

Petroleum Production in India since Independence**Prof Qunser Parveen*****V B Women College, Rainawari Srinagar, Jammu and Kashmir, India****Email: kousarp77@gmail.com****Abstract**

The petroleum industry in India has witnessed remarkable growth and transformation since gaining independence in 1947. This abstract provides a concise overview of the evolution of petroleum production in India over the past seven decades, highlighting key milestones, challenges, and the sector's current status. Post-independence, India's petroleum production was relatively modest, primarily reliant on imports to meet its energy demands. However, the discovery of oil reserves in the Assam region in the early 1950s marked a turning point, and India began its journey towards self-sufficiency in petroleum production. The nationalization of the petroleum industry in the 1970s led to the formation of the Oil and Natural Gas Corporation (ONGC) and Oil India Limited (OIL), which played a pivotal role in boosting domestic exploration and production activities. These efforts, coupled with the liberalization of the Indian economy in the 1990s, attracted significant foreign investment and technology, fostering a more dynamic petroleum sector. Today, India is one of the world's largest consumers and importers of crude oil. It has witnessed substantial growth in refining capacity and has diversified its energy mix to include natural gas and renewable energy sources. The discovery of new reserves in the Krishna-Godavari basin and the Western Offshore regions has further enhanced the nation's hydrocarbon potential. However, the industry faces several challenges, including the need for technological advancements, environmental concerns, and a growing demand for cleaner energy alternatives. The Indian government has been proactive in addressing these issues through policies that encourage exploration, foster investment, and promote energy efficiency and sustainability. India's petroleum production journey since independence reflects a remarkable evolution from a net importer to a prominent player in the global energy landscape. The nation's ambitious plans for energy security, including the Atmanirbhar Bharat Abhiyan (Self-Reliant India), indicate a promising future for the Indian petroleum industry, shaped by innovation, sustainability, and self-sufficiency.

Key Words: *Petroleum, Production, India, Independence, Oil, Economic*

Introduction

India's journey in the field of petroleum production since gaining independence in 1947 is a fascinating narrative of growth, transformation, and strategic evolution. In a post-colonial era marked by resource scarcity and economic challenges, the nation embarked on a quest to achieve energy self-sufficiency and harness its vast hydrocarbon potential. This comprehensive overview delves into the significant milestones, challenges, and the present-day status of India's petroleum industry, shedding light on the country's remarkable trajectory from a modest importer to a prominent player on the global energy stage. At the dawn of independence, India's petroleum production was relatively modest, and the nation heavily relied on oil imports to meet its energy demands. The domestic industry was in its nascent stages, lacking the technical know-how and infrastructure necessary for large-scale exploration and production. However, a pivotal moment arrived in the early 1950s when oil reserves were discovered in the northeastern state of Assam. This discovery marked the first step in India's quest for energy independence, spurring efforts to expand domestic exploration and production capabilities. The 1970s witnessed a significant turning point with the nationalization of the petroleum industry, leading to the establishment of the Oil and Natural Gas Corporation (ONGC) and Oil India Limited (OIL). These state-owned entities played a crucial role in bolstering domestic exploration activities, while also introducing advancements in drilling and extraction technologies. Furthermore, they helped lay the foundation for India's increasing self-reliance in the petroleum sector. The 1990s brought another wave of transformation when India opened up its economy, attracting significant foreign investments and technological expertise. This liberalization led to a more dynamic and competitive petroleum industry that not only aimed at fulfilling domestic demands but also sought to become a global player. Today, India stands as one of the world's largest consumers and importers of crude oil, with a rapidly expanding refining capacity. It has diversified its energy portfolio by incorporating natural gas and renewable energy sources into the mix. Discoveries in the Krishna-Godavari basin and the Western Offshore regions have further augmented the nation's hydrocarbon potential. However, this remarkable journey is not without its share of challenges. Technological advancements, environmental concerns, and the global shift towards cleaner energy sources have posed significant hurdles. Yet, the Indian government has responded proactively with policies and initiatives aimed at

promoting exploration, attracting investments, and fostering energy efficiency and sustainability. "Petroleum Production in India since Independence" is a saga of progress, innovation, and strategic planning. It is a story of a nation that has not only overcome its energy challenges but also aspires to shape the future of the global energy landscape. This comprehensive overview explores the multifaceted aspects of India's petroleum journey and provides insights into the nation's quest for energy security and self-sufficiency, driven by a commitment to innovation, sustainability, and economic progress.

