

A Study on Import of Coal in India for Last 10 Years

A dissertation submitted to the School Of Maritime Management,

Indian Maritime University in the partial fulfilment of

Master of Business Administration

in

International Transportation and Logistics Management

By VISHNU SUBRAMANIYAM

(Reg No: 2103305041)

UNDER THE SUPERVISION AND GUIDANCE

OF

Dr. EMIL MATHEW

(Assistant Professor)



SCHOOL OF MARITIME MANAGEMENT

INDIAN MARITIME UNIVERSITY

(A Central University under the Ministry of Ports, Shipping and Waterways)

CHENNAI CAMPUS

May: 2023

SCHOOL OF MARITIME MANAGEMENT
INDIAN MARITIME UNIVERSITY
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CHENNAI CAMPUS



Certificate

This is to certify that the project report titled “A Study on Import of Coal in India for Last 10 Years” is a bonafide work done by Vishnu Subramaniam (Reg.No:- 2103305041) in partial fulfilment of the requirement for the award of the degree of Master of Business Administration in Indian Maritime University, Chennai.

Dr. B. Swaminathan
(Head of the Department)



Dr. Emil Mathew
(Project Guide)

External Viva- voce examination conducted on: -

External Examiner :-

Place : Chennai

Date : 16.../05.../2023

DECLARATION

I, **Vishnu Subramaniyam**, do hereby declare that the dissertation entitled "*A Study on Import of Coal in India for Last 10 Years*" is exclusively a bonafide work done by me under the supervision and guidance of **Dr. Emil Mathew**, Assistant Professor, School of Maritime Management and is submitted to Indian Maritime University in partial fulfilment of the requirement for the award of the degree of Master of Business Administration.

I further declare that no part of this report has been previously submitted to any other university or academic body for the award of any degree or diploma.

Place : Chennai
Date : 10/05/2023



Vishnu Subramaniyam
(Reg.No:- 2103305041)

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With great pleasure I acknowledge the help given to me by my family members and my friends

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Vishnu Subramaniyam
(Reg.No:- 2103305041)

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INTRODUCTION

1.1 Introduction

Coal is a commodity that falls under the category of Bulk cargo. As we all know, bulk cargo commodities are shipping terms for products that are shipped loose and unpackaged rather than in packaging or containers. Because coal is a free flowing that cannot be effectively secured on a containerized, it is delivered in huge amounts unpackaged. Coal is often dumped or poured into a merchant ship, railway car, or tanker truck as a liquid.

According to a research, India's coal imports jumped by 32% in April-February FY23 to 148.58 million tonne (MT) from 112.38 MT the previous year. Coking coal imports increased 7.69% to 50.50 MT during April-February FY23, up from 46.89 MT the previous year.

1.1.1 Coal

Definition

Coal is a combustible black or brownish-black sedimentary rock composed mostly of carbon, along with various other elements, including hydrogen, sulfur, oxygen, and nitrogen. It forms from the compressed and altered remains of plants that lived millions of years ago. Coal is primarily used as a fossil fuel for generating electricity, but it is also used for industrial processes such as steel and cement production. Coal can be classified into four main types based on its carbon content: lignite, sub-bituminous, bituminous, and anthracite. The higher the carbon content, the more energy the coal contains, and the less pollution it produces when burned.

1.1.2 Types of Coal

A) Coking coal- Coking coal, also known as metallurgical coal, is a high-quality coal that is used in the production of coke. Coke is a key raw material in the production of steel, as it is used as a reducing agent in the process of extracting iron from iron ore. Coking coal has a high carbon content and low impurities, making it an ideal fuel for the high-temperature heating process required to produce coke. Coking coal is typically bituminous coal with a carbon content of 60% to 90% and a low ash and

sulfur content. It is usually mined in underground mines, and the largest producers of coking coal are Australia, the United States, and Russia.

B) Non - Coking Coal - Non-coking coal, also known as thermal coal, is a type of coal that is primarily used as a fuel for power generation. Unlike coking coal, non-coking coal does not have the ability to form a strong, hard, and porous coke when heated in the absence of air. Instead, it burns more easily and produces more heat, making it an ideal fuel for power plants. Non-coking coal is typically of lower quality than coking coal, with a lower carbon content and higher ash and sulfur content. It is usually mined from open-pit mines or surface mines, and the largest producers of non-coking coal are China, the United States, and India. Non-coking coal is also used in various industrial processes, such as cement and paper production, and for domestic heating and cooking in some countries.

