting to the hydrocarbons industry's evolving landscape with more debt being raised and bonds issued.

- Total investments in the gas sector will amount to USD 186 billion, just under half of which is committed. ***MENA remains a primary growth region (2% growth per year) for gas demand over the next five years.*** The investment impasse over the last two years seems to be ending with projects funded without the need for non-recourse financing, or with attractive pricing terms to secure firm offtake agreements.

- ***The petrochemical sector is in the ascendant, with total investments over USD 123 billion, including USD 33 billion for projects currently under execution.*** Projects also increased in size and complexity. The first crude-oil-to-chemicals (COTC) in MENA will be the USD 20 billion Saudi Aramco/SABIC complex, 9 million tonnes per annum Olefins (mtpa), 20mtpa in refining capacity, likely to be commissioned in 2025. It is expected to significantly alter the global supply and demand balance of major petrochemicals, despite an emerging drive for plastics recycling.

- Saudi Arabia has the largest committed and planned investments in the medium-term. Outside of the GCC, Iraq is focused on rebuilding its energy infrastructure. Egypt will prioritise upstream gas and power sector investment to meet rising demand. **Most of the MENA region will see a greater transition towards gas, downstream and petrochemicals sector, and significant renewable energy additions**

Global economic growth is slowing. Weaker financial market sentiment and momentum has already hit large economies, including Germany, Japan and Italy. Others may flirt with stagnation this year.

MENA economies rebound as global growth struggles to hit softer targets

- **Major economies may undershoot growth targets**
- **Trade tensions have affected inward investment, currencies and supply chains**
- **MENA growth is picking up but remains weak on lower oil output and Iran sanctions**
- **Oil prices should recover slightly, with Brent at USD 60-70/b during H2 2019**
- **Global gas is growing steadily, and some projects are funded without the need for non-recourse financing**

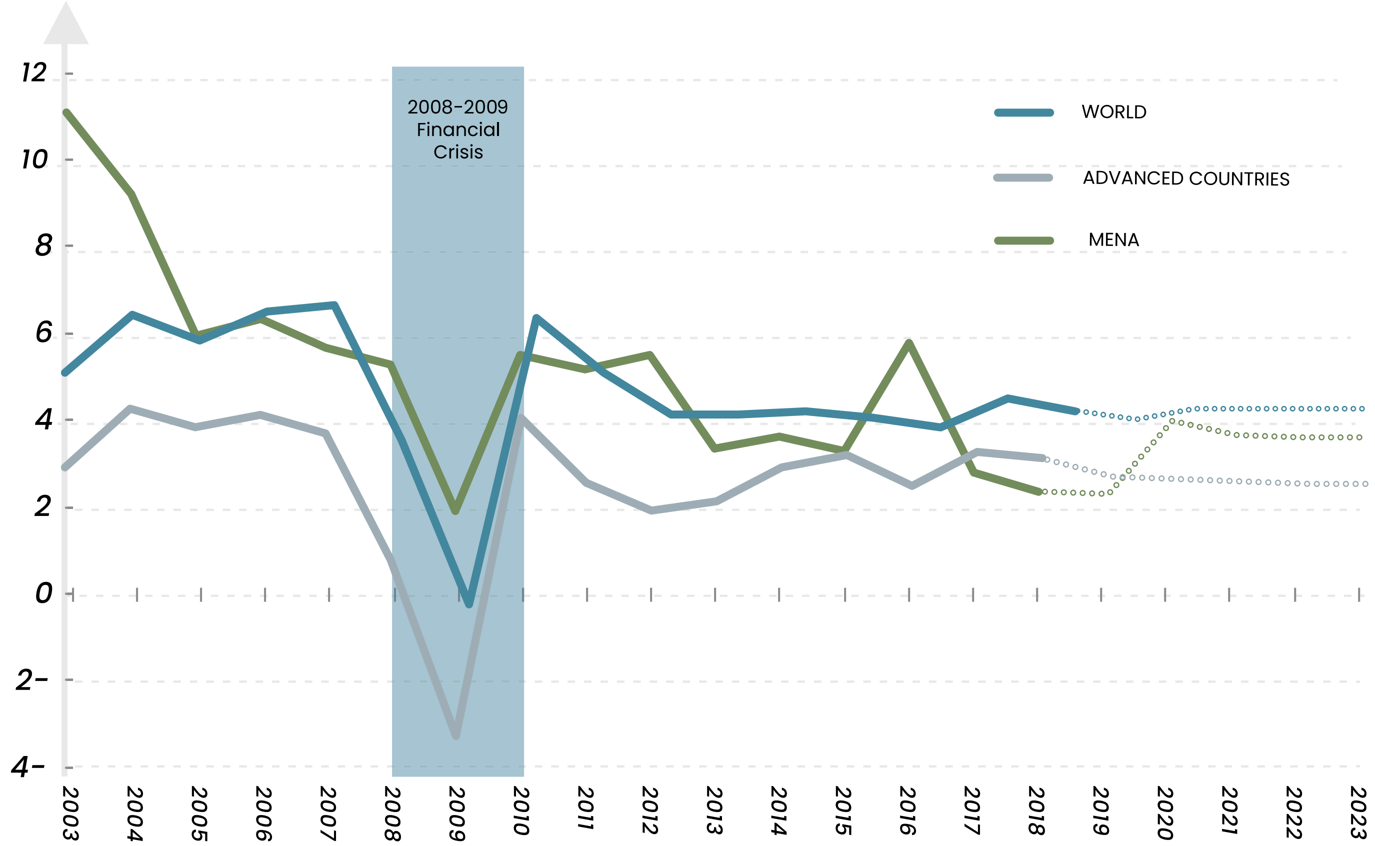
In April 2019, the International Monetary Fund (IMF) downgraded its global GDP growth by 0.4 percentage points to 3.3% for 2019, due to the negative effects of US and Chinese trade tariffs and slower than expected momentum in Europe. It also slightly lowered its outlook for 2020 to 3.6%, assuming slower recoveries from the current recessions in Turkey and Argentina.

In early February, the Bank of England cut its 2019 UK forecast to 1.2% from 1.7% - its weakest predicted growth since 2009. The European Commission also lowered its Eurozone outlook from 1.9% to 1.3%.

Most major global economies may struggle to even hit these targets as labour-force and productivity gains slow. Market forecasts assume global growth will be lower than the IMF hopes. The consensus is just 2.9% in 2019 (against the IMF's 3.3%), declining further to 2.8% in 2020 and 2021. Lower growth will expose vulnerabilities to shocks and increase the likelihood of recessions in the near term, with implications for energy prices and investment projects.

Global growth may not hit lower targets

Projected real GDP growth 2019-23 (%)



SOURCE: IMF

1) **Trade will be critical: A positive outcome from trade negotiations will naturally lift growth, assuming countries and major economic blocks are able to resolve their differences.** The downside is that policy uncertainty continues to hurt trade, investment and output, as excessive tariffs increase the cost of imported goods. It is already hampering the investment climate; global FDI fell 19% in 2018 .

The US dollar has peaked against other major currencies but remains strong, despite uncertainties over the direction of the Federal Reserve interest rates policy. The strong dollar will continue to affect the US exports of goods and services, swelling the trade deficit that hit USD 60 billion at the end of 2018.

At 6.6%, China's growth last year was the lowest since 1990. The IMF expects it to slow to 6.3% in 2019 and 6.1% in 2020. US trade restrictions will affect China's medium-term outlook and could drag down other Asian economies and curtail Japanese exports through the supply chain. However, losses in Chinese competitiveness also creates opportunities for manufacturing hubs in South and Southeast Asia.
Growth in Europe will also be governed by global trade dynamics, but even more so by the prevailing political storm in the UK and the outcome of the Brexit process.

2) ***The risk of a global recession has risen but remains low*:** Downside restraints on global economic growth include inflationary pressures, trade protectionism and a lack of market reform to allocate resources efficiently and raise productivity. European growth in the last quarter of 2018 was around 0.2%, with Italy falling back into recession and Germany coming close. The European Central Bank continues to monitor stress on Italian banks. The possibility of a no-deal Brexit could lead to a domestic and broader European recession.

3) ***Several global disruptive factors remain*:** Further US federal government shutdowns, deteriorating private-sector credit conditions, the risk of capital flight and sell-offs in emerging countries dependent on external finance, and MENA geopolitical tensions will continue to brew over the medium term. In reality, the outlook could be weaker as headline numbers may have been lifted by front-loading of imports ahead of tariff hikes and an upturn in tech exports as new products were launched.