Objective

The primary objective of this study is to analyze the trends and patterns of petroleum production in the country.

Study area

India, officially known as the Republic of India, is a South Asian country that ranks as the seventh-largest nation in terms of land area and the second-most populous in the world. It stands as the most populous democracy on the global stage. Geographically, India is surrounded by the Indian Ocean to the south, the Arabian Sea to the southwest, and the Bay of Bengal to the southeast. It shares its land borders with Pakistan to the west, while to the north, it has neighboring countries such as China, Nepal, and Bhutan. To the east, India shares borders with Bangladesh and Myanmar. In the Indian Ocean, India is situated in proximity to Sri Lanka and the Maldives. Additionally, its Andaman and Nicobar Islands maintain maritime borders with Thailand, Myanmar, and Indonesia.

Data and Methodology

This study relies predominantly on secondary data sources, with a primary focus on data published by the Ministry of Petroleum and Natural Gas. Additionally, magazines, journals, and pertinent research papers are consulted to gain insights into the trends and patterns of petroleum production in India. The data is analyzed using a straightforward percentage-based method, and Microsoft Excel is employed for data visualization to enhance comprehension.

Result and Discussion

The analysis reveals a significant growth in onshore petroleum production, which escalated from 0.3 million tonnes in 1950-51 to 11.5 million tonnes in 2003-04, representing an increase of 11.2 million tonnes. Similarly, offshore production also exhibited a notable surge, surging from 5 million tonnes in 1980-81 to 21.9 million tonnes in 2003-04, reflecting a substantial increase of 16.9 million tonnes. Consequently, the total petroleum production in

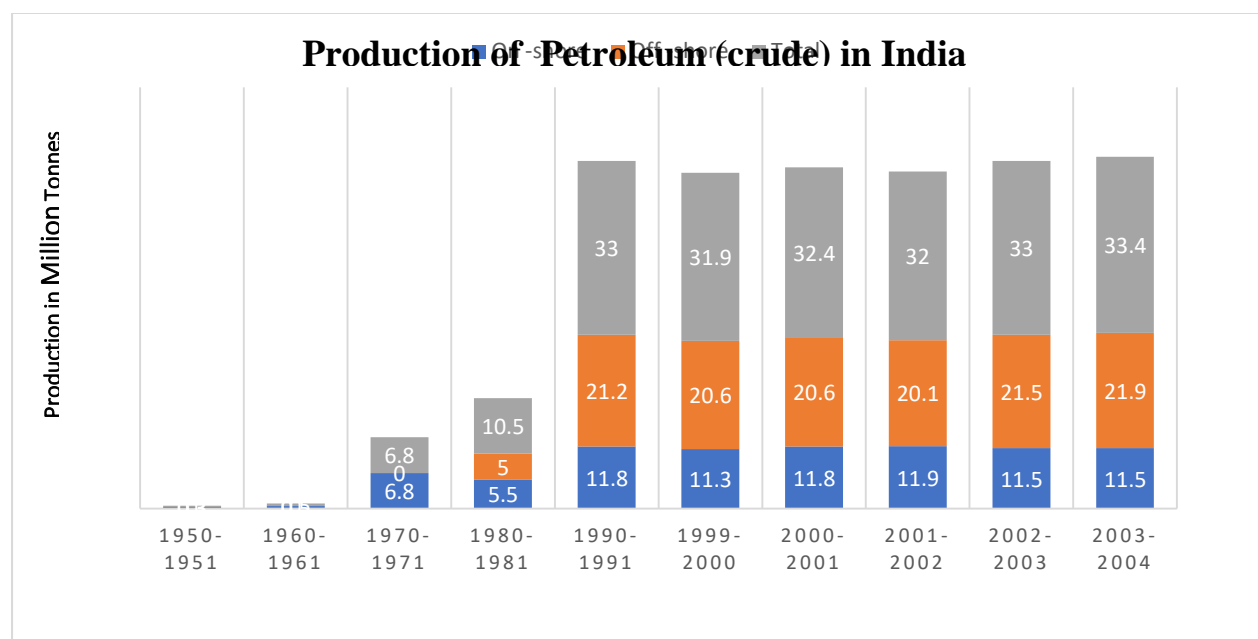
India surged from 0.3 million tonnes in 1950-51 to 33.4 million tonnes in 2003-04, marking a remarkable overall increment of 33.1 million tonnes.

