

The argument for a Middle Eastern gas grid



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Covid-19 has accelerated the will of many countries globally to engage in a “green recovery” aiming at a reduced reliance on fossil fuels (in particular oil and coal). Given the abundant gas reserves in the Gulf and the Eastern Mediterranean and the need for a pragmatic approach to climate change mitigation, Gulf countries could lead the development of a regional gas-grid across the Middle East, allowing for a corresponding increase in the use of gas for power generation. In a later stage, this infrastructure could be used to transport hydrogen.

A siloed and inefficient approach to gas infrastructure investments

Arab Gulf States are pursuing independent gas infrastructure projects. Kuwait, for example, has struggled to meet gas demand and is importing LNG from the global market and is likely to have to rely on LNG imports until at least 2035. Iraq finds itself in the paradoxical situation where it flares natural gas from oil wells while importing both gas and electricity from Iran at huge cost to its already strained economy. In Saudi Arabia, the focus has shifted to more upstream investment in both conventional non-associated and unconventional gas but that too comes at a very high cost when it would make more sense to import gas and lock in current low prices rather than invest in overseas assets. The UAE, once a net exporter of gas, is now a net importer and while it is developing its sour gas reserves, it will take time to achieve its goal of becoming a significant exporter again. Its current imports, which averaged 12.9 bcm in 2017 are set to increase as new receiving terminals come online. Oman's LNG exports have dwindled in recent years, but it is investing in new capacity that will generate additional supply that is expected to be used in priority for LNG exports and to satisfy domestic demand.

Natural gas as a transitional step to climate change mitigation

Given that two of the world's largest gas reserves are to be found in the Middle East and that the East Mediterranean is emerging as a significant gas hub, it is time to consider how best to pool these resources and create a regional gas market that would benefit all countries and make for a more equitable distribution of wealth. That would require a unified price structure across the region and the elimination of domestic subsidies. Current price levels would make it easy for governments to do away with remaining price controls as they have done in the past during weak price cycles. Developing a regional grid would serve all countries in the region more than the unilateral approach that is being adopted, particularly now with uncertainty about future demand for natural gas given rising concerns about methane emissions and moves by the EU and others to phase out the use of natural gas in power generation. Unlike crude oil, natural gas is a regional story and despite the expected reduction in demand in Europe and the US, it is still the only fossil fuel that is forecast to increase its share of the global energy mix by 2050 at the expense of both coal and oil. With the energy transition now underway, natural gas remains the environmentally acceptable bridge fuel until renewable energy capacity can be sufficiently

sufficiently expanded in the Middle East. By way of illustration, the Italian oil major Eni has pledged to become carbon neutral, yet its strategy will see an increase in production of natural gas as part of the process. Total, on the other hand, is investing more in electricity generated from renewable energy as part of its strategy to decarbonize its business.

There is also an undeniable environmental benefit in reducing the amount of crude oil and other liquid fuels burned for power generation in many Gulf countries. Recent months have seen a marked increase in the amount of crude oil burned for electricity generation, while associated gas production has declined along with falling crude oil production to meet OPEC targets. As temperatures continue to increase, demand for energy to power Air Conditioning units in the region is bound to grow, worsening the carbon footprint of Gulf countries. With 30% lower CO₂e emissions per unit of energy produced and significantly lower nitrogen oxide and sulphur dioxide emissions, gas could serve as a transitional energy source on the path towards full decarbonization. The availability of gas would also serve to develop a regional hydrogen industry, while the gas pipeline infrastructure could be used for hydrogen transport when and if the time comes for substitution (assuming widespread green hydrogen production).