MENA GOVERNMENT BUDGETS UNDER PRESSURE

Growth in the MENA region is expected to pick up modestly, albeit at a lower rate than forecasted this time last year as expectations for Saudi Arabia and Iran, have been downgraded. Weaker oil output growth, driven by OPEC+ production policies, will erode gains in the second half of 2019. Saudi Arabia's growth has been revised down 0.6 percentage points for 2019 but revised up 0.2% to 2.1% in 2020. US sanctions on Iran have sent the economy into recession, with visible declines in oil production and exports, and will continue to weigh heavily on the country's ability to push through with energy investments.

Continuous energy price reforms and the implementation of a 5% VAT in some of the GCC countries (Bahrain in January 2019, Oman later in the year) will contribute to direct and secondary inflation, and squeeze consumer spending. But these measures will also alleviate fiscal pressures, allowing some governments to increase spending in key industries and on critical projects. Aside from Kuwait, GCC countries have dollar pegs, and will likely follow the US Federal Reserve's interest rate policy.

The prospects in Egypt have improved after it agreed loan terms with the IMF and other multilateral agencies. Gas production from the Zohr field and higher utilisation of export facilities are expected to improve the country's net trade balance.

Overall, GCC growth in the medium term will depend on an improvement of the geopolitical situation, oil prices, and governments' ability to rationalise spending and continue their efforts to introduce much-needed structural economic reforms.

OIL: DEMAND GROWTH AND SUPPLY LOSSES

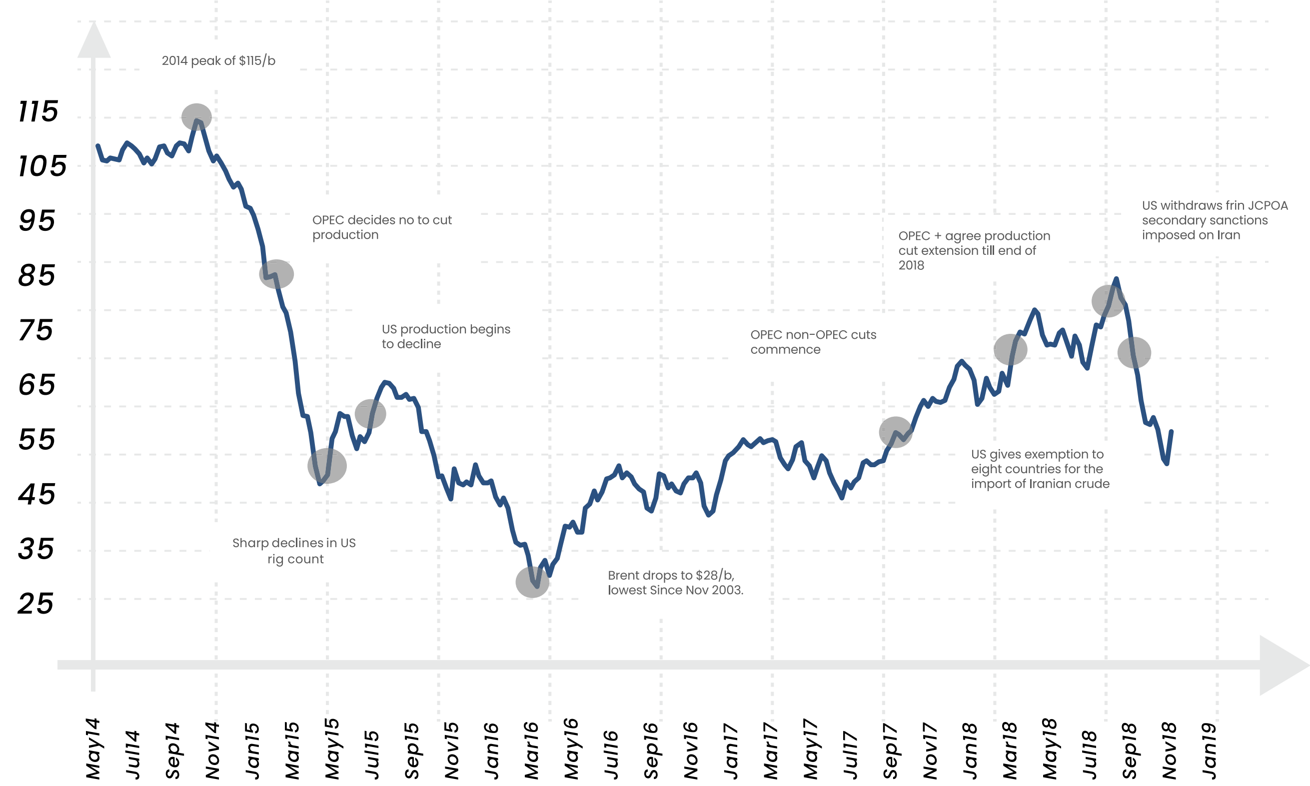
Before Brent prices collapsed in the fourth quarter of 2018, analysts were projecting ending 2018 at USD 100/b, in a market marred by falling crude stocks and supply risks from sanctions on Iran, falling Venezuelan output, and fragile Nigerian and Libyan production. By the end of 2018, the sentiment was reversed. US shale continued to surprise, adding to record combined production from the world's top three producers. Waivers on eight countries for the import of Iranian crude, as well as growing concerns about the broader macroeconomic environment and protectionist policies, saw Brent prices close the year at USD 51/b.

Even so, Brent crude still averaged USD 71/b in 2018, up from USD 54/b in 2017. Higher-than-expected oil demand growth in OECD and non-OECD markets and the implementation of 2016 OPEC+ cuts were the main contributors to the oil market rebalancing – particularly given the high compliance with the production targets from key OPEC countries that reached 180% in some months. Between July 2016 and April 2018, OECD commercial oil stocks fell from 3,109 million barrels (mbbls) to 2,820. That drop from 385 mbbls above their five-year average to 12.3 mbbls below the average cleared the stocks overhang.

The International Energy Agency (IEA) estimates global demand growth at 1.3 million barrels per day (mb/d) in 2018 rising narrowly to 1.4mb/d in 2019, as lower oil prices will offset some of the demand concerns. Non-OECD countries are driving demand, up from 875 thousand barrels per day (kb/d) in 2018 to 1.15mb/d in 2019. OPEC supply was up 2.8mb/d at the end of 2018, compared to the year before. The agreement by OPEC+ in November 2018 to curb production should also provide some floor for oil prices in the first half of 2019. That will be offset by non-OPEC production that is set to grow by 2.6mb/d in 2019, marking a 1mb/d increase on the year before.

The oil market outlook will be governed by macro fears on the prospects for oil demand. Prices will depend on whether OPEC+ cuts, mainly in Saudi Arabia, are large enough. In its December report, the IEA estimated the call on OPEC at 31.6mb/d. Assuming that the cut is implemented in full (February compliance stood at a little over 90%), OPEC's reduction of 0.8mb/d from October level, estimated by secondary sources at around 33mb/d, will keep OPEC output at about 32.2mb/d, implying that stocks would continue to build at a rate of around 0.6mb/d.

Brent Price - Historic (USD/b)



Source: Bloomberg

There is also huge uncertainty around the expected declines in Iran and Venezuela. The IEA expects monthly declines in Venezuela to average 10kb/d compared with 40kb/d before. There is growing speculation that the US may extend the waivers that allowed eight countries to continue imports from Iran, as new US sanctions on Venezuela are likely to further squeeze global supplies of heavy crude.

Purely based on fundamentals, a collective cut of 1.2mb/d between OPEC and its allies, the high probability of supply losses from Iran, Venezuela, Libya and Canada, and global oil demand growth of 1.4mb/d will mean market achieves balance in 2019.

A balanced market is consistent with a wide range of prices, and until the market starts showing signs of stock drawdowns, oil prices will be under pressure. As market fundamentals re-assert themselves, the oil price will recover some of its losses. Our base case forecast is for the oil price to trade between the USD 60-70/b range towards the second half of the year, barring a sharp slowdown in the global economy.

