

Information Visualisation

Petroleum and Natural Gas Industry Statistics

Shashank Kamath (RA2011029010036)

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0.1 Abstract

The Petroleum and Natural Gas sector is among the eight major industries in India. Oil and gas demand is expected to increase in the foreseeable future, making the sector highly favorable for investment. India is the third-largest consumer of both energy and oil in the world and also the fourth-largest consumer of liquefied natural gas (LNG).

This data set aims to investigate the significance of the petroleum and natural gas industry in India and its impact on the country's economy and society. The study will examine the industry's primary players, production and consumption, and trends. The research will also look at how this industry helps close the trade deficit. Finally, This data set will offer a thorough understanding of India's petroleum and natural gas industry and its significance to the development of the nation.

0.2 Introduction

To effectively understand and analyze the trends and patterns in this sector, it is important to have access to accurate and comprehensive data. This project aims to visualize key statistics on petroleum and natural gas production, consumption, trade, prices, and reserves and basins in an interactive and user-friendly format.

The incorporation of visualizations will aid in bringing the data to life and provide a more engaging and intuitive knowledge of the sector. Modern data visualization tools and methods will be used in the project to produce interactive dashboards, maps, and charts that let users explore the data and learn more about the market.

These petroleum and natural gas statistics data sets contain information on the production, consumption, trade, and prices of these resources. The data set may include data on the following:

- Crude oil production: The volume of crude oil produced by a region, on a monthly or annual basis.
- Natural gas production: The volume of natural gas produced by a region, on a monthly or annual basis.
- Crude oil imports and exports: The volume of crude oil imported and exported by a region, on a monthly or annual basis.
- Natural gas imports and exports: The volume of natural gas imported and exported by a region, on a monthly or annual basis.
- Crude oil prices: The average price of crude oil, on a monthly or annual basis.
- Natural gas prices: The average price of natural gas, on a monthly or annual basis.
- Refined petroleum products: The volume of refined petroleum products produced and consumed, on a monthly or annual basis.

0.3 Data Description

0.3.1 What are the available Data sets ?

Here we have considered the following Data sets:

- **Basin-wise Production of Crude Oil from 2016-17 to 2020-21**

There are 26 sedimentary basins in India, covering a total area of 3.4 million square kilometers. The area is spread across the land, with shallow water up to 400-meter water depth, and deep water farther up to Exclusive Economic Zone (EEZ). Of the total sedimentary area, 49% of the total area is located on land, 12% in shallow water, and 39% in the deep water area. There are 16 on-land basins, 7 located both on-land and offshore, and 3 completely offshore.

This data set shows the following:-

- State-wise distribution of Crude oil basins
- Basin-wise distribution of Crude oil
- Basin-wise production of Crude oil
- Yearly production of Crude oil

- **Crude Oil Refining Capacity in India from 2017-21**

The refining industry in India has grown dramatically over time. The nation, which was in a deficit in 2001, became self-sufficient in refining and is now a significant exporter of high-quality petroleum products. With a refining capacity of 248.9 MMTPA, India is currently the fourth-largest country in the world, behind China, the United States, and Russia. There are a total of 23 refineries in the nation, 18 of which are public, 2 of which are joint ventures, and 3 of which are private. They are all geographically dispersed and connected by cross-country pipelines.

This data set shows the following:-

- Company-wise refining capacity
- Public/Private/Joint Venture share of refineries
- Yearly output of the refineries

- **Import Export of Crude Oil and Petroleum Products from 2014-15 to 2020-21**

India is a major player in the global oil market, both as a consumer and as an exporter of crude oil products. The nation exports a range of petroleum products, including diesel, gasoline, and liquefied petroleum gas, as well as a sizeable amount of crude oil to meet its rising energy demand (LPG). The import and export of crude oil and petroleum products play a significant role in the Indian economy and the country's energy security.

This data set shows the following:-

- Product-wise Import of Raw material
- Product-wise Export of Raw material
- Yearly Import of Raw material
- Yearly Export of Raw material

- **State-wise Consumption of Total Petroleum Products from 2014-15 to 2020-21**

India's petroleum consumption is currently about 5 million barrels per day, which is growing at 3%, higher than the average global growth rate of around 1% and the government has managed global energy challenges well by shielding the economy from vagaries of international oil prices. This data set shows the following:-

- State-wise consumption of petroleum products
- Yearly consumption of petroleum products

0.4 Inferences

0.4.1 Why should the data be analyzed?

Analyzing data on petroleum and natural gas can help to provide a better understanding of the industry, including production trends, pricing dynamics, and market demand. It is possible to identify potential opportunities for investment or exploration in new regions or reserves. Analyzing data can help to identify inefficiencies in the production and distribution of petroleum and natural gas, which can then be addressed to improve operational efficiency.

0.4.2 What inferences can be made based on the data ?

- What region produces the largest capacity of Crude oil?
- What has been the percentage increase in the production of Crude Oil?
- Which sector (Private/Public/Joint Venture) generates the highest output?
- How self-sufficient is India in terms of Petroleum and Natural Gas products?
- What is the total incoming/outgoing amount of petroleum products?

0.4.3 What are the outcomes of analyzing the data?

Analyzing data can help identify inefficiencies in the production and distribution of petroleum and natural gas, allowing stakeholders to make necessary changes and improvements to enhance efficiency. It can help decision-makers make informed decisions related to investment, exploration, pricing, production, and policy-making. It can also help stakeholders identify ways to improve sustainability practices related to petroleum and natural gas production and distribution.

0.5 Future Trends

It is crucial to take into account a wide range of variables when assessing statistics on gasoline and natural gas, including supply and demand patterns, geopolitical developments, technological advancements, and environmental restrictions. You might be able to predict future trends by examining these variables in addition to the most recent statistics on the use of gasoline and natural gas.

Hence, it would be extremely difficult to predict future trends using the current course for the chosen data set because of unexpected events, limited data scope, extraneous variables, data quality issues, and complex interactions between variables. While current data can provide valuable insights, it is important to consider these limitations when making predictions about the future.

0.6 Conclusion

The following data set will hence provide an overview of the current state of the petroleum and natural gas industry in the country, including production, consumption, and trade patterns. This will further aid in a thorough analysis of the trends in the production and refining capacity of crude oil and petroleum products, and their impact on the industry.

0.7 References

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0.8 Project URL

<https://www.overleaf.com/project/63d7c52fe3795402c5e9a17a>