



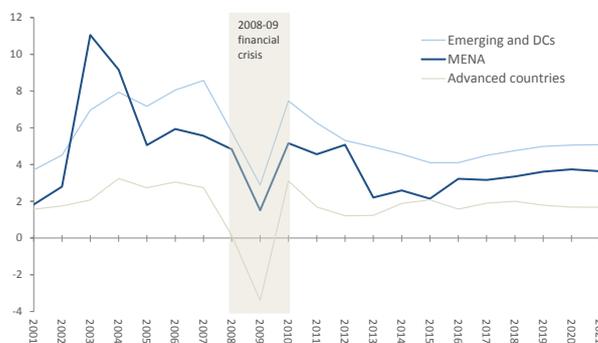
## MENA energy investment outlook - cautious optimism

The MENA region will see a number of critical energy projects pushed through in 2017, despite uncertainties that cloud the investment outlook. Fully \$337bn has already been committed to projects under execution while an additional \$622bn worth of development is planned. Leading the drive will be Saudi Arabia, which along with the rest of the GCC will invest across the energy value chain. Iraq and Iran will play catch-up and are determined to push their ambitious oil and gas plans with investments in Iran starting to flow back after years of sanctions, but will face many above-ground challenges. In North Africa, Algeria has vowed to pump billions into its upstream sector. Much is also expected in Egypt as recent gas finds promise to meet rapidly rising power demand. Renewable-energy projects will be at the forefront of efforts to meet rising power demand in Morocco, Tunisia and Jordan. But there will be many challenges as low oil prices, the uncertain economic outlook, regional instability and conflicts all have an impact on planned investments.

### Global and MENA economics

In January 2017, the International Monetary Fund (IMF) projected global growth of 3.4% for 2017 and 3.6% for 2018. This represents a 0.2 percentage-point increase compared with projections it made in October 2016. The short term outlook is driven by a projected pickup in growth in emerging markets and developing economies. Nonetheless, several factors will affect this forecast over the medium term:

#### Projected real GDP growth 2017-21 (%)



Source: IMF

1) The growth forecast for emerging markets was revised down by 0.1 percentage-point compared with the October 2016 report. The slowdown in China and the structural shift from manufacturing activities towards services have weighed on the global economy. But China is now expected to grow by 6.5% in 2017 compared with the 6.0% forecast in January 2016 on expectations of continued policy support.

2) Advanced economies are now projected to grow by 0.1 and 0.2 percentage-points more in 2017 and 2018 respectively than in the October 2016 forecast. The main driver behind this revision is the expected fiscal stimulus and increase in infrastructure spending in the US, increasing GDP growth to 2.3% and 2.5% for 2017 and 2018. Following a subdued outlook for Europe and the UK in October 2016, as a result of Brexit, the IMF has recently revised up its growth forecast. This is in turn due to better than expected output in the UK along with better

performance in Japan, Germany and Spain, which more than offset declines in Italy and South Korea.

The growth forecast for the MENA region has been revised down to 3.2% for 2017 compared with 3.3% this time last year but remains at 3.4% for 2018. For Saudi Arabia, the Arab world's largest economy, the decline in oil revenues has altered the prospects both for government and for private-sector growth. Growth forecasts were revised upwards to 2.0% and 2.6% for 2017 and 2018 in October 2016 but are expected to be weaker following the recent update in January off the back of oil production cuts in line with the OPEC agreement. The modest recovery in oil prices will have little impact on the growth prospects for energy-exporting countries. Low oil prices are putting strains on the region's energy exporters, which now face higher budget deficits and rising debts and have been forced to undertake austerity measures. Consequently, these countries have been cutting government spending, boosting non-oil revenues and many have introduced limited energy-pricing reforms to reduce fiscal pressure and curb rising energy demand. Overall, growth in the medium term will depend on improvement of the geopolitical situation, the speed of the oil-price recovery and governments' ability to rationalise spending and continue their efforts to introduce much-needed structural economic reforms.