C) Lignite - Lignite is a type of coal that is the lowest rank of coal, often referred to as brown coal, and is characterized by its low energy content, high moisture content, and low carbon content. It is formed from peat through the process of coalification, which occurs over millions of years. Lignite is soft and crumbly, with a dark brown color, and has a carbon content that typically ranges from 25% to 35%. Due to its low energy content, lignite is primarily used for electricity generation in power plants located near the mines. Lignite is abundant and is found in many countries around the world, including Germany, Russia, China, and the United States. However, lignite is not considered a high-quality fuel, and its use is often associated with higher emissions of pollutants compared to other types of coal.

D) Coke - Coke is a solid, porous fuel that is produced from heating coal to a high temperature in the absence of air, a process known as pyrolysis or carbonization. Coke is primarily used as a fuel and reducing agent in the production of iron and steel. It is used to remove oxygen from iron ore during the smelting process, reducing the iron oxide to metallic iron. Coke is also used as a fuel in blast furnaces and foundries, as well as in the production of non-ferrous metals such as aluminum. Coke is hard and porous, with a high carbon content of between 90% and 95%, making it a high-energy fuel. It is usually produced from bituminous coal or anthracite, although other materials such as petroleum coke can also be used.

1.1.3 Why India Import Coal?

- Insufficient domestic supply: India has a large demand for coal, particularly for electricity generation, but it does not have enough domestic coal reserves to meet its needs. This is due

to a variety of factors, including geological limitations, environmental and regulatory issues, and transportation bottlenecks.

- **Quality requirements:** India's coal reserves are largely comprised of low-grade, high-ash coal, which is not suitable for many industrial processes, particularly steelmaking. India imports higher-quality coal, such as coking coal, to meet the requirements of its steel industry.
- **Price competitiveness:** In some cases, it is more cost-effective for India to import coal rather than produce it domestically. This is due to factors such as high production costs, low productivity, and inefficient mining practices.
- **Demand fluctuations:** India's coal demand can fluctuate due to various factors, such as changes in weather patterns and economic conditions. Importing coal can help mitigate supply shortages during periods of high demand.

Overall, India's coal imports are driven by a combination of supply and demand factors, as well as economic and strategic considerations.

1.2 Coal in India

India is a big consumer and producer of coal, which serves as a key source of energy for the country. Coal generates around 70% of India's electricity, making it a key component of the country's energy mix. India has significant coal reserves, which are mostly concentrated in the country's east, particularly in the states of Jharkhand, Odisha, and Chhattisgarh.

The state-owned Coal India Limited (CIL), the world's largest coal mining business, dominates India's coal industry. CIL produces the majority of coal in India and supplies it to a variety of businesses, including power, steel, cement, and others. However, in recent years, India's coal business has encountered a number of issues, including falling coal reserve quality, environmental concerns, and competition from renewable energy sources.

The Indian government has attempted to reform the coal industry by allowing private enterprises to participate in commercial coal mining, increasing the use of technology to improve coal quality, and pushing the use of clean coal technologies. To lessen India's reliance on coal and accomplish its climate targets, the government is also supporting the development of renewable energy sources such as solar and wind power.

Despite these efforts, India's coal sector confronts substantial obstacles, including environmental concerns and the need for infrastructural upgrading. The government is also under increasing pressure to cut greenhouse gas emissions and migrate to cleaner energy sources, which might have serious consequences for India's coal industry.

- India has the fifth largest coal reserves in the world.
- 88% are non-coking coal reserves & 12% coking coal reserves
- Indian coal is characterised by its high ash content (45%) and low sulphur content.
- Power sector is the largest consumer of coal followed by the iron and steel and cement segments.
- India is the world's fifth largest energy consumer, accounting for 4.1% of the global energy consumption.
- The current per capita consumption of energy in India is 0.5 toe against the global average of 1.9 toe, indicating a high potential for growth in this sector.
- Total electricity consumed in India approximately 80% is produced from coal.

