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Aramco raises oil prices as crude surges

DUBAI: Saudi Arabia raised oil prices for customers in Asia, the US and Europe after crude's surge to almost $95 a barrel.

Saudi Aramco increased all grades for its main market of Asia in March, according to several people with knowledge of the matter. The company raised its key Arab Light oil for the region by 60 cents from February to $2.80 per barrel above the benchmark it uses. Other Asian grades jumped by between 40 and 70 cents a barrel. US prices were increased by 30 cents, *Bloomberg* reported

Brent crude has climbed around 20 per cent in 2022 to more than $93 a barrel. Its rise has come as global consumption remains strong despite the spread of omicron variant of the Coronavirus. AGENCIES

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Indian oil industry

Faultline in refining

Wrong choice of geographical locations and technologies — driven by political rather than economic considerations — made India import-dependent in petroleum during 1970-90

AUTHOR

DIPANKAR DEY

This piece is the third in the series of articles on the development of the Indian petroleum industry since its inception in 1867. The first article, dated January 23, covered the genesis and initial decades of its development till 1970. The second article, dated January 30, narrated the development of exploration and exploitation of the crude and natural gas between 1970 and 1990. This third article will remain focussed on the development of the refining sector during 1970-90. The next article will discuss oil marketing and pricing strategy till 1990. Subsequently, we shall discuss the developments in the oil and gas industry during the past thirty years of the liberalisation, privatisation, and globalisation (LPG) phase of the Indian economy.

The growth of public sector refineries

Total refinery output in 1969 was 17.49 MMTPA, which increased to 51.85 MMTPA — almost three times — in 1989-90 (Refer to the table). Of the total output, four foreign company-owned refineries — Assam Oil Company, Digboi (0.521); Burmah Shell Refinery, Bombay (3.713); Esso Standard Refining Company, Bombay (2.442); and Caltex Oil Refinery (India) Ltd, Vizag — produced 7.981 MMTPA (45.63%). Two joint venture refineries — Cochin refinery Ltd and Madras Refinery Ltd — produced 3.33 MMTPA (19%), and the rest 6.179 MMTPA (35.3%) was produced by three public sector refineries at Guwahati, Barauni and Koyali.

During 1969-89, (a) the refining capacity in India had increased by nearly 285% but refining companies were reduced to six from seven. (b) In 1969, IOC's share in total refining capacity was 35.3% which had increased to 47% in 1989-90. (c) Share of the joint sector refineries (CRL & MRL) almost remained the same i.e., 19.4% in 1989 and 19% in 1969. (d) In 1969, there was only one public sector unit (PSU) namely IOC but in the next 20 years, their number reached to four and the market share increased to 80.6% from 35.3%. (e) All the four foreign oil companies — AOC, BSR, ESRC, and CORIL — which had a combined market share of 45.6% in 1969, left the Indian refining industry. (f) In 1981, AOC refinery at Digboi was taken over by the IOC. Earlier, Bharat Refineries Ltd, (later BPCL) took over BSR refinery at Bombay. HPCL was formed to run ESRC and CORIL refinery at Bombay and Vizag respectively. (g) Two oil refineries at Haldia and Mathura were built by IOC during the period of this study. Another refinery-cum-petrochemical complex was built by BRPL at Bongaigaon. (h) PSUs and Joint sector refineries had taken complete control of the Indian refining sector by the early 1980s.

Induction of Indian private firms

The government decided to involve Indian private companies in refinery projects mainly due to resource crunch, and Indian private companies showed interest at least for two reasons:

First, the Indian private capital wanted to control the feedstock of fertilizers and the petrochemical industry. Amid the blowing winds of liberalisation, they apprehended that they may not be able to survive without establishing a vertically integrated production system. Second, in the 1980s, there was a proposal for changing the 'administered pricing mechanism' which, for years, acted as a disincentive to any entrepreneurial endeavour. In 1984, a few items like benzene and toluene were made 'free' to the market mechanism. This was one of the reasons why private companies preferred to produce more feedstock for industries.