### Oil Markets

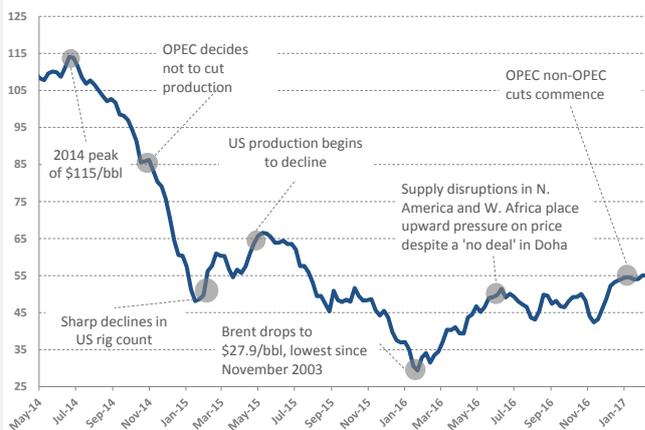
Global crude prices remain relatively weak, with Brent averaging \$45 in 2016 but ending 2016 at a higher price of \$55. Oil demand grew more strongly than expected in 2016, averaging around 1.6m b/d. The IEA suggests that average supply exceeded demand by 1.1m b/d in 2016, from 2m b/d in 2015. However, the recent deal to cut production by OPEC and some non-OPEC producers will accelerate the rebalancing and the drawdown of inventories.

The sharp decline in oil prices saw non-OPEC supply fall by 650k b/d in 2016 compared with 2015. But the IEA estimates that the US, Canada, and Brazil will increase their production by 750k b/d in 2017, driving non-OPEC supply growth for the year. On the other hand, given record production levels towards the

end of 2016, we expect OPEC to maintain the agreed production quota at around 32.5m b/d for the rest of the year.

Looking ahead, we expect the market to rebalance this year in response to the OPEC and non-OPEC agreement and a drawdown in stocks, particularly in the second half of the year, when many refineries complete their maintenance and return to operation. On the supply side, US output has been the fastest to respond to recovering oil prices with rig counts picking up in the second half of 2016 after reaching a low of 250 in May 2016. US production reached 8.8m b/d in December 2016 after reaching a low of 8.5m b/d in September 2016 and is expected to average 9.2m b/d in 2017 and 9.7m b/d in 2018.

## Brent price – historic (\$/b)



Source: Bloomberg, APICORP research

Compliance to the OPEC and non-OPEC agreement, which has been at historical high levels in the months of January and February will be the biggest cause of uncertainty, and the market will also be anxious to know whether the agreement will be extended in May when OPEC meets again. Another source of uncertainty is how fast and how big the US shale response would be. In addition, Libya and Nigeria – exempted from the cuts – will potentially place downward pressure on prices as they seek to ramp up production, although the recent deterioration of the political situation in Libya implies that the upside potential from the current production level is limited.

On the demand side, growth is likely to slow down marginally compared with 2016 levels, as economic expansion in different regions slows and as China continues to rebalance its economy. But we still expect global oil demand to grow strongly, by more than 1.3m b/d, as low prices persist.

While oil prices are expected to recover towards the end of the year, they will remain in the \$50-\$60 band given the high level of stocks which will combine to put a cap on the price. As such, average oil prices for 2017 are not expected to exceed \$60/b.

## Global gas markets

Global gas demand has increased by 700bcm over the past decade, with 70% of this increase coming from Asia Pacific and Middle East countries; and gas is expected to be the only fossil fuel the share of which in the global energy mix will grow between now and 2040. Global gas prices saw a higher degree of convergence in 2016, helped by lower oil prices, weaker demand and additional LNG supplies. LNG prices last year collapsed to less than half the 2014 levels, reaching \$7/mmBtu

as oil-linked import prices took a similar plunge. LNG prices in Japan were a little over \$15/mmBtu in 2012 but dropped to \$5.20/mmBtu in early 2016. Gas demand has been disappointing, but greater than expected growth from Asia and the Middle East absorbed some of the additional supplies. In Japan, the restart of some nuclear plants displaced gas used in power generation. The Middle East has offered one of the few positive demand-side stories, as countries like Kuwait and Egypt increase their LNG imports. By the end of 2017, MENA countries will account for 6.5% of global LNG demand – significantly higher than in 2013, when their share was only 1%.