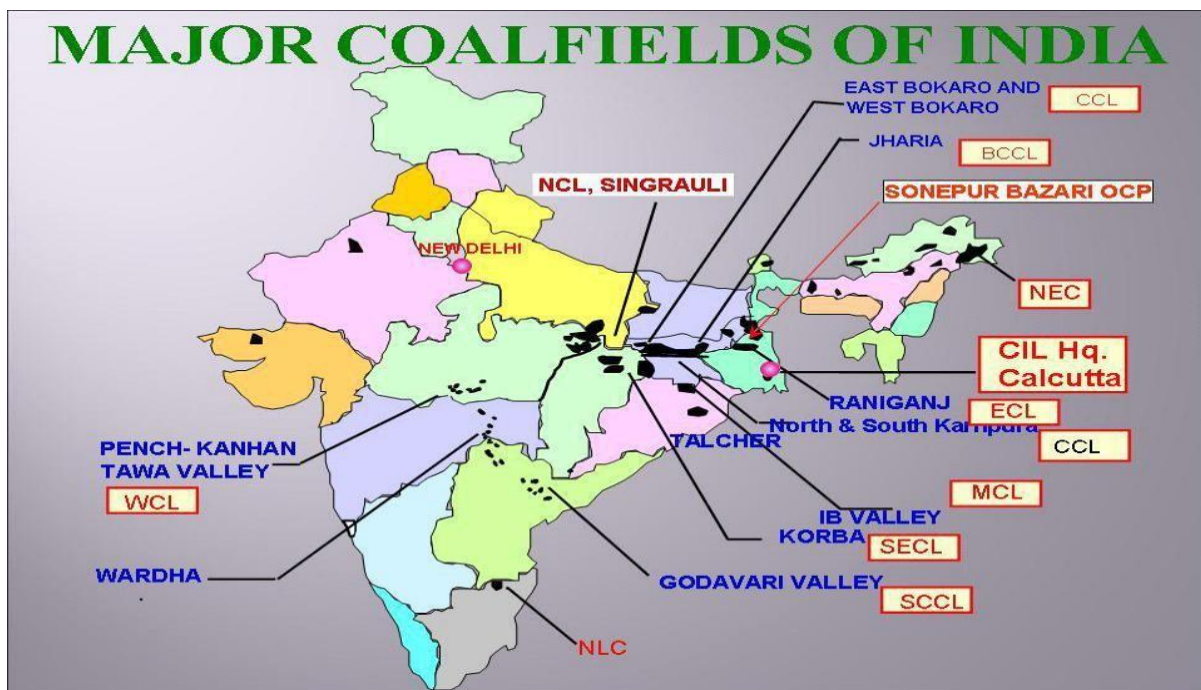


Figure 1.1: - Major Coal Fields of India

1.2.1 Major Uses of Coal

Coal is one of India's most affordable and abundant energy sources, being used primarily for the following:

- Power generation in Thermal Power Plants.
- Steel production with help of coking coal.
- Synthetic fuel by gasification and coal liquefaction.
- In alumina refineries, paper manufacturing, and chemical and pharmaceutical industries.

1.2.2 Types of coal found in India

- **Anthracite:** - It is the largest coal grade containing a high percentage of fixed carbon. It is hard, brittle, lustrous and dark. It is found in smaller amounts in Jammu and Kashmir regions.
- **Bituminous:** - it is a medium grade of high-capacity coal. It is the most frequently used form of coal for generating electricity in India. Most bituminous coal is located at Jharkhand, Odisha, Chhattisgarh, West Bengal, and Madhya Pradesh.
- **Subbituminous:** - It is black in colour, slender (not shiny) and has a heating value higher than lignite.
- **Lignite:** - It is coal of the lowest quality with the lowest carbon content. It is found in the Rajasthan, Tamil Nadu and Jammu & Kashmir regions.

1.2.3 Need for coal quality assessment

Coal India Limited (CIL) strives to bring transparency and accountability to all stakeholders including Indian citizens in the entire production and sale process. Sampling by third parties (TPS) provides a very effective system for achieving the same.

Third Party Sampling (TPS) facilitates assessment of coal quality, which has an impact on:

- Environment

- Operating efficiency of the thermal power plant
- Cost of power generation (Both Domestic and Industrial) and a cascading effect on prices of other products due to higher input costs.

There are various parameters on which the quality assessment can be done, two of the primary quality parameters are :

- Gross Calorific value (GCV)
- Ash/Moisture content

Coal India Limited (CIL) has set a goal to cover 100 percent of Third Party Sampling (TPS) coal dispatch, which will help lower pollution rates , increase thermal power plant operating output, thereby providing cheap electricity to Indian households and industries.

1.3 OBJECTIVES OF THE STUDY

- To study the Coal import (Qty. & Value) in the Major ports.
- To study the Coal import (Qty. & Value) in the Non - Major ports.
- To study the trend of Coal import in India from Different countries of world.
- To understand and analyse factors responsible for import of coal.