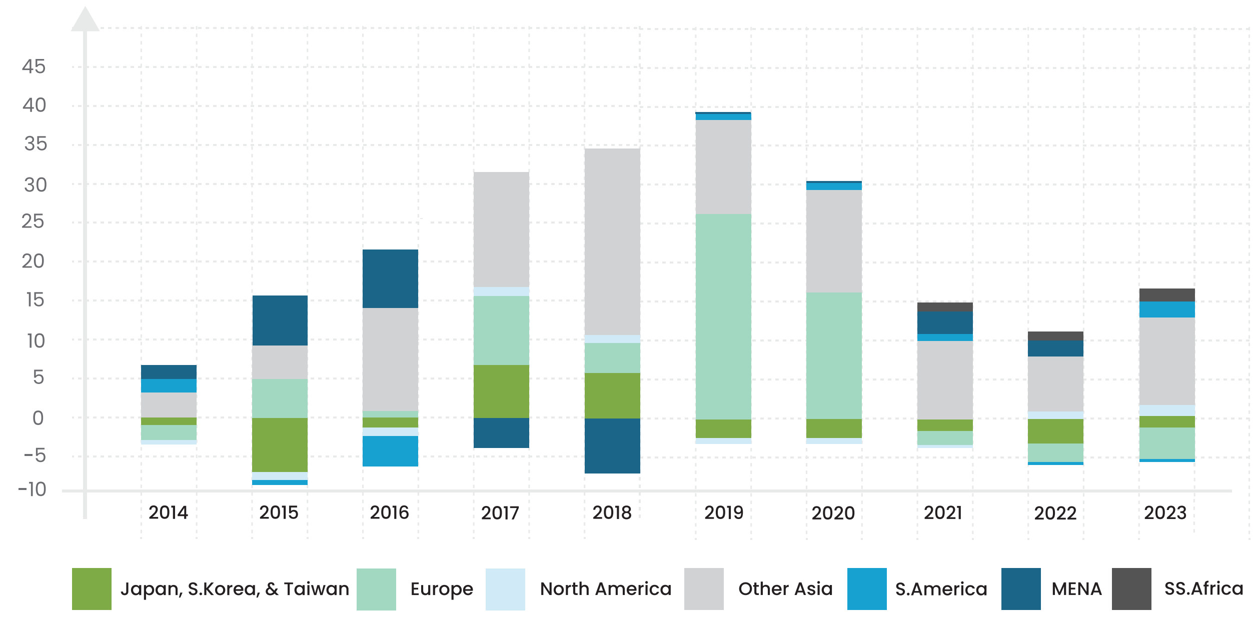
STEADY GROWTH IN GLOBAL GAS

2018 was a good year for gas. Higher prices across most global hubs and key indices were supported by oil and coal prices. The annual average for the LNG Japan-Korea Marker (JKM) stood at a little over USD 9.7 per Million British Thermal Units (mmBtu), higher than the 2017 average of USD 7.14/mmBtu and almost double the 2016 average of USD 5.72/mmBtu. In Europe, TTF prices averaged USD 7.82/mmbtu, higher than the average for 2017 of USD 5.68/mmbtu. In the US, Henry Hub prices were slightly higher than in 2017 (USD 3.19/mmbtu versus USD 2.99/mmbtu).

The IEA expects global gas demand to grow at an average rate of 1.6% for each of the next five years to reach 4,293 billion cubic metres (bcm) in 2023. This is a decrease from the 2.1% average growth rates witnessed between 2010 and 2017.

Demand for LNG has been driving global gas demand, rising 10%, from 292mtpa in 2017 to 320mtpa in 2018. China is expected to account for around 43% of the growth in global LNG demand in the next five years, overtaking Japan as the largest natural gas importer in the early 2020s.

y-o-y Change in LNG Imports (mtpa)



Forecast change from 2019 onwards
Source: IHS

However, the medium term will see a significant drop from current double-digit demand growth. Demand in China will drag down the overall outlook for emerging Asia, and LNG imports in Europe will begin to decline. Higher prices for electricity and gas and higher production of domestic gas in the Middle East, have prompted a slowdown in the growth of gas demand already. LNG imports declined for the second year in a row in 2018, down 40% y-o-y.

Nevertheless, the move towards a more liquid LNG market persists. Small-scale and flexible distribution models have opened up new markets by offering smaller consumers greater opportunities to import and transport gas through Floating Storage and Regasification Units (FSRUs) and to avoid the substantial capital costs of building permanent regasification facilities.

On the supply side, the US is still building substantial new LNG liquefaction capacity. If the 133 billion cubic meters per annum (bcma) of liquefaction facilities come online, capacity will have jumped more than 33% between 2016 and 2020. In 2019, US LNG production is expected to exceed 52bcma with additions from Freeport, Cameron, Sabine Pass and Corpus Christi.

To regain supply-demand balance in the medium term, the LNG market is counting on continued strong demand growth in Asia and the Middle East, despite competition from renewables and nuclear power. Industry observers expect a wave of new Final Investment Decisions (FIDs) in 2019 and 2020 totalling 148bcma (109mtpa) . However robust LNG demand growth may not be enough to keep pace with additional supplies, tipping the market into surplus again in the mid-2020s

But reaching FID on new projects has become increasingly difficult over the last few years, even as LNG demand has risen. Finding buyers who are willing to enter into long-term supply agreements in more competitive environments has challenged financing of new projects. This plays to the strengths of the integrators who (as in the recent Shell LNG Canada and US Golden Pass LNG FIDs) can fund projects without the need for non-recourse financing. For smaller players or newcomers, developers have been forced to explore innovative commercial structures that spread risks across the value chain. One method adopted by sponsors has been to offer attractive pricing terms, including low slopes or low tolling fees, in order to secure offtake agreements.

Natural gas is still expected to be the fastest growing fossil fuel, driven by overall primary energy demand, an increased use of gas in the energy mix, and government policies to reduce emissions and air pollution, especially in cities.
But there is no consensus on the speed of growth, pointing to the risk that some gas assets will remain stranded for some time.

For example, the IEA expects global gas consumption to be between 432bcma and 2,095bcma higher than 2017 levels. The IEA's World Energy Outlook New Policies Scenario provides a mid-point of 1,647 bcma above 2017 in 2040, with Asia Pacific accounting for nearly 49% of that increase.

One key growth area is the Middle East, which is expected to grow annually at 2%, or 293bcma, by 2040, driven by utilities, power and desalination. Incremental domestic supplies will mostly meet increased demand.

The case for switching from oil to gas and renewables remains strong in countries with sizeable gas reserves, such as Saudi Arabia and Iraq, or where the share of liquids in power generation remains significant.

MENA energy investment: healthy growth despite GDP deceleration

- **Total planned projects nudge USD 1 trillion over the next five years, requiring significant private sector financing**
- **GCC planned and committed project values drop as big projects are coming online already**
- **Government participation tumbles down to 78%**
- **Power projects account for 36% of total investment, with greater private financing participation**
- **Net energy importers and countries with lower fiscal reserves need more third-party finance**
- **Oil projects and expectations reduced, petrochemical capacity gets a boost**

Countries in the region will follow different paths to meet the expected increase in gas demand. Saudi Arabia has ambitious plans to develop its unconventional gas reserves and to increase its gas production from 14 billion cubic feet per day (bcf/d) to 23bcf/d by 2030. In Kuwait, reliance on LNG is expected to continue, despite efforts to increase production of non-associated and sour gas. In January, two production units of 100mcf/d or a little over 1bcma each came online at the Sabriya and West al-Raudhatain fields, and a third 100mcf/d unit at East Raudhatain was completed in September 2018. Total capacity of the project reached 0.5bcf/d, a 150% increase on the year, and closer towards the 1bcf/d target for 2020, despite delays in tendering.

According to the IEA, global energy investments declined for the third year running in 2017. But the results in 2018 were mixed, with upstream oil and gas investments recovering in the first half then falling in the second half due to a slowdown in US shale.

We expect the MENA region to maintain upstream investments (relative to the size of their markets) as major energy-exporting countries expand their energy sectors and strengthen their positions in global markets. Upstream capital expenditure spending in the Middle East should rise from USD 37 billion in 2018 to USD 40 billion in 2019 then flat line at USD 38 billion per year to 2022. It is particularly important to note the rising cost of upstream capital, up over 4% in 2017 in the global upstream service sector. Should this persist, more will need to be spent for the same level of capital.

The GCC continues to drive investment in the region and will be well positioned on the back of a USD 60 -70/b outlook. The governments of non-exporters, including Morocco, Tunisia and Jordan, will prioritise investments in their domestic power sectors as electricity demand continues to rise on average 9% per year.