In the late 1980s, three joint sector oil refineries were approved by the government. Those were: (i) 6MMTPA refinery at Karnal; (ii) 3MMTPA refinery at Mangalore and (iii) 3MMTPA refinery at Numaligarh in Assam.

Karnal Refinery: Tata Chemicals was chosen as Indian Oil Corporation's partner, with an equity share of 26 per cent in the joint venture. In 1987, a bilateral agreement between India and the Soviet Union was made for the Soviet credit and equipment for Karnal Refinery.

Due to internal problems in the Soviet Union in the late 1980s, its economy was not in a good shape. At that stage, IOC suggested that it would be able to construct the refinery at Rs 1,600 crore by maximising the indigenous content — as it had done in Koyali refinery. For Koyali refinery, IOC had a tie-up with Chevron for hydrocracker technology which maximised production of middle distillates like diesel, and with Engineers India Ltd. (EIL) for certain other services. This reportedly made Tatas to have second thoughts about their participation in the project.

Tata Chemicals conceded that the Karnal Refinery should be conceptualised and configured in a manner that it could, with minimum disruption, produce petroleum feedstock suitable for industries such as fertilizers, petrochemicals, lubricants etc. Over years, the partners drifted apart. Fuel, rather than industrial feedstock, emerged as a more important objective of Karnal refinery, complained the CEO of Tata Chemicals.

The basic objectives of promoting TIRL were no longer relevant to the partners at the end of 1989. IOC became cash rich and Tatas were not interested in fuel refineries. Instead, the Tatas got involved in the Haldia Petrochemical Project — failing the first joint venture with the private sector.

Mangalore Refinery and Petrochemicals Ltd. (MRPL): In the mid-1980s, the government approved the formation of another joint venture in MRPL between HPCL and Indian Rayons and Industries Ltd. (IRIL) — a member of the Aditya Birla Group of companies.

HPCL and IRIL signed an MoU in June 1987 to form the joint venture company. The petrochemical complex planned to include a naphtha cracker unit for the manufacturing of 2.5 lakh tonnes of ethylene, with approximately 1.10 lakh tonnes propylene and 40,000 tonnes of butadiene as co-products.

Numaligarh Refinery: Approved towards the end of the 1980s, the Numaligarh refinery was purely a political decision taken to pacify the agitating students of Assam. The government agreed to establish an oil refinery in Assam. It also promised to render all possible assistance in terms of institutional and bank finance to facilitate the establishment of a refinery in the 'private sector'.

In addition to the Tatas and Birlas, a few other major Indian business houses also ventured into the petroleum refining sector. Reliance industries had opened their oil division towards the end of the 1980s and applied to the government for permission to construct a 6 million-tonne refinery in Western India. The house of Ruias incorporated Essar Oil Ltd. in September 1989.

Controversies over the geographical locations

In 1939, nearly 70% of the refineries of the non-communist world were resource-oriented and only 30% were market-oriented i.e., situated near the market. However, after the World War, the trend began to change mainly because (a) improvement in transportation facilities made it possible to transport a large quantity of crude over a long distance at a cheaper rate and (b) newly independent countries like India wanted to establish refineries of their own to fight major transnational oil companies. In 1962, about 63% of the refineries in the non-communist world were market-oriented. 7% were intermediate refineries and 30% were resource-oriented.

The refineries built till 1969 in India could be classified into three broad categories: (a) Inland refineries situated near domestic crude fields, namely Digboi, Guwahati and Koyali; (b) inland refineries based on domestic crude but situated away from crude producing fields, namely Barauni and (c) coastal refineries based on imported crude, situated at Bombay, Vizag, Madras and Cochin.

During 1970-90, three public sector refineries were built in Bongaigaon, Haldia and Mathura. The decision to build three more refineries in the joint sector at Mangalore, Karnal and Numaligarh were also taken. Evidently, the distribution of the refineries in India was highly skewed. While the vast north and Central India had only one refinery in Mathura, Northeast had four at Digboi, Guwahati, Bongaigaon and Numaligarh. Western India had three — two in Bombay and one in Koyali, and south had four in Vizag, Cochin, Madras and Mangalore. Eastern India (except the North-east) had two in Barauni and Haldia.