1.4 SCOPE OF THE STUDY

- This project provides a clear insight on port-wise coal import consumption made by different parts of the country.
- This project would be helpful for the government or any other organization for getting the insight of the ongoing trend in air cargo.
- Students who are interested to explore about Coal commodity within India can know the present scenario and future prospects.

1.5 RESEARCH METHODOLOGY

The study will mostly use the secondary data to arrive at the conclusion of the project and will analyses and evaluate the data to find the conclusion regarding the project. The researcher will be using all the data's in the form of graph diagrams and histogram to access the current growth statistics.

- The data has been collected through following ways:
- Coal Controller Organization
- Journals & Past reports
- Online sources

The researcher attempts to analyse the situation and make critical evaluation. The research methodology will be focusing on study of Coal import in India scenario and various data pertaining to that.

1.6 LIMITATIONS OF THE STUDY

- The study has been conducted using secondary data. The main limitations are that the scarcity of data and its volume which was restricted to its official website only.
- The study was conducted for a limited period which was not sufficient to make a more detailed report.
- In certain area due to lack of data available on the web and various reference reports, use of trend analysis has been made to get certain data.

CHAPTER-2

LITERATURE REVIEW

2.1 Literature review

An attempt is made in this chapter to review some of the studies carried out to assess the importance of Coal Import in India. The studies that allowed the researcher to undertake this study are as follows. Coal import studies for Indian ports from different countries are scanty. Hence, here is a brief review of the studies on Coal Import in India.

Coal Import in India has an important role in nation's trade and economy because of its significant contribution for the economic prosperity and well-being of the country.

2.1.1 palo (2014)

The article addresses the factors that are leading to India's increasing dependency on coal imports, such as low domestic coal production and regulatory barriers in the coal business.

According to the report, environmental rules, land acquisition hurdles, and labour disputes have all impeded India's domestic coal output. Furthermore, the report mentions that the quality of India's local coal deposits is often poorer than that of coal imported from Indonesia and Australia.

The article also discusses the economic consequences of India's coal imports, including the cost of importing coal and the implications for India's trade balance.

(Palo, Bidhu Bhushan. (December 18, 2014). India's coal imports due to low production, regulatory obstacles. The Dollar business. Retrieved Oct 28,2015)

2.1.2 Lydia Powell, Akhilesh Sati, and Vinod Kumar Tomar (2019)

The paper analyzes the role of imported coal in India's energy security and examines the economic, political, and environmental implications of coal imports. The authors argue that coal imports have become a critical source of energy for India, particularly in the power sector, due to domestic supply constraints and growing demand.

The authors also examine the challenges associated with coal imports, including price volatility, transportation and logistics issues, and environmental concerns. They highlight the need for a more diversified and sustainable energy mix in India, which reduces dependence on coal and promotes the use of renewable energy sources.

Overall, the paper provides a comprehensive analysis of the role of imported coal in India's energy security and the challenges associated with coal imports. It emphasizes the need for a more diversified and sustainable energy mix in India and the importance of promoting renewable energy sources.

("Imported Coal: Source of Energy Security for India?" is a research paper written by Lydia Powell, Akhilesh Sati, and Vinod Kumar Tomar. The paper was published in the Energy Policy journal in 2019.)

2.1.3 Dr. Rajiv Kumar, Dr. Soumya Kanti Ghosh, Mr. Vivek Pandit (2012)

the article says that apart from crude oil, Coal imports rose 80.3 percent in 012-13 to \$17.6 billion. Coal is also not exported to Nepal and neighbouring countries except for small amounts so the gross and net imports are more or less the same.

Coal production may hit 795 MT in 2016-17, but issues affecting coal production such as land acquisition, reconstruction and relocation, law and order and infrastructure for evacuation will also need to be resolved in a time-limited way. Since then, the demand-availability difference will be reduced to 186 MT which will have to be changed by importing coal. Hence, coal imports may just be a chink in the armour of India's BOP. India has a productivity of 0.58 tons of coal mining per year, which is 1/10th of the US. This is a significant issue and needs urgent attention.

Government must immediately initiate competition in the coal sector through the privatization of Coal India Ltd and its major subsidiaries. It will infuse capital and technology in our mining sector; will lead to our domestic production being increased. Coal supplies to power companies should be as set out in the 2007 New Coal Distribution Policy.

