



Telephone: (212) 867-0052

**Petroleum Industry Research Foundation, Inc.**

**1 2 2   E A S T   4 2 n d   S T R E E T**

**New York, N. Y. 10168**

**INDONESIAN OIL AND GAS IN A GLOBAL CONTEXT**

By John H. Lichtblau

A Presentation Before The Indonesian Petroleum Association

Jakarta, October 8, 1985

liquefaction and gasification, to name just some of the alternative energy sources ready to displace conventional oil at those prices. On the demand side, the substantial energy conservation and fuel substitution which we have witnessed over the past 10 years would undoubtedly have been greatly accelerated by this price trend, with concentration on the oil sector. The inevitable outcome of all this would have been a much sharper price fall than we have actually seen, starting at a later date. But by the time of the price fall, institutional rigidities on both the demand and the supply side would have kept oil from recouping its losses, with the probable result that world crude oil production at the end of the century would have been below this year's level.

While we are on the subject of how high prices had been expected to go in the aftermath of the second OPEC price explosion, it may be worth contemplating briefly what would have happened to oil demand if that explosion, which had not been planned nor expected by OPEC, had never taken place. We know that at its last regular meeting before the Iranian revolution OPEC had adopted quarterly price increases for 1979 amounting to an average annual increase of about 10% which was moderately in excess of world inflation. Let us assume for the purpose of our calculation that OPEC would have wanted to maintain this price in real terms which would have been an improvement from the 1974-78 period when real OPEC oil prices declined somewhat; it would also have increased OPEC's international purchasing power because of a rise in the dollar value from late 1980 to early 1985.

By the end of 1985 this real price maintenance would have led to a nominal price of \$22-23 for the Arab Light type crude, or about \$4.00-4.50 below its current market value. By the end of 1986, assuming some further erosion of current prices, the two price levels would be about even which would signal the full reversal of the 2nd OPEC price escalation.

How a flat real price trend would have affected OPEC's total oil revenues depends of course on the volumes sold under this scenario. During the period 1974-78 world oil demand rose at an average annual rate of about 2.5%. While this was a drastic reduction from the persistent 7% rate of the pre-1974 period, it was still an untenably high rate, reflecting in part the recovery from the depressed level of 1974 and in part the time lag between the 1973-74 price escalation and its full impact on consumption.

However, a very modest growth rate, perhaps slightly under 1%, would have been quite likely under a scenario of steady flat real prices from 1979 on. A growth rate of this magnitude would have led to an increase in world demand to about 55 million B/D in 1985, or nearly 9 million B/D above this year's likely actual consumption. If we also assume that non-OPEC production would have been somewhat lower under this lower price scenario, it appears that the requirements for OPEC crude oil this year would have been about 25 million B/D, or 60% more than the 15.6 million B/D the organization will actually produce.

The calculation indicates that because of the high volumes of output in the first 2 to 3 years after the 2nd OPEC price explosion the organization earned considerably more in those years than if prices had not increased in real terms. But last

year and even more so this year, OPEC would have fared better under the lower price scenario, for 25 million B/D times \$22.50 certainly yields more revenue than 15.6 million B/D times \$26.50. Next year the hypothetical revenue differences would be even larger, since the two prices would be about equal but demand would be substantially higher under our assumed steady real price conditions than under the up-and-down movements of the actual OPEC price path since 1979.

An important aspect of this hypothetical price and production scenario is that different members of OPEC would have been differently affected by it. Those members which could have expanded their production substantially would have reaped the full benefit of the higher production to offset the lower price. Those with limited spare capacity would have fared less well. Most Middle East members are in the first category. Indonesia is one of several member countries in the second category. It could increase its current crude output by no more than a third, or about 400,000 B/D. This would still have given it a somewhat higher export revenue this year under our hypothetical price/volume scenario than it is actually obtaining. But the percentage increase would have been far less than that of most Middle East members or of Libya and Venezuela. Member countries with spare producing margins below 20% would earn less this year under our hypothetical scenario than under actual market conditions.