The locations of the Indian refineries were primarily resource-based. Only Mathura refinery was market-oriented.

Political pressure

Unlike in the case of Koyali and Mathura, there was a prolonged agitation while choosing the location for Bongaigaon refinery. This affected the entire refining and allied industries and had far-reaching consequences. Location of the five refineries situated in the North-east and eastern India were largely determined through political considerations.

When more crude was discovered in upper Assam in the early 1950s, the government decided to erect one more refinery under the public sector. While some favoured Assam as a resource-oriented location, others wanted market-oriented refineries in Bihar and West Bengal.

In the mid-1950s, a high-level committee had recommended the construction of a refinery at Budge Budge (near Calcutta) but the government lacked the political will to accept the recommendation. Owing to agitation in Assam against its crude oil being taken to other states, the government reluctantly decided to build two refineries — one at Noonmati and the other at Barauni — to satisfy the people of Assam and Bihar.

Towards the end of the 1960s, due to discovery of a few more oilfields in Assam, people demanded a third refinery to process indigenous crude. Instead, the Barauni refinery was expanded in a phased manner to process those newly discovered crudes. However, owing to continuous political agitation in Assam, the Prime Minister announced in the Lok Sabha to build an integrated refinery cum DMT/Polyester fibre petrochemical complex in the state. On February 20, 1973, the Bongaigaon refinery and petrochemical complex were incorporated in Assam. At that point in time, no one was sure about the actual availability of crude from the upper Assam fields. Moreover, the refinery fuel oil (RFO), which would be produced from the refinery, had no customer in Assam. To dispose of the RFO, the proposed coal-based fertiliser plant at Sindri was abandoned in favour of RFO.

The wrong choice of location had led to the inefficiency of these refineries. A CAG Report (1989) on oil pricing arrangements revealed that, in 1982-83, the establishment costs (Rs/MT) of refineries in Assam and Bihar were prohibitively high compared to refineries in Mathura and Gujarat. The figures were as follows: IOC, Digboi (69.52); IOC, Guwahati (43.08); IOC, Barauni (28.41); BRPL, Bongaigaon (27.85); IOC, Mathura (9.64); and IOC, Gujarat (9.20). It is logical that the century-old Digboi refinery's establishment cost was very high but the newly built grassroot refineries at Guwahati, Barauni and Bongaigaon were victims of political decisions.

The fourth refinery in Assam was the outcome of the 'Assam accord' between the leaders of All Assam Students' Union, All Assam Gana Sangram Parishad and the Government of India. When the government decided to build this refinery in upper Assam, there was already a shortage of crude to feed the existing refineries.

Choice of technology

The government had to depend on foreign technology for the construction of public sector refineries. Initially, Russian and Rumanian companies supplied the critical instruments and helped the government to establish refineries at Guwahati, Barauni and Koyali on a turnkey basis. Between 1970 and 1990, three new refineries were built by the government at Haldia, Mathura and Bongaigaon.

Bechtel Corporation, USA, was the major foreign consultancy engaged in the Indian petroleum sector. Despite controversies around Bechtel's technical recommendations and mode of operations, the government decided to form a joint venture with it. Thus, in 1965, Engineers India Ltd (EIL) was established as a joint venture between GoI (51%) and Bechtels (49%). The formation of EIL had marginalised India's own Central Design Organisation (CDO) which was established in the early 1960s to work with the Soviet team that constructed the Koyali refinery. This hampered the development of knowledge in critical design work of the refining technology which the Indian engineers earned in the Koyali project.

The Haldia refinery was built with the technical collaboration of two foreign firms — TECHNIP-ENSA of France and the Industrial Export of Rumania. They were associated with the lube section. Involvement of a French technology disrupted the indigenisation process which had started with the construction of Guwahati and Barauni refineries.