(Dr. Rajiv Kumar, Dr. Soumya Kanti Ghosh, Mr. Vivek Pandit. (3rd Aug 2012). Coal is the next big problem. Financial express)

2.2 Conclusion

In this paper, an attempt was made to examine trends, and the benefits of importing coal in India. The literature Import of Coal was analysed by segregating existing studies on various criteria, with a emphasis on different aspects of coal consumption at different ports. To conclude, the import area of Coal in India has promising prospects for future research, as it has many facets that remain unexplored or underexplored. Because of huge coal imports and increased consumption, it

becomes necessary to understand and analyse the latest trends in international coal trade and find steps to reduce coal imports in India, as well as boost coal exports to allow us to become self-sufficient in coal production and consumption.

2.3 Literature Review

The research articles and reference work in this field are limited in number with minimal focus on Coal Import in India. The available literature mainly emphasised on Coal India limited with in India.

My report mainly focuses on the Coal import in terms of Quantity and value to India from different countries of World, and provides the Port- wise consumption towards total Coal import.

2.4 Research Methodology

2.4.1 Data Collection

The research articles and reference works in this field are limited in number with minimal focus on Coal Import in India. The available literature mainly emphasised on Coal India limited with in India.

My report mainly focuses on the Coal import in terms of Quantity and value to India from different countries of World, and provides the Port- wise consumption towards total Coal import.

2.4.2 Primary Data

Primary data are those which are collected directly from first-hand experience.

2.4.3 Secondary Data

The secondary data are those which have already been collected by someone else and which have already been passed through the statistical process. Collection of secondary data has the advantage of being less expensive and less time consuming. Scrutiny must be made before using secondary data. Secondary Data are available on the various forums after doing extensive research work and published on some Journal, Article or Novel. Apart from the primary data, secondary data was collected from the administration report, company websites and various reports.

The Ministry of Coal is the ministry setup by the government for the regulating the industry.

There has been lot of Extensive research on data available done by various government agencies. The Coal controller organization of India and Indian Bureau of mines Air are some of the Government agencies which can provide the trustable data that can be very useful in carrying the research work. Ministry of Coal is one of the important Ministries of handling various types of coal import around the country. The resources available on these platforms will motivate and inspire in accomplishing the objective of the study.

2.4.4 Methods/sources for collection of secondary data

- Annual reports
- Company records
- Journals
- Books
- Website
- Magazines & News paper

2.4.5 Data analysis

The study has used mostly the secondary data to arrive at the conclusion of the project and has analyzed and evaluated the data to find the conclusion regarding the project. The researcher will be using all the data's in the form of graph diagrams and histogram to access the current growth statistics. The data describes the consumption of coal by the various ports in India.

The researcher attempts to analyze the situation and make critical evaluation. Microsoft excel has to be used to get all the desired analysis and statistical reports. The research methodology has focused to the study of Coal import in Indian scenario and various data pertaining to that.

2.5 Presentation of to Study

- Chapter1:-Deals with an overview about the Project report which includes the introduction, Definition, Types.
- Chapter2:-Deals with the Literature Review & Research Methodology.
- Chapter3:-Deals with the Introduction to the Indian Market
- Chapter4:-Deals with the analysis of data collected.
- Chapter5:-Deals with the findings, suggestions, conclusion and bibliography of Coal Import.

Chapter 3

3.1 OVERVIEW OF GLOBAL COAL INDUSTRY

Coal is the most important single source of electricity, accounting for one-third of total worldwide power generation. According to Global Data, global coal mining would reach 8,776.5 million tonnes (Mt) in 2025.

Mining Technology analyses coal price trends as well as country-specific coal production, consumption, export and import statistics to track the worldwide coal market. We also track the performance of coal mining firms and big coal mines worldwide.

3.1.1 Global Coal Market Overview

Coal is one of the most important energy sources in the world, fuelling nearly 40 per cent of the world's electricity. Coal is a global industry with coal being used economically in over 50 countries and coal being used in over 70 countries. This figure is much higher in many countries: Poland relies on coal for more than 94% of its electricity; South Africa 92%; China 77%; and Australia 76%. In recent years, coal has become the fastest rising energy source in the world-faster than gas, oil, nuclear, hydro and renewables. Coal has played this important role for centuries – providing not only electricity, but also an essential fuel for the manufacture of steel and cement and other industrial activities.

The Coal Resource provides an overview of the coal and its role in our lives. It covers how coal is formed, how it is mined, through its use and its impact on our societies and nature. This explains the critical role of coal as an energy source and how coal – along with other energy sources – will be essential in meeting the increasingly the energy needs of the world. Today, the planet produces more than 4050 Mt of coal.

