Will Exploration Success in Africa Lead to New Refineries?

Opportunities and challenges for refiners in Africa

Africa is a net importer of refined products and its import requirements are expected to grow further in the near future. In addition there have been recent successes in oil exploration in countries such as Uganda, Ghana and Mauritania, amongst others, and there are well-established reserves in many other countries such as Nigeria and Angola. The combination of growing markets and the availability of crude oil would, superficially, seem to be an optimal environment in which to develop new refineries. Yet, despite many project announcements, there are still only 46 refineries in Africa today compared with 45 in 1990. This paper looks at some of the issues relating to the potential construction of new refining capacity in Africa.

The Case for New Refining Capacity in Africa

Africa is already a net importer of refined products and, as shown in Figure 1, unless refining output is increased, the growing demand for refined products in Africa will result in greater import requirements. Figure 1 also clearly illustrates that oil production on the continent considerably exceeds refinery throughput suggesting that some of that oil could be diverted to new domestic refineries, if constructed.

This situation of required export of crudes and import of products leads to a significant freight advantage for a refiner in Africa versus alternative refiners in the Middle East or Europe who are exporting production to Africa. For example, as shown in Table 1 (on the next page), the freight charge of importing gasoil product in a Medium Range or MR tanker from the Middle East to Durban compared with importing crude from Middle East to Durban in a Very Large Crude carrier (VLCC) was over US$3.5/Bbl for the first half of this year (US$4.52/Bbl - US$0.94/Bbl = US$3.58/Bbl).

The freight advantage (and hence margin) for an African refinery could be increased further, by instead of importing Middle Eastern crude oil as in the example above, the refinery could process African crude which is currently destined for Asia.

Figure 1: Oil Production, Demand and Refinery Output in Africa

AFRICAN REFINING—KEY FACTS

Current Refineries

| No. of Refineries: | 44 |
| Utilization Rate | 67% |
| (Global average 80%) |
| Capacity | 3,317 MBPD |
| Conversion Capacity | 20% |
| (Global average 50%) |

African Countries with Planned New Refineries

- Angola
- Chad
- Ivory Coast
- Mozambique
- Niger
- South Africa
- Southern Sudan
- Uganda
- Angola
- South Africa
- Nigeria
- Ghana
- Kenya
- Cote d’Ivoire
- Angola
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Consider the example of a refinery in Durban importing Angolan crude rather than Middle Eastern crude (it is assumed that the Middle Eastern crude and West African crude in this example compete in the Asian market on equal terms and that their FOB price is therefore set to provide equal value to the Asian refinery). From Table 1 it can be seen that Middle Eastern crude is landed in Africa at a small premium of US$0.11/Bbl to Singapore, while Angolan crude can be landed at a discount of US$0.80/Bbl versus Singapore. Based on this example an African refiner could acquire African crude oil that is currently typically exported to Asia at a freight advantage of approximately US$0.90/Bbl versus a Middle Eastern refinery.

Other advantages for Africa of refining locally rather than importing refined products would be the increase in skilled jobs it would create and also the improved energy security. In addition, new refining capacity, increased competition and the associated enhanced infrastructure can provide a boost to a country’s economy. Hence there appears to be a strong case for new refining capacity in Africa.

Domestic Refining or Regional Imports

However while there are clear drivers for new refining capacity in Africa the continuation and growth of imports is an alternative option for the specific demographics of Africa. For example, whilst historically it has often been best to build refineries close to areas of product demand rather than near to crude supplies, much of Africa’s demand is widely dispersed which makes it difficult to select optimal locations for African refineries, so that economies of scale can be realised.

Furthermore, although conventional wisdom suggests refineries should be built close to demand centres there has been a trend in recent years towards very large complex export refineries, such as Reliance in India and the Jubail (2013), Yasref (2014) and Jazan (2016) refineries in Saudi Arabia which are due to come on stream over the next few years. The achievable economies of scale and flexible operating nature of these refineries partially compensate for the higher transportation costs such that they are able to supply markets in a cost effective manner. To overcome some of the freight disadvantage, these export refineries are looking to transport product in large tankers such as LR2s to minimise freight rates. However, given that much of Africa’s refined product demand is dispersed and not concentrated in specific demand centres, and that the internal infrastructure for product delivery across Africa is poor, many African countries do not provide the large volume markets that such export refineries would optimally supply.

Overall, when considering whether Africa’s future product demand is best supplied via imports from large export refineries in other regions or from new domestic refineries there is no clearly optimal solution but, as shown previously, there are drivers for some capacity additions in Africa.

Given that infrastructure as a whole within Africa is relatively limited, the construction of large “regional” refineries within Africa, which are designed to supply large areas, is not envisaged. Instead it is likely that future African refineries will continue to be smaller than the mega-scale export refineries, such as Jubail, and will continue the current trend of African refineries being smaller and less complex than those in other regions as illustrated in Figure 2. Indeed one other approach of partially meeting future refined product demand within Africa would be the debottlenecking, expansion and/or upgrade of its existing capacity.

The Challenge of Developing Refineries in Africa

If African nations wish to develop their own refining capacity there are some challenges. Chief amongst these issues will be the consideration of who is going to develop and fund the refinery? There are, of course, understandable reasons for companies to be
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reticent about investing in African refining capacity. Indeed it is not just the African refining industry which is struggling - many companies have mothballed or divested refining assets due to the oversupplied global market which is keeping global refinery margins subdued. So what kind of company would be able to drive the development of refining capacity in Africa?

Figure 3: Refinery Ownership in Africa

Worldwide, refineries are typically developed and owned by independent refiners (which for the purposes of this analysis will also include private equity or other financial institutions), national oil companies (NOCs), or integrated oil and gas companies (IOCs). Within Africa the refining industry is dominated by NOCs as shown in Figure 3. These NOCs may be either the host country NOC or a foreign NOC.