EIL was selected as the consultant for the construction of the BRPL refinery. The foreign companies closely associated with the project were: Universal Oil Product (UOP), USA; Engelhard, USA; Du Pont, USA; Chentex, USA; Dynamit Nobel, Germany; and Krupp Koppers, Germany. BRPL helped companies from non-communist countries to enter into the Indian refining industry, managed by the public sector.

The knowhow for the Mathura Refinery Project was provided by Neft Techimprom Export of USSR and the process licensor was UOP of the USA. Both the Soviet and US firms worked together for the first time in any Indian refinery. Again, for the first time in India's refining sector, a secondary processing unit like FCC (Fluid Catalytic Cracker) was installed which maximised the production of light distillates like MS, naphtha and LPG. Naphtha was primarily used as feedstock for the fertilizer industry. The FCC process, licensed by UOP USA, had shaped the product pattern of the Indian refining sector.

Thanks to the green revolution, consumption of naphtha in India increased over five times — from 6,65,000 MT to 33,49,000 MT between 1969 and 1989. Of this, 69% was consumed in the fertilizer sector and 29% in the petrochemical sector.

To meet the increasing demand for fertilizer, installation of more and more FCC technology was justified, which resulted in product imbalance. Moreover, in most of the years except in 1980-81, naphtha and light distillates were overproduced.

As there was a deficit in light distillate in 1980-81, the World Bank gave loan assistance to install FCC technology in different refineries. FCC resulted in substantial overproduction of light distillates in 1988-89. But towards the end of 1980s, it was projected that there would be a deficit of light distillates in the Ninth and Tenth Five Year Plan (2002-2007) period. Based on this projection, The World Bank again sanctioned a loan for the installation of catalytic reformers to produce more light distillates in Digboi and Barauni refineries.

But India had to face a substantial deficit in middle distillate due to the higher production of light distillates. The use of hydrocracking technology in place of FCC technology would have been an ideal solution. But the former was installed only in one refinery (Koyali) towards the end of the 1980s. In the mid-1980s, the government decided to introduce hydrocracking process technology to increase the production of middle distillates like high-speed diesel etc. In 1988-89, Chevron Research Corporation, USA, supplied hydrocracker technology to Koyali refinery. It may be mentioned that in the feasibility report for a new refinery in North India, IOC, as early as May 1971, proposed to set up a 6 MMTPA refinery with a 1 MMTPA hydrocracker. However, the government installed FCC instead of a hydrocracker in that new refinery at Mathura.

This imbalance could have been avoided by restricting the use of naphtha and domestic LPG. Natural gas could be an ideal substitute for naphtha as feedstock for fertilizer production. In addition to natural gas, coal could also be used for fertilizer. In 1987, the National Chemical Laboratory (NCL) embarked upon a pilot project to convert gas into kerosene and feed for petrochemicals. It was later reported that the project was not taken up due to a lack of funds!

The important features of FCC technology were the following: (i) the technology was repetitive, i.e., the same technology from the same source was used in the 1970s and 1980s. (ii) The technology supplier offered the license to use its process against separate fees for each plant. They did not 'transfer' the technology. In this context, the Petroleum Secretary submitted before a Parliamentary Committee on Public Undertakings: "We do not know the know-how or know-why of the design of that equipment."

Conclusion

Political rather than economic considerations have played an important role in selecting sites for PSU refineries in India. The country has become dependent on petroleum products due to a faulty choice of refining technology. Imported refining technology has compelled India to abandon the huge potential of using coal as a feedstock for fertilizer production.

Moreover, an inappropriate mix of refinery output has made India more dependent on petroleum imports. In the next article, we shall discuss the marketing and pricing strategies of oil PSUs which have turned India into an oil-dependent economy.