Coal is used in a number of industries – including power generation, processing of iron and steel, manufacture of cement and as a liquid fuel.

3.1.2 Global hard coal reserve

USA has large hard coal reserves and India is third largest hard coal reserve, Hard coal, also known as anthracite, is a type of coal that has a high carbon content, low moisture content, and high energy density. It is the most metamorphosed type of coal, meaning that it has

undergone the greatest degree of transformation from the original organic matter, resulting in a very hard and dense material

Countries based on hard coal reserves in 2020 (In Million Metric Tons)	
Countries	MMT
USA	218497
China	135475
India	106015
Australia	75428
Russia	71719
Ukraine	32034
Indonesia	25605
Kazakhstan	24059
Poland	22464
South Africa	9893

Table 3.1 Countries based on hard coal reserves in 2020 (In Million Metric Tons)

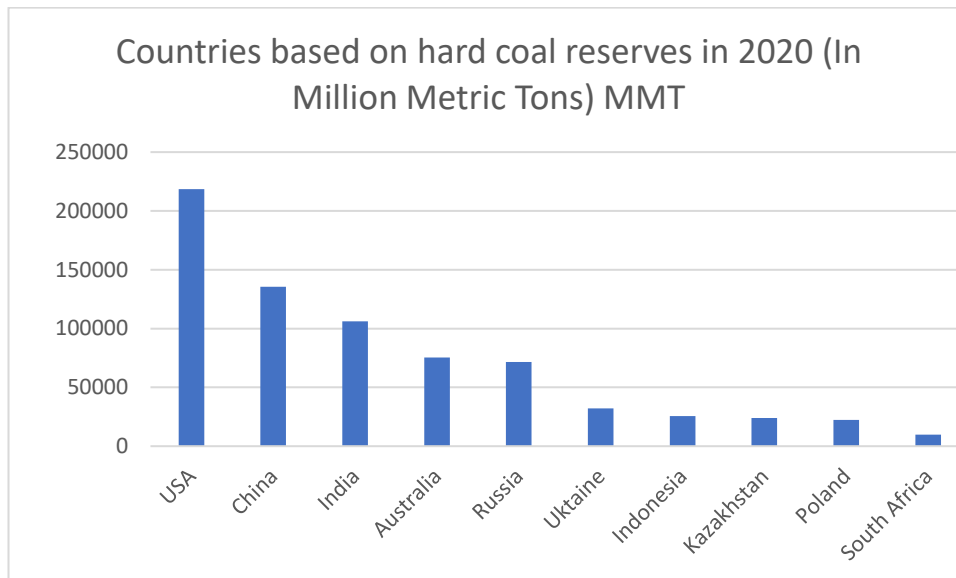


Figure 3.1 Countries based on hard coal reserves in 2020 (In Million Metric Tons)

3.1.3 Global Coal Production

Currently, over 7046 Mt of coal is produced – an increase of 58 % over the past 20 years. Coal production in Asia has grown most rapidly, whereas Europe has actually seen production decline. The main coal producing countries are not limited to a single country – China, the USA, India, Australia and South Africa are the top five producers. A great deal of global coal production is used in the country where it was produced; only around 18 % of hard coal output is intended for the international coal market.

HARD COAL PRODUCING COUNTRIES WORLDWIDE IN 2021 (IN MILLION METRIC TONS)	
COUNTRIES	MMT
China	3771
India	778
Indonesia	554
USA	481
Australia	433
Russia	359
South Africa	229
Rest of the world	441

Table 3.2 hard coal production countries world-wise

This is a list of the top hard coal producing countries in the world in 2021, along with their production in million metric tons (MMT). China was the largest producer with 3771 MMT, followed by India with 778 MMT, Indonesia with 554 MMT, and the USA with 481 MMT. Australia produced 433 MMT, Russia produced 359 MMT, and South Africa produced 229 MMT. The rest of the world combined produced 441 MMT.

