

APICORP's Annual Review of MENA Energy Investment – Flattening Expectations Amid Heightened Challenges

This commentary has been prepared by Ali Aissaoui, Senior Consultant at APICORP, to serve as a review of business environment for the Corporation's 2014 Annual Report.

1. The year 2014 has been an unsettling time for the Middle East and North Africa (MENA).¹ The persistent geopolitical turmoil, which has resulted in conflicts and civil wars in key parts of the region, has been compounded by broad structural changes in the world's energy industry with far-reaching implications. In particular, the supply shock caused by the development of North American unconventional petroleum has triggered a precipitous fall in oil prices that clouded the investment outlook. However dramatic these developments, our analytical framework for investment and financing has not been invalidated. Indeed, not only have macroeconomic trends and price movements in major markets provided more relevant underpinnings, but the investment climate has gained centrality. We present these and the resulting outlook in three parts. The first part provides the economic and markets context. The second discusses the investment outlook, while the third part highlights the attendant challenges.

The economy and markets context

Global and MENA economies

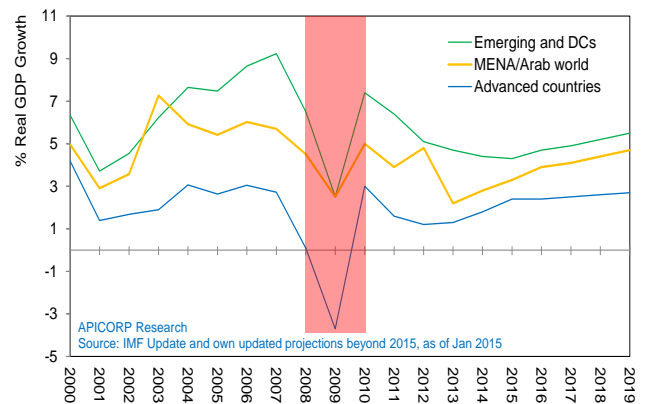
2. Not unexpectedly, the International Monetary Fund (IMF), which assesses twice a year the world's economic trends, has reviewed its October 2014 growth forecast.² Four key developments have justified the January 2015 revision: the collapse in oil prices (mostly driven by oversupply); US exceptional economic growth; US dollar appreciation (versus the depreciation of the Euro and Yen); and widening financial risk spreads in emerging economies. Overall, the balance of risks has been found to be tilting downward. Indeed, the 'net positive' impact of lower oil prices on output is weighed down by lesser investment, market volatility, stagnation in the Eurozone and Japan, and potential geopolitical flashpoints. As a result, global growth has been revised downward by a third percentage point to 3.5% in 2015 and 3.7% in 2016.

3. Altogether, the different paces of regional economic growth continue to suggest an uneven recovery. Growth in emerging markets and developing economies is expected to remain on a downtrend from 4.4% in 2014 and to 4.3% in 2015, and only slightly improve in 2016 to 4.7%. In contrast, the rally in the United States and the expected improvement of the euro-area, even if slower than previously forecast, both create a positive prospect for the advanced economies. Accordingly, growth in this group is expected to rise from 1.8% in 2014 to 2.4% in 2015 and 2016.

4. The revisions to MENA outlook include several aspects; the most important being the external and balance sheet vulnerabilities facing petroleum-exporting countries'

economies. As a result, MENA growth has been reviewed downward by half a percentage point to 3.3% in 2015 and 3.9% in 2016. Whether or not the region's economy will live up to the more optimistic growth forecast for 2016 and beyond (Figure 1), depends on the outlook for oil markets and the extent to which regional turmoil and political uncertainties recede. It also depends on MENA governments pursuing and achieving more inclusive socio-economic reform agendas.

Figure 1: Trends in Economic Growth



Money and credit markets

5. In late October 2014 the US Federal Reserve (Fed) announced that it was ending its quantitative easing (QE) program, while continuing to be committed to keeping very low interest rates for "a considerable time". This decision follows on the heels of a previous (mid-2013) policy reversal dubbed 'tapering', consisting of a gradual reduction of the Fed's QE program. Whether or not the end of the QE policy should be understood as a move towards monetary tightening is a matter of interpretation. The Fed has on several occasions made it clear that it will keep the target range for its Fed-funds rate – the benchmark rate for interbank lending – at near zero until US unemployment falls significantly and so long as inflation remains contained. However, while the US labor market has shown a more robust sign of improvement, inflation expectations are not high enough to justify an immediate increase in the interest rate.