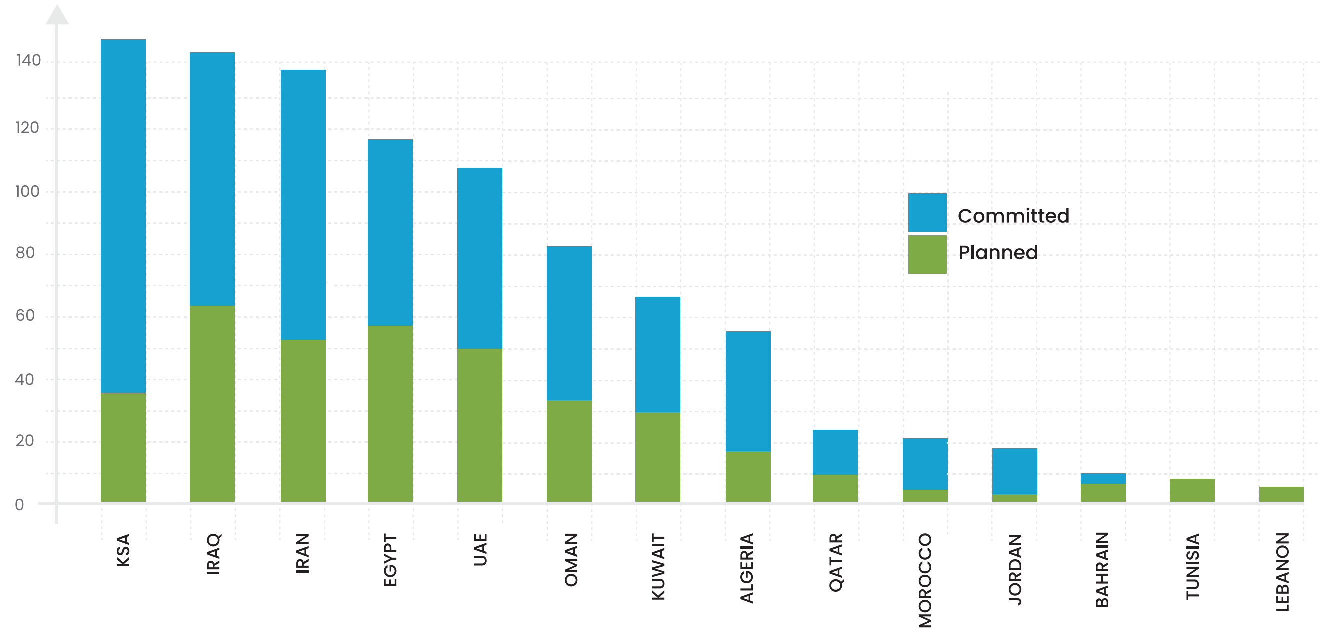
MENA investments near USD 1 trillion, 5% increase on last outlook, 36% concentrated in power.

Total planned and committed MENA investments in the energy sector are estimated at USD 961 billion for the next five years.

Planned investments account for the majority at USD 613 billion with committed investments covering the remainder.

The power sector accounts for the largest share of total investments at USD 348 billion. Of that, there are USD 90 billion of projects currently under execution. The oil sector (upstream, midstream, refining) is next at USD 304 billion, of which committed investments account for a little under 50% or USD 138 billion. Similarly, total investments in the gas sector will amount to USD 186 billion, which includes USD 87 billion worth of committed investments. Finally, the petrochemical sector is expected to see total investments upward of USD 123 billion, including USD 33 billion for projects currently under execution.

Total planned and committed MENA energy investment 2019-23 (USD billion)



SOURCE: APICORP

The total investment for 2019-2023 will be 5% higher than our estimate last year, reflecting the general recovery in expected demand. For the GCC however, total investments have shrunk 11% y-o-y, driven by a 13% decline in planned investments and a 7% decline in committed investments, marking the second consecutive year of declines in committed investments.

Planned MENA investments have increased by 7% and committed investments increased by 1% from our previous outlook. Although the five-year GDP growth forecast for MENA has declined, it remains positive. We therefore expect an increase in investment in line with both GDP and inflation, resulting in higher project costs. The surge in planned investments signals a healthier investment climate supported by robust macroeconomic growth and reconstruction needs. It also reinforces the commitment of many countries to push through ambitious visions and medium-to long-term energy sector strategies.

Saudi Arabia is targeting 58.7 GigaWatts (GW) of renewable energy by 2030, and a recently revised target of 27.3GW by 2023. Algeria hopes to install 22GW by 2030. The UAE and Kuwait have pledged significant sums in the energy sector in order to meet their oil and gas targets, including 4mb/d within the medium term. Iraq is also pursuing a higher target of 6.5mb/d within the same period. Except for Lebanon, all the net-importers in the region experienced a y-o-y growth in their five-year investment outlook, with Jordan, Iraq and Tunisia witnessing the largest percentage increase.

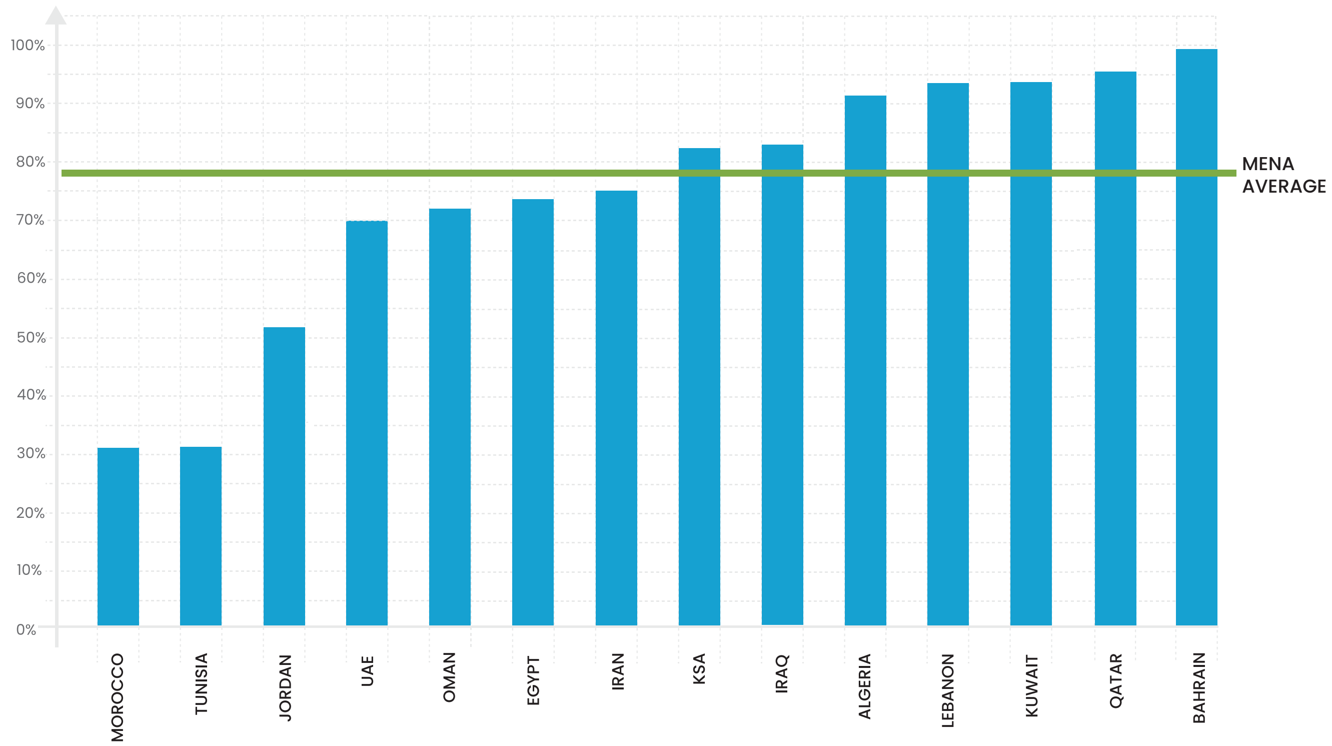
WOOING PRIVATE SECTOR FINANCE

The role of the private sector is increasingly influential in maintaining a positive investment outlook for the region. Net energy exporters have suffered a squeeze on revenues and tightened budgets, meaning that funding for energy had to be secured elsewhere. That has led to a revival in IPO activity and restructuring (for example Abu Dhabi National Oil Company ADNOC); and unbundling (e.g. Saudi Electricity Company, SEC) of state-owned entities, sector reforms, privatisations, government bond issuances and, above all, the need to encourage greater private sector participation.

> ***Whilst the private sector remains positive on MENA reforms and economic diversification, private finance has not grabbed as big a share of investment as expected***

Since our last outlook, the share of government-led investments has declined from 80% to 78%. The remainder has been a combination of wholly private sector developments or public-private partnerships . The change is less significant than the 5% y-o-y drop perceived in our outlook last year. The structural shift that we would expect is not necessarily materialising. The balance between government and private sector investments continues to be driven by cyclical factors – namely oil prices, which recovered in 2018.