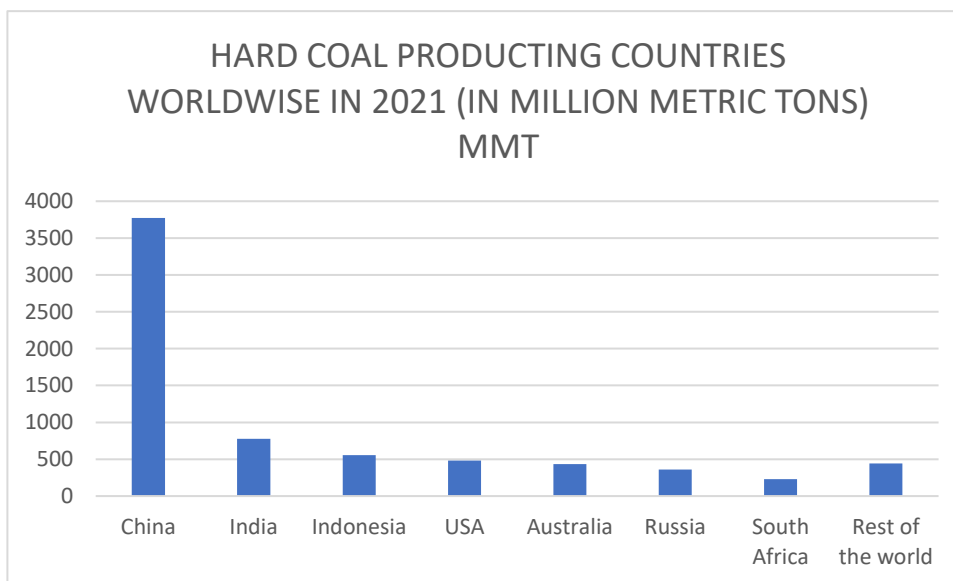


Figure 3.2 hard coal producing countries worldwide in 2021

3.1.4 Globally Coal Importing

Coal importing countries in 2021 in (million short tons)	
Country	Quantity
China	357
India	211
Japan	201
South korea	138
taiwan	74
Vietnam	44
Germany	43
Nerherlands	40
Turkey	40
Malaysis	39

Table-3.3 Coal importing countries in 2021 in (million short tons)

In 2021, China was the largest coal importing country with 357 million short tons of coal, followed by India with 211 million short tons. Japan, South Korea, and Taiwan were also significant coal importers with quantities of 201 million short tons, 138 million short tons, and 74 million short tons, respectively. Other notable coal importing countries included Germany, the Netherlands, Turkey, and Malaysia, each importing around 40 million short tons of coal.

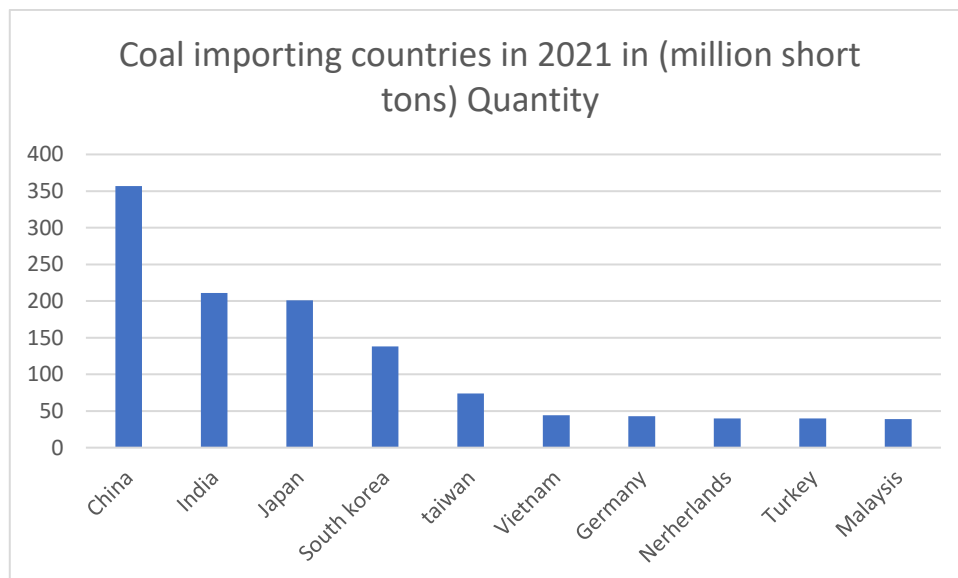


Figure 3.3 Coal importing countries in 2021 in (million short tons)

3.1.5 Globally Coal Consumption

Coal plays a crucial role in the production of electricity and that role is set to continue. Coal currently power 39 percent of the world's electricity, and it is predicted that this proportion will remain at similar rates for the next 30 years. Steam coal consumption is projected to grow by 1.5 % per annum over the 2002-2030 period Lignite, also used in the production of electricity, would rise by 1 per cent per year. Throughout this time, demand for coking coal in iron and steel production would increase by 0.9 % per year.