This points up some inherent differences of interest within the OPEC community. Those countries with high reserve/production

ratios and low ratios of capacity utilization would be less hurt or more helped (depending on the elasticity factors) by a price reduction and consequent demand increase than those countries with low R/P ratios and high capacity utilization. In other words, in the long-term, revenue optimization might well require a different pricing policy for Saudi Arabia and Kuwait than for Indonesia and Algeria. This is not a new observation but it should be kept in mind when analyzing the latest developments in the pricing policies of OPEC members. Another relevant fact to keep in mind is that all non-OPEC producers are hurt by any price reduction, regardless of its impact on demand, since none has significant spare producing capacity.

Of course, up to now Indonesia has done relatively well as a member of OPEC. While the group's total crude production this year will be 50% below its 1979 peak, Indonesia's crude output, which also peaked in 1979 at 1.52 million B/D, will be only 23-25% lower. If condensates are included the decline will be less than 20%. This indicates that other members absorbed a larger share of the output reduction required to support the OPEC price structure.

A major reason for the decline in OPEC oil production has of course been the displacement of its oil exports by other fuels. One of these fuels, natural gas, is of special interest to Indonesia. Outside of the U.S. which has a locked-in domestic surplus of this commodity, world natural gas consumption (including the Soviet Bloc and China) has risen by nearly 4 million B/D of oil equivalent between 1979 and 1984 and will increase further this year. Some of the gas increase has

displaced coal but the bulk of it has displaced or preempted fuel oil and heating oil virtually all of which would have been made from OPEC crude oil, since most non-OPEC crude has been running at capacity throughout this period. The impact of the growing gas competition has fallen unevenly among the OPEC members, since some have participated in the gas export expansion and thus have had an offset to their oil market losses. For the two principal OPEC gas exporters, Algeria and Indonesia, the gains in gas exports have greatly helped to offset the losses in oil exports. Indonesia's LNG exports rose by an oil equivalent of nearly 200,000 B/D from 1979 to 1984 and is rising further this year. Of course, on a Btu-equivalent basis Indonesia receives much less for a unit of gas export than for a unit of oil export. Still, last year the gross value of Indonesia's LNG exports was about \$3.4 billion. This year it will undoubtedly be still larger.

Now let us take a brief look into the future. Last year's 2% increase in world oil consumption\* raised some hope that the world oil decline which started in 1980 had ended. As we now know, the increase was due almost entirely to such special factors as the U.K. coal strike, the colder weather in the U.S., Europe and Japan and the abnormally rapid economic growth rate in the U.S. This year world demand is likely to be slightly below last year's while non-OPEC production continues to rise. The indicated result is a reduction in OPEC production this year to

---

\* Unless stated otherwise, all world oil data exclude the Soviet Bloc and China.

300-500,000 B/D below the group's self-imposed ceiling of 16 million B/D. In fact, the whole annual reduction has already occurred in the second and third quarters of this year.

We don't expect any significant change from this level next year. So, OPEC's problem for the near term is not only to keep its members from exceeding their assigned production quotas but to have one or more members accept a lower production quota to support the price structure. Up to now Saudi Arabia has carried out this function when required. There are now clear indications of its refusal to continue playing this role, at least formally. Meanwhile, some other OPEC members, primarily Iraq, are requesting higher production targets. All this is of course well known and I'm not bringing it up as evidence of OPEC's forthcoming demise but simply to point out that the organization will continue to face extremely difficult times. Based on its record over the last four years, when all trends worked consistently against it, one has to be impressed by its staying power. But eventually things will either have to get better for OPEC or it will disintegrate.

In our view, the improvement will start in the late 1980's but on a very modest scale, assuming the organization can hold together until then, i.e. that prices will erode somewhat more but will not "collapse", as is now so freely predicted. I might interject here that while the gradual price reduction of approximately \$8 since early 1981 has been quite beneficial to the world economy, the destabilizing effect of a further drop of equal or greater magnitude, particularly if it occurred rapidly, could well outweigh the direct benefit to consumers. For

economic dislocations and distortions can be caused by rapid radical price changes in either direction.

