

Monetizing East African Gas

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Once virtually ignored by the global oil & gas industry, East Africa now faces the prospect of becoming a global natural gas hub following a string of recent natural gas discoveries.

The star of this past year's exploration campaign was doubtless Anadarko Petroleum Corporation, which made four discoveries off the coast of Mozambique, together estimated by some analysts to hold 6+ trillion cubic feet (tcf) of gas. Farther north, in Tanzania, oil & gas companies continue to add to the country's natural gas resource base, which presently stands at 7.5 tcf. With additional reservoirs being discovered throughout the region, the big question is how this resource will be monetized.

Limited Local Markets

The size of local markets for natural gas varies significantly across East Africa. In Tanzania, natural gas was introduced into the economy in 2004 and since then demand from industrial and power customers has grown. According to the Tanzanian government, demand for natural gas outstrips current supply by 12 mmcf/d.

Demand for power is expected to grow by 10% to 15% per annum, which will further contribute to gas demand growth. These figures have inspired a rash of projects, including 340 MW of gas-fired generation expected to come online by 2013 and a USD460 million electricity distribution expansion scheduled for completion in 2015.

Orca Exploration and Production, which through its subsidiary PanAfrican Energy operates Songo Songo, Tanzania's only significantly producing gas field, has announced plans to raise production by 60% to 144 mmcf/d, requiring expansion of existing pipeline infrastructure and processing capacity. But domestic demand for gas, despite projected growth, will only ever absorb a fraction of Tanzania's 7.5 tcf of proven reserves. Producers must surely look further afield in order to monetize existing and new finds.

The domestic market in Mozambique offers even fewer options for gas producers. In the power market, Mozal, the BHP Billiton-operated aluminium smelter, is by far the largest single consumer with a peak-demand of over 900 MW. This is met largely through a long-term supply agreement with South Africa's ESKOM.

Outside Mozal, power demand is limited, as only ~13% of the population has access to electricity. Though the government plans to increase this access in the future, the focus appears to be on hydroelectric generation.

Energy hungry South Africa offers an opportunity for Mozambique gas stakeholders. At close to 230 bcf/year, South African gas consumption is nearly twice domestic production, with imports from Mozambique already filling much of the gap through a 534 mmcf/d pipeline in operation since 2004, feeding a Sasol run petrochemical plant in Secunda. To put this in context, exports through this pipeline represent 96% of Mozambique's natural gas production.

Additional exports to South Africa would require an expansion of the existing pipeline or construction of a new pipeline, together with a likely extension beyond Secunda to access other gas buyers. Once reserves reach "critical mass", many resource holders in East Africa will look to monetization options that capture higher margins in the global market. For

resources holders with reserves over 3 tcf, LNG is likely to be the monetization option of choice, given higher potential margins per molecule.

Despite weak demand in the Atlantic Basin LNG market, strong demand (and high prices for LNG), together with still prevalent long-term firm offtake contracts in the Asian markets will support LNG monetization for larger scale reserves.

At the country level, both Tanzania and Mozambique possess sufficient reserves for LNG. However, governments must ensure that they do not overcommit gas resources to export projects well into the future lest they find themselves short of domestic supply, as Egypt has found to its cost.

When assessed at the resource holder level, for now only Anadarko's Mozambique assets appear to pass the LNG reserve threshold. Given the relative proximity of gas resources in Tanzania and Mozambique, one could argue that resource holders in both countries could pool resources in developing a single larger scale LNG project. History has shown, however, that cross-border gas monetization has proven to be a difficult commercial model to develop and finance (see the West African Gas Pipeline for an object lesson).

East African gas could be used to feed ammonia/urea and/or methanol production in order to tap the global fertilizer and petrochemical industries. Although not usually as profitable as pipeline or LNG exports, urea/ammonia and methanol projects can be usefully employed where gas resources are too small to justify an LNG project (or when sponsor capital is constrained).

The major global fertilizer-consuming regions include South Asia, North Africa and East Asia. Reports vary on supply and demand forecasts for urea, with some analysts viewing the market as over-supplied in the medium term.

Methanol, which serves as a feedstock in the production of petrochemicals, could be pursued in tandem with urea/ammonia or separately. While traditional petrochemical markets in North America and Western Europe are presently stagnant, robust demand in China and other Asian markets offers opportunities for methanol exporters.

What To Expect Going Forward

With a growing portfolio of commercial discoveries, oil & gas companies will look to export markets for higher returns. This will require significant investment as well as technical and project expertise, which likely means that many of the junior oil & gas companies active in the region will make way for larger independents and IOCs with the balance sheets and experience to undertake these projects. Assets, and potentially companies, will no doubt swap hands as the resource holders in the region look to consolidate portfolios in an effort to build a sizable resource base.

Though full-scale natural gas production is still some years away, it is clear that East Africa's position in the global natural gas market is moving quickly from a sleepy backwater towards a new gas hub.

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