LNG trade volumes are expected to double by 2021 compared with 2015 levels, helping to narrow regional differences in gas prices. US exports of gas, which will receive a boost from the 24bcm Sabine Pass terminal due for full ramp-up this year, as well as from gas exports from Australia, will place further downward pressure on prices in 2017. Cost overruns and delays have increased the breakeven cost for most projects in Australia, but global output will continue to increase as these new plants were all commissioned before the fall in oil prices - leading to the addition of over 63bcm of liquefaction capacity in total between 2009 and 2015. Until recently, Qatar has enjoyed relatively low competition, but its reign as the world's largest LNG exporter will end by the end of 2017 as liquefaction capacity in Australia reaches 120bcm. There are no indications that Qatar will lift its moratorium on the North Field and increase its LNG exports; instead, its focus will be on how to optimise its LNG sales between Asia and Europe.

To regain supply-demand balance in the medium term, the LNG market is counting on strong demand growth in Asia and Latin America – but also from the Middle East, despite competition from renewables and nuclear power. The current squeeze on budgets and significant cuts in energy investments suggests that the market will tighten, but this will not be visible before the first half of the next decade.

## MENA energy investment outlook

According to the IEA, global investments in oil and gas fell by 24% in 2016 compared with 26% in 2015, marking one of the biggest back to back drops in history. However, the IEA expects investments to recover in 2017. We expect the MENA region to continue investing heavily as major energy-exporting countries expand the size of their energy sector and strengthen their positions in global markets. The GCC and Iran are driving investment in the region and will be well positioned when prices start to increase. The governments of the region's non-exporting countries will prioritise investments in their domestic power sectors as electricity demand continues to rise. In this report, we provide estimates for both planned investment and committed investment. While committed investments constitute spending in energy projects currently under execution, planned investments represents a country's spending target to develop its energy sector. 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 have progressed from under study but await the Front End Engineering and Design (FEED) contract; and

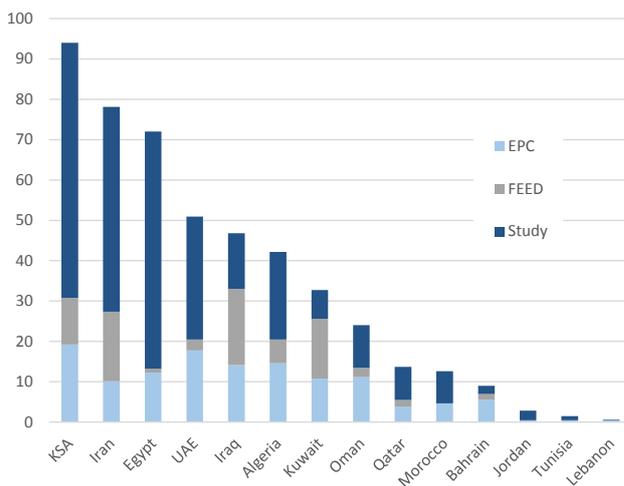
- Those at the final level waiting for main contracts to be awarded

APICORP's database is unique in many aspects. It separates planned projects from ones that are under execution. This gives us a better overview of where in the planning stage the project is, and provides us with a better indication of the likelihood that a given project will be executed. We only capture projects that have been announced; and not projects or investments that are needed in the sector, particularly for power. We also include projects 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. But there are a few limitations. First, it is 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. It is also difficult to capture investments that are not project-based, particularly in the upstream oil and gas sector.

## Planned investments

Planned MENA investments in the energy sector are estimated at \$622bn for the next five years. The power sector accounts for the largest share of investments, at \$207bn. The oil and gas sector will represent \$195bn and \$159bn respectively, with the remaining investments in petrochemicals. Projects under study represent by far the largest portion of planned investments, at \$282bn. Given the current investment climate and uncertain outlook, we do not anticipate that all projects under this phase will move to the execution phase. In our view, contracts under design and EPC phases are more likely to materialise in the medium term. Projects under EPC amount to \$125bn, while those under design reach \$78bn.