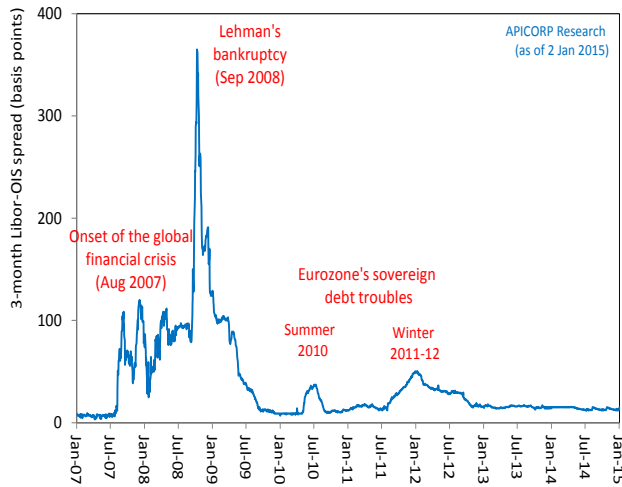
6. Whatever monetary policy stance the Fed ultimately takes, its actions so far have greatly improved liquidity in the dollar money market. At the time of writing (January 2015), the spread between the US dollar Libor and the overnight indexed swap (OIS), which measures the relative funding stress in these markets, has barely moved above the flat trend observed since early 2013, around 15 basis points (bps) (Figure 2).³

³ Liquidity strains in financial markets are usually measured by interbank spreads, i.e. by rates that banks use when lending to each other. One such a spread is the London interbank offered rate (Libor) over the overnight indexed swap (Libor-OIS spread). The OIS rate is the expected average of the effective Fed-funds rate over the duration of an interest rate swap. Swapping interest rates allows banks to borrow in the overnight market to fund their short-term lending positions.

¹ MENA is here defined to include the Arab world and Iran.

² The IMF's *World Economic Outlook* was last published in October 2014 under the title "Legacies, Clouds, Uncertainties" and updated in January 2015 under the title "Cross Currents".

Figure 2: Trends in Libor-OIS Spread



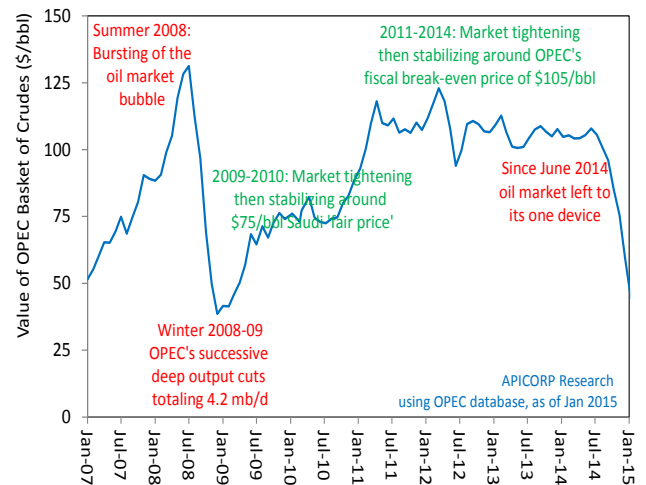
7. In this context, we should expect the 3-month \$Libor rate, which is the cost of bank-to-bank lending of dollars for three months, to trade somewhat higher than the Fed benchmark due to the risk premium for dollar denominated deposits outside the US. After trending steeply upward in the wake of the Eurozone debt crisis, the 3-month \$Libor rate eased abruptly during 2012 before trending steadily lower to reach 25 bps in October 2013 and keep flat since. However, as noted earlier, notwithstanding the end of its QE, the Fed's pledge on low rates for a "considerable time" makes any forecast of the future Fed-funds rate, therefore of Libor, extremely difficult. Current consensus among monetary policy observers is that any rise of the Fed benchmark rate, most likely from mid-2015, would be very modest and gradual.

8. Certainly, the major central banks' ultra-accommodative monetary policies (at the moment of writing the ECB has confirmed its own QE program) have helped stabilize the money markets. However, such measures can hardly be said to have fully benefited the real economy. Commercial banks, through which monetary policies are implemented, have largely failed to support growth by providing much needed low-cost credit. Instead, they have focused efforts on rebuilding their capital reserves to mitigate persistent financial market uncertainty and the requirements of Basel III. Those involved in MENA region have further been witnessing unprecedented turmoil and geopolitical threats that dampened their risk appetite. In this context, capital inflows to the region – the bulk in dollar-denominated loans – have collapsed after lenders significantly reduced their exposure or completely pulled out. The supply of bank credits, for instance, nearly halved from \$101 billion in 2010 to \$55 billion in 2012. It recovered slightly to the value of \$74 billion in 2013 and, thanks to the continuing involvement of export credit agencies (ECAs), has kept flat at the level of \$73 billion in 2014. Even though local banks have stepped in and access to the regional bond/sukuk markets has significantly expanded, the financing gap has remained substantial. As discussed further in later sections, external funding for the large-scale, capital-intensive MENA energy projects has witnessed a similar declining pattern.

Oil and natural gas markets

9. The second half of 2014 witnessed a steep fall in oil prices, which was precipitated by OPEC November decision not to cut its production despite a lower call on its oil. Accordingly, the value of the OPEC basket of crudes had fallen by more than half from its June's peak of nearly \$113 per barrel to about \$60 per barrel at the end of 2014 (and below \$45 per barrel at the moment of writing) (Figure 3). As long as the market is left to its own device, oil prices could go lower, and needed to remain low for some time before the market could make a sustainable recovery. As demonstrated during OPEC's November meeting, agreeing on a production cut is proving to be considerably more difficult in face of weak global oil demand and surging non-OPEC supply (particularly from unconventional sources such as US light tight oil and Canadian oil sands). Looking ahead, a further complicating factor for OPEC policy agenda will be the prospect of accommodating increased production from Libya and Iraq should these countries recover from current turmoil, as well as from Iran, should a deal on its nuclear program succeed.

