Towards a Policy for Exploitation of Oil in India

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THE ADDITION TO INDIA'S RESERVE OF OIL BY THE EXPLORATIONS IN the Bombay High, has raised expectations about the country's capability to meet her requirements from the indigenous resources. India has been carrying a heavy burden of foreign exchange payments for the import of oil from abroad, the figure for which stands around Rs. 1400 crores per annum now. The load is going to increase further with hike in oil prices in the coming years. It is only natural that knowledge gained about the reserve would elicit suggestions for utilizing it for reducing the country's dependence on imported oil. There has even been suggestions for setting up a target for attaining self-sufficiency in oil by the country. A debate on the suggestion will help us develop some of the ideas relevant for working out a rational oil exploitation policy.

In the first place, one cannot talk of achieving self-sufficiency in respect of a resource whose stock is limited in nature and must be exhausted over a finite period. One can at best think of matching the demand with supply from the domestic source at points of time over a given period. Such balance can only be a transient phenomenon terminating eventually once for all. We may illustrate the point with actual position availing in the country.

A firm estimate of crude oil in the country is not available. We have to bring together available information to prepare an estimate for ourselves. The proven reserve of crude oil in the country was estimated at 125.2 million tonnes in 1972. Henderson[3]. To this has to be added the estimate of reserve from Bombay High and those expected from other basins. A techno-economic study by Soviet experts in 1972, estimated that it may be possible to discover another 170 million tonnes of recoverable oil during the decade [K.P.N. [5]]. Putting the two estimates together we may take 295 million tonnes as the potential reserve of oil for the country.

As against this we have been exploiting the reserve at the rate of about 10 million tonnes at present (1974) projected the level of indigenous crude production to be 15 to 20 million tonnes by 1990-91. Assuming the rate of exploitation to be 15 million tonnes per annum on average the total reserve of oil can be expected to last about 20 more years only. Our annual import of crude oil has been around 14 million tonnes in the recent years. If it is desired to scale down the level of imports by substituting indigenous crudes the life of the reserve would be reduced further. The country may strike greater reserve of oil than estimated. But the rate of consumption of oil may also increase to offset the advantages. The Fuel Policy Committee based their estimates of demand for oil products on an assumed growth rate of 6.9 per cent per annum. By 1990-91 it was estimated that the level of consumption of oil products would reach around 6.7 million tonnes, calling for an import of crude oil products between 40 and 50 million tonnes.

A global view of the oil situation also reveals similar features. The group experts engaged in the Club of Rome's project on the long term trends of world economy [Meadows et all[6] observed that the world reserve of oil can endure for only 31 years if the rate of consumption is maintained at its present level. If further exploitation brings up reserve as high as five times the presently known level, the report speculates that it cannot last beyond 50 years if the rate of consumption is allowed to increase in pace with economic growth.

It may be seen therefore that any forced acceleration of exploitation of indigenous oil to meet the rising demand can only hasten the day of its complete exhaustion. Beyond this point the country becomes completely dependent on imports from abroad. Oil is an exhausting resource for other countries also and its price tends to rise fast as the remaining stock diminishes. The price bears an inverse relationship with the residual reserve. This was pointed out by Hotelling[4] as early as in 1939. The hike in oil prices over the recent years confirmed his masterly analysis of the way the prices of the exhaustible resources could behave in the long run.

The need for pursuing a conservationist policy toward oil should be apparent from above considerations. A rational policy for utilization of oil under the circumstances would be firstly, to restrain the consumption of oil and products in the country and secondly, to minimize pressure on the indigenous reserve by imports as much as can be supported by the balance of payments condition of the country.

So far as restraints on the consumption of oil is concerned, the demand for the crude can be reduced by suitable modification of the pattern of its utilization in the country. Since petroleum crude is fractionated and processed into a number of products for final use, viz., petrol, naptha, kerosene, diesel oil, fuel oil, etc., there is sufficient scope for variation in the product mix from a unit of crude. A change in the proportions of the products in a mix can reduce the demand for the crude. It is possible, for instance, to increase the proportions of petrol, kerosene and diesel in the mix by secondary processing of the heavy distillates. This would however call for replacement of the heavy stock currently in use as furnace oil by other substitutes like natural gas or coal which are available in the country.

The way the country lost by neglecting these opportunities, has been described by Bhatia[1]. The volume

of crude to be imported was determined mainly by the requirements of the middle distillates. e.g., kerosene and diesel which could be obtained by refining the crude. This resulted in the surplus of naptha and fuel oil which had to be disposed of by keeping their prices sufficiently low to induce their use as inputs in fertilizer industry and fuel for a number of industries respectively. If, instead of this, hydrocracking facilities for secondary processing of the heavy stock were expanded it would have been possible to meet the demand for the middle distillates with a reduced volume of crude.

A reduction in the level of consumption of oil could also be achieved by substituting for oil by other resources in a number of processes. Low prices of the surplus products of the refineries however stood in the way.

