

Investing In the Downstream:

The Point Of View of a National Oil Company

Dr. Shokri M. Ghanem

Chairman

The National Oil Corporation of Libya

Good afternoon ladies and gentlemen. Indeed I am delighted to be here today to address such a distinguished gathering at this important seminar which is dedicated to the discussion of the opportunities and challenges facing OPEC in the oil market. Before I start my address, let me first take the opportunity to thank the OPEC Secretariat for organizing this seminar and for inviting me to participate as a speaker in this session.

The title of this session: *“Downstream Challenges and Opportunities”*, reflects the concern of all players in the oil market about the recent rises in the oil price and their effects on the world economy. Although, during the past few years, many analysts have predicted some increase in oil prices, very few contemplated \$50/b oil let alone \$70+/b oil. The main reason behind most conservative predictions is the conventional wisdom that higher oil prices will lead to a slow down of the world economy and may even cause severe economic recession, which in turn will lower oil demand and drive oil prices back down. However, this did not happen in the current situation, as the world economy seemed to be relatively unaffected by the rise in oil prices and the oil market continued to function under the influence of a growing oil demand and volatile oil

prices. Such a behavior by the oil market may be explained by the combined effect of several factors notably: oil supply-demand imbalances driven by a growing world oil demand as well as concerns about adequacy of world oil resources to meet future oil demand (peak oil syndrome), diminishing refinery spare capacity, geopolitical uncertainties, market speculation, and natural disasters such as hurricanes Katrina and Rita.

With so much uncertainty, *long term* investment planning for both upstream and downstream may prove to be quite a formidable task for all concerned parties; producers and consumers alike. Moreover, making investment planning in the medium, and even the short term, could be just as hard. As an example, for a shorter term (say up to 2010), and according to a study by APICORP presented in the 8th Arab Energy Conference which was held in Jordan during May of this year, the Arab countries (many of them MENA oil producers) are expected to invest around \$180 billion over the next 5 years for exploration, development and refining in order to meet the rising oil demand. The refining sector alone would need around \$37 billion for upgrading existing refineries as well as for new refining capacity. Similarly, most OPEC countries have announced several upstream capacity expansion plans encompassing in total over 100 projects with cumulative investments of more than \$100 billion to boost capacity by more than 4 million b/d by 2010 (excluding Iraq). With so much uncertainty regarding oil demand in the short term, no one can tell for sure whether all or part of these investments will materialize during the next 5 years. Much will depend on the world economy's growth rates and the impact of oil prices

Against this background, I would like to turn my attention to investing in the downstream; focusing primarily on the refining industry. Let me begin by briefly

addressing some of the events leading to the current tight refining capacity situation which by the way is not something that has occurred overnight or has not been previously anticipated. On the contrary, Since many years, it has been observed that the world refining capacity is becoming increasingly inadequate in terms of both distillation capacity and conversion capacity, mainly because the refining industry (particularly in the USA and Europe) has not been investing enough in new projects, any excess refining capacity that has existed in the past could quickly vanish if oil demand starts to rise rapidly.

To put this in perspective, it is well known that the USA has not built a new refinery for about three decades, and Europe for about two decades. In fact, in both the USA and Europe, the number of operating refineries actually decreased. As an example, the number of refineries in the USA has decreased by more than 50 percent from 325 in 1980 to less than 140 in 2005. A similar trend was observed in Europe. The refinery closures were attributed to such factors as: low demand for products and therefore low utilization rates, low refinery margins and poor profitability, small or inadequate distillation capacity, and lack of adequate conversion capacity needed to meet the increasingly stricter fuel standards.

Recently, however, and as a result of rising oil demand and higher oil prices, there was a marked improvement in both refinery margins and capacity utilization rates and hence marked improvement in profitability. Refinery margins which have been persistently low for decades increased substantially during the past two years with complex refineries (refineries with deeper conversion capabilities) enjoying the highest margins and hence the best economic returns. Similarly, most refineries around the world have increased their utilization rates significantly. In the USA, for example, many refineries have been running at or near 100% capacity with the USA average utilization rate now exceeding 95%. The average utilization

rate worldwide is currently around 90% and rising. However, while such high utilization rates are considered by the refining industry as a welcome relief, any remaining slack in refining capacity will quickly disappear if the demand for petroleum products continues to grow and no additional refining capacity is built.