### Planned MENA energy investment 2017-21 (\$bn)



Source: APICORP research

**Saudi Arabia** and **Iran** represent 37% of planned investments, with \$124bn and \$103bn, respectively, over the outlook period, as both countries look to boost their upstream oil and gas programmes. Saudi Arabia has concrete plans to increase gas production and to promote the role of gas in its energy mix – it is currently diverted entirely for domestic use in power generation and industry. Additionally, the country has a large number of projects in the pipeline to add significant power-generating capacity. Major projects include the Taiba integrated-solar combined-cycle plant in Madinah which will bring total capacity of

3.6GW by 2020 at an expected cost of \$4bn. The Kingdom is also planning to continue investing in petrochemicals in its drive to diversify and create more value. Two major projects currently under study include the Jubail Oil-to-Chemical Complex and the Yanbu Integrated Refinery & Petrochemicals Complex.

For **Iran**, total planned investments are \$103bn, of which the majority will go towards oil and gas projects. This highlights the country's desire to boost its oil and gas sectors. Major projects include the \$4.5bn Kish gas development and the \$8.5bn Iran Gas Trunkline - currently at the design phase - that plans to connect Iranian gas to Europe via a proposed pipeline to Turkey. Given the removal of sanctions last year, the government has pushed efforts to attract much needed foreign investments, with the Iran Petroleum Contract set to revitalise its energy sector. But there are obstacles to attracting foreign investment. New entrants will have to deal with local regulation and dispute arbitration regimes, both of which suffer from a lack of transparency, if they want to succeed. Iran will also need to maintain its commitments to the letter under the nuclear agreement to avoid the "snap-back" of sanctions. Iran's internal political rivalries will need to be kept in check if the oil sector is to flourish. Already, there are promising signs in the oil sector as the government and Total are nearing an agreement to develop phase 11 of the giant South Pars field.

For **Egypt**, the main concern is the acute gas shortage and rising power demand. Planned investments in the country are \$83bn, with the power sector representing 75% of the total. Gas development projects underway will potentially make Egypt a net energy exporter, but not in our medium-term outlook. ENI's recently discovered Al-Zohr field in the Mediterranean will be Egypt's main focus in the medium term. Estimated investment in the giant gas field is around \$12-14bn, and we expect this project to be fast-tracked given the importance of the field to Egypt's energy security.

Planned investments in the **UAE** is \$51bn, of which \$18bn is at the EPC phase. The ADCO consortium - which accounts for more than half of the UAE's oil output - will drive up upstream investment in our outlook. Recently, BP acquired 10% of the consortium, with the remaining going to China's CNPC (8%) and CEFC (4%). This completes the concession which already included France's Total, Japan's Inpex and South Korea's GS who combined won 18% of the concession.

In **Kuwait**, planned projects over the period stand at \$60bn, with over 50% in the oil sector. More specifically, the country plans to invest \$6bn to develop the first phase of heavy crude reservoirs. In petrochemicals, Petrochemicals Industries Company (PIC) is likely to go ahead with the Olefins 3 Project, estimated at \$7bn, which is expected to be awarded in 2018. The country is looking at financing options including bonds and sukuks to fund some of their projects.

In **Algeria**, a sharp fall in export revenues is threatening fiscal balances and investment programmes. Planned projects stand at around \$70bn with the Hassi Messaoud Peripheral Field Development accounting for a significant portion of investments in upstream oil. In total, Sonatrach aims to invest \$9bn a year in upstream exploration and development to meet the country's target of increasing oil and gas production by 20%. A series of downstream projects totalling \$11bn are planned including the Hassi Messaoud and Tiaret refineries.

