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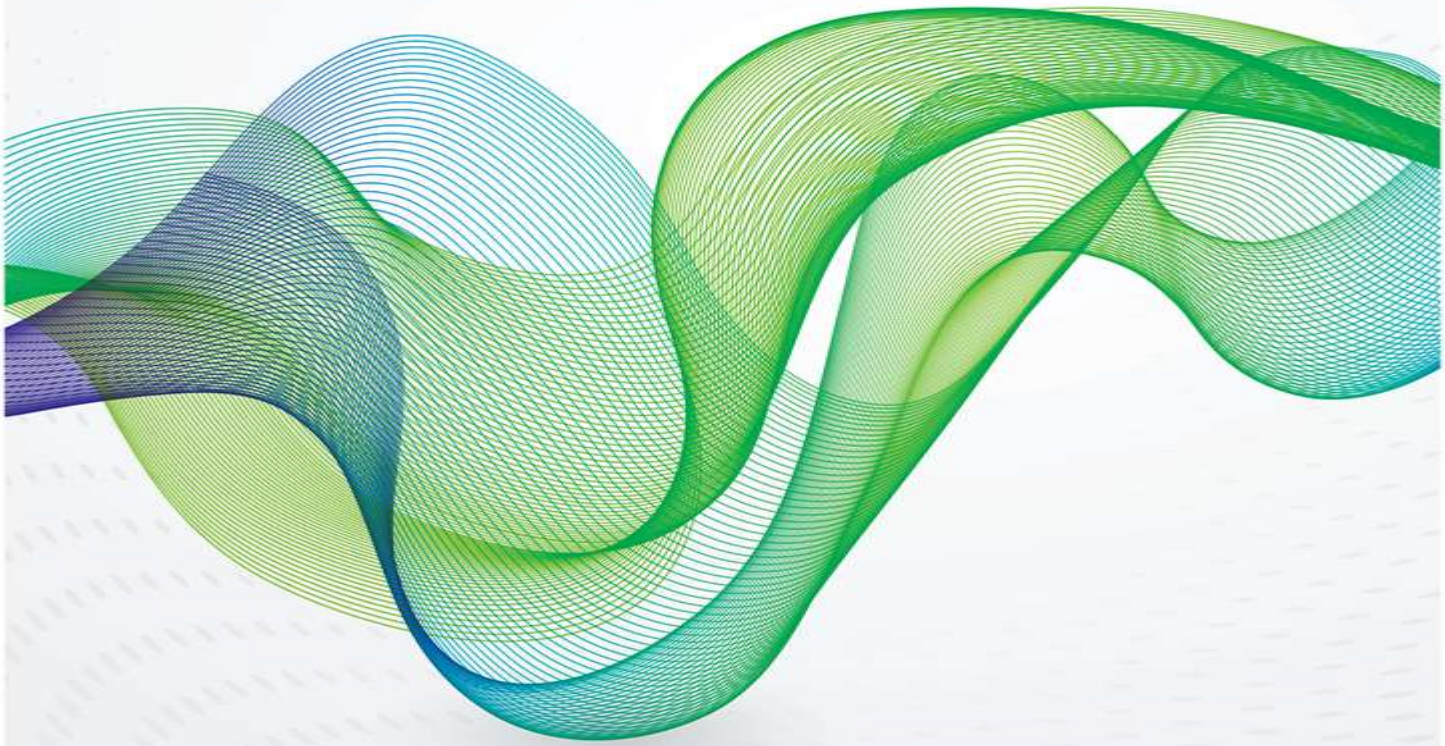
MENA – Could intra-regional gas trade be refocused as a result of the ongoing global crises?



OXFORD ENERGY COMMENT

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Introduction

Over the last three decades, several studies have been conducted into the elusive development of regional or sub-regional natural gas networks to encourage gas trade within the Middle East and North Africa (MENA) region. However, due to commercial and non-commercial factors, the trade of natural gas within the region or sub-regions remains either limited or non-existent.

In the short to medium term, could the unprecedented multi-dimensional crisis situation of oil and gas price collapses combined with the highly damaging coronavirus (Covid-19) pandemic, lead MENA gas exporters to focus more on their domestic markets? With a gas demand/price meltdown in Europe and Asia, intra-regional gas sales could be interesting to consider.

Focusing on the next five years, the following are the key factors to look at:

- The resilience or non-resilience of MENA's natural gas demand to the adverse impact of this multiple crisis environment and whether MENA's domestic markets could absorb additional gas volumes during the period to 2025.
- The main sources of gas supply within the MENA region that could drive a significant potential expansion of what is currently very limited intra-MENA gas trade.
- In a period of extremely low gas export prices, could the resulting export netback price levels from MENA sources and prevailing domestic natural gas prices in MENA markets favour these local markets?
- The availability of regional gas infrastructure (gas pipeline and LNG import capacity) to expand intra-regional gas trade.
- Finally, is there enough political will to overcome political tensions and rivalries in the MENA region to allow for more intra-regional gas flows?

The purpose of this Energy Comment is not to look at the more complex and long-term issue of gas market integration within the MENA region or even its sub-regions. It is rather to comment on the short to medium term opportunities that may be created by the challenges of the current global multiple crises faced by MENA gas producers and exporters.

