

India leads Asia in exports of petroleum products



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India has rapidly established itself as a major player in the global refining industry in the last decade. The country has been a net exporter of petroleum products since 2001-2, and since 2009 has been Asia's largest exporter of petroleum products.

The speedy expansion in capacity, from 62 million metric tonnes per year (mmtpa) in 1998 to 215 mmtpa in 2013, has been the result of deregulation of the sector in 1998 and investment-friendly government policies. Of the country's 22 refineries, 19 are in the public sector (including joint ventures) with a combined capacity of 135 mmtpa, and three in the private sector with a total capacity of 80 mmtpa. Refining capacity now exceeds domestic demand.

The capacity increase reflects the government's strategic commitment to providing safe and convenient energy at competitive prices, and with as few shocks and disruptions as can be reasonably expected. Addition to refining capacity enhances energy security, and provides flexibility with the option to process crude or import product. This flexibility is important for an energy importing country like India, because crude markets are generally larger and more stable than product markets, which are significantly smaller, lack depth and therefore are more volatile.

With proven reserves of just 758 million tonnes of oil and 1,355 billion cubic metres of natural gas,

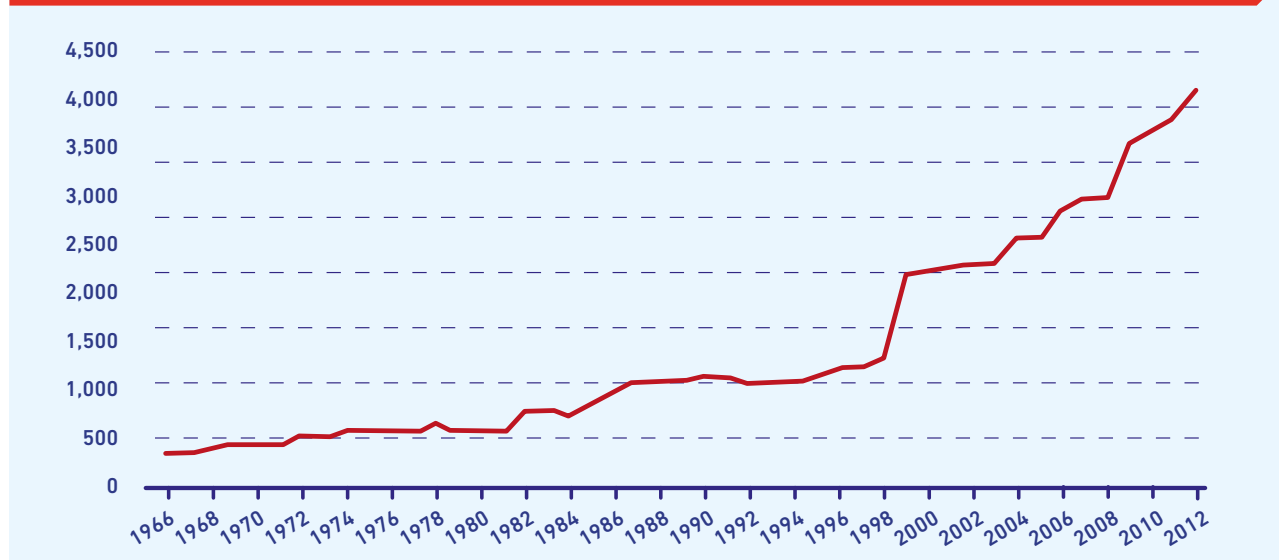
India is inescapably dependent on imports. So it has consciously built refining capacities and capabilities over the years by focussing on processing imported crude oil and leveraging its strategic geographical advantage rather than depending on import of petroleum products to meet domestic demand. This has resulted in several direct, indirect and induced benefits, both economic and social, for the country and society at large.

Over the next few years India's GDP is expected to grow at 5.5-6 per cent a year, making it one of the largest economies in the world. The current per capita primary energy consumption for India, at 466 kilograms of oil equivalent (kgoe), is low compared to both the Asia-Pacific average of 1,329 kgoe and the global average of 1,853 kgoe.

The energy required from oil and gas is going to almost double by 2030 to around 410 million tonnes of oil equivalent. Growth in energy demand will be driven primarily by the transport sector, which is presently the largest consumer of oil in India, representing 50 per cent of total demand, followed by agriculture (18 per cent) and industry (11 per cent). Fossil fuels are expected to account for 85 per cent of Indian energy consumption in 2030, compared to 92 per cent at present.

From an insignificant exporter of petroleum products just a decade earlier, India now surpasses Singapore

Figure 1: Refining capacity over the years in India (tb/d)