## Largest energy projects by budget over the outlook period

Project	Country	Sector	Budget (\$m)	Completion year
Barakah Nuclear Power Plant	UAE	Power - Nuclear Plant	40,000	2020
IGAT Gas Trunkline	Iran	Gas - Midstream	17,900	2019
South Gas Utilisation Project	Iraq	Gas - Upstream	17,200	2019
Al-Zour Refinery Project	Kuwait	Oil - Downstream	17,000	2019
Clean Fuels Project 2020	Kuwait	Oil - Downstream	16,300	2022
Jizan Refinery Project	Saudi Arabia	Oil - Downstream	16,000	2018
Khazzan & Makarem Fields Development	Oman	Gas - Upstream	16,000	2020
Duqm Refinery & Petrochemical Complex	Oman	Oil - Downstream	15,000	2023
Mohammad Bin Rashid Al Maktoum Solar Park	UAE	Power - Solar Farm	13,600	2020
West Nile Delta Development	Egypt	Gas - Upstream	12,000	2018
Bul Hanine Field Redevelopment Project	Qatar	Oil - Upstream	11,000	2022
Barzan Gas Development	Qatar	Gas - Downstream	10,300	2023
Halfaya Project Surface Facility (HPSF)	Iraq	Oil - Upstream	10,000	2020

Source: MEED Projects

**Iraq** is playing catch up at very challenging times when global energy investments are declining. Its planned projects currently stand at \$52bn, a figure weighed down heavily by above-ground difficulties that continue to threaten existing investments. Up to \$6bn worth of awarded contracts have been put on hold and a further \$3bn cancelled since 2014. Meanwhile, low oil prices are damaging the government's budget, despite oil production reaching a record average of above 4.4m b/d in 2016. To maintain these high levels of production, the country and IOCs will need to continue investing in upstream development. The government is also committing substantial sums to the failing power sector - arguably the country's priority - with GE recently winning more than \$1.4bn worth of contracts to build power-generating capacity.

Planned projects for the remaining GCC countries will reach \$97bn. **Oman's** oil production averaged around 1m b/d in 2016, with the majority of its exports going to China. However, the largest share of its planned projects are in downstream and petrochemicals. One of the largest projects is the Duqm refinery, which is expected to see a large portion of its \$6bn budget invested over the next five years.

The majority of **Qatar's** investments have come into fruition, and with the moratorium still in effect, no major projects are in the pipeline - with the exception of a few downstream projects such as the RasGas processing plant currently under study. A joint venture between ExxonMobil and RasGas valued at over \$1.7bn for phase I is currently under execution, with a capacity of 1.7bn cf/d. Phases II and III are under study and would bring capacity up to 6.2bn cf/d.

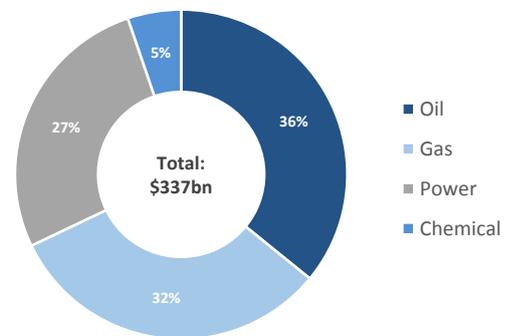
Most of **Bahrain's** committed investments are also in downstream. The kingdom plans to invest \$9bn between 2017 and 2021, with the BAPCO modernisation programme accounting for a third of this. The aim is to increase refining capacity by 100k b/d to 367k b/d.

Total planned projects in **Morocco** and **Jordan** amount to \$15bn and are heavily skewed towards power generation. Both countries have been leading on their renewable initiatives, but the majority are still at the early stages, including subsequent phases of the giant Masen solar park in Morocco.

## Committed investments

Investments in the energy projects currently under execution are estimated at \$337bn for the five-year period. The oil sector accounts for the largest share of investments at \$121bn, with the majority in upstream projects. Total committed gas and power investments are approximately \$108bn and \$91bn, respectively, followed by chemicals at \$17bn. The GCC represents \$174bn in committed investments, more than 50% of the MENA total.