Therefore, even though the refining industry is currently operating under the pressure of tight spare capacity, it is enjoying some of its finest days in terms of improved margins and profitability. Moreover, and despite the genuine fear from overbuilding, the brighter profitability picture of the refining industry seems to be encouraging investment in new distillation and conversion capacity in many countries, particularly MENA countries. Even in the USA and Europe, where the refining industry does not seem to be keen towards building new refining capacity and looking keener towards upgrading existing capacity, there are signs that several refining companies are considering investing in additional refining capacity, particularly in the USA.

Despite this bright investment outlook, the actual development of the refining industry in the coming decades could be constrained due to such factors as: quantities of crude oil available for refining in the future, expectations of a continued move towards demand for lighter products, and trends of product specifications towards significantly cleaner products. Each of these factors can greatly affect the shape of the refining industry in the coming years. Furthermore, and before any refinery investment could materialize, several questions need to be answered such as: how much capacity to build? , what type? , where to build it? , and who will be building it (or investing in it)? Let me now briefly touch on some of the possible answers to these questions.

Starting with the first question, it is quite obvious that any answer will be closely tied to the level of world oil demand selected from the various projections reported by the various WEO studies. It will also be tied to the ongoing and announced plans in various regions of the world for refinery capacity expansion both in distillation and conversion, if we take the forecasts in 2015 as predicted in the reference scenario of OPEC's Energy Outlook Study as an example, then world oil demand could be around 98.5 million b/d. Then, by considering the current world refining capacity of around 85.0 million b/d and the ongoing and announced worldwide plans for refinery expansion in distillation capacity up to 2010 which amount to about 3.5 million b/d, then the additional refining capacity that need to be built in various regions of the world by 2015 would be around 10 million b/d. Simply put, this would translate into around some 30-40 world class refineries which will cost around \$110 billion to build.

Turning to the second question, the answer is greatly dependent on the types of motor fuel that will dominate a particular regional market as well as on their specifications. However, on a global basis, the current trend in the refining industry is in the direction of handling heavier and more sour crude oils, with refineries becoming more sophisticated in their ability to produce more lighter and cleaner fuels as the market shifts towards the lighter fuels namely gasoline, diesel and jet fuels which are demanded by the transportation sector. In this respect, refineries in the USA will tend to be more adapted to gasoline production as the USA market is primarily a gasoline market while the refineries in Europe will be geared towards diesel production since diesel is the dominant transportation fuel in Europe. Furthermore, newer and tougher USA and European environmental regulations calling for cleaner motor fuels are forcing

refiners to reduce the amount of sulfur and other chemicals in gasoline and diesel to extremely low levels. For example, these new regulations call for reducing sulfur from the previously accepted levels of around 500-1000 parts per million (ppm) to levels of 10-50 ppm by 2010.

As for the third question, the answer is really quite simple. New refining capacity should be built at or near the consuming markets (consuming countries). The only problem with such a simple and straight forward answer is that consuming countries appear to be quite uninterested in building new refineries on their own soils. It seems that no body in the USA or Europe wants a refinery in his backyard. Local and environmental opposition to refinery expansions and new construction, tougher environmental regulations calling for more stringent fuel specifications, and very complex and time consuming permitting procedures are some of the factors contributing to this lack of interest. Consequently, many oil refining companies in the USA and Europe are of the opinion that it is going to be easier and cheaper for the refining industry to build new refineries in the oil producing regions. The only problem with this line of thinking is that other regions of the world, including oil producing countries, are gradually moving in the direction of implementing tougher environmental regulations and more stringent fuel standards and might become just as reluctant as the consuming countries to build new refineries on their soils.

Finally, with regard to who will be building the additional refining capacity, the answer will be quite closely related to the answer of the third question. If the consuming countries (being the places of oil demand) are reluctant to build the new refining capacity on their own soils, they could build them in the producing countries, but should bear most if not all of the investment cost. The oil producing

countries may take part in the new refining projects, but they can not alone bear the total needed investment in the refining industry.