MENA - different countries and challenges

The MENA region is far from being a homogenous group of countries. It varies in terms of political and economic systems, financial and natural resource endowments, population sizes, geography, climate, and ethnicity. As far as MENA's existing domestic gas markets are concerned, the region can be divided into four sub-regions stretching from the Atlantic to the Indian Oceans: Maghreb in North Africa; East Mediterranean (including Egypt); the Gulf Cooperation Council (GCC) countries plus Iraq and Yemen; and Iran. There are, however, distinct differences within each of these sub-regions and therefore the impact of the combined oil and gas price collapses, the Covid-19 pandemic, and the response of governments to these crises, will differ across the region. Some countries will undoubtedly be much more affected than others. For example, MENA oil importing countries that rely heavily on remittances sent by their nationals working in the GCC and on financial aid and foreign investments from the GCC will be severely affected. Hydrocarbon producing countries such as Egypt are likely to be affected in a similar manner.

According to an April 2020 World Bank report[1], the MENA region's real GDP growth rate is projected to fall by 3.7 per cent in 2020, compared to a pre-crisis forecast issued in October 2019 of an increase of 2.6 per cent. The current forecasted magnitude of the drop in the region's economic growth rate for 2021 is reduced to about 1 per cent. However, the report stresses that given the present "uncertainties" surrounding the estimation of economic growth rates, these forecasts "remain fluid" and could change. The forecasts are broken down into three categories of countries: GCC; developing oil exporters (Algeria, Iran and Iraq); and developing oil importers (Djibouti, Egypt, Jordan, Lebanon, Morocco, Tunisia, West Bank and Gaza). The group of developing oil exporters is projected to suffer the most from the multiple shocks with a sharp drop in economic growth of about 6 per cent this year, whilst the GCC area will experience the least impact on economic growth.

MENA's gas market growth prospects

For some MENA hydrocarbon exporting countries, gas exports are much more important than oil exports and gas export revenues have been consistently declining since well before the oil price collapse and the emergence of the Covid-19 pandemic. The multiple crisis situation has worsened already depressed market conditions caused by an oversupply of natural gas and shrinking demand from the export markets of Europe and Asia. Furthermore, this has been happening against a background of increasingly intense pressure to seriously engage in the decarbonisation of economies, especially within the European Union with its Green Deal and likely adoption of a net zero commitment.[2]

Therefore, MENA's gas markets could offer opportunities for more gas use within the region which could dampen the negative impact of a sharp fall in MENA gas exports to the rest of the world. Pre-crisis gas demand projections and scenarios predicted that over the next ten years, the MENA region would have one of the highest gas demand growth rates in the world.[3] But, in the short to medium term, how are MENA's gas markets going to react to this year's catastrophic supply and demand shocks?

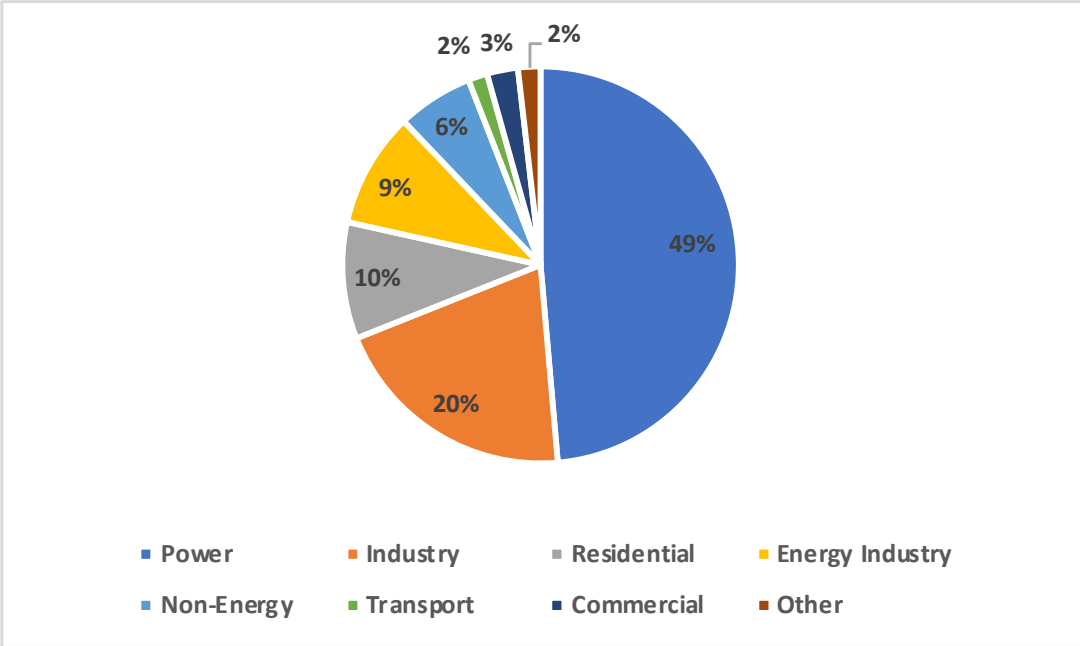
In 2018, the MENA region consumed about 670 billion cubic meters (bcm) of gas, surpassing the total consumed by Europe in the same year. Within the overall total, Iran, Saudi Arabia, the UAE, and Egypt accounted for 70 per cent of the MENA region's total gas use. The structure of natural gas consumption differs from country to country depending on the countries' hydrocarbon resource endowment, affordability and gas infrastructure availability. However, the share of total gas use by the power sector (including seawater desalination) remains significant in most countries, especially in the hydrocarbon exporting countries. Overall, it accounts for about 50 per cent of the region's total gas use, as shown in Figure 1. It is worth noting that in the long-term, the generation of electricity based on renewable energy sources, especially solar, is expected to become more important in an increasing number of MENA countries.