Figure 3: Trends in Global Oil Prices
(Monthly Value of OPEC Basket of Crudes)



10. In the more complex and fragmented natural gas markets, prices have failed to converge as long anticipated. For not only have they mostly deviated from oil parity, but they have also been diverging along different regional paths. The greater potential for arbitrage that the US shale-based LNG exports would create from 2016 onward is unlikely to further such convergence within our medium-term framework.⁴ Therefore, we expect prices to evolve between \$3 and \$5 per million Btu in the liberalized and well supplied North American markets. In Continental Europe, with hub pricing taking over progressively oil indexation and oil-indexed pipeline gas imports already marked down as a consequence, gas prices will tend to be market-driven with a 'ceiling' provided by Russian oil-indexed contract prices. With falling oil prices this ceiling is not far above current European hub prices of about \$8 per million Btu. Finally,

⁴ When US LNG export volumes build up from 2016 onwards the arbitrage between European, Asian and US markets will likely occur. Naturally, the cost of liquefaction, shipping and regasification will be reflected in price differentials between these markets.

in the Asian market, prior to US LNG exports and the forthcoming new generation of Australian LNG projects, Japan's oil-linked LNG import prices are likely to fall durably below \$15 per million Btu, while LNG spot prices could weaken further, well below \$10 per million Btu.

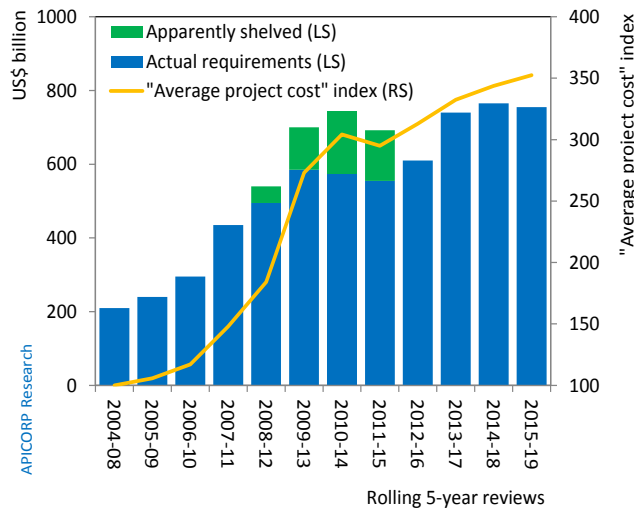
MENA energy investment outlook

Overview

11. Notwithstanding an uncertain oil market, we anticipate prices to return to higher and sustainable levels, though not in the 3-digit realm. In this context, we could envisage continued, though less vigorous, capacity expansion outside MENA for both oil and natural gas. Therefore, MENA investment may experience a period of relative lull before picking up by the end of the current decade.

12. This moderate medium term prospect for the region is well reflected in our current review.⁵ We estimate cumulative MENA energy investment to \$755 billion for the 5-year period 2015-19. As shown in Figure 4, this level of investment, which is slightly lower than that of last year's review, indicates a pause in trend. The outlook would have been even weaker if not for investments being mostly driven by a catch-up effect, particularly evident in the power sector, and ever-increasing project costs. We will discuss these factors more thoroughly in subsequent sections. Suffice to note for the moment that, as far as costs are concerned, our average project-cost-index, which has been subdued in the wake of the Global Financial Crisis and Great Recession, remains upward even if only moderately.

Figure 4: Successive 5-Year Assessments of Energy Investment
(Series revised to reflect the full scope and scale of the power sector)



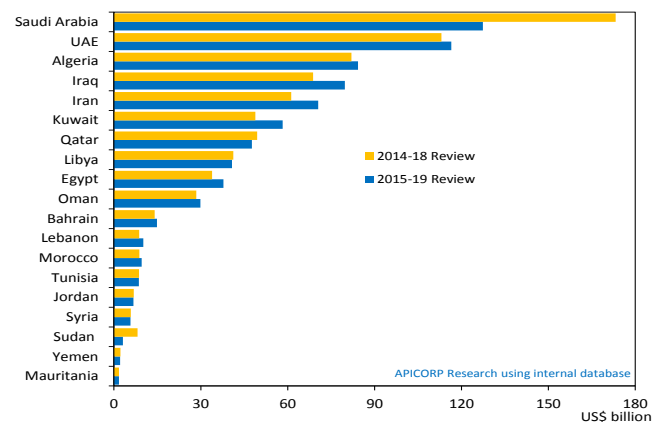
Geographical pattern

13. More than three-quarters of total capital investment projects is in eight countries among the region's biggest holders

⁵ The lull in energy investment is only relevant to the medium term. In the longer term, investment in MENA region is likely to increase to make up for supply shortfall from other regions (Ref. *World Energy Investment Outlook*, June 2014).

of oil and gas reserves (Figure 5).⁶ The resulting geographical pattern has favored countries that have been relatively shielded from the turmoil or those whose investment decision and project implementation have not been gripped by either political paralysis or policy inertia. Although Saudi Arabia continues to top the ranking, its investment is projected to fall to \$127 billion. The most significant factors in this relative decline are the achievement of the major upstream oil development phase and the diminished opportunities for further downstream mega projects. This is not to mention Saudi Aramco's recent drive to reduce its capital cost by 20%.⁷ Second in the ranking is the UAE, which has established itself as the region's second-largest investor after upholding capital expenditures at \$116 billion. The third is Algeria with capital requirements totaling \$84 billion. This amount includes additional expenditures in the power sector, but excludes uncertain investment for the development of shale gas resources in the Saharan provinces due to mounting anti-fracking protests.