Table 1
Production of Petroleum (Crude) in India (In Million Tonnes)

Years	1950-1951	1960-1961	1970-1971	1980-1981	1990-1991	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
On – shore	0.3	0.5	6.8	5.5	11.8	11.3	11.8	11.9	11.5	11.5
Off – shore	—	—	—	5.0	21.2	20.6	20.6	20.1	21.5	21.9
Total	0.3	0.5	6.8	10.5	33.0	31.9	32.4	32.0	33.0	33.4

Source: The Economic Survey of India 2004-05.

Figure 1: Production of Petroleum (crude) in India.

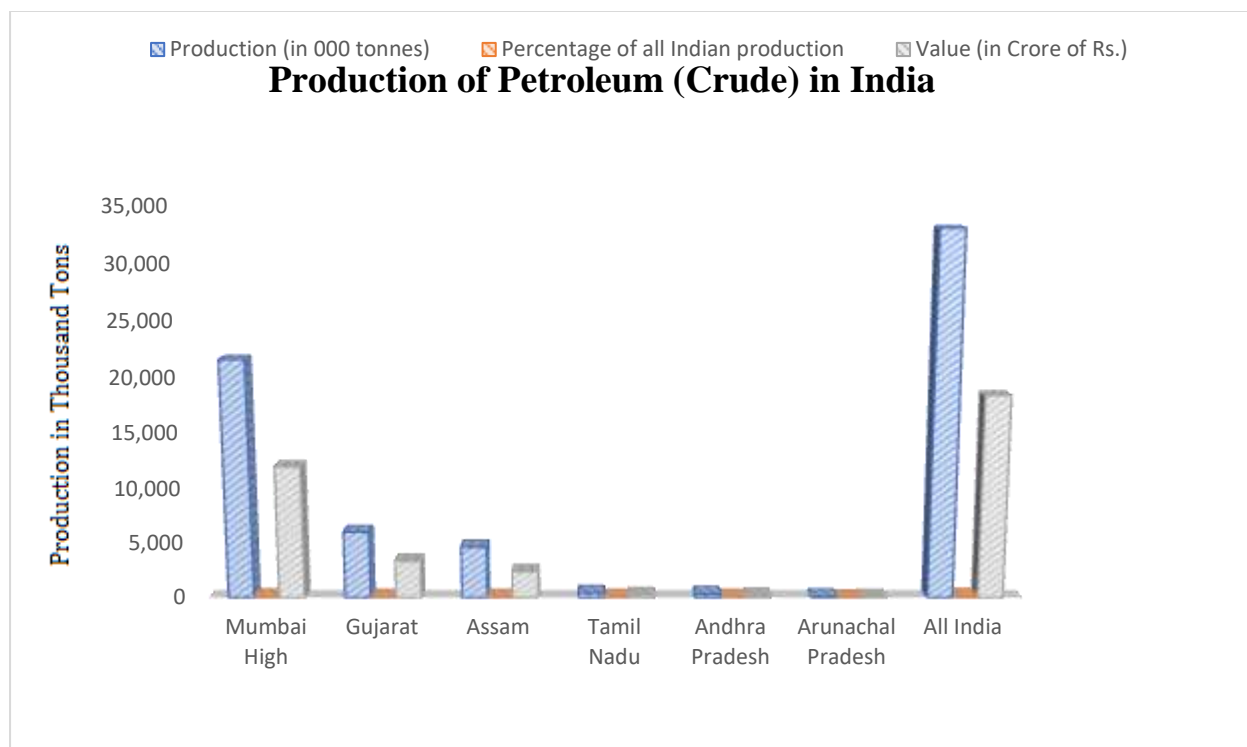
**Table 2****Production of Petroleum (Crude) in India, 2002-2003.**