[1] Arezki et al (2020). "How Transparency Can Help the Middle East and North Africa." Middle East and North Africa Economic Update (April), Washington, DC: World Bank. https://www.worldbank.org/en/region/mena/publication/mena-economic-update-april-2020-how-transparency-can-help-the-middle-east-and-north-africa

[2] Stern, Jonathan (2019). "Challenges to the Future of LNG: decarbonisation, affordability and profitability", Oxford Institute for Energy Studies, October. https://www.oxfordenergy.org/publications/challenges-to-the-future-of-lng-decarbonisation-affordability-and-profitability/?v=79cba1185463

[3] See, for example, the International Energy Agency's gas demand scenarios in its latest World Energy Outlook 2019. https://www.iea.org/reports/world-energy-outlook-2019

Figure 1: MENA Gas Use Shares by Sector - 2018



Source: IEA, 2019.

MENA Gas Use by Sector

Power is a strategic and socially sensitive sector usually shielded by governments from temporary shocks. Many electricity reforms and significant upward tariff adjustments have already taken place in several MENA countries (for example Egypt) without significant slowdowns in electricity consumption. Nevertheless, gas-to-power demand growth could stagnate over the next five years due in part to the expansion of renewable sources of electricity generation in some countries and the commissioning of large nuclear and coal-fired power capacities in the UAE.

Under current very low oil prices, there could be a possible slowdown in the substitution of gas for oil in electricity generation, especially in the Gulf countries. However, as oil prices may probably recover more quickly than gas prices, the underlying directional switch to gas will still make sense financially and from an environmental point of view.

Industry is the second largest consumer of natural gas in the MENA region. It includes energy-intensive and export-oriented industries, such as the aluminium and steel industries, that will be affected by the severe global economic downturn. Similarly, gas use by the petrochemical industry, which falls under the Non-Energy use category in the above figure, will also be adversely affected by the global economic contraction as the bulk of this industry's output is exported outside the MENA region. Finally, natural gas use by the energy industry could decline if oil and gas operations are considerably reduced as a result of the oil and gas price crises and the Covid-19 pandemic.

The **residential** sector, which accounted for 10 per cent of MENA's total gas use in 2018, is another socially sensitive gas consuming segment that is unlikely to see a major change in its gas use growth rate. It should be pointed out, however, that gas use in this sector is limited to a very small number of countries. In 2018, Iran accounted for 80 per cent of MENA's total residential gas consumption, with the remaining 20 per cent accounted for by Algeria and Egypt.

During the next five years, 40 per cent or more of MENA's current natural gas use could be adversely affected by the on-going multiple crises, whilst the remainder could exhibit some sort of short to medium term resilience, as long as government support is forthcoming. This is a situation that very few MENA countries can afford, meaning that support could be hard to maintain if the crises deepen and persist over a long period. Governments of wealthier producing countries, such as most of the GCC countries,

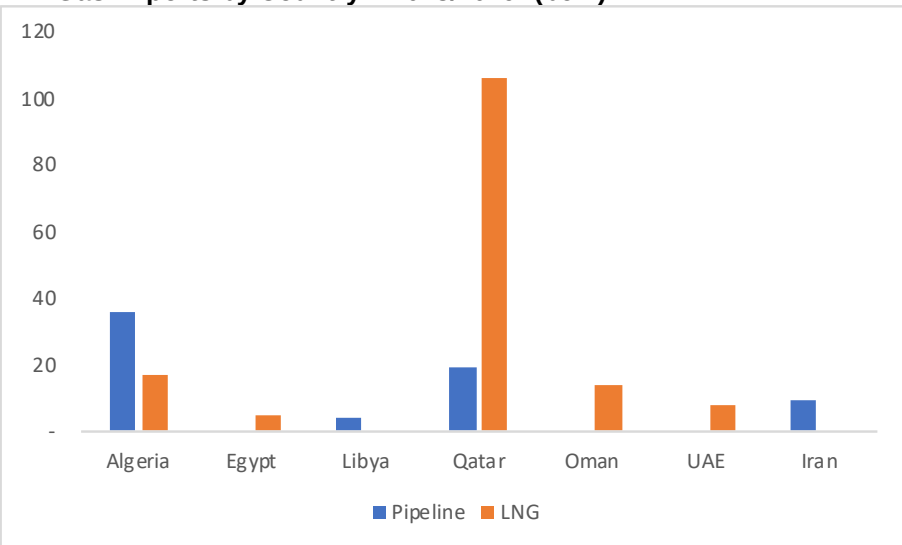
have already started injecting economic stimulus packages to support their economies. However, poor gas producing and gas importing countries do not have the financial resources to provide such economic stimuli. Thus, they will have to rely increasingly on austere economic measures such as reductions in public expenditures.

Despite this challenging gas market environment, MENA gas exporters could consider looking at intra-regional gas markets to compensate for at least some of the loss of export markets in Europe and Asia. But first we need to look at what the latest available data tell us about the state of MENA's gas trade and which countries have the greatest potential to boost intra-regional gas trade.