Figure 5: Geographical Pattern



14. In the other countries investment has fallen far below potential. This is particularly the case of Iran, Iraq and Libya, where investment is expected to be at best back-ended, towards the end of the assessment period. In Iran, the investment outlook depends very much of the outcome of ongoing talks on its nuclear program and the possibility of international sanctions being lifted. In Iraq, most analysts agreed prior to the events of June 2014 (when Da'esh - aka ISIS or IS - blitzed through from Syria) that the reaffirmation of the vital need to achieve full development of the oil and natural gas sectors has to be translated into coherent policies and actions. In particular, the Iraqi Federal Government (IFG) has yet to pass a long-awaited package of hydrocarbon legislation. Assuming a return to territorial integrity and political stability, this would be hardly possible if IFG and the Kurdistan Regional Government (KRG) fail to reach a complete and thorough understanding for

⁶ The biggest MENA holders of combined oil and natural gas reserves are in decreasing size: Iran (52.0 billion toe), Saudi Arabia (43.9), Qatar (24.8), Iraq (23.4), UAE (18.5), Kuwait (15.6), Libya (7.7) and Algeria (5.6) (source: compiled from BP Statistical Review of World Energy, June 2014).

⁷ Saudi Aramco's CEO Khalid Al-Falih's keynote speech at ONS 2014 (Stavanger, 25-28 August).

the settlement of their complex disputes, beyond their current *ad hoc* agreement on oil exports.

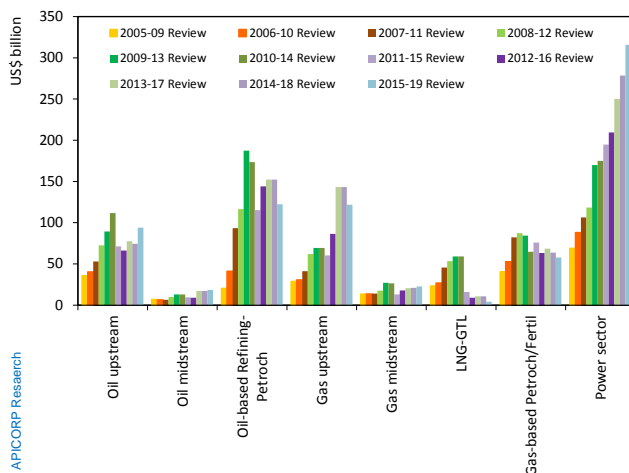
15. Under-investment, though less dramatic, is also the case in Kuwait and Qatar. In Kuwait, government policy has often been at odds with parliamentary politics, and efforts to align the two have been repeatedly frustrated. Only recently has the long-delayed giant al-Zour refinery reached final investment decision and is being implemented. The portfolio of major upstream projects has also been moved from the back burner; but the front-end engineering designs of key components require updating. In contrast, Qatar's stagnation stems from a long-standing moratorium on further development of the North Field gas deposits. As a result, and despite a shift in emphasis towards enhancing oil recovery and expanding the petrochemical industry, energy investment has lost momentum.

16. More critically, and as already noted in the case of Iraq and Libya, investment has been affected to different degrees in countries still facing political uncertainty or turmoil, as investors tend to adopt a cautious "wait and see" attitude. In this respect, capacity expansion in Egypt may fall short of expectations unless the country continues to be supported during what is likely to be a protracted and difficult transition. In the case of Yemen, which is edging closer to civil war, investments are coming to a virtual standstill. Finally, in Syria, even if the civil war ends, future investments are expected to be mostly in repairs and rehabilitation.

Sectorial pattern

17. Capturing the full scope and scale of the power sector, and adjusting for the inclusion of the transport and distribution (T&D) systems, has reshaped the sectorial distribution of investment. As a result, the oil sector now accounts for 31% of total investment, the gas sector for 27% and the power sector for 42% (Figure 6). In the hydrocarbon sector, upstream investments may continue to be sustained. In contrast, investments in both the oil and gas downstream sectors are likely to decline. The former as a result of near implementation of major refining and petrochemical programs; the latter, as a result of a pause in the expansion of LNG and GTL export capacity.

Figure 6: Sectorial Pattern



Box 1: MENA Power Investment Outlook, 2015-2019 (*)

B1. Fast-growing electricity demand and lagging supply have led to chronic power shortages across MENA. In the context of lingering turmoil in parts of the region, bridging a widening demand-supply gap through large capacity additions is now perceived as politically and socially desirable. Without active demand-side management entailing serious cuts in subsidies, this will lead to a capacity growth of 8.3% per year, which translates into a five-year increment of 156 GW for the period 2015-2019.