State/ Area	Production (in 000 Tons)	Percentage of all Indian production	Value (in Crore of Rs.)
Mumbai High	21,573	65.28	12,016.16
Gujarat	6,042	18.28	3,365.94
Assam	4,659	14.09	2,395.6
Tamil Nadu	395	1.19	220.01
Andhra Pradesh	300	0.93	167.01
Arunachal Pradesh	74	0.23	41.22
All India	33043	100.00	18,404.95

Source: Statistical Abstract of India, 2003.

Table 2 shows that in 2002-03 that Mumbai high reported 65.28 per cent which was the highest production among all the main petroleum producing states in the country followed by Gujarat (18.28 per cent), Assam (14.09 per cent), Tamil Nadu (1.19 per cent), Andhra Pradesh (0.93 per cent) and Arunachal Pradesh (0.23).

Figure 2: Production of Petroleum (Crude) in India



The table clearly illustrates the remarkable evolution in India's crude oil production. In 1950-51, the country produced a mere 0.3 million tons of crude oil, a figure that soared to 34 million tons by 2005-06. Notably, this level of production only covers around 40% of the nation's domestic demand, which hovers between 35-40 million metric tons annually. As a result, India faces the pressing issue of depleting reserves, which are estimated to last only for the next two decades. The current annual production of 35 million tons may soon prove insufficient to meet the country's energy needs. Specifically, the production of the Oil and Natural Gas Corporation (ONGC) witnessed a 1.9% decline, with two of its fields reporting decreased output while the other two experienced growth. Similarly, the Oil India Limited (OIL) recorded a 1.9% drop in production, while private operators saw a slight 0.2% increase. The significant decrease in production was notable in the case of Bombay High, which historically contributed to nearly 50% of India's total oil production and faced a 4.6% decline. Collectively, ONGC and OIL accounted for 87% of the total production in the first ten months of the current fiscal year. The growth in crude oil throughput during the period from April to January 2002 was 4.9%, a significant contrast to the 23.7% increase seen in the corresponding period of the previous year. India produced 80.2 million tons of petroleum products, reflecting a 4.2% growth compared to the year 2000. Furthermore, Reliance

Petroleum has already unveiled plans for the retail marketing of controlled petro-products in the country, and Essar Oil has signed a product-sharing contract with the government for the Ratna and R series of gas fields. This partnership involves drilling 30 oil fields with the potential to yield 500 million barrels of crude oil. Additionally, an expansion project worth 3365 crores at the Panipat refinery has received clearance from the Union Ministry for Environment and Forest. This project is expected to double the refinery's capacity from 6 million tons to 12 million tons per annum. India's economic landscape is also impacted by its energy imports. The government currently allocates substantial funds for non-targeted subsidies, a situation that the International Energy Agency (IEA) deems financially unsustainable. In the 2011-2012 financial year, a staggering 54% of India's trade deficit, amounting to \$189.9 billion, was attributed to oil imports. Consequently, the rupee depreciated, inflation soared, and the country's foreign exchange reserves experienced a significant drawdown of nearly \$13 billion. According to a report by PricewaterhouseCoopers (PwC), these challenges could have been mitigated if India had produced an additional 17 million tonnes of oil domestically. This increase in domestic production would have stabilized the currency, contained inflation, and reduced the import bill, ultimately leading to higher GDP growth (Source: White paper by PwC, titled "It's our turn now – E&P partnerships for India's Energy Security"). In 2011, India's proven balance of recoverable reserves was estimated at 9.04 billion barrels of oil equivalent, placing the country at the 19th position worldwide, a ranking that raises concerns about energy security. A report by India's Directorate General of Hydrocarbons in 2012 indicated that, during the financial year 2010-2011, 12% of India's sedimentary basins remained unexplored, with another 22% classified as "poorly explored." This points to the untapped potential in India's onshore and offshore fields, offering hope for increased production in the near future.