Government led investments as a share of total MENA energy investment (%)



SOURCE: APICORP

Governments in MENA have always played the bigger role in financing energy projects. Hydrocarbon revenues account for a significant portion of government budgets and contribute a great deal to GDP. However, the squeeze on government budgets, the need to diversify revenues away from oil and gas exports and a greater focus on the power sector should in theory have prompted higher private sector participation.

Further private sector involvement will not only help bridge the funding gap between government investment targets and budgets, but will also prompt accelerated reforms, faster project completion rates and improved efficiency.

Evidently, countries with lower fiscal reserves (particularly net importers) and, more importantly, those with a higher share of investments in the power sector have exhibited greater private sector participation. Tunisia and Morocco rank the highest with the private sector accounting for 68% of total planned and committed energy investments, followed by Jordan at 46%. UAE, Oman (with its credit rating cut to junk in March) and Egypt also exhibit a greater penetration of private sector participation, rising to 30%, 29% and 28% respectively.

OIL AND GAS TRIMMED

As a word of caution, many governments in the region tend to announce ambitious targets, then scale back projects over time. This simply signifies how each country better understands its needs, adjusts to new expectations and rationalises its spending.

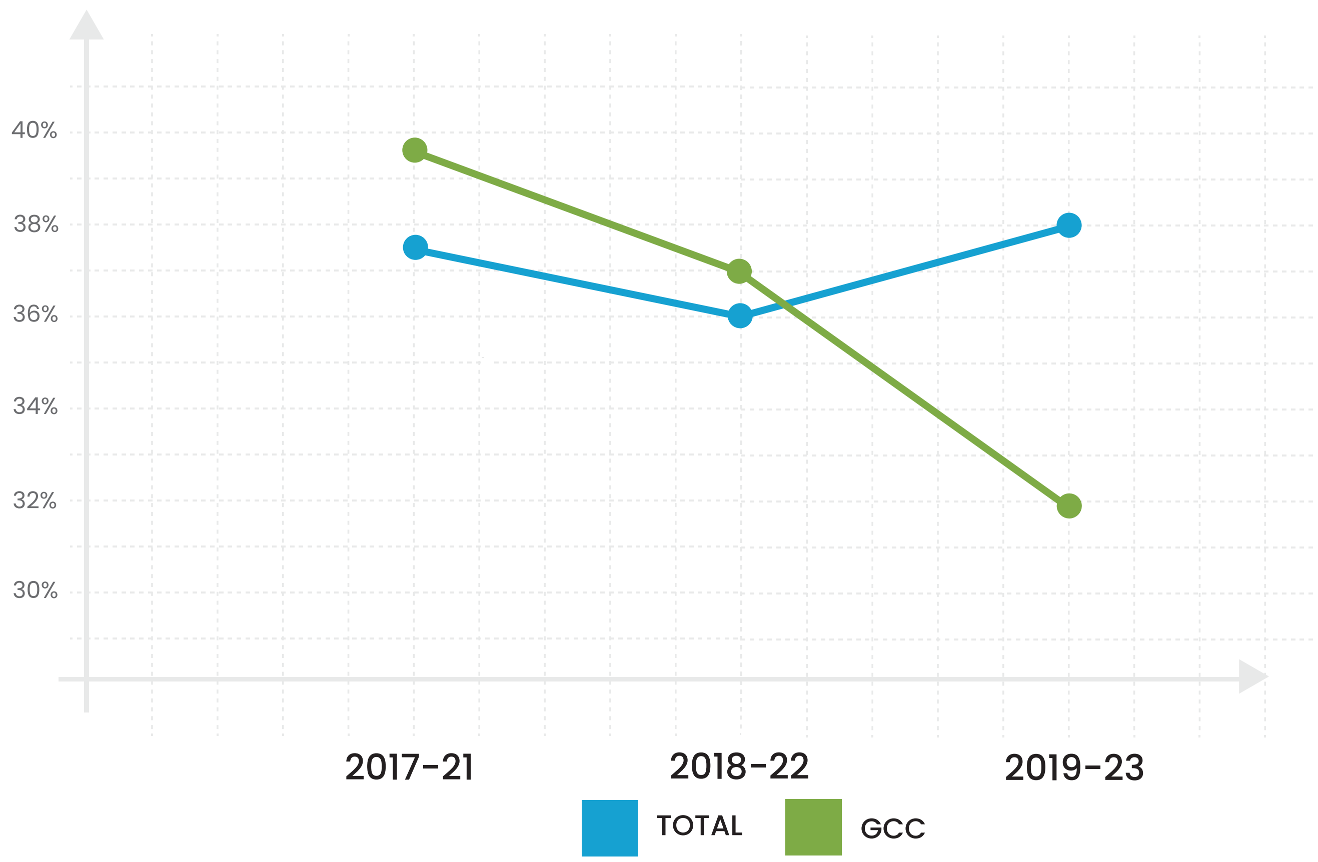
This is particularly true for the gas sector. The entire MENA region witnessed a y-o-y decline to USD 70 billion in the outlook for both committed and planned investments, weighed down largely by Saudi Arabia and lower prospects for Iran's gas sector. Overall, ***two thirds of the MENA countries, will experience lower investment in their upstream gas sectors.*** Reforms have all contributed to lower gas demand growth, particularly the reduction in energy subsidies, and bigger energy efficiency and renewables programmes.

Similarly, in the oil sector, investments in several OPEC member countries have been scaled back, including Saudi Arabia, Iran and Algeria. Whilst Iraq, the UAE and Oman have ensured y-o-y growth in upstream oil spending, higher global production and slowing global demand have affected the need for additional supply of crude and products. Total investments in the GCC's oil sector decreased from USD 197 billion in our 2018 outlook to USD 156 billion, with planned investments down USD 33 billion y-o-y.

In 2018, the call on OPEC was 1.3mb/d lower than the 32.9mb/d forecast by the organisation, and in 2019 the call on OPEC stands 1mb/d less at 30.6mb/d. OPEC agreed to cut production by 0.8mb/d from October 2018 levels of 33mb/d. Based on the new OPEC estimates, non-OPEC production is expected to grow more than previously anticipated (see APICORP research January 2019).

In contrast, petrochemicals and refining, and certainly the power sector, contributed positively to the outlook period compared to last year, as countries look to enhance their energy security through more diversified electricity generation and maximise the value of hydrocarbons throughout the supply chain.

Project Execution Rate (%)



SOURCE: APICORP

Overall, the share of committed investments remained stable y-o-y, despite lower execution in the Gulf. One can gauge progress based on committed investments in the current outlook period, as a share of total investments outlined in our previous outlook. It has narrowly improved for MENA, averaging 38% this year compared with 36% in 2018, but roughly equal to 2017. The trend is downwards for the GCC, meaning committed projects account for a lower share of previously projected total investments. For countries such as Iraq, this share has increased from 51% in 2017 to 75% more recently, as many projects were abandoned due to the higher geopolitical and security risks at the time (see box on Iraq) compared with the more stable period we now foresee.

Iraq: growing opportunities in downstream and power.