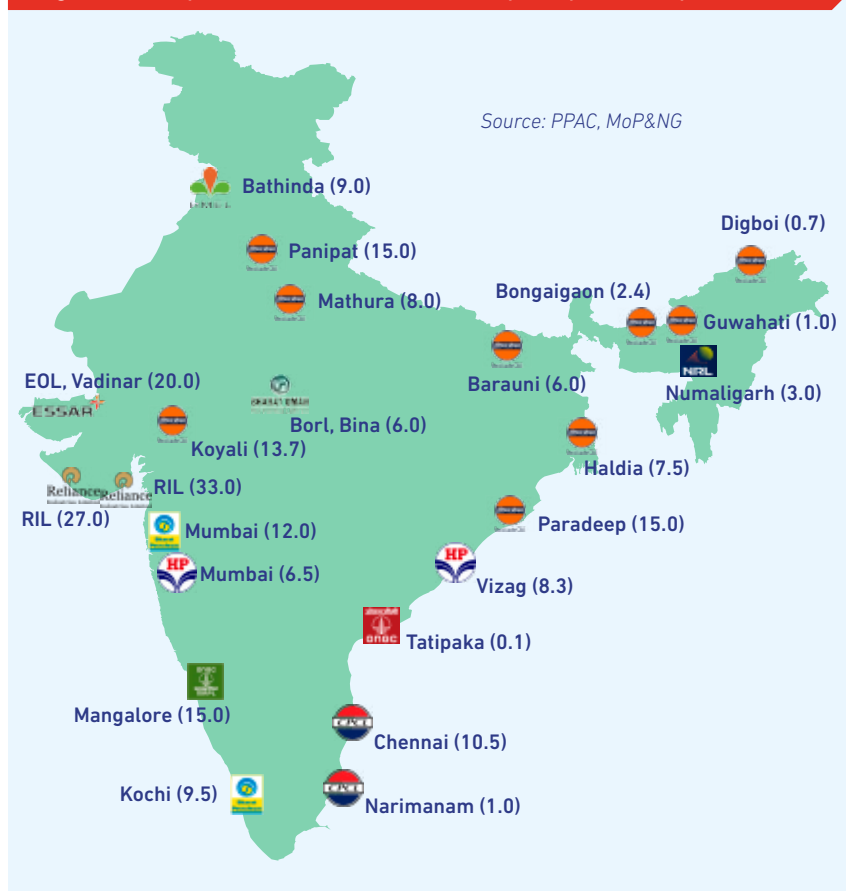


as Asia's largest refined product exporter. Most of India's product exports remain in the Asian region, where demand is growing, but shipping data show significant increases in exports to OECD Europe, which has a deficit in diesel and where refinery capacity is shrinking. Shipments also went to Latin America and the Middle East, regions that have seen up to now limited refinery expansion. Diesel and gasoline led Indian product exports, accounting for 39 per cent and 25 per cent of the total, respectively. In value terms, India's imports of crude oil, petroleum products and natural gas increased from INR 2,030 billion in 2005-6 to INR 8,812 billion in 2012-13. This increasingly high import cost was partially offset by the increase in exports of petroleum products which increased from around INR 500 billion to about INR 3,200 billion in 2012-13.

India's energy requirements will rise as the economy grows. Barring major oil and gas discoveries, India's import dependence is likely to increase in future, suggesting continued exposure to international price trends. Meeting the increased demand is challenging. There are structural imbalances in product demand, such as growth in auto fuels versus decline in fuel oil and low-sulphur heavy stock oil, and the fact that many of the existing refining assets in India are not configured to produce more of light end products.

However, apart from being located strategically, India has other advantages. Production and labour costs are significantly lower than in the developed world, while skilled labour and high-quality capital are relatively abundant. Captive domestic demand and its projected growth will be a natural hedge against volatility of external demand. The government encourages private and foreign direct investment, and has also announced special economic zones, such as the Petroleum,

Figure 2: Map of refineries in India (capacity in mmtpa)



Chemicals and Petrochemical Investment Regions (PCPIRs) in four locations across the country for setting up world scale refinery-cum-petrochemical complexes and associated downstream industries.

The industry's key challenges will be around upgrading technologies and revamping existing refineries to produce products as required by stringent new environmental regulations and to bring safety, environmental and operating parameters into line with global standards. In addition, acquiring land near demand centres for setting up new refineries will be difficult in view of the recent changes in land acquisition procedures.

For exports, India is likely to face export pressure from refineries starting up in the Middle East which will be well-head refineries and will have lower shipping costs to European markets.



India has a net deficit in most petrochemical products with the exception of benzene and currently polypropylene, which is forecast to move into deficit, based on projected demand growth and domestic capacity additions. With increasing LNG imports and availability of natural gas, Indian national oil companies (NOCs) are increasingly looking to invest in newer technologies to leverage available surplus products and add value to them.

Companies which focus on the regional demand and export opportunities for integration will create more value, given the high logistics costs for inland transportation and vast coastline that India has. Integration with petrochemicals and employment of technology to enhance oil recovery present Indian NOCs with the opportunity to expand refinery capacity to capture more value from local oil. For instance, Rajasthan's Mangala crude, which is waxy, viscous crude with a high pour point and paraffinic content, is better suited for processing into petrochemicals. Given the volatility in oil and gas prices, the industry is likely to achieve integration across the value chain, and to diversify into petrochemicals through revamps and setting up new capacity expansion projects.

For India to continue to be a net exporter of products and evolve into a pre-eminent refining hub, a constant and secure supply of imported crude is essential.

Indian NOCs are entering into partnerships with local and global organisations to develop oilfields in Africa and South America. The government is setting up strategic reserves of crude oil, through Indian Strategic Petroleum Reserves Ltd (ISPRL), in order to minimise the impact of disruptions in the import of crude oil. There will be cavern storage for crude oil with total capacity of 5 million tonnes at three locations – in Vizag on the east coast and at Padur and Mangalore on the west coast.

In parallel, augmenting port infrastructure both for receiving crude and exporting petroleum products will be essential for India, if it is to be competitive and an alternative to the Singapore market, which has emerged as the marker crude location for determining oil prices in Asia.

To keep pace with the increasing demand for liquid fuels in India and to ensure energy at affordable prices, India's refining capacity is expected to grow to 314 mmtpa by 2017. Roughly three-quarters of this growth will be led by India's NOCs. The key determinant of success will be the ability of India's downstream NOCs to achieve optimisation through integration within existing refineries, and to expand capacity by establishing world-scale refineries, with input flexibility, integration with petrochemicals and capability to produce high value products. ■

Figure 3: Petroleum products exports by Asian countries (mmtpa)