	2013* installed capacity (GW)	2013* electricity production (TWh)	Medium- term annual growth (%)	2015-19 capacity addition (GW)	2015-19 capital requirements (GS)
Maghreb ¹	34.3	141.0	8.1	17.7	21.3
Mashreq ²	68.3	321.6	9.5	42.9	55.8
GCC ³	121.8	529.7	8.7	68.5	75.9
Rest of Arab world ⁴	4.4	14.3	6.3	1.7	2.2
MENA Total	292.8	1259.8	8.3	156.0	188.0

2013: APICORP's estimates
¹Maghreb: Algeria, Libya, Mauritania, Morocco and Tunisia.
²Mashreq: Egypt, Iraq, Jordan, Lebanon, PT and Syria.
³GCC: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the UAE.
⁴Rest of Arab world includes Sudan (N&S) and Yemen, but excludes Comoros, Djibouti and Somalia for lack of data.

Compilations and projections by APICORP Research

B2. The capital required for the whole sector will be in the order of \$316bn during the 5-year period, 59% of which in new generation capacity and 41% in associated T&D systems.

(\$ billion)	Generation (G)	Transmission (T)	Distribution (D)	Total (T,D)	Total (G, T, D)
Maghreb ¹	21.3	4.6	14.1	18.7	40.0
Mashreq ²	55.8	10.8	25.5	36.3	92.1
GCC ³	75.9	15.5	29.6	45.1	121.0
Rest of Arab world ⁴	2.2	0.4	0.7	1.1	3.3
Iran	32.8	7.2	19.6	26.8	59.6
MENA Total	188.0	38.5	89.5	128.0	316.0

¹Maghreb: Algeria, Libya, Mauritania, Morocco and Tunisia.
²Mashreq: Egypt, Iraq, Jordan, Lebanon, PT and Syria.
³GCC: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the UAE.
⁴Rest of Arab world includes Sudan (N&S) and Yemen, but excludes Comoros, Djibouti and Somalia for lack of data.

Compilations and projections by APICORP Research

B3. This huge sectorial investment offers great opportunities but also raises major challenges. As elaborated in the main text, we have identified three issues in particular that should feature prominently on policy agendas. The first results from the perception, in the wake of the Arab uprisings, of a deteriorating investment climate in most parts of the region. The second stems from the scarcity of natural gas (in this case, as a fuel for power generation) in apparently well-endowed countries. The third follows from the inadequacy of internal and external financing.

(*) Summary from "MENA Power Investment Outlook: Opportunities Patent; Challenges Less So", APICORP *Economic Commentary*, April 2014.

18. Much more impressive is investment in the power sector. Notwithstanding rapid expansion, power supply has fallen short of needs in recent years. To catch up with unmet demand, medium-term capacity growth, which has been worked out on a country-by-country basis, is expected to accelerate during the assessment period. As detailed in Box 1, generation capacity expansion should proceed at a growth rate of 8.3% per year, leading to a capacity increment of 156 GW over the next five years. This will require investment of about \$316 billion for MENA representing as noted above 42% of total energy investment. New generation capacity accounts for 59% of investment, while the remainder 41% will be needed for the T&D system.

19. Anticipated MENA energy investments, as previously summarized, will not be fully realized without addressing perennial constraints, prominent among which are investment

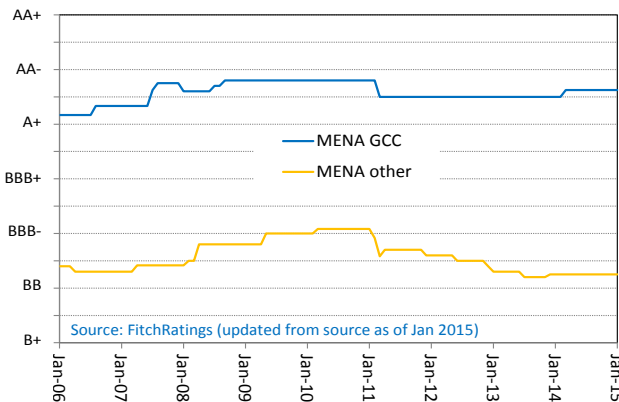
climate, project cost, fuel/feedstock, and funding. These constraints, which have proved to be far beyond the scope and resources of any individual investor or project sponsor, continue to pose considerable challenges.

Key Constraints and Challenges

Flagging investment climate

20. Persistent political turmoil has adversely, though unevenly, affected the region's business environment. The degree to which this has been the case is often measured using a proxy for country risk, most conveniently in the form of a sovereign rating. Since the onset of the Arab uprisings, the region's rating landscape has dramatically changed, particularly in Tunisia, Egypt, and to a lesser extent Bahrain, while Libya was suspended from being rated. Also, in the stir of Syria, the ratings of both Jordan and Lebanon have been lowered. Whereas Algeria, Iran, Iraq, Syria, Yemen, Libya, Mauritania and Sudan have remained unrated. Except for Bahrain, the GCC countries have maintained their strong position. Figure 7 captures the marked bifurcation trend between GCC and non-GCC countries, omitting from the latter unrated countries. However, using such a proxy means that we are relying on a definition of country risk that focuses on the likelihood that the sovereign borrower will meet, or fail to meet, its debt obligations.