MENA's natural gas trade

In 2018/2019, the MENA region exported a total of about 220 bcm of gas. Approximately two-thirds was exported as LNG and the rest through cross-border gas pipelines. These gas exports are dominated by a small number of producing countries. As shown in Figure 2, Qatar is by far the largest MENA gas exporter followed by Algeria. These two countries accounted for over 80 per cent of all MENA natural gas exports. It should be noted that Algeria is currently facing critical gas balance problems with declining/stagnating gas production and rapid domestic gas demand growth that could severely hamper its future gas export potential.[4]

Figure 2: MENA Gas Exports by Country – 2018/2019[5] (bcm)



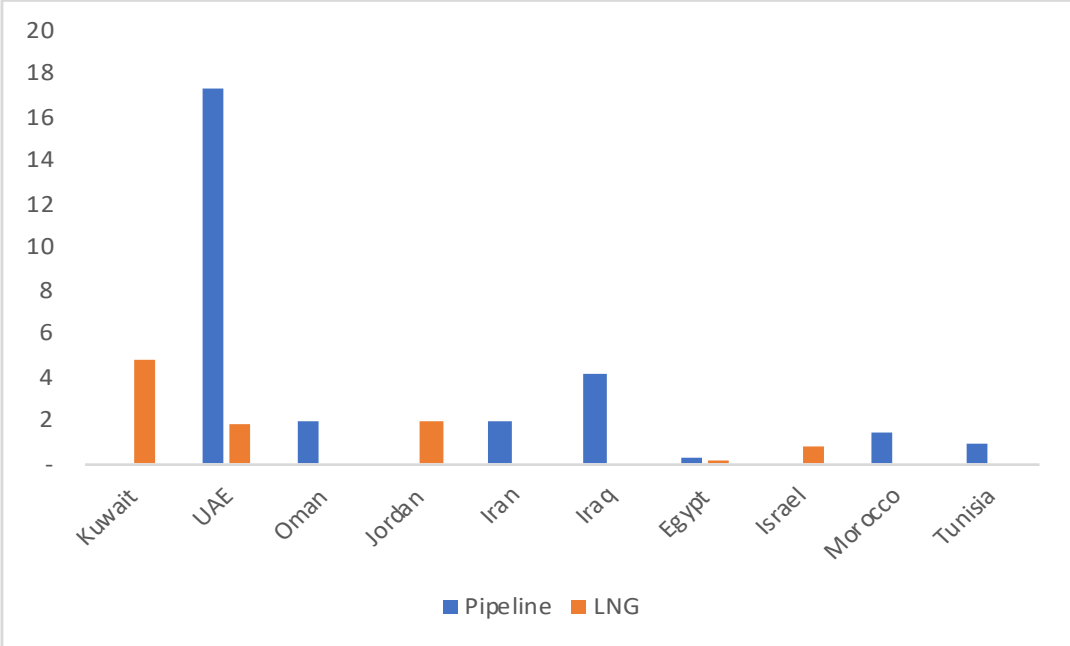
Source: IEA, 2019 and GIIGNL, 2020.

Conversely, the MENA region imported a total of about 38 bcm in 2018/2019. The UAE, which is an LNG exporter, accounted for just over 50 per cent of the region's gas imports. These imports were almost entirely supplied by Qatar through the Dolphin Energy cross-border gas pipeline. As shown in Figure 3, Kuwait was the region's largest LNG importer. These charts show annual figures, but it is important to emphasise that the MENA region, especially the Gulf area, is subject to high seasonal gas demand peaks, particularly during the summer when hot weather causes a peak in air conditioning use. As a result, natural gas imports, wherever needed, peak or occur during the summer.

[4] Ouki, Mostefa (2019). "Algerian Gas in Transition: Domestic transformation and changing gas export potential", Oxford Institute for Energy Studies, October. https://www.oxfordenergy.org/wpcms/wp-content/uploads/2019/10/Algerian-Gas-in-Transition-NG-151.pdf?v=79cba1185463

[5] No gas pipeline trade data are available yet for 2019. So, a combination of the latest data available for 2018 and 2019 was used.

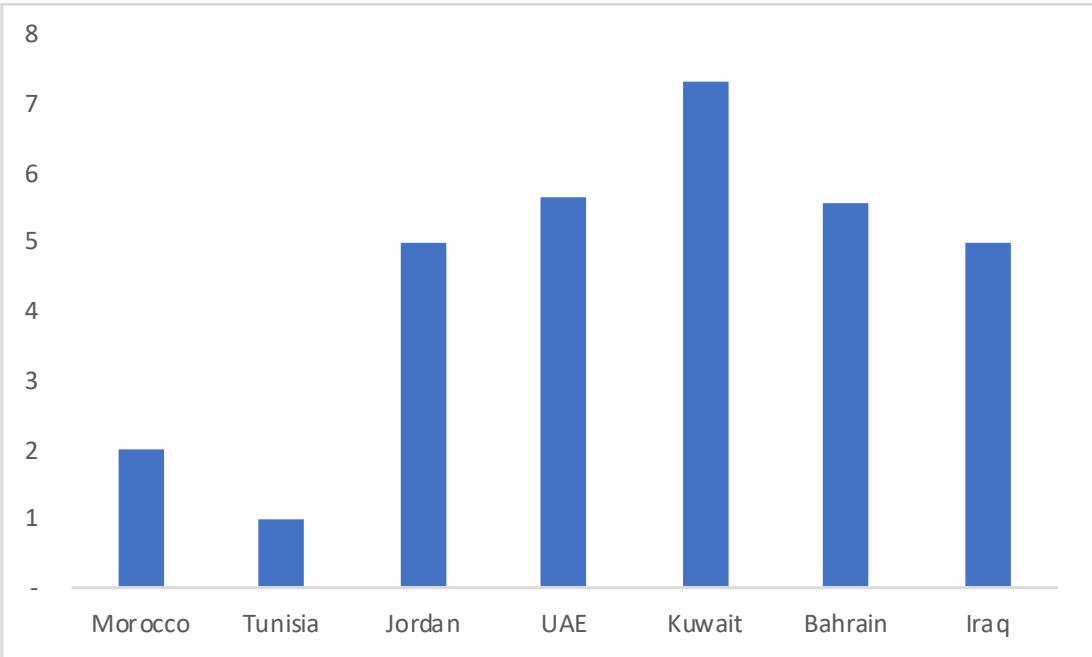
Figure 3: MENA Gas Imports by Country – 2018/2019 (bcm)