Against this background, I would like Turn my attention now to the prospects of the refining industry in the Arab world in general, and Libya in particular. Starting with the refining industry in the Arab countries, it is worth noting that the current refining capacity which stands at about 7.5 million b/d is distributed between 68 refineries. Most of this refining capacity (about 90%) as well as most of the refineries (53 are in OAPEC countries). As for the future prospects, the oil rich countries, particularly Saudi Arabia, UAE, and Kuwait, are going ahead with plans to expand their refining capacity. According to the announced plans, for various refining expansion projects throughout the Arab world, investment requirements up to 2010 are estimated to be around \$37 billion, with Saudi Arabia, UAE, and Kuwait, accounting for about 60% of these investments. Looking ahead beyond 2010, many of the Arab oil producing countries, particularly those with large oil reserves and large production capacities, are expected to play a greater role in supplying the world oil market with its needs for petroleum products. As a result, these countries may invest heavily in new refining capacity either on their own or through joint venture agreements with either major international oil companies or major national oil companies. However, much will depend on how investment decision drivers such as; worldwide oil demand growth, oil prices, refinery margins, and environmental regulations and motor fuel standards, will affect these investment plans.

As for Libya, there are five refineries in the country with a total refining capacity of 380,000 b/d, basically of the hydroskimming type. The two largest refineries namely; Ras Lanuf and Zawia account for about 90% of this capacity.

Due to the lack of suitable conversion capacity, there is a gasoline supply-demand imbalance and as result more than 60% of the country's gasoline demand is currently met by imports. The inability to upgrade these refineries in the past, mainly because of the embargo imposed on the country, has kept the economics of this industry basically on the poor side. Failure to act now or in the near future on upgrading of existing refining capacity, will only compound the problems particularly in light of the more stringent product specifications by the EU countries, which is the natural market for Libyan oil products. Moving towards applying more stringent fuel standards for use in the local market will definitely aggravate the situation and make the existing refineries even more obsolete.

As for the short term prospects of the Libyan refining sector, it is quite clear that suitable programs to upgrade the existing refining capacity are urgently needed. To achieve this, the Libyan oil sector is currently working on such programs which will be implemented, preferably through joint ventures with reputable international oil companies. In this regard, it is worth mentioning that Libya strongly encourages foreign investment, especially by the international oil companies, in both the upstream as well as the downstream of its oil sector. Already, in the upstream, two open bid rounds have been conducted for exploration and production sharing agreements involving more than 25 international oil companies. Also, and as many of you already know, the third bid round which has been recently announced covers more than 40 blocks, with bid results to be declared in December 2006 As a result of these and other upstream investments, Libya hopes to boast its oil reserves considerably, and at the same time increase its oil production gradually to reach 3 million b/d by 2012.

As for the long term prospects of the Libyan refining sector, and since our plans call for increasing oil production to around 3 million b/d by 2012, investment by international oil companies in any additional refining capacity will be highly encouraged while we will be willing to secure the crude supplies provided that markets for the produced fuels can be secured. Obviously, this will have to be done through some sort of joint venture agreements, either with the international oil companies participating in the new upstream oil and gas projects, or with other qualified companies that might be interested in investing in the Libyan refining industry.

In conclusion, world demand for petroleum products is expected to grow substantially during the next two decades. The transportation sector is the driving force behind this growth and behind the need for more conversion technology to produce cleaner fuels. Additional refining capacity (both distillation and conversion) must come on stream in a timely fashion in order to meet the rising demand which will require huge capital investments. The refining industry must be able to meet the new standards for motor and other fuels by use of appropriate technology. The consuming countries, the international oil companies, and the oil producing countries must all invest in any additional refining capacity needed to meet the rising oil demand worldwide, which will preferably be built in the consuming countries. However, if some of the additional refining capacity needed to meet the rising world oil demand is going to be built in oil producing countries, the consuming countries and the international oil companies should secure oil demand, as well as most if not all of the investment costs required.