Figure 7: Sub-regional Trends in Sovereign Ratings

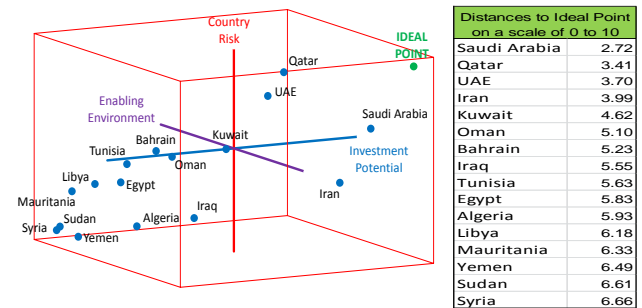


21. More relevantly, country risk should be related to the likelihood of events and policies impacting business and investment. In this respect, an alternative, less conventional measure of the degree to which the turmoil has affected MENA energy investment climate is provided using a 'perceptual mapping'. This is a multidimensional scaling analysis combining in our case three attributes: potential investment; country risk; and the enabling environment for the development of the oil, gas and energy industries.⁸ The resulting 3D map plots 16 MENA oil-producing countries ranging from titanic Iran and Saudi Arabia to small Mauritania. Each point has three coordinates corresponding to each country's scores of selected attributes. The map shows an Ideal Point, whose coordinates are the

⁸ For a thorough presentation of the conceptual and empirical framework see "MENA Lingering Turmoil and its Effect on Investment Climate: A Reassessment", APICORP's Economic Commentary, December 2013.

highest achievable scores. Countries' perceived investment climates appear at varying distances from the Ideal Point taken as benchmark. Notwithstanding considerable uncertainty, this mapping, if interpreted correctly, provides a more nuanced insight into the complex situation investors face. Figure 8 shows the resulting 3D snapshot of the current perception of the region's energy investment climate. The Figure also shows, on a scale of 0 to 10, the easier to read (Euclidean) distance of each country to the Ideal Point benchmark.

Figure 8: 3D Perceptual Mapping of the Current Energy Investment Climate

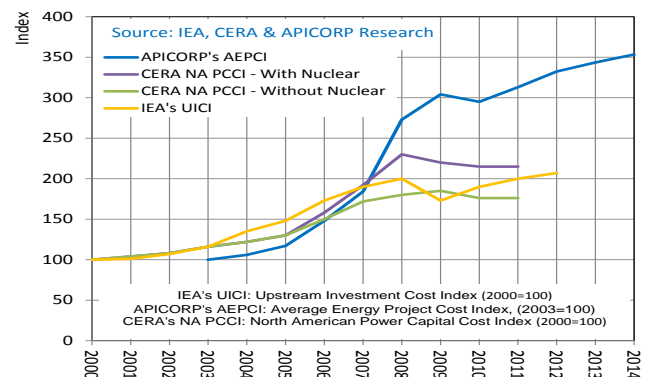


22. At the time of writing, Saudi Arabia appears well positioned, nearest to the benchmark. Next, are Qatar and the UAE putting some distance between themselves and Kuwait. The two remaining GCC countries, Oman and Bahrain, seem to have managed to secure the next best positions. Beyond the GCC, Iran and Iraq continues to be pulled up by their investment potential notwithstanding their deteriorating country risk and the enabling environment for business. Algeria has not managed to improve its position, despite some policy progress, while Libya has regressed relative to Egypt and Algeria. Finally, Yemen, Sudan and Syria are among the farthest from the ideal point. Looking ahead, it is difficult to foresee any significant improvement to the current mapping.

Projects' cost inflation

23. We, in APICORP, have long contended that rising project costs have been the most important factor driving the increase in investment. All research-oriented policy and consulting institutions have since confirmed the corresponding inflation pattern (Figure 9).

Figure 9: Cost Inflation of Large-scale Energy Projects



24. The IEA for instance has found that investment cost has doubled during the past decade or so, due largely to rising prices of input factors, including skilled labor and specialized services. In the upstream sector, costs have additionally been found to closely correlate with the complexity of projects. CERA has established the same for power generation projects, with the nuclear generation component rising even higher. But as exhibited in Figure 9, APICORP's findings reflect a steeper trend. In the context of MENA region, escalating project costs have stemmed from the concurrent inflation of the main price components of engineering, procurement and construction (EPC). Therefore, to the IEA's input factors, one should add contractors' margins, project risk premiums and what we have dubbed the 'cost of excessive largeness'. The latter implies a diseconomy of scale due to poor Front End Engineering Design (FEED) and subsequent delays and cost overruns. The likelihood is that costs will continue rising beyond general inflation.