Table 4

Production of Crude Oil in India Since 1998 to 2001(Production in 000' tons)

On-shore	1998-99	1999-2000	2000-2001
Gujarat	5828	5665	5785

Assam	5708	4972	5200
Tamil Nadu/Andhra Pradesh	449	523	698
Arunachal Pradesh	38	44	31
OIL	3294	3283	3286
ONGC	8101	7921	8428
Off- shore (000 tons)			
ONGC	18286	16727	16629
Private Joint Ventures	3042	4018	4083
Total	32722	31940	32426

Source: Petroleum Planning and Analysis Cell, New Delhi.

The demand for oil products in India saw a notable increase, surging from 74 metric tons per annum in 1996 to 90 MTPA in 2000, marking a compounded annual growth rate of 5%. By the year 2005, it is estimated that the demand for oil products will reach around 114 MTPA, while the refining capacity is projected to be approximately 155 MTPA. Over the last two decades, there has been a consistent annual growth of 5-6% in the consumption of petroleum products. In the 1970s, there was a remarkable growth rate of 7% in oil demand over the previous decade, but in the 1980s, this requirement declined by 6%. In the 1990s, the growth rate further reduced to 5.3%, primarily due to a slowdown in industrial activities. The expected rise in demand for petroleum in India is anticipated to reach 110 million tons in 2002-03, while crude oil production during this period is projected to be around 32 million tons. It is predicted that crude production will increase to 195 million tons. This substantial gap between production and consumption is the driving force behind the import of crude oil and petroleum products. India relies on imports for close to 70% of its oil requirements, sourced from over 8 countries, making it a net importer of oil. The remaining 30% is met by domestic oil production. India's oil consumption has seen a steady increase, while domestic production has remained relatively constant. This analysis does not take into account recent findings in the KG basin by Reliance. Even with potential discoveries in other reserves, the overall trend is not likely to change significantly in the near future. Since 1996, India has consistently exceeded its oil production, and this trend continues today. Despite a 3.5% decrease in output by the Oil and Natural Gas Corporation (ONGC), the overall crude oil production in India has risen by 4.1% to reach 2.75 million tons, according to the latest data released by the Petroleum Ministry.

Conclusion: The findings of this study highlight a significant increase in petroleum production since India gained independence. However, recent trends indicate a stabilization in production, with a heavy reliance on imports to meet domestic demand. The resurgence in the industrial sector and the decline in international crude oil prices have contributed to a surge in consumption. Demand for petroleum products recorded a substantial 10.86% increase during the April-March period of 2015-16 compared to the previous year. Due to the limited availability of domestic crude oil and natural gas, India is compelled to import over 75% of its energy requirements. As an emerging economy, India's energy demand is growing rapidly, driven by the need for sustained economic growth. The international crude oil prices have been on a declining trend since 2014-15 due to excess production, significantly impacting import, production, and consumption of crude oil in India. This downward trend has also had repercussions on the revenues and profits of Indian oil refining and oil drilling/exploration companies. Starting in 2014, the revenues of oil refining companies have been decreasing, but the profit margins of oil refining and oil marketing companies have been on the rise, as they procure crude oil at lower prices. Conversely, the profit margins of oil drilling and exploration companies have been declining, as they sell crude oil at reduced prices to oil refineries, impacting their revenue and profit figures. Despite a global economic slowdown, the consumption of crude oil and natural gas in India continues to rise, underlining the nation's growing energy needs.

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