The glut in naptha was a worldwide phenomenon in the mid-sixties. The market price of naptha was low at international level as well. *This encouraged a complacent view about the cost of development of the naptha-based fertilizer industry in the country. Not only that plans for fertilizer industry were worked out for utilization of the current surplus of naptha available within the country but long term plans for expansion of capacities of fertilizer industry and of refineries were also based on the expectation of import of cheap naptha in future.* This *approach* deprived the country of the opportunity of development of the indigenous coal as an alternative base for the fertilizer industry and kept the country tied to the vagaries of international market forces in respect of a series of vital industries. Protests by Indian scientists did not register. Chakravorty[2] shows how the choice of naptha-based fertilizer plants, 20 in number and several of them now in various stages of construction, led to the decision to expand refinery capacities to supply feedstock for their requirement. This in turn called for import of crude to feed the refineries. It was thought to be an economic way of reducing our dependence for import of naptha. *One wrong decision was sought to be undone, observes Chakravorty, by another wrong decision. Bhatia[1] also noted in his analysis that if only a few of the petroleum products were considered it would have been economic to import them directly rather than obtain them by processing imported crude.*

India has, on the other hand, a reserve of about 94, 000 million tonnes of coal which can substitute not only as a base for fertilizer but also for the other petroleum like motor spirit and a wide variety of hydrocarbons. The Fischer-Tropsch process yielded synthetic oil and products from coal on large-scale in Germany upto the end of the Second World War. Large plants are installed and run commercially in Sasolburg in South Africa. *Interest in developing such technologies vary in different countries in accordance with their expectations about oil.* Similarly India's policy towards coal technology has been varying *on the same account.* At the first impact of the oil price rise, the policy makers in India renewed their faith in coal and aspired for a self-reliant growth energy on the basis of coal. Such optimism was, however, short-lived. With the findings of the Bombay High reserve of oil the enthusiasm over coal rapidly gave way to euphoria over oil. The suggestion for self-sufficiency in oil was advanced in this context.

Advocates for limiting the import of oil find it to be necessary to prevent the large drain on foreign exchange reserves. The argument misses the point that the *net balance of payments from the foreign trade of a country cannot be determined simply by imposing the burden of adjustment on any single commodity.* The whole range of tradeable goods have to be considered for the purpose.

Secondly, the amount of foreign exchange this country can save avoiding import of oil now, has to be set against the out flow of foreign exchange from the country in later years, when the price will have risen because of depleting stock in the other countries. As the rise in prices due to scarcity is expected to be higher than any reasonable rate for discounting of the return over the years, it would be prudent to import oil in the earlier years rather than in the later years.

Thirdly, the exploitation of oil from the domestic reserve involves large expenditure of foreign exchange. At present about 80 to 85 per cent of equipment needed for drilling for oil on land in India has to be imported. As for offshore drilling, nearly 100 per cent of the equipment, including the platform and other rigging material, has to be imported at huge cost in foreign exchange for the present. According to the five year plan drawn up by *ONGC* for the period 1974-75 to 1978-79, a total expenditure of Rs. 1710 crores will be necessary to raise crude output in the country by 8.0 million tonnes. Of this, the foreign exchange component will be Rs. 785 crores.

The foreign exchange involved in the exploitation of oil can be reduced eventually by resorting to the manufacturing of equipments within the country. This however raises a few problems. As the life of oil reserves in the country has a limit over a few decades only, various equipment, starting from the stages of exploration to the diverse processing of the end products, will become obsolete at the end of the period. *It would be unwise to commit heavy resources to manufacture equipment when the scope for investment is so limited.* An optimal policy would actually call for determining appropriate level of investment on the equipment so as to reap the benefits over their full working age. *Otherwise there will be an overstocking of capital goods which will remain ineffective over a large part of their life. The savings in foreign exchange in the early years in this part of their life. The savings in foreign exchange in the early years in this scheme would not be sufficient to offset the losses arising from their outflow in the later years when the price for imported oil will be higher. It will be worthwhile to re-examine the cost of production of hydrocarbon chemicals from coal in this concern.* It can be appreciated that the relative economics of chemicals produced from oil and coal respectively will continue to turn in favour of the latter with changes in the position of the supply of the crude. As the coal based plants will have no difficulty in operating over the full period of their working life unlike oil based plants, their economic merit

will not be affected over the years.

A long term policy for oil should therefore keep in view the need for restraining the rate of exploitation of an exhaustible resource like oil to as low a level as possible and meet the additional demand by imports within the capacity. The country should seriously consider changing the existing pattern of consumption of oil products, by suitable modification of the product mix and substitute by coal and coal-based chemicals wherever feasible. Apart from coal based chemicals it would do well to take a fresh look at the growing rates of substitution between nylon and cotton clothing, between polythene and jute bags, and similar instances where alternatives to petro-chemical products exist.

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