Feedstock scarcity

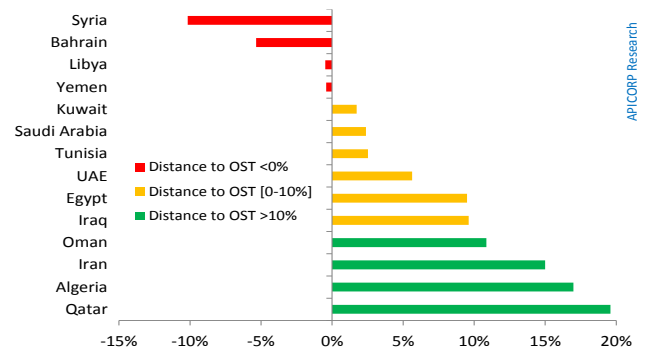
25. The next challenge is the supply of feedstock and fuel, primarily ethane to the petrochemical industry and natural gas to the power generation sector. Our research findings show that on aggregate, MENA proved reserves are substantial, and their combined dynamic life is a little beyond the traditional 30-year strategic planning horizon for exploration and development (E&D). However, reserve depletion in more than half our large sample of gas-endowed countries has neared - if not already reached - a critical point. This is tentatively measured by the trend towards an optimal supply threshold (OST). Reflecting the structure and use of hydrocarbon reserves (crude oil, condensate, NGLs and natural gas), OST is defined as the set of solutions that equalizes the share of natural gas production in total hydrocarbon production with that of natural gas reserves in total hydrocarbon reserves. A simple Euclidean distance, expressed in percent, measures how different countries are far from or near that threshold.⁹

26. The most recently updated corresponding cross section is shown in Figure 10. Progressing towards the OST line should not be worrisome; unless such a move is perceived to be too rapid as a result of demand growing faster than additions to reserves. This appears to be the case, in ascending critical order, of Iraq, Egypt, UAE, Tunisia, Saudi Arabia, Kuwait and, most critically, of Syria, Bahrain, Libya and Yemen. While the case of Syria and, to a lesser extent that of Libya and Yemen, can be justified by the degree of breakdown suffered by their energy industry, that of Bahrain suggests that the country is using more gas than it could possibly afford from domestic resources.¹⁰

⁹ For a thorough discussion of this topic see 'MENA Natural Gas Endowment Is Likely to Be Much Greater Than Commonly Assumed'; APICORP *Economic Commentary*, December 2012.

¹⁰ Ideally, our OST metric needs to be balanced with market and economics. It may indeed be perfectly rational to under-produce tradable natural gas if markets are not there or, taking account of the heavily subsidized domestic prices, the returns on investments are lower than can be obtained from other uses. Alternatives uses may include recycling more field gas to increase the supply of high-export-value natural gas liquids (NGLs) and condensate, or injecting gas into depleting oil fields to enhance their recovery.

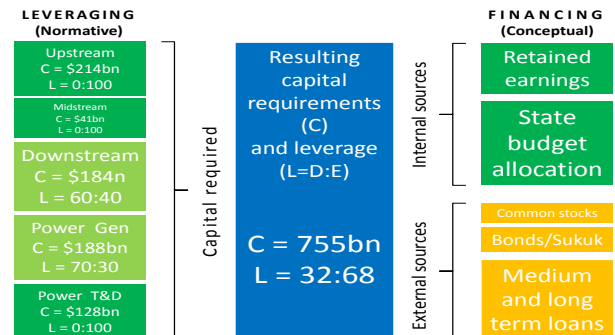
Figure 10: Distances to Optimal Natural Gas Supply Pattern



Financing uncertainties

27. Financing, which is a pivotal element in investment decisions, is basically determined by the structure of capital requirement. Our segmental assumptions lead to an overall structure of 32% debt and 68% equity for MENA medium-term energy investment (Figure 11).¹¹ Equity, which is a dominant feature of the upstream and midstream industry, is sourced internally either through corporate retained earnings or, more significantly, through state budget allocations. Therefore, its funding depends on the extent oil prices (Brent is taken as the most effective international benchmark crude) recover towards countries' fiscal break-even prices, which we have established, before the collapse of oil prices, at \$105 per barrel for OPEC as a whole.¹² But this output-weighted average masks heterogeneity among OPEC members among which are key MENA oil-exporting countries. This latter point is elaborated next.

Figure 11: Energy Capital Structure and Financing



Source: APICORP Research using the 2015-2019 MENA Investment Outlook – Dec 2014

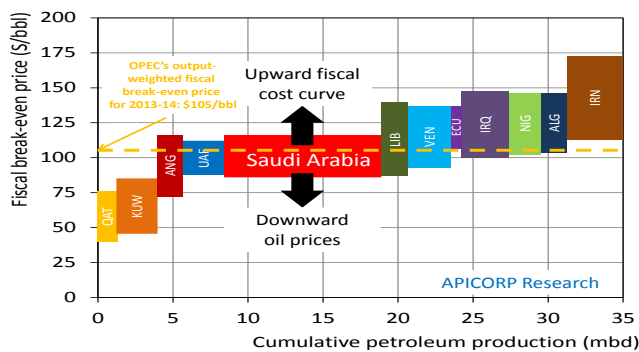
28. Since a fiscal break-even oil price can be interpreted as a cost, a fiscal cost curve (FCC) can be drawn. A reasonable approximation to such a curve is obtained by ranking each OPEC country's petroleum output, from lowest to higher prices (Figure 12). The FCC sheds light on the investment challenges facing key countries. The 'low fiscal cost' ones – those at the low end of the fiscal break-even price range – have managed to post

¹¹ For a thorough discussion of these points see "Financing MENA Energy Investment: Critical Issues and Challenges"; APICORP's *Economic Commentary*, March 2014.