GCC gas production and consumption in 2019 vs consumption in 2040

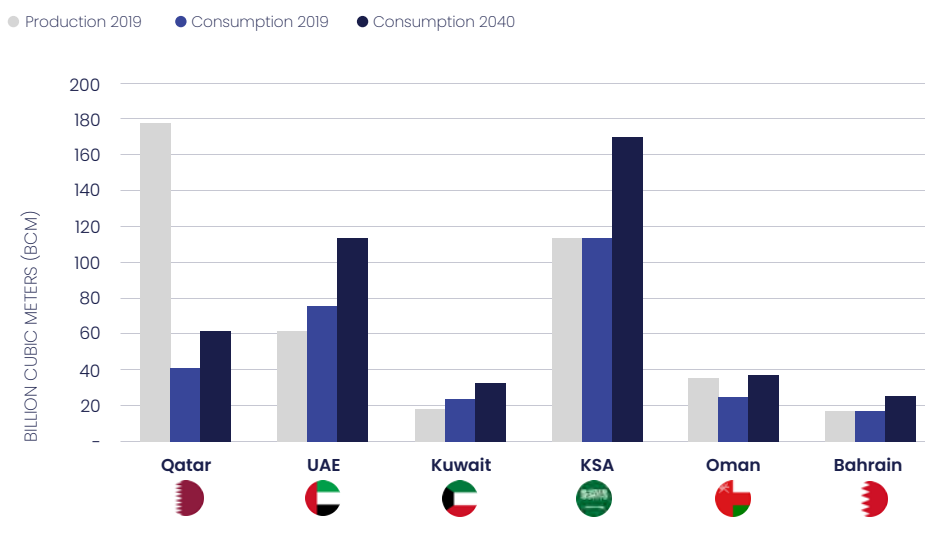


Figure 1:
GCC gas production and consumption volumes in 2019 vs projected consumption volumes in 2040.

Sources: BP Energy Outlook 2020, IEA.

RESERVES TO ANNUAL PRODUCTION RATIOS (2019)

139	94	92	53	19	6
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An opportunity and a precedent for success

There are signs that GCC gas integration is gaining traction but geopolitical considerations and tensions within the region will make it difficult to achieve a true regional gas hub, which would require far more supply liquidity than presently available. However, there is perhaps too much focus on downstream oil refining and petrochemicals integration, with natural gas increasingly being diverted into petchems production. There is a risk of overcapacity and producers need to be cautious about banking too much on growth in demand for plastics should more countries ban single use plastics. The current situation, where demand has soared during the pandemic, should not be interpreted as the start of a new trend. More than 40% of plastics production goes to packaging and if that disappears, it would lead to a decline in demand for petrochemicals, one of the key drivers of future oil demand along with heavy transportation and aviation. As a result, more gas supply would be available. Finally, the addition of new gas from the East Mediterranean and the proliferation of both fixed and floating LNG receiving terminals in the region will allow for an expansion of gas trade within and beyond the Middle East. This will require investment in pipeline infrastructure to connect more countries to existing gas grids. Given the relatively short distances involved, the investment outlays are not likely to be huge. Gas infrastructure can also be re-purposed in the future if necessary, to carry clean energy vectors like hydrogen.

There is a precedent to successful interconnection in the Gulf region. The GGCIA has made some progress in interconnectivity and cross border trade has risen significantly in recent years though there is scope for more to be done. In 2019, the GGCIA reported that there were 1,800 incidents where the interconnected grid prevented interruption in the MENA region and avoided blackouts and shutdowns. An increase in the volume of cross border electricity trade can optimize energy sources across the GCC. Opportunities are being explored to interconnect with other countries, namely Iraq and Jordan. Peak load occurs in the summer and there is excess capacity in the winter that can be utilized if there is wider access.

The Way Forward

Interconnecting national gas grids across the region can provide flexibility and affordability in a context where intermittent energy sources are being deployed more rapidly to meet climate goals. It would also provide a balancing mechanism where there is a deficit of or surplus renewables capacity, leading to enhanced security of supply by optimizing the delivery of energy across the region and result in savings for all parties. The economic development benefits would also be substantial.

While current geopolitical tensions make the realization of a regional gas-grid challenging, there is a clear rationale to further explore the economic, social and environmental benefits of such a project as a stepping-stone to energy transition. This could start through the establishment of a robust governance structure to guide cooperation between GCC and other Middle East governments and research institutions in order to align on a common set of objectives and conduct a feasibility study to determine the economic and financial viability of the project.

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