Source: IEA, 2019 and GIIGNL, 2020.

The bulk of MENA's total gas imports (pipeline gas and LNG) for 2018/2019 were sourced from within the region, mainly as pipeline gas imports from Qatar. Total net imports for the region (i.e. including only net imports by country) for 2018/2019 were 25 bcm. Preliminary estimates of future MENA gas balance movements show that by 2025 the region's potential for net gas imports could increase to 32 bcm.

Figure 4: 2025 MENA Net Gas Imports – preliminary estimates (bcm)



Source: OIES, 2020.

The potential increase in net imports is very limited although some of the importing countries have already made firm commitments to purchase additional natural gas supplies. In fact, new gas imports have started flowing (e.g. into Jordan). In the medium term, the UAE will continue to be one of the region's largest net gas importers, but it is planning to reach gas supply "self-sufficiency" by 2030 through various on-going supply development projects, in particular sour gas projects.[6]

Iraq's potential gas import requirements will depend on the pace of investments in associated gas flaring reduction projects and the sustainability of imports from Iran. Kuwait, however, is likely to emerge as one of the region's largest gas importers over the longer period and is presently developing a large onshore LNG import infrastructure. In North Africa, potential additional gas imports will remain limited, as Morocco's integrated LNG import and power project has been delayed to the end of this decade. Furthermore, Morocco is expanding generation of electricity from renewable sources of energy.

Therefore, any potential expansion of MENA's intra-regional gas trade, especially for the existing non-producing gas importing countries, remains limited. In order to find significant alternative markets for gas that cannot be exported outside the region, the focus will have to be on the region's main gas users, specifically how to unlock a greater proportion of the domestic gas markets of MENA's largest gas consumers such as Saudi Arabia, the UAE and possibly Egypt (although Egypt has already started importing gas from Israel and is presently experiencing a natural gas supply surplus).

In the GCC, Saudi Arabia and the UAE are already working on a substantial expansion of their domestic gas supply capacity through the development of conventional and non-conventional gas resources. With the exception of Qatar, these sources of supply would produce high cost gas and will take time to develop and come on-stream, especially in a period of brutal cost cutting by both international and national oil and gas companies. In fact, some of the planned new gas projects have already been delayed or cancelled, such as the Dalma gas development project in the UAE.[7]

Could part of the gas initially destined to be exported to European and Asian gas markets be re-routed to MENA's large gas markets instead, at least until international markets recover? This question could be dismissed as naïve given the long-standing political tensions and rivalries that have marred the MENA region since the independence of the countries that form it. These rivalries represent a formidable constraint to any intra-regional gas trade expansion, but it is still worth considering what export options are available within the region. First, we will look at potential gas suppliers in the region and their commercial and infrastructure challenges or opportunities which could boost intra-regional gas trade.

Netback price considerations

In the short to medium term, there are only two existing gas producing countries who could be considered as net gas exporters and potential intra-regional gas suppliers. These are Qatar and - on a much smaller scale - Algeria. Iran with its vast gas reserves could obviously play a role in this potential intra-regional gas trade expansion, but under the present international sanctions which have been imposed on the country, and political tensions with other Gulf countries, it is unlikely that it could expand its MENA trade beyond the current gas export contracts it holds with Iraq.

In the East Mediterranean, large natural gas reserves have been discovered in Israel, but its domestic gas market remains relatively small. A highly-capital intensive cross-border gas pipeline project, the EastMed gas pipeline, has been proposed to export gas supplies from Israel and Cyprus to Europe. But this complex cross-border project was already facing tremendous challenges in terms of commercial viability even before the current multiple crises occurred. Therefore, regional markets seem

[6] Stern, Jonathan (ed). (2019). *The Future of Gas in the Gulf: Continuity and Change*, Oxford Institute for Energy Studies. https://www.oxfordenergy.org/shop/the-future-of-gas-in-the-gulf-continuity-and-change/?v=79cba1185463

[7] Brelsford, Robert (2020). "ADNOC cancels contracts for Abu Dhabi gas mega project", *Oil & Gas Journal,* April 16th. https://www.ogj.com/refining-processing/refining/construction/article/14174248/adnoc-cancels-contracts-for-abu-dhabi-gas-mega-project