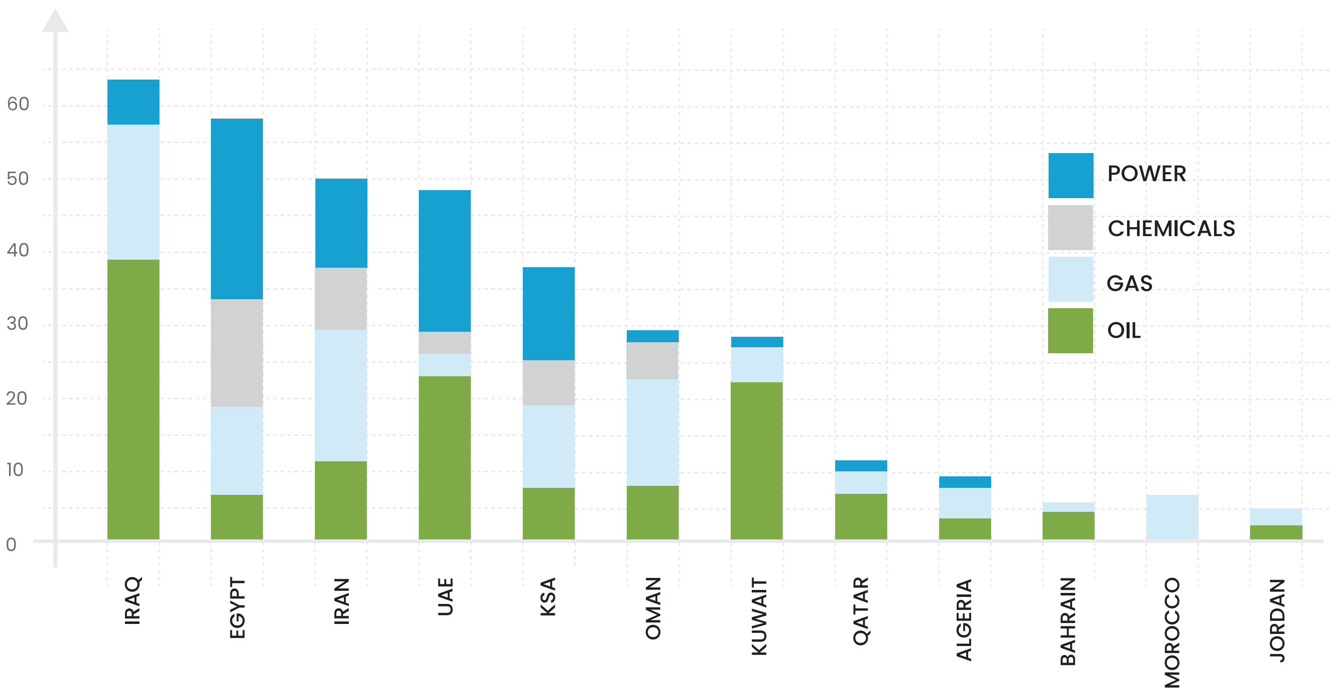
Even before the war on ISIS, Iraq was playing catch-up in the energy sector, with a swathe of upstream opportunities across oil and gas. But between 2014 and 2016, the infrastructural damage was significant, particularly in the North. Iraq's most notable refinery, Beiji, was all but out of operation, reducing the country's already outdated refining capacity. Power transmission and distribution lines were also specifically targeted, reducing the country's electricity supplies.
Rebuilding the downstream sector has been a priority for the government. Over the last couple of years, we have monitored several projects that have progressed from the planning phase through to execution. In our 2016 outlook, the 150kb/d Maysan refinery was still awaiting the award of a FEED contract. It was classified as under execution in our 2017 outlook and is now due for commissioning in 2020. Likewise, the new 70kb/d Kirkuk refinery has progressed from study in 2017, to bid evaluation in 2018, and is under execution in our current outlook. Efforts to move forward with investments have been supported by both the recovery in oil prices, which supports government budgets, and a period of stability and improved security.

COMMITTED INVESTMENTS UP BY 1%, SUPPORTED BY GROWTH IN IRAQ AND EGYPT

Investments in energy projects currently under execution are estimated at USD 348 billion for the five-year period. The oil sector accounts for the largest share of investments at USD 138 billion, with the majority in upstream projects. ***Committed power investments have overtaken gas for the first time,*** at approximately USD 90 billion and USD 87 billion respectively, followed by chemicals at USD 33 billion.

For the second consecutive year, committed investments in the GCC declined, totalling USD 159 billion or 46% of the MENA total. The UAE is the only country in the GCC with committed investments up y-o-y. Over the past couple of years, Kuwait's downstream sector had accounted for a significant portion of MENA committed investments. The region's 13% decline is largely due to the expected commissioning of the USD 16 billion Al-Zour refinery in 2020, which will boast a capacity of 615kb/d, and a large share of Kuwait's USD 16 billion clean fuels project due for completion in 2022.

Committed MENA Energy Investment by Sector 2019-23 (USD billion)

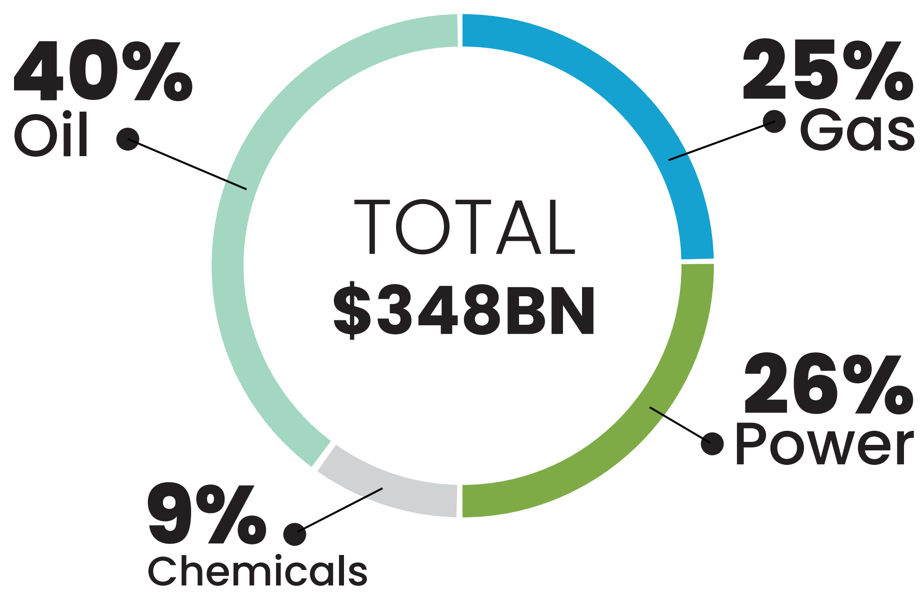


SOURCE: APICORP

Iraq is leading the drive in the oil downstream sector with USD 25 billion of committed investments, aimed at ramping up production from existing and new refineries. Iraq is currently a net importer of products, despite crude oil production of more than 4.5mb/d, as existing refineries are old and produce large volumes of fuel oil. Beginning with the 150kb/d Maysan refinery (USD 2.5 billion), the new capacity should help reduce the existing import bill and absorb the additional heavy-sour crude supplies expected over the medium term – especially if the country reaches its 6.5mb/d target by 2022.

Upstream oil investments in the UAE will reach USD 20 billion, double that of Iraq. UAE is targeting 4mb/d of production capacity by 2022, whilst Kuwait has a similar target for 2020. In the gas upstream sector, Iraq leads with over USD 16 billion committed to capture flared gas; the BGC south gas utilisation project makes up the lion's share. Three projects will alone total USD 31 billion: the Al Zohr gas field development (Egypt), the BP-led block 61 (Oman) and the South Pars gas field development (Iran). They all aim to ramp up production and export higher volumes of gas whilst keeping up with domestic demand in both power and industry.

Committed MENA energy investment by sector (%)



SOURCE: APICORP

BOOST TO PETROCHEMICAL PRODUCTION

At USD 33 billion, the petrochemicals sector has seen the largest increase in committed investment relative to our outlook in 2018. Egypt alone accounts for just under half the investment. Completing the remaining list of committed investments in petrochemicals are Iran and Saudi Arabia, and Oman's USD 6.7 billion Liwa plastics plant. ORPIC estimates that around USD 1.5 billion of the project costs will support the In-Country Value (ICV) development programme: reinforcing and developing businesses by achieving authenticated 'Made in Oman' products and ensuring at least 30% Omanisation in the companies working on the project.

Finally, in the power sector, committed investments have declined by nearly USD 5 billion compared to our projections last year. Power as a proportion of total committed investment has declined marginally with each outlook from 28% in 2016 to 25% today. This is largely due to a fall in electricity demand growth rates in the region. Egypt accounts for the majority of investments, as it expects electricity demand to rise from a compound annual growth rate (CAGR) of 4.6% in 2005-2017, to a 5% CAGR until 2025. Independent power producers (IPPs) represent two-thirds of the 30GW of capacity in the project pipeline. A diverse mix of capacity includes the 6GW Hamrawein coal power plant, the world's largest clean coal project, the Ataka hydro power plant and over 750MW of solar and wind over the medium-term.

Primary chemicals drive investments in crude-to-chemicals and integration with refining

Petrochemicals demand remains strongly linked to GDP growth, unlike transportation fuels. The GDP elasticity of major petrochemical products is between 1 and 2%. ***Demand for primary chemicals is growing fast, particularly in emerging markets, to fulfil end-use demand for plastics and fibres.*** *That has boosted the investment benefits of refining and petrochemicals integration in recent years.*

Most projects commissioned over the 2018-2021 period are in China and are refinery-to-Poly-Xylene (PX) schemes that back-integrate production by configuring refineries to produce maximum PX.
There are different crude-to-chemicals schemes. The first crude-oil-to-chemicals (COTC) in MENA will be the Saudi Aramco/SABIC, USD 20 billion 9mtpa Olefins joint venture that promises 20mtpa in refining capacity, likely to be commissioned in 2025.
Saudi Aramco, partnered with Chevron Lummus Global (CLG) and CB&I (now McDermott), plans to commercialise its thermal process that aims to convert 70%-80% of crude oil to chemicals. Given its large scale, COTC is expected to significantly alter the global supply and demand balance of major petrochemicals in the years to come.