### Committed MENA energy investment by sector (%)

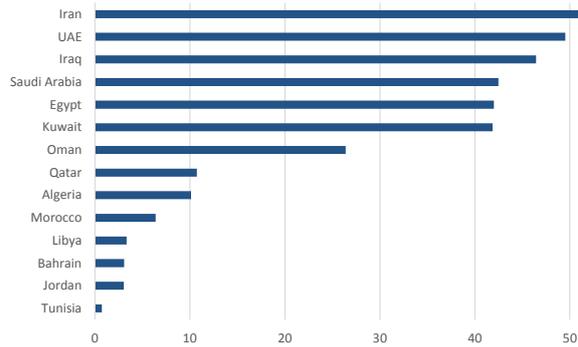


Source: APICORP research

**Iran** leads the region with an estimated \$51bn and is mostly focused on the oil and gas sector. The country has prioritised development of the South Pars gas field, where around \$13bn will be invested over the outlook period. In upstream oil, the focus will be on the West Karun oil fields, particularly Yadavaran and Azadegan, expected to be the source of most of Iran's short-term output-capacity growth. In the downstream, the Siraf refinery project, with a budget of \$2.4bn, will bring capacity up by over 480k b/d.

Second is the **UAE**, at around \$50bn, with upstream investments in Upper Zakum and power projects like the Barakah nuclear power plant. **Iraq** comes third, at \$46bn. Oil investments account for \$24bn with the ENI-led Zubair and the PetroChina-led Halfaya two of the largest upstream development projects in the country.

## Committed MENA energy investment 2017-21 (\$bn)



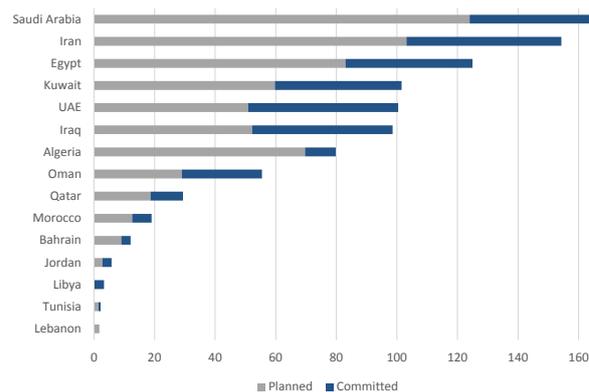
Source: APICROP research

Saudi Arabia has committed an estimated \$42bn for the outlook period, of which \$13bn will be in the power sector. The 4GW Jizan integrated gasification combined-cycle power plant will alone cost \$8.5bn. The remaining investments are spread evenly across oil and gas, with the \$6.5bn Fadhili gas plant one of the largest investments due on line towards the end of our outlook period.

**Kuwait and Oman** have committed \$42bn and \$26bn, respectively. In Kuwait, downstream projects represent more than half of investments under execution. The Al-Zour refinery will alone account for \$17bn. KNPC will invest \$16bn as part of the Clean Fuels Project aimed at upgrading and expanding Mina Abdulla and Mina Al-Ahmadi refineries. As for Oman, the government is prioritising investments in upstream gas. The BP-led Khazzan and Makarem project is the largest gas development in the country, with estimated total spending of \$16bn. In downstream, the \$4.5bn Liwa petrochemical plant is expected to be completed in 2020.

North Africa represents the majority of remaining investments. **Egypt and Algeria** have together committed \$52bn. In Egypt, power-generation projects are necessary and account for \$15bn, with the Siemens-led 4.8GW combined-cycle power plants in Beni Suef among the largest projects. The BP-led West Nile Delta represents the majority of investment in gas under execution. Algeria will invest \$4bn on gas as it focuses on developing its midstream sector as part of the country's plan to expand total pipeline-network capacity. In **Morocco**, investments are focused in power generation with renewable-energy projects, such as the Moroccan Solar Plan, at the forefront of its plans.

## Total planned and committed MENA energy investment 2017-21 (\$bn)



Source: APICROP research

**Libya, Syria and Yemen** - thwarted by ongoing civil wars - will see very little investment over the period. In fact, Libya is the only contributor out of the three to our outlook, committing around \$3bn in oil and gas.