NOCs are therefore likely to continue to be amongst the key drivers of refining investment in Africa. The NOC of a country with undeveloped oil reserves will probably have the strongest motivation of any type of investor to develop refining capacity in that country. However, NOCs, particularly African ones, may not always have the practical experience of developing refineries or indeed the finances to pay for them. NOCs from countries outside of Africa may be potential partners but may want terms that are incompatible with the host government’s plans – for example many NOCs who have invested internationally in recent years have tended to look for assets that will provide security of supply to their own country. This may very well be the exact opposite of what an African refinery targeted at domestic markets offers.

Meanwhile IOCs will typically have the technical capability and the financial ability to develop refining capacity in Africa but may have little motivation to do so. Indeed as an industry trend over recent years IOCs have typically divested refining capacity rather than acquiring it.

Independent refiners feature in Africa’s refining only on a small scale. In some areas of the World, independent refiners operate successfully and the global refining industry has seen many new privately-owned companies enter the business. The African refining industry would be a challenging environment for any new player and there will be many who do not have the appetite for such risk, given the robust balance sheets required for developing refineries in frontier areas such as Africa. However, recent trends suggest there are at least some entrepreneurial companies with sufficient financial backing to be pursuing refining options in Africa (e.g. Dangote Group in Nigeria). Nevertheless, although such exceptions exist, many independent refiners may find it difficult to secure financing for such endeavours.

There is some potential that a fourth type of investor may show interest in refining capacity in Africa. E&P companies could feasibly invest in refining capacity if that helps them monetise assets. However, entering such a market may not seem to be particularly attractive when the industry seems to be plagued by over capacity, cyclicality and, at the moment, low margins, although refineries in Africa may see differing refining margins than other regions. Unlike the mature markets of Europe and North America, many African nations are seeing very robust demand growth for refined products with some experiencing real shortages of product. In addition land-locked nations often have to source imported product at very high cost. Indeed some of the potentially most profitable refinery investments in Africa are in areas where new refining capacity would replace expensive imports, leveraging off import parity prices. Nevertheless, a venture into this unknown industry will likely not be a top priority for any E&P company unless it is the only way of monetising assets.

Overall, as Figure 4 (on next page) shows, there does not seem to be any one type of company that can bring to the table everything that is required to develop refineries specifically for Africa.

The simple and obvious answer could be, of course, that partnerships of various types of companies will be the optimal way of driving forward investment in refining for Africa. But as Figure 2 clearly shows, the largest hurdle to attracting the kind of companies who could successfully develop refineries in Africa, is convincing them they should invest in Africa. It is here that governments and NOCs can take the lead in driving forward investment in refining capacity.

The optimisation of financial and legal terms for any refinery investment and the fundamental deal structure can help make an investment attractive. Tax breaks and simple fiscal stimuli are useful but perhaps, in order to kick-start refining growth in Africa, more effective, or at least additional incentives will be required.
The cyclical nature of refining margins, and their low values in recent years has been touted as the reason for many refinery sales in recent years. Therefore if some form of tolling refinery could be developed (although that would still necessitate someone, for example the government, assuming the margin risk), it would ensure minimum required returns which may make it more appealing to some investors and, potentially, financiers.

The appeal of refining investment can of course be further enhanced by increasing refining margins. As illustrated earlier, freight advantages may assist in improving margins. Furthermore, in land locked countries or those with tortuous and bottlenecked import routes, a new inland refinery, if it had a secure crude supply, could achieve import parity prices and robust margins. However, where the returns on a refinery are not enhanced by market conditions, a government could consider artificially improving margins via a reduced crude purchase price and/or guaranteed minimum market-linked prices for products. However governments must be aware, before providing such measures, of the only term costs of them, the difficulties in removing them once started and the potential negative impact on completion in a country if they are offered to one refiner but not another.

In addition to the direct influences on refinery profitability, such as reducing crude prices, a government can of course indirectly influence the profitability and hence appeal of a refinery. The cost of a refinery can be influenced by a government by ensuring adequate infrastructure (if refining companies have to build new roads, bridges etc. to get equipment to site, this will elevate costs substantially), and optimal site selection. The OPEX can, in turn, be influenced by the availability of skilled local workers possibly educated via government or oil-company sponsored training initiatives. Hence a government can look to provide adequate infrastructure for both the building phase and the operation of the refinery and also to provide training to enhance the level of skills in the workforce.

Actions such as those above may help attract cash-rich companies to the various refining projects or, alternatively, enable project financing to be accessible for less cash-rich companies. Indeed with the recent trend of apparent IOC apathy towards refining, an area of focus may be to increase the commerciality of such projects with the aim of increasing the participation of independent refiners in Africa. But of course this support will come at a cost and thus possibly create a conundrum - Do the benefits of a refinery in-country outweigh the costs associated with development – either via direct capital investment or via long term margin controls/subsidies? Or would it be better to maintain imports and divert those monies to projects such as rural electrification or the improvement of health services?

Conclusions

Overall therefore GCA believes that there will be increased refining capacity added in Africa. Projects will continue to be driven predominantly by indigenous NOCs with a very small number of cash-rich independent players such as Dangote potentially entering the frame. Participation by IOCs or E&P companies will be likely to be limited to opportunities where a refinery is a logical step required to monetise oil (as in Uganda where the government pushed strongly for a refinery) and where the refinery is part of an integrated investment in the country. The ability of smaller independent refiners to enter the market will be greatly influenced by terms offered for any refiner, but opportunities will likely increase as the African oil and gas industry evolves. It is probably not an industry that should be entered by those who are adverse to risk, but then again that could be said for other sectors of the oil and gas industry as whole.

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