Despite an emerging drive for plastics recycling, oil demand for petrochemicals is still expected to add a solid 3-4mb/d by 2040. There is consensus that oil will retain its dominance in transport, thanks to increasingly efficient internal combustion engines, its utilisation in freight and heavy duty vehicles, and the slow deployment of infrastructure for competing fuels. For chemicals, the key to profitability will be to continue to deliver low-cost feedstock (ethane, LPG, naphtha or crude) that will determine the market share of the different products.

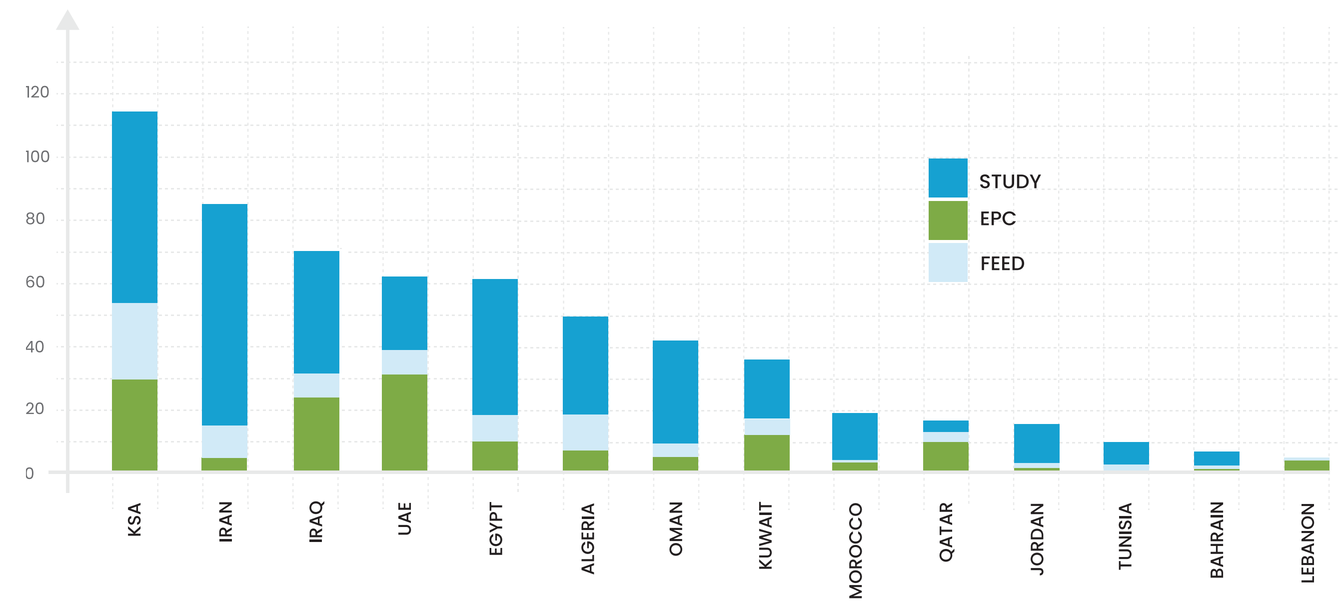
SAUDI ARABIA'S POWER AND IRAQ'S OIL SECTORS DRIVE 7% GROWTH IN PLANNED ENERGY INVESTMENT

Planned MENA investments in the energy sector are estimated at USD 613 billion over the next five years. The power sector accounts for the largest share of investments, at USD 257 billion. The oil and gas sectors represent USD 166 billion and USD 99 billion respectively, with the remaining investments in petrochemicals.

Saudi Arabia leads the list of announced power investments, with ambitious plans to diversify its electricity generation mix with considerable renewable and nuclear capacity. This is also true for Egypt, where a swathe of renewable projects and the 4.8GW El Dabaa nuclear plant account for nearly a third of the planned power investments. Investment in Algeria's power sector has been relatively low as per our previous forecasts. Between 2011 and 2013, Algeria increased its capacity by one third and added more between 2015 and 2018, meaning the country was one of few in the region to have had adequate generation capacity to meet demand. Now Algeria hopes to install 4.5GW of renewable energy by 2020 and reach 22GW by 2030 to account for 27% of the country's generation mix. As a result, planned investments in renewable energy account for 80% of the total USD 29 billion expected in Algeria's power sector over the outlook period.

Planned investments in both oil and gas have declined in our current outlook. Three countries – Iran, Iraq and the UAE – are responsible for 47% of the total. In Iran, the majority will still be in upstream gas, whereas in Iraq, USD 44 billion is planned across the board, including the Basra-Najaf crude export pipeline currently in the bid evaluation phase and the 300kb/d Port of Fao refinery.

Planned MENA Energy Investment 2019-23 (USD Billion)



SOURCE: APICORP

Projects under study represent 66% of planned investments. We anticipate that only a fraction of projects under this phase will move to execution. Contracts under design and EPC phases are more likely to materialise in the medium term. Projects at bidding phase for the contract award amount to USD 121 billion, USD 29 billion higher than our outlook last year, whilst those at the design phase have decreased by USD 11 billion y-o-y to reach USD 75 billion. Overall, there is a healthy transition from the study and design phases towards execution.

In Saudi Arabia nearly USD 50 billion of projects currently stand at the design and contract award phase. Whilst nuclear power investments could be substantial, there is great uncertainty indeed over the full execution because of institutional, regulatory, technical and industrial constraints. The first of six reactors at the design phase will cost USD 2 billion for a capacity of 200 MegaWatts (MW) of electricity.

As part of the Kingdom's plans to deploy 9.5GW of wind and solar capacity by 2023, investment in renewables will amount to USD 29 billion over the next five years. ACWA was awarded KSA's first solar tender in February 2018. Construction of the 300MW Sakaka solar PV project in Al Jouf began in late 2018 and is expected to come online by late 2019.

Whilst Iran is next with USD 87 billion of planned investments, projects at the study phase account for the overwhelming majority, with only USD 16 billion worth of projects at the design or contract-bidding phase. This reflects the difficulty the country faces in securing vital investment and international participation. International interest was strong when sanctions were frozen, but the US decision to withdraw from the Joint Comprehensive Plan of Action (JCPOA) has cast a new shadow over the country's medium-term investment plans.

Major investments in electricity driven by renewable energy

In Morocco, Jordan and Tunisia, power also represents the majority of planned investments. But much like Iran, most of these investments are still at the study phase, and financing will perhaps be the largest obstacle. Jordan and certainly Morocco have led the region with their renewable initiatives. Morocco's target for renewable energy as a share of total generation is amongst the most ambitious in the world, standing at 42% by 2020. The Noor-Ouarzazate project is the largest Concentrated Solar Power (CSP) complex in the world, with an estimated capacity of 580MW and has already helped the country achieve 35% of its energy requirements through renewables.

In the future, renewable energy will play a bigger role in Tunisia's generation capacity, where it could account for 12% by 2020, and 30% by 2030. Given their lower fiscal reserves and, more importantly, the larger number of power projects, it is no surprise that the share of the private sector participation in these countries is higher than the MENA average.

THE ROLE OF THE PRIVATE SECTOR HAS NEVER BEEN MORE IMPORTANT

As MENA pushes ahead with its investment plans, the medium term will pose several challenges and constraints that could tilt the balance.

Firstly, global investments in the oil and gas sector are closely linked with balanced oil prices. The oil market, despite a modest recovery, remains volatile and full of uncertainty. MENA states, including Kuwait, the UAE and Iraq, have announced firm oil production targets. Other countries with low fiscal buffers and competing pressures on revenues, particularly Iraq, Iran and Algeria will continue to face political and economic challenges in executing their ambitious expansion programmes.

Secondly, investor caution also creates opportunities, as regional players are forced to seek external finance. Low oil revenues have pushed governments to raise capital on the domestic and foreign debt markets. In 2018 however, sovereign issues dipped to USD 46 billion from USD 50 billion the previous year, driven by recovering oil prices, but remain slightly higher than corporate issuance. Saudi Arabia accounted for the largest share, raising USD 24 billion including close to USD 11 billion in domestic bonds. Qatar and Oman were next, raising USD 12 billion and USD 8 billion respectively, whilst Bahrain and Sharjah raised USD 1 billion each. Abu Dhabi and Kuwait were absent in 2018, having raised USD 10 billion and USD 8 billion in 2017. Total issuance is expected to increase once more this year. Saudi Arabia is expected to tap the market for USD 32 billion alone, unveiling a USD 295 billion budget for 2019 and an expected budget deficit of between USD 12.4 billion to USD 20.7 billion, depending on the assumptions used for oil prices.

