

The Mediterranean Oil Markets: Issues and Implications

By Mohamed T. Yousef*

Good morning, ladies and gentlemen. I am honored to have been invited to speak today on a subject of great interest to all of us – the Mediterranean energy market.

The Mediterranean is at a cross-roads between the Atlantic Basin on the one hand and the previously expanding oil economies of the Far East on the other. Although this provides excellent oil trading opportunities, it also means that the region is vulnerable to international changes in both the quantity and quality of crude oil and products supply and demand.

This is, of course, in addition to the “internal” market of the region itself. Although there are clear links between the individual countries bordering the Mediterranean Sea, the market is better understood if looked at as three distinct parts:

- Southern OECD Europe, including southern France and southern Germany, as well as Austria and Switzerland but excluding Portugal;
- The north African countries and the eastern Mediterranean – from Morocco to Lebanon;
- Countries of the former east bloc which border on the Adriatic and the Black Sea.

These three subdivisions of the Mediterranean have different characteristics in terms of market structures and growth potential as shown by:

- The rate of population growth;
- Gross Domestic Product per capita;
- Energy intensity – measured in barrels of oil equivalent per \$1,000 of GDP.

This emphasizes the extent of the differences between the sub-regions and provides a pointer towards the potential variations in future energy and oil demand growth.

In economic and energy terms, the Mediterranean is dominated by southern Europe. Although these countries represent less than half the area’s total population, they account for around three-quarters of the Mediterranean’s energy and oil consumption and economic wealth.

Although much smaller in size, the countries of the former eastern Europe play a disproportionately large role in terms of oil and energy use. Despite major structural changes since the end of the Soviet era, the legacy of inefficient, heavy industries remains. This is reflected in the fact that these are the least energy-efficient economies in the area. An energy input of over 4 bbls oil equivalent is required to generate each \$1,000 of Gross Domestic Product – compared with around 2 bbls oil equivalent in other parts of the Mediterranean.

North Africa and the countries of the eastern Mediterranean have greatest potential, in terms of future energy supply and demand growth. Recent strength in population growth and economic activity is likely to continue and there is scope for modest increases in per capita and per unit GDP and energy use as disposable incomes rise, access to personal transportation grows and industrialization continues.

Having established a regional framework for analyzing the

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Mediterranean, I would like to examine the following areas:

- Primary energy demand and oil demand
- Products qualities and the impact on the refining industry
- The crude oil market background
- The refining position
- Products trade implications
- Conclusions

Primary Energy Demand

Let us now look at primary energy use for the Mediterranean as a whole.

The past 12 years have seen an increase of some 3 million b/d oil equivalent, concentrated in oil and natural gas. In fact, consumption of solid fuels has actually declined by over 1 million b/d – with almost half of the decline in the former eastern Europe.

Looking ahead over the next 10 years (Chart 4), we can see that energy demand could expand by around 2% each year – or about 6 million b/d oil equivalent over the whole period – assuming economic growth of about 3% a year.

This assumes that environmental concerns lead to a gradual reduction in energy and oil intensity. In addition, there will be an increasing impact on energy use from emission reduction targets from 2005 onwards.

The growth is likely to be concentrated in natural gas use and, to a lesser extent, oil.

The most significant change in energy market structure is the increase in natural gas demand, accounting for around 60% of the total increase in primary energy. As a result, gas’s share of the energy market will rise from 20% currently to about 30% by 2010.

There are a number of reasons for this.

- Gas has lower emissions of both sulphur and CO₂ than coal or oil and this is important for the power generation sector.
- Deregulation of the natural gas and electricity markets in Europe will increase demand for natural gas. In the gas industry, the removal of transmission and distribution monopolies will create more open market access, increased competition and hence lower prices. There will be also new entrants into the liberalized electricity sector, and with the removal of coal’s previously protected role, power generators are expected to switch to gas. Combined cycle gas turbine technology, in particular, has become a popular option, having a short construction phase, fuel efficiency and relatively lower capital cost.

In addition, natural gas will benefit from competition emerging between the larger suppliers – such as Russia, Algeria and potentially also Central Asia, in Turkmenistan and Iran.

Oil Demand

The growing role of gas has had a significant impact on oil demand in recent years.

Against a background of some 2 million b/d growth in total oil use, residual fuel oil consumption actually declined slightly. If use had not been rising in north Africa and the eastern Mediterranean, the drop would have been even sharper.

In short, although oil has maintained its share of around 47% of primary energy requirements, this hides a trend towards declining power sector use and increasing concentration in the transportation and petrochemical sectors.

Looking to the future, we would conclude that average

economic growth of around 3% per annum would generate an incremental 2 million b/d of oil demand for the Mediterranean region as a whole through 2010.