By 1990 OPEC crude and NGL output might be 3 million B/D above this year's level. While this would be a substantial improvement, it would mean a production level by 1990 that as recently as a year ago would generally have been considered untenably low. The potentially good news is that once the trend reversal starts it is likely to continue and, in fact, should accelerate somewhat. Thus, the growth is likely to be faster in the 1990-95 period than in the 1985-90 period.

The basic premise underlying this forecast is beguilingly simple: within a few years the falling oil prices, together with the now declining dollar and a world economic growth rate of about 3% are expected to reverse the declining demand trend. With a likely demand decline of only about 1% this year, following last year's increase, the reversal would not require a radical change. On the supply side the premise is that within a few years non-OPEC production, nearly all of which is operating at capacity and much of which is relatively old, will finally face the constraint of a declining reserve/production ratio and start falling, or at least stop rising. Production in Alaska, the U.S. mainland, the North Sea, Egypt as well as Soviet exports could be in that category by 1990. Currently, supplies from these sources amount to nearly 15 million B/D. Altogether, we now see total Non-OPEC oil and NGL supplies (including net exports from the Soviet Bloc and China) falling modestly between now and 1990 and by 1.2-1.4 million B/D during the following five years. The problem for



OPEC is of course to get from here to there, with the timespan between now and the beginning of the upturn quite possibly somewhat longer than we have assumed.

Where does Indonesia fit into this scenario? Its two principal oil export markets are Japan and the U.S. Last year nearly 46% of Indonesia's crude oil and condensate exports went to Japan and 28% to the U.S. (including the Virgin Islands). The problem is that for Indonesian crude Japan is a stagnant market at best and the U.S. a declining market. Japanese oil demand in 1990 is expected to be virtually unchanged from last year's level of 4.5 million B/D and should be only 2.5-3.0% higher by 1995. The principal reason for this stagnation in oil demand is the continuing encroachment of other energy sources into the oil sector, for total Japanese energy consumption is expected to grow by nearly 2% annually over the next 10 years. Meanwhile the Middle East producers whose exports to Europe are likely to remain flat at best throughout the remainder of this decade are increasingly directing their sales efforts at the large Japanese market. Another rising source of Japanese imports will be China. Its crude exports, the bulk of which goes to Japan, are expected to grow by 250,000-300,000 B/D between 1984 and 1990.

In the U.S. the traditional principal market for Indonesian crude has been the West Coast region (including Hawaii). In the 1978-80 period it accounted for about 90% of total U.S. imports of Indonesian crude. But by 1984 the West Coast's share had dropped to about 50%. The same held for the 292,000 B/D imported into the U.S. in the first half of 1985. The principal reason for the decline in imports to the West Coast has been the

emergence of a regional crude oil surplus in 1979 because of Alaskan North Slope production. Currently the surplus amounts to 800,000 B/D. By 1990 it is likely to have declined to 400,000-600,000 B/D. But it probably won't be completely eliminated until after 1995.

Related to the surplus is the fact that, as an economic consequence of U.S. legislation prohibiting the overseas exportation of domestic crude oil, Alaskan crude is now generally sold at the West Coast below the current market prices of similar quality foreign crudes. For most of the West Coast surplus is transported to the U.S. Gulf Coast where it is priced competitively with imported crudes. The West Coast price substantially reflects the transportation cost differential between the West Coast and the Gulf Coast for Alaskan crude. This gives the West Coast a significant price advantage. Thus, the West Coast does not need foreign oil to balance supply and demand and, in addition, is one of the world's least attractive markets for foreign producers.

A different historic reason for the importation of Indonesian crude oil into the West Coast is also rapidly disappearing. I'm referring to the very severe sulfur restrictions on residual fuel oil burned in southern Californian electric power plants. However, between 1980 and 1983 the share of electric power generated by fuel oil in California has dropped from 26% to 5%. Since then it has declined even further. Accordingly, West Coast refiners have greatly reduced their

output of this particular product and consequently their input of low-sulfur Indonesian crude.