A large share of upstream investment is still being shouldered by the equity of active NOCs and some of their IOCs partners. The two largest NOCs in the region issued their first-ever international bonds during the last two years (2017 for ADNOC, 2019 for ARAMCO). This is a milestone for the important players in the region's oil sector to optimise their capital structure, get access to international capital markets and diversify their long-term strategic financing options. As for Iran, attracting funds has proven more onerous than it would have hoped as the re-imposition of sanctions continues to deter foreign investors.

Finally, despite the defeat of ISIS in Iraq and arguably modest improvements in Syria and Libya, the region's geopolitical backdrop remains fragile. Persistent conflicts in Syria, Libya and Yemen are reshaping the region's geopolitical landscape, and will deter investment in these countries in the near term. Tensions in the GCC between Qatar and its neighbours persist. Regional instability and weakened institutional structures are unlikely to improve in the immediate future, and investors will be wary of spill-over effects in surrounding countries. A new government in Iraq will be pivotal in resolving disputes between the Kurdish Regional Government and Baghdad. Politics in Algeria will be closely monitored after mass protests forced President Bouteflika to resign.

Following a particularly unsettling 2016, we saw improvements in 2017 and rebalance in the region. But 2018 brought renewed uncertainty about growth and oil prices. The period of weakest economic growth and oil prices may have passed, but the recovery phase will be long and challenging. GCC governments have announced expansionary budgets following a few years of tightening expenditures because of lower oil revenues.

Governments will prioritise critical investments in their energy sectors. Iraq will focus on rebuilding its energy infrastructure with the arrival of a new government, a period of stability and higher oil revenues. But the majority of MENA countries will see a greater transition in the energy sector from oil to gas, expansion of the downstream and petrochemicals sectors, and significant power generation capacity additions, including a surge in renewable energy.

Saudi Arabia has the largest committed and planned investments in the medium-term. Kuwait and the UAE have ambitious programmes throughout the value chain. Egypt will prioritise upstream gas and power sector investments to meet rising demand. Elsewhere in North Africa, Algeria will be interesting to observe, not least following the results of the elections, but also in its ability to meet ambitious gas, power and renewable energy targets - a trend started in Morocco and pursued more recently in Tunisia.

The rate of transition from planned to committed investments has been lacklustre. A greater participation of the private sector will ensure more projects are committed and commissioned on time. The private sector will be an important player to ensure the region can finance its energy investment plans, whilst freeing up revenues for other sectors of the economy. Its role has been growing, but the pace has been slow. Governments will need to do more to ensure that the private sector commits to the region and is encouraged to participate in the financing of energy projects across all sectors.

APPENDIX

In this report, we provide estimates for both planned investment and committed investment for the period 2019-2023. Projects will be included in our estimates even if they will not come on line in the medium term, as investments and work will be made during our outlook period.

COMMITTED INVESTMENTS

This includes investments in energy projects currently under execution; that is, final investment decisions have been made and contracts for these projects have been signed. Total committed investment is the sum of the estimated cost over the five-year period based on the contract value.
Once a final investment decision (FID) has been made, the project is classified as under execution.

PLANNED INVESTMENTS

Planned investment represents a country's spending target to develop its energy sector. These are the investments that are of most interest to third-party financing as they would, in theory, need external financial support or capacity building to materialise.

Specifically, the planned investments can be broken down into:

- Projects which are at the first phase and are classified as "under study";
- Subsequently, those that await "Front-End, Engineering and Design" (FEED) contracts;
- And those with FEED completed, at the final level waiting for Engineering, Procurement and Construction contracts to be awarded (EPC)

Additionally, we capture non-project-associated estimates based on announcements from various sources that we believe will materialise within the outlook. These include, but are not limited to, IOC/NOC investment plans, ministerial announcements on specific sectoral spending, and government plans within five-year budgets.

Planned projects are by no means an estimate of what is required in each sector, especially in the power sector. In some instances, the perceived investment outlook for each country may fall below or exceed these levels.
Planned and committed investment figures as outlined by this report are not an endorsement of the expectations in any specific country and/or sector, nor do they reflect the views of APICORP.

APICORP'S INVESTMENT OUTLOOK IS UNIQUE IN MANY ASPECTS

- It is the only publication providing an integrated and sectoral view of energy investments in the region. It is a valuable and much-needed needed platform on investment requirements in the region
- Separating planned projects from those under execution indicates each country's priorities and energy strategy. It provides a better overview of where in the planning stage each project is and of the likelihood that it will be executed
- Numerically, it only captures projects that have been announced but, where relevant, we provide a view on investments that are needed in a specific sector
- Projects can be funded either wholly or through a combination of equity and debt, enabling us to monitor funding trends in each sector. Typically, we see higher equity investments in upstream oil and gas sectors, whilst power projects have a higher proportion of debt as the role of the private sector is more prevalent.

EXCLUSIONS

There are some data limitations, and these depend on the region. It is often not possible to capture all projects in a given country, particularly outside the GCC, as some of these countries also suffer from weak institutions, security concerns, and poor business environments.
Spending on the upstream oil and gas sector, may not be fully captured as these are often confidential and/or disclosed as part of an aggregated figure announced by the relevant institution or company.

DEFINITIONS

Oil sector: Upstream – exploration and development, midstream and refining.
Gas sector: Upstream – exploration, development and extraction, midstream – pipeline, storage and LNG liquefaction and regasification facilities, downstream – gas processing plant.
Power sector: generation, transmission and distribution.
Petrochemicals: petrochemical production plant including crude to chemicals.

SOURCES

A wide range of sources were used and included:

- APICORP
- Bloomberg
- BP statistics and outlook
- EIA database and reports
- IEA reports
- IHS
- IMF database and reports
- IOC websites
- JODI
- MEED articles
- MEED Projects
- MEES articles
- NOC websites
- OPEC
- Reuters Eikon
- Utility websites
- World Bank

TABLES AND CHARTS

Total planned and committed MENA Energy Investment 2019-23 (USD Billion)

2023 - 2019	Committed	Planned	Total
Algeria	9	46	55
Bahrain	5	3	9
Egypt	57	61	118
Iran	50	87	137
Iraq	63	81	144
Jordan	3	15	18
Kuwait	27	40	68
Lebanon	0	3	3
Libya	3	11	14
Morocco	5	16	21
Oman	29	54	84
Qatar	11	13	24
Saudi Arabia	37	111	148
Tunisia	0	7	7
UAE	49	62	111
Others	0	2	2
Total	348	613	961

SOURCE: APICORP

Planned and Committed MENA Energy Investment by Sector 2019-23 (USD Billion)

Sector	Oil	Power	Gas	Chemical	Total
Planned	166	257	99	90	613
Committed	138	90	87	33	348
Total	304	348	186	123	961

SOURCE: APICORP

GDP Growth

	2016	2017	2018	2019	2020	2021	2022	2023
Algeria	3.2	1.4	2.5	2.7	1.8	1.1	0.7	0.5
Bahrain	3.5	3.8	3.2	2.6	2.5	2.5	2.6	2.6
Egypt	4.3	4.2	5.3	5.5	5.9	6.0	6.0	6.0
Iran	12.5	3.7	-1.5	-3.6	1.1	1.6	2.3	2.3
Iraq	13.1	-2.1	1.5	6.5	3.2	2.7	2.5	2.2
Jordan	2.0	2.0	2.3	2.5	2.7	2.9	3.0	3.0
Kuwait	2.2	-3.3	2.3	4.1	4.1	4.0	3.8	2.9
Lebanon	1.7	1.5	1.0	1.4	2.0	2.4	2.9	2.9
Morocco	1.1	4.1	3.2	3.2	3.8	4.3	4.4	4.5
Oman	5.0	-0.9	1.9	5.0	2.7	3.1	1.1	1.5
Qatar	2.1	1.6	2.7	2.8	2.6	2.7	2.9	2.7
Saudi	1.7	-0.9	2.2	2.4	1.9	2.1	2.2	2.3
Tunisia	1.1	2.0	2.4	2.9	3.4	3.6	4.0	4.2
UAE	3.0	0.8	2.9	3.7	3.6	3.2	3.0	2.9

SOURCE: IMF 2019

APICORP

P.O. Box 9599,
Dammam 31423,
Kingdom of Saudi Arabia

info@apicorp.org