Two further key assumptions underlie the outlook for oil demand:

- Oil intensity could actually rise over the medium term in the southern and eastern Mediterranean, due to rapid economic and population growth, with this area accounting for 50% of the total increase in oil use. In contrast, oil intensity should continue to decline in southern Europe and the former eastern Europe.
- Oil use is expected to become increasingly concentrated in the transportation and petrochemical sectors, with fuel oil use declining by a further 300,000 b/d. Fuel oil demand is only likely to grow in the developing power generation and industrial sectors of the southern and eastern Mediterranean, where energy demand is expected to out-pace the development of a non-oil infrastructure.

Within the transportation sector, diesel will continue to gain market share from gasoline. This is already evident in Europe, where diesel use is currently similar to gasoline, up from only 35% of the road fuels market in the mid-1980s. And European governments on the whole show no sign of removing the fiscal advantage to the consumer that has supported this increase in diesel's share. As automotive diesel engines are more energy efficient than gasoline, diesel's market share stand to rise further in the future, with gasoil and diesel oil accounting for 50% of increased oil requirements.

Products Qualities

Changes in products quality, however, are becoming as important as developments in volume. The European Union has already agreed on tighter gasoline and diesel specifications for the year 2000 under the "Auto-Oil" program, with further progress on year 2005 specifications expected in 1999.

The main features are:

- A reduction in sulphur content of gasoline and diesel, with diesel cetane and density requirements and gasoline olefin content also being tightened;
- A complete phasing out of leaded gasoline. However, some slippage may be available from the 2000 deadline for refiners in southern Europe, where leaded fuel still has a larger market share than in North West Europe;
- Regulations to reduce heating gasoil and fuel oil sulphur contents are also being drawn up under the European Union Liquid Fuels Directive.

Although the limits we have discussed may apply only to the European or United States markets for now, Asia and Latin America are also progressively tightening fuel qualities. If the Mediterranean is to retain its position as a key swing trade center for global products, refiners in the region will have to respond to the challenge.

Impact on the Refining Industry

The refining industry will be affected in a number of different ways by these quality changes:

- Demand for low sulphur crude feedstock is likely to be boosted, although if low sulphur feedstocks are not available, refiners will need to invest in hydro-processing capacity to remove sulphur and match diesel cetane requirements;
- Rising hydrogen needs, resulting from additional hydro-

treating capacity, could force refiners to increase reforming, worsening Europe's existing imbalance between surplus gasoline and middle distillate tightness;

- Light straight run kerosene supplies will tighten, as their value as diesel blend-stock increases.

In addition, as products markets become more segmented, it will be less easy to switch production between products cuts, and production units, storage and shipment facilities will become increasingly product-specific. This will reduce supply-side flexibility and lead to increased price volatility.

Of course, not all refiners will make the significant investments needed to meet new fuel specifications. Some may already have the flexibility to alter their operating regime at low cost and others may become marketers of "off-spec" product. The remainder will face a stark choice between high investment or closure.

On the whole, the refining sector in the Mediterranean is less advanced than in North West Europe in terms of octane and hydro-processing capability, so refiners in the Mediterranean face greater problems in adapting to changing product specifications. Substantial investment will obviously be made, but there will also be restructuring and closures.

The Crude Oil Market Background

Crude oil prices are expected to remain relatively low over the medium term, with little scope for a sustained recovery above \$15/bbl for Brent. And this is likely to encourage further rationalization in the European downstream. Further ahead, however, the low oil price will cut into non-OPEC supplies, boosting the call on OPEC and providing scope for higher prices by the second half of the next decade.

An examination of marginal crude oil supply and demand indicates a continued tightness in the heavy crude market over the next 3-4 years. This implies a relative strength in Urals prices until 2003, when increased supplies of Arab Gulf crude start to force a global widening in light versus heavy crude differentials.

Urals prices will be further weakened as the Mediterranean becomes broadly crude self-sufficient by 2005.

The key to this self-sufficiency lies in the outlook for production from Algeria and Libya, together with the likely volume of Iraqi and FSU exports passing through the Mediterranean. Total liquids production from Algeria and Libya currently amounts to some 3 million b/d. This could rise by at least a third by 2010.

The Refining Position

The Mediterranean region has installed a crude distillation capacity of 10.4 million b/d, with the majority of both simple and complex capacity concentrated in southern Europe.

Current utilization rates are relatively high in southern Europe and the southern and eastern Mediterranean, with any significant spare capacity concentrated in eastern Europe.

However, it is not clear whether substantially higher utilization rates can be achieved in practice without further investment. Investment is also needed to produce products in line with existing, let alone future, European specifications.

We can expect fuel oil conversion and product quality-based additions to remain the focus of refinery investment in the next few years.