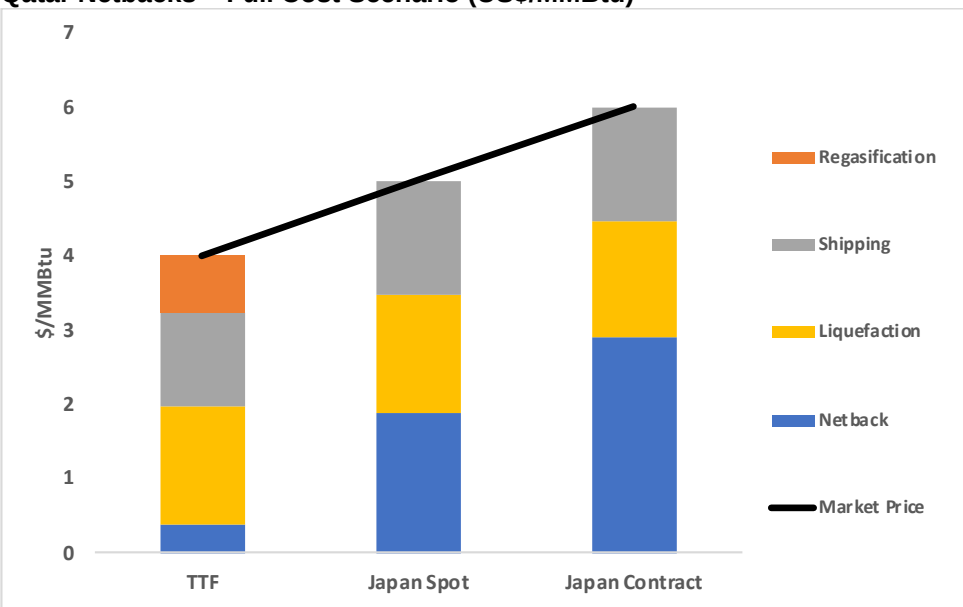
the only option currently for the gas. In fact, Israel is connected to the Jordanian and Egyptian gas markets and gas is already flowing to these regional markets. In Jordan, there has been popular hostility towards imports of Israeli gas and the Jordanian parliament has passed a draft law for a ban of these imports. However, the Jordanian government has also indicated previously that "it was a deal between companies rather than a political matter". [8]

Both Qatar and Algeria are currently exporters of natural gas both as LNG and through cross-border gas pipelines. Qatar with its immense gas resource endowment and large gas infrastructure supplies a wide range of export markets in Europe and Asia. Algeria, with its much lower gas reserve base and proximity to the European continent, has Europe as its natural export market, especially southern Europe.

Thus, we propose to review the export netback price levels for Qatar and Algeria from export markets in Europe and Asia assuming average gas market prices over the next five years. One could argue that these netbacks are irrelevant in the absence of markets or with gas demand destruction taking place in some market segments. But this is not the case yet, despite the recent force majeure announcements to reduce LNG imports. In fact, some importing countries are leveraging the current incredibly favourable buyers' market to negotiate new deals or revisit existing ones to their advantage. Furthermore, even in a situation of very low or negative netbacks, before stopping exports, producers will have to consider carefully a number of factors. In addition to the critical issue of losing market share, these include shut-in costs along the gas chain, monetization of associated liquids, and contractual commitments and liabilities.

The following charts present a range of netbacks for Qatar and Algeria for the full cost approach. The results of a second scenario where we take into consideration only variable costs for the estimation of the gas export netbacks are summarised below.[9] The market prices assumed for these scenarios are averages for the 2020-2025 period and consist of the TTF benchmark price for gas exports to Europe and the Japan spot and contract prices for Asia.

Figure 5: Qatar Netbacks – Full Cost Scenario (US$/MMBtu)[10]



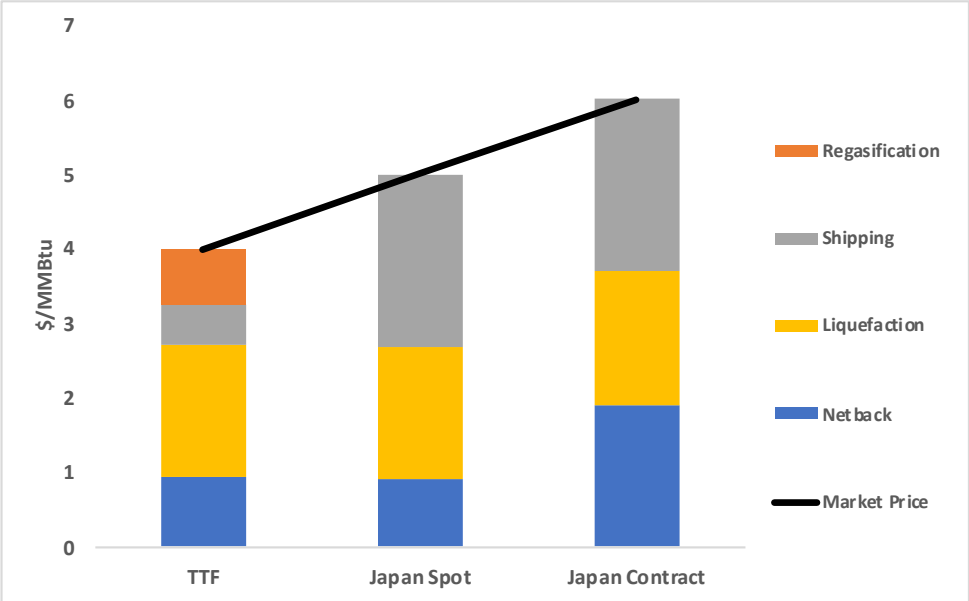
Source: OIES estimates.