One might ask why under these circumstances West Coast refiners imported even as much as 147,000 B/D from Indonesia so far this year. The answer is in large part that several major West Coast refiners are also crude producers in Indonesia and find it advantageous to keep some of this equity crude within their own integrated system. It is through these companies that Indonesian oil is likely to maintain a modest foothold at the U.S. West Coast. An example in reverse of how this connection between equity production and downstream integration operates can be seen in Trinidad which was a regular outlet for Indonesian crude -- nearly 30,000 B/D in 1983 and 1984 -- when Texaco owned and operated a refinery there. But Trinidad has not imported any Indonesian crude since the refinery was sold to the government which now runs it mainly on local crude.

In contrast to the West Coast, Indonesian imports to the U.S. Gulf and East Coast have been rising since 1980. This, too, is largely related to the direct or indirect integrated requirements of companies with equity production in Indonesia. Logistically Indonesia is of course at a disadvantage in these markets, relative to other foreign suppliers.

But while Indonesia's traditional export outlets in the industrial countries do not appear promising, there is a market with a growth potential right in its back yard in Southeast Asia. The eight countries of this region\*, other than Indonesia,

\* Brunei, Hong Kong, Malaysia, Phillipines, Singapore, South Korea, Taiwan, Thailand

increased their oil demand by slightly more than 2% between 1979 and 1984. While this is a very modest growth it must be contrasted with Europe, Japan and the U.S. which registered drops of 18%, 17% and 16% respectively during the same period. Currently the eight countries consume about 2 million B/D and produce 550-600,000 B/D. Thus, they constitute a major oil deficit area. With an expected GNP growth rate of about 5% annually, oil demand, which accounts for about 70% of the region's total energy demand, will continue to grow, probably at a substantially faster rate than in the last five years, while regional oil production is unlikely to show much further increase.

But the most important export growth potential for Indonesia lies not with oil but with natural gas. Outside the U.S. where gas demand is falling, world gas consumption is expected to rise by an annual rate of about 4% between 1984 and 1990 and 2.5-3.0% from 1990 to 1995. Most industrial countries will participate in this growth. For Japan a 50-60% increase is expected between 1984 and 1995, to a total of 1 million B/D oil equivalent in the latter year. Virtually all of the increase will consist of liquefied natural gas imports. As you know, of course, Indonesia is currently Japan's principal supplier of this commodity. In the future it will have to face increased competition from Australia, Qatar and Canada and possibly also from Thailand, Malaysia, Soviet Sakhalin and Alaska, although none of the latter are likely to have new export projects operating before the early to mid-1990's, if then. Thus, Japan's rising LNG requirements are likely to be more than matched by

potential new supplies.

There is also a substantial growth potential for gas in South and Southeast Asia, perhaps on the order of 6-7% annually over the next 10-12 years. Part of the growth will be met from local supplies but imports will also rise significantly. Indonesia's gas deal with South Korea which becomes operative next year is probably just the beginning of its gas export expansion into this region. Fortunately, with an R/P ratio of about 65:1 Indonesia has the resource base to increase both its domestic gas consumption and its exports substantially in the foreseeable future.

How much revenue Indonesia will receive from its gas exports and how many more LNG projects it will actually build depends of course on the future price of gas which in turn depends on the future price of oil which in turn depends on OPEC's ability to maintain some effective control over world oil prices.

Whether OPEC will be able to do so is of course the key question facing the world oil and gas industry. There is obviously no factual answer, just more or less informed judgemental views. Our own view is that the odds favor approximate continuation of OPEC's present price setting ability. But the odds against it are large enough to take the possibility of OPEC's loss of control quite seriously. This may sound like a Delphic Oracle answer to the riddle of OPEC, but it's the best I can and, as the Greeks knew, oracles do have their function.

Thank you.