On the basis of firm plans – that is, projects already

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underway – regional distillation capacity will increase by 230,000 b/d, heavily concentrated on projects in Egypt and Morocco, with only Turkey adding primary capacity within Europe. In contrast, cracking, octane-boosting and hydro-treating additions will be substantial and widespread throughout the region. Despite a period of relatively poor margins since the mid-1990s, the investments so far made in terms of firm capacity additions reflect an awareness of fuel oil's declining market share and the measures needed to meet new fuel specifications in Europe.

The story is rather different for projects currently at the planning stage, which represent the next generation of refinery investments. There are numerous proposals for expansions and new refineries, amounting to some 900,000 b/d and distributed throughout the Maghreb region to Lebanon, Syria and neighboring countries.

So far, however, the amount of upgrading capacity associated with these projects is either uncertain or limited. Clearly, given the lightening of the demand barrel, and a growing need for ever-cleaner products, substantial further cracking, octane and hydro-treating investment will be needed. The extent to which this investment takes place may depend upon a fundamental re-orientation in the structure of the downstream sector in the Mediterranean.

Products Trade Implications

So just what does the future hold for the Mediterranean in terms of its traditional role at the cross-roads of global products trade? Note the following:

- The region is a significant net importer of gasoline, gas/diesel oil and fuel oil, much more so than when east Europe's refineries were operating closer to capacity levels;
- Significant volumes of gasoline can be sourced from the North West European refining region, which has a substantial structural gasoline surplus;
- Gasoil and fuel oil enter the region in significant volumes through the Russian Black Sea ports, while Algeria's refineries provide low sulphur diesel supplies for southern Europe;
- The region is long in straight-run products such as jet/kerosene and naphtha, with north African refineries again the main source of export cargoes.

Purely on the basis of firmly planned capacity additions, how is this position likely to change?

Despite the apparently high levels of new upgrading capacity already under construction, the combination of higher runs and static fuel oil demand could lead to a substantial fuel oil surplus by 2005, with the main distillate products in deficit.

This suggests that, although total oil demand growth through 2005 can be met by raising utilization to 95%, currently planned cracking additions are insufficient. Indeed, we would estimate that the system needs an average of around 115,000 b/d of new upgrading capacity every year to minimize the potential fuel oil surplus. Comparing this with capacity under construction suggests a potential annual average shortfall of some 80,000 b/d. To put this into context, since 1990 annual upgrading capacity additions have averaged only around 50-60,000 b/d.

Conclusions

The international oil industry is currently undergoing a

major restructuring, which is already having an impact on the Mediterranean downstream. As long as oil prices remain low this global trend is likely to continue and, combined with specific regional factors, could lead to significant changes in the structure of the Mediterranean downstream. The key factors involved here are:

- The anticipation that crude prices and oil company profitability will remain weak over the medium term. This will maintain pressure on European integrated operators to seek further cost reductions and efficiency gains through consolidation, capacity closures, alliances and mergers;
- The privatization of the eastern European refining systems finally appears to be getting underway. This will lead to much-needed investment in outdated facilities, allowing higher throughputs and products exports;
- Liberalization moves in north Africa and the eastern Mediterranean look set to gather momentum and will allow greater involvement in the downstream by foreign operators;
- Growing opportunities to link downstream oil activities with natural gas distribution and marketing and power generation will also alter the nature of the Mediterranean downstream.

Even before last year's price collapse, international oil companies were under pressure to restructure their European downstream operations to reduce costs and increase financial returns. The problems in Europe were brought into focus by the relative success already achieved in the USA. There, however, the market structure lent itself more easily to the disposal of refining capacity to third party independents and to the merging of downstream operators of similar size and complementary geographic structures.

Although this had minimal impact on overall refining margins, since there has been little or no capacity closure, it has improved individual company profitability through cost reductions, as well as enhancing overall financial performance.

Privatization in the former east bloc countries of the Mediterranean, especially in Bulgaria and Romania, is leading to the re-activation of under-utilized capacity. The need for additional investment, not just to meet tighter product specifications, but even to meet current specifications, has already been discussed.

Although there has been little downstream liberalization or privatization to date in the southern Mediterranean region, except for Morocco, there are clear signs that this is now starting to happen, especially in Algeria and Egypt. This is expected to become more apparent in the next few years, especially in a climate of low oil prices.

Whether this will lead to an increase in investments in new refining capacity remains to be seen. However, state funding is bound to diminish, whilst private capital is more likely to be directed towards improving distribution and retailing facilities than adding refining capacity – unless this is needed for domestic demand growth and/or products quality improvements.

Turning to the non-oil sector, the changing nature of the natural gas and electricity markets will make it possible for newcomers to enter, not only the natural gas "midstream" business, but also electricity generating and distribution. Some oil companies will view this as an opportunity to establish a fully integrated and diversified new energy business, with

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