Overall, according to our estimates, \$622bn could be invested over the next five years over and above what has already been committed, bringing total committed and planned investments up to \$960bn – a 7% increase from last year's forecast. The region continues to prioritise investments within the energy sector. Planned investments increased by 2% whereas committed investments increased by 17% from our previous outlook. This represents the transition of many projects and investments from the planned to committed phase as contracts are awarded following a more positive outlook. For committed investments, the largest increase was in the gas sector where investments in projects under execution saw an increase of 42% in the medium term, followed by investments in power and oil at 13% and 10% respectively.

## Change in investment outlook

	Committed	Planned	Total
2016-20	289	611	900
2017-21	337	622	960
% Change	17%	2%	7%

Source: APICROP research

## Challenges and constraints

While MENA is pushing ahead with its investment plans, we believe several challenges and constraints will prove pivotal in the medium term.

First, global investments in the oil and gas sector are closely interlinked with oil prices. While prices have somewhat recovered from their 2016 levels, prices are expected to remain range bound around the current level for now. Countries in the MENA region, including Saudi Arabia, Iran, Algeria and Kuwait, announced that they would go ahead with investment plans despite low prices, other countries with low fiscal buffers and competing pressures on its revenues - particularly Iraq - will continue to face challenges in executing their ambitious capacity-expansion programmes.

Second, financing projects continues to be challenging with credit worthiness in MENA not seeing any improvement from Standard & Poor's average 'BBB sovereign ratings'. Although recent efforts to attract foreign investment have seen some success, political and economic concerns mean investors will be cautious. However, this environment also creates opportunities, as regional players would be forced to seek external finance. For instance, Saudi Arabia's state utility (SEC) is increasingly relying on external finance to help reduce the burden on the government. SEC borrowed a record \$5.1bn in 2016, surpassing previous records of \$3.7bn in 2014 and 2015. SEC, which has always preferred to have a complete monopoly on power generation, realises the need to rely on non-government funds for its expansion programmes, and is increasingly relying on domestic and international financing to fill in the gap. Since 2007 to date, SEC has borrowed over \$21bn from local and international capital markets.

Finally, the region is in turmoil. Persistent conflicts in Syria, Iraq, Libya, and Yemen are reshaping the region's geopolitical landscape, and the instability will deter investment in these countries in the near term. Regional instability is unlikely to recede in the immediate future, and investors will be wary of spill-over effects in neighbouring countries.

Year 2016 was particularly unsettling for the region at a time of slower global economic growth and low oil prices. GCC governments have announced high budget deficits and government expenditures will be tightened in response. But governments will prioritise critical investments in their energy sectors. Saudi Arabia has the largest committed and planned investments in the medium term. The GCC will use investments

to keep its status quo as the key supplier of energy to the rest of the world. The UAE and Oman have ambitious programmes throughout the value chain. Iran will also play catch-up as investments in Iran start flowing back after years of sanctions. Investments in Iraq will continue, but security concerns, political uncertainty and a deteriorating business environment will dictate the number of new projects to come. Egypt will prioritise upstream gas and power sector investments to meet rising demand. Elsewhere in North Africa, Algeria will be interesting to observe, as large investments are needed to boost oil and gas output.

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## APPENDIX

The database separates planned projects from those under execution (committed investments). 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.

### Planned investments

Planned investment represents a country's investment target to develop its energy sector. Pre-execution level projects include:

- Those at the first phase and classified as under study;
- Those that have progressed from under study but await the Front End Engineering and Design (FEED) contract; and
- Those at the final level waiting for main contracts to be awarded.

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.

### Committed investments

This includes investments in energy projects currently under execution; that is, 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.

### Exclusions

There are some data limitations and these depend on 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.

Our estimates do not capture investments that are not project-based, particularly in the upstream oil and gas sector, unless specifically announced (as per above).

### Sources

A wide range of sources were used and included:

- APICORP
- Bloomberg
- EIA
- IEA
- IMF
- IOC websites
- MEED Articles
- MEED Projects
- MEES
- NOC websites
- OPEC
- Utility websites