[8] Al-Khalidi, Suleiman (2020). "Jordan parliament passes draft law to ban gas imports from Israel", *Reuters*, 19 January. https://af.reuters.com/article/energyOilNews/idAFL8N29O0ED

[9] In the variable cost scenario, fixed costs are assumed as sunk costs and estimation of netbacks are based on variable costs only.

[10] For the case of Japan, assumed average market prices in all charts are DES prices.

Figure 6: Algeria Netbacks – Full Cost Scenario (US$/MMBtu)



Source: OIES estimates.

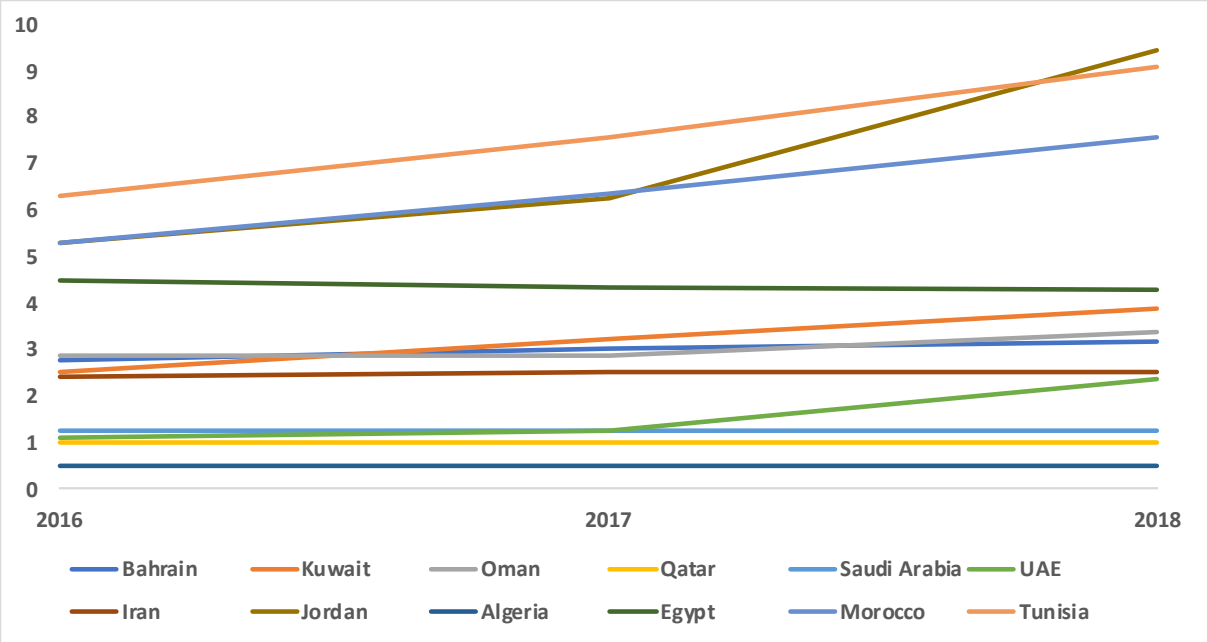
A review of the netbacks shows that under the full cost approach, netback levels in Qatar's case vary from less than $0.5/MMBtu (Europe) to about $3/MMBtu (Asia). Algeria's netback levels for this scenario vary from about $1/MMBtu (Europe) to close to $2/MMBtu.

For the variable cost scenario, netback levels are obviously much healthier without the heavy burden of fixed costs. The resulting netbacks for both Qatar and Algeria vary from just over $2/MMBtu (Europe) to close to $5/MMBtu (Asia). So, under this variable cost approach, it is difficult to envisage that MENA's domestic gas markets would attract a lot of interest as alternatives to exports outside the region.

Netback price levels using the full cost approach would present MENA gas exporters with difficult financial challenges. The issue is not whether to continue to export to European and Asian gas markets, as gas exporters would be very reluctant to exit such markets, even temporarily. Rather the question is whether some of the previously exported volumes could be re-directed to alternative markets. As outlined in the previous sections, we propose to look at opportunities within the MENA region.

One of the key barriers that has prevented an expansion of intra-regional gas trade in this region are the low (and often) subsidized domestic gas prices. In some countries the issues of creditworthiness and payments are also a challenge. However, efforts have been deployed by some MENA governments to reduce subsidies and increase energy prices, especially for petroleum products and electricity. Domestic gas price adjustments have been slower to be implemented in hydrocarbon producing countries due in part to their impact on the international competitiveness of export industries. But, as shown in Figure 9, domestic gas prices in most MENA countries have now evolved to levels close to or above current export netback price levels (full cost scenario). Could this lead to a refocus on MENA's domestic gas markets and an expansion of intra-MENA gas trade? This would depend on several factors both within and outside the MENA region. One of the most important factors to consider is the availability of gas infrastructure.

Figure 9: MENA Domestic Gas Prices: 2016–2018 (US$/MMBtu)



Source: International Gas Union, 2019.

MENA's gas import infrastructure

In a period of massive cuts in oil and gas capital expenditures by both national and international oil and gas companies, it is unlikely that there would be any appetite for new large-scale gas infrastructure investments to accommodate a potential expansion of intra-regional gas trade. Therefore, any attempts to capture gas trade opportunities in the MENA region will have to rely on the existing gas infrastructure and possibly the development of short pipeline connections.