¹² For a comprehensive treatment of this concept see "Modeling OPEC Fiscal Break-even Oil Prices: New Findings and Policy Insights", APICORP's *Economic Commentary*, September-October 2013.

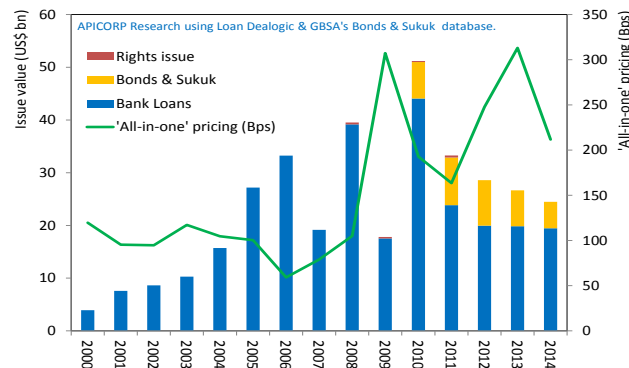
substantial fiscal surpluses, which have been mostly invested abroad for financial returns, but can now be repatriated to support the domestic economy. Conversely, unless they have sufficiently-sourced fiscal stabilization funds (FSF) to draw from, 'high fiscal cost' counties – those at the high end of the fiscal break-even price range – are set to continue running deficits, thus incurring more debt. In any case, the higher their fiscal costs, the lesser funds will be available for the equity financing of energy investments. As a result, notwithstanding current depressed oil prices, we should not be particularly worried about Qatar, Kuwait, and to some extent the UAE. However, we should be concerned about Saudi Arabia and, even more so - in ascending order along the fiscal cost curve - about Libya, Iraq, and, more dramatically, Iran.

Figure 12: Current OPEC Fiscal Break-even Oil Prices



29. Finally, debt, which is a dominant attribute of the downstream industry, is sourced externally. Despite recent success in the issuance of bonds and sukuk, predominantly in the GCC, external financing of energy investment continues to rely heavily on a still distressed dollar-denominated loans market (Figure 13), notwithstanding greater involvement of export credit agencies (ECAs) and local banks. This market will hardly fully recover without international banks renewing their commitment to the region. Meanwhile, meeting the potential debt requirements suggested for MENA in Figure 11 – some \$48 billion per year in the medium term – will remain a daunting challenge.¹³

Figure 13: Trends in Energy Sector External Financing



¹³ For a thorough discussion of these points see "Financing MENA Energy Investment: Critical Issues and Challenges", APICORP's *Economic Commentary*, March 2014.

Conclusions

30. In a context of still weak economic recovery, continuing geopolitical turmoil and collapsing oil prices, our review of MENA energy investments has established that cumulative capital requirements are likely to decline or remain flat at best over the medium term. The outlook would have been even weaker if not for a catch-up effect, particularly evident in the power sector, and ever-increasing project costs. More than three-quarters of the required capital is in eight MENA countries among the region's biggest holders of oil and natural gas reserves. Saudi Arabia continues to top the ranking, followed by the UAE, Algeria, Iran, Iraq, Qatar, Kuwait and Libya. Except Iraq and Libya, where investments are expected to be back-ended towards the end of the review period, the geographical pattern has favored countries that have been relatively shielded from the turmoil.

31. The assessment has also highlighted serious constraints and challenges to the outlook. In addition to lingering turmoil in parts of the region, which threatens to have a long-lasting, negative effect on investment climate outside core GCC, three critical issues continue to confront investors and project sponsors: rising project costs, scarcity of supply of natural gas and ethane, as well as funding restrictions. Of the three, the latter remains the most critical. Given the structure of capital investment assumed in the outlook, internal financing could tighten if the price of Brent (taken as a benchmark) stays durably below the value of OPEC's fiscal break-even price, which we estimated at \$105 per barrel before the fall in oil prices. External financing, which comes predominantly in the form of dollar-denominated loans, will also be challenging as long as the region's loan market has not fully recovered.

Box 2: 2014 Issues of APICORP's Economic Commentary

(All issues have been wrapped up in a single e-Book on www.apicorp-arabia.com/Research/Commentaries/2014/Economic%20Commentaries%20eBook%202014.pdf)

- 'APICORP's Review of MENA Energy Investment – An Uneven and Still Challenging Outlook', Jan-Feb 2014.
- 'Financing MENA Energy Investment: Critical Issues And Challenges', Mar 2014.
- 'MENA Power Investment Outlook: Opportunities Patent; Challenges Less So', Apr 2014.
- 'Economic Development, Diversification and the Role of the State', May 2014.
- 'IEA's World Energy Investment Outlook: Can We Still Count on the Middle East?', June 2014.
- 'MENA Energy Investment Outlook: What We Should Really Worry About', Jul-Aug 2014.
- 'The Elusive Costs and Benefits of Saudization', Sep 2014.
- 'OPEC in the Future: Will It Continue to Play a Pivotal Role?', Oct 2014.
- 'Revisiting the Dynamics of the Forward Crude Oil Price Curve', Nov 2014.
- 'Arab Energy investment Outlook: Opportunities, Constraints, Policies, Dec 2014.