Views expressed are personal

Table: Company-wise break-up of refinery output 1989-90

Sl no	Company	Output (MMTPA)
1	Indian Oil Company (IOC) a) Guwahati 0.85 b) Barauni 3.30 c) Haldia 2.75 d) Koyali 9.50 e) Mathura 7.50 f) Digboi 0.50	24.40
2	Hindustan Petroleum Corporation (HPCL) a) Bombay 5.5 b) Vizag 4.5	10.00
3	Bharat Petroleum Corporation (BPCL), Bombay	6.00
4	Cochin Refinery LTD (CRL)	4.5
5	Madras Refinery Ltd (MRL)	5.6
6	Bongaigaon Refinery and Petrochemicals Ltd (BRPL)	1.35
	Total	**51.85**

SOURCE: THE HINDU, SURVEY OF INDIAN INDUSTRIES, 1991, PIAS

The distribution of refineries in India was highly skewed — while the vast north and central India had only one refinery, Northeast had four


The government decided to involve Indian private companies in refinery projects mainly due to resource crunch

Chhotu a hit with PMUY beneficiaries	Financial Express	1	Anupam Chatterjee

LPG CYLINDER

Chhotu a hit with PMUY beneficiaries

ANUPAM CHATTERJEE
New Delhi, February 5

AS MANY AS 7.7 lakh beneficiaries under the Pradhan Mantri Ujjwala Yojana (PMUY) scheme have switched to 5 kg liquefied petroleum gas (LPG) cylinders from the standard 14.2 kg domestic cylinders provided to them earlier under the scheme. Among the new PMUY beneficiaries, oil marketing companies (OMCs) have released 8.1 lakh 5 kg connections as on January 1, petroleum minister Rameswar Teli recently informed Parliament.

Under the first phase of the PMUY scheme, 8 crore LPG connections were provided to poor households. Under the second phase of the PMUY scheme — launched in August 2021 — a target of providing one crore LPG connections was set, and the target was extended to an additional 60 lakh connections in January 2022. Under PMUY-2, the beneficiaries are given deposit-free LPG connection along with free first refill and a stove.

With rising global prices, and the government not reinstating subsidy, prices of 14.2 kg LPG cylinders have touched record-high levels (currently ₹899.5 per cylinder in Delhi). The 5 kg cylinder is priced around ₹330 in the national capital.

Nearly 8 lakh Pradhan Mantri Ujjwala Yojana beneficiaries opted for smaller cylinders in view of steep prices

Teli also informed Parliament that as many as 2.1 lakh crore PMUY consumers have not come back for refill after installation.

As *FE* reported earlier, the sale of small 5 kg cylinders supplied by Indian Oil Corporation Ltd (IOCL) recorded a significant jump in FY20 after it was re-launched under the 'Indane Chhotu' brand name in December 2020.

The government also has a plan to supply small LPG cylinders through its network of fair price shops across the country. Small LPG cylinder sales grew further in FY21 when subsidies on LPG cylinders were stopped.

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Chhotu a hit with PMUY beneficiaries

The government not paying any subsidy on LPG since May 2020 has led to rural households spending nearly 10% of their monthly expenditure on the cooking fuel, a study by the Council on Energy, Environment and Water (CEEW) released in September 2021 had said.

The report said 85% households in the country have LPG connections, and 80% of the non-user households cited affordability issues for not having an LPG connection.

The FY23 budgetary estimate for direct benefit transfer subsidy for LPG has been set at ₹4,000 crore. Although the allocation is around 18% higher than the amount earmarked for FY22 (revised estimate), the figure is significantly lower than the ₹23,666.6 crore spent on this account in FY21.

Here's Why India's oil import bill may shoot up	The Hans India	1o	Sushma Ramchandran

Here's why India's oil import bill may shoot up

Oil markets are in a volatile situation right now; in case of a conflict between Russia and Ukraine, oil prices could shoot up to $125 per barrel

SUSHMA RAMACHANDRAN

The government's projection of 8 to 8.5 per cent growth in 2022-23 is predicated on a few assumptions of the future global and domestic scenario. On the domestic front, it is presumed that there would be no more economic disruptions due to revival of the pandemic and that there would be a normal monsoon this year. As for the external environment, it is expected the withdrawal of global liquidity would be in an orderly fashion while international supply chain disruptions would ease in the near term. These assumptions may be proved correct and could rightly be used as the backdrop for projecting next year's growth outcomes.