The existing MENA gas import infrastructure is mainly concentrated in three separate subregions: North Africa, the East Mediterranean and the GCC area.

In **North Africa**, two cross-border gas pipelines destined for exports to southern Europe connect Algeria's gas fields to Tunisia and Morocco. These are:

- The Trans-Mediterranean gas pipeline (Algeria-Tunisia-Italy) with a 33 bcm capacity
- The Gas Maghreb Europe gas pipeline (Algeria-Morocco-Spain) with 12 bcm capacity

Presently, both cross-border gas pipelines have ample capacity to accommodate increased gas supplies to the Tunisian and Moroccan domestic gas markets, if needed.

Morocco is planning the development of a large integrated LNG and power project that would initially include a 5 bcm LNG import terminal. But this project has now been delayed to 2028. The possibility of using a floating storage and regasification unit (FSRU) to import LNG supplies has also been considered, but has not been confirmed or publicly announced.

In the **East Mediterranean** sub-region, there are also two cross-border gas pipelines:

- The Arab Gas Pipeline from Egypt to Jordan with links to Syria and Lebanon with a capacity of about 10 bcm
- The EMG subsea gas pipeline from Egypt to Israel with a capacity of about 7 bcm, currently operating in reverse flow mode supplying gas from Israel to Egypt.

In addition to these cross-border gas pipelines, there are two FSRUs for LNG imports, one at Aqaba in Jordan and another one in the Ain Sukhna area of Egypt (which is currently not in operation). The FSRU in Jordan is currently underutilized as more gas pipeline supplies are becoming available. There is also a deep-water floating facility offshore Israel that serves as an LNG import facility to supplement its domestic gas supply.

In the **GCC** area, the gas import infrastructure is dominated by the Dolphin Energy cross-border gas pipeline which supplies Qatari gas to the UAE and Oman. It is presently transporting a total of 20 bcm of gas, but has a potential capacity of over 30 bcm.

Floating LNG import facilities are also available in Kuwait, the UAE, and soon will be in Bahrain. Furthermore, Kuwait is presently developing a large onshore LNG import terminal with a capacity of 30 bcm expected to be commissioned within the next two years.

Outside the GCC, there are cross-border pipeline links from Iran to Iraq currently delivering Iranian gas supplies to Iraq.

Therefore, in the short to medium term, there should be enough gas import infrastructure capacity to accommodate potential additional gas supplies to some of the region's existing importing countries, as identified above. For potential new gas importers, especially in the GCC area, investments in short gas pipeline links to existing gas pipeline infrastructure should not represent a major challenge, as long as they are commercially viable and, more importantly, if there is serious political will to expand intra-regional gas trade.

Political will or continued tensions?

Political tensions, rivalries and conflicts have always been a consistent feature of the MENA region from North Africa all the way to the Gulf area, and political analysts and pundits do not foresee the removal of this unfortunate characteristic in the near future. When it comes to intra-regional MENA gas trade and its potential expansion, it is mainly political tensions between countries that are affecting this trade.

Looking at the region's largest natural gas consuming countries, it is interesting to note that despite the political rift and economic embargo on Qatar by the UAE, Saudi Arabia and Bahrain, gas is still flowing from Qatar to the UAE. Although the UAE is on its way to reach one of the region's highest levels of energy mix diversification, it is important to point out the attractive price level[11] of the Qatari gas exports to the UAE.

It is true that politics could be a major constraint to gas trade expansion. However, politics is not the only barrier to the development of MENA's internal gas trade. The commercial viability of such cross-border gas transactions also remains a dominant barrier to trade expansion. The evaporation or severe contraction of MENA's gas export markets and the ensuing collapse of international gas prices could lead to a revisiting of the viability of MENA's domestic gas markets. In these unprecedented multiple crisis times, politics may not follow conventional wisdom and pragmatic economic decisions may prevail.

Concluding Thoughts

Not long ago, one of the main subjects of focus for MENA's gas consuming countries was the unabated increase in their gas demand growth and the widening gas supply shortages affecting some of these countries. By contrast the region, up to 2025, is now likely to find itself with rising volumes of natural gas supplies that it will not be able to export to other regions.

Thus, domestic MENA gas markets could provide a valuable home for part of these lost or commercially challenging gas exports. In fact, with current international gas prices sinking below the $6/MMBtu mark,

[11] Under current very low international gas prices, the price gap with LNG export netback levels must have shrunk.

some domestic MENA markets may start to look attractive and additional gas supplies would generate added economic value for these MENA economies.

Although there could be a potential incremental demand from the existing MENA gas importers, the size of this additional demand is quite limited, probably less than 10 bcm per year. The real opportunities for a significant expansion of intra-MENA gas trade reside is in the region's largest gas consuming economies. The potential increase in intra-regional gas trade could help these countries transition to new domestic sources of gas supply that are being developed and that could take time to materialize.

The possibility of boosting intra-regional gas trade will undoubtedly raise the issue of the adverse impact of politics and the consensus expert opinion is that regional political tensions and rivalries will not allow it to happen. However, in an era of disruptive politics across the globe and economic survival concerns, it might not be unthinkable to see political decisions made that do not necessarily comply with conventional wisdom and rather focus on economic pragmatism. This could result in the prioritization of the economic benefits of intra-regional economic cooperation.

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