The fifth assumption, however, is that oil prices would remain at about 70 to 75 dollars per barrel in the next fiscal. This is an expectation over which there is considerable doubt, at least in the near term. Oil prices have already shot up to 89 dollars per barrel and experts are predicting that these could rise as high as 125 dollars in coming months.

The current scenario of soaring prices has emerged as a result of the oil exporting cartel, OPEC having joined hands with Russia and its allies in the last few years. This collaboration known as OPEC plus took place to curb softening in prices owing to sudden rise in oil production in the US from shale oil fields. Alarmed by this trend, OPEC and Russia jointly decided to curtail output in a bid to push up prices. The strategy proved successful but the onset of the Covid pandemic led to a steep decline in oil demand in 2020.

Prices began hardening once again in January 2021 as world economies began to return to normalcy bringing about a revival in demand for oil. OPEC plus then decided on a gradual ramping up of production from September onwards at the rate of 4,00,000 barrels per day. It must be recalled this was to gradually reverse the huge cut of roughly 10 million barrels per day that was effected in April 2020 by the cartel in a bid to push up prices. Over the last few months, however, demand has been rising rapidly as the pandemic has ebbed in many parts of the world. This has led to the recent spurt in prices.

The high oil prices have been of concern not only for India which imports over 80 per cent of its consumption but for the US and the European Union which are large fuel consumers. US President Joe Biden initially appealed to OPEC plus to increase output to meet demand and cool down prices. There was little positive response to the appeal. He then embarked on a strategy last month in cooperation with other major oil importers to release oil stocks from strategic reserves. The US released some stocks last month, followed by India and Japan. China and South Korea also agreed to release some of their reserve stocks.

The strategy has so far not had much of an impact on the cartel which is relentlessly adhering to the earlier policy of raising output by only 4,00,000 barrels per day. The situation has been aggravated by recent geopolitical tensions. Russia has massed its troops on the border of Ukraine prompting the US to warn of serious consequences in case it decides on an invasion. Since Russia supplies about 30 per cent of Europe's oil and gas needs, the situation has become even more complex.

The net result has been further hardening of oil prices, leading to prices touching seven year highs of 91 dollars per barrel just a few days ago. A study done by Dutch financial services agency, Rabobank has estimated that in case of a conflict between Russia and Ukraine, oil prices could shoot up to 125 dollars per barrel.

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In other words, oil markets are in a volatile situation right now. For this country, the import bill has already shot up during 2021-22 and is expected to cross 112 billion dollars as compared to only about 100 billion dollars in the pandemic year 2020-21. The worry is that if world prices shoot up, the import bill will rise steeply and lead to a widening of the current account deficit. Fortunately, the country has sizable foreign exchange reserves estimated at 634 billion dollars. But it would not be desirable to have a drawdown of these simply to meet the cost of oil imports.

Thus the major assumption being made while formulating the budget, that world oil prices would be contained at the level of 70 to 75 dollars per barrel may not be realised in the near term. The geopolitical scenario is actually worsening with the US having decided to send about 3000 troops to Eastern Europe in preparation for any conflict in the region. In addition, a winter storm is predicted for central US over the next few days, which will push up gas demand. One factor that could conceivably cool markets over the next few months is a positive outcome to talks about Iran's nuclear program with the US This would lead to more Iranian crude coming into the market.

In any case, the global scenario currently is rife with uncertainties, not just on the oil front but also regarding the progress of the Covid pandemic. A new variant may still be on the horizon though experts maintain mutations are likely to be more benign than otherwise. In this backdrop, one cannot fault those finalising the 2022-23 budget for having to make certain assumptions. The only caveat is that the country should be prepared for some hiccups in the path of higher growth owing to a volatile external environment.