The largest coal market is Asia, which currently accounts for 54 per cent of global coal consumption, although China accounts for a significant proportion of that. Many countries do not have adequate natural energy supplies to satisfy their energy needs, and so they need to import energy to help meet their needs. For example, Japan, Chinese Taipei, and Korea import substantial quantities of steam coal for electricity generation, and coking coal for steel production. Not only is the lack of indigenous coal supplies prompting countries to import coal but also the importance of obtaining specific coal types.

For example, major coal producers like China, the USA and India also import quantities of coal for both quality and logistical reasons. Coal will continue to play a key role in the world's energy mix, with demand set to rise rapidly in some regions. Growth in both the steam and coking coal markets will be highest in developing Asian countries, where demand for electricity and the need for steel in building, car production and household appliance demand will grow as incomes increase.

Coal Consuming Countries worldwide in 2021 (in exajoules)	
Countries	exajoules
China	86.17
India	20.09
USA	10.5
Japan	4.8
South Africa	3.53
Russia	3.41
Indonesia	3.28
South Africa	3.04
Vietnam	2.15
Germany	2.12
Austratia	1.63

Table 3.4 - Coal Consuming Countries worldwide in 2021

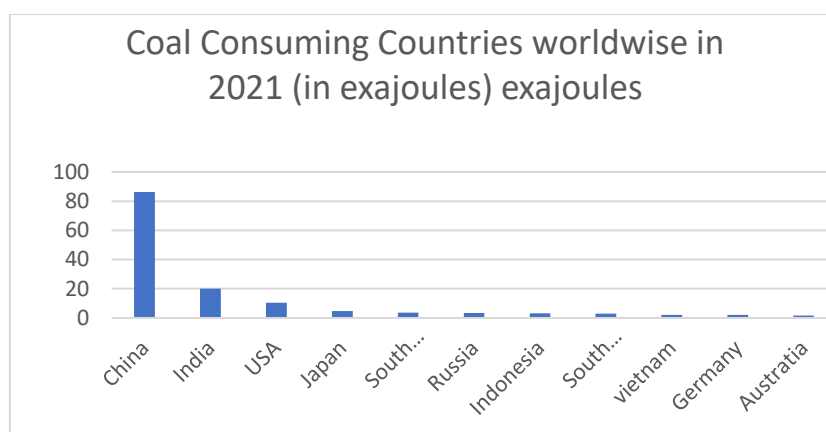


Figure 3.4 - Coal Consuming Countries worldwide in 2021

3.2 INDIAN COAL INDUSTRY OVERVIEW

3.2.1 India's coal market structure

The coal sector in India is mostly government-owned and managed. Since the nationalization of India's coal mines in the early 1970s, the central government has overseen coal output in the country. Mining licenses and leases are approved by state governments. Because of the intricate institutional interactions, streamlining and altering the approvals process is difficult.

	Central Government	State Government	Private Sector
Policy	Ministry of Coal Central Mine Planning and Design Institute Coal Controller	State Government	
Production	Ministry of Coal Coal India Limited Singareni Collieries Company Limited Neyvelli Lignite Corporation Joint Ventures	State Government Singareni Collieries Company Limited Gujarat Mineral Development Corporation	Captive Producers Power Industry
Consumption	National Power Generators	State Power Generators	Private Power Generators Industry Cement Brick Iron/steel

Figure 3.5: - Structure of India's Coal sector

The Ministry of Coal is in charge of developing policies and plans for coal exploration, project approvals, and other issues connected to the production, supply, distribution, and pricing of coal in India. A Memorandum of Understanding (MoU) between the Ministry of Coal and Coal India also establishes output targets and other performance measures.

The Coal Controller: A Ministry of Coal subordinate office that establishes standards and procedures for assessing coal quality, inspects coal quality, acts as an arbitrator in quality disputes, issues project approvals, collects excise duties, and manages coal-related statistics.

Governments at the state level: Sets royalty rates and approves mining licenses and leases, which are required before the Ministry of Coal gets final project approval.

Coal India Limited dominates coal output in India, with smaller companies accounting for the remainder. Key producers include:

- **Coal India Limited ('Coal India'):** A holding company formed in 1975 to include the state-owned firms formed following the nationalisation of India's coal assets. The government owns 75% of Coal India, which continues to dominate coal production in India, accounting for more than 80% of total coal production.
- **Singareni Collieries Company Limited (SCCL):** Produces around 10% of India's coal, which is mostly supplied to southern India. The central government owns 49 percent of SCCL, with the state government of Andhra Pradesh controlling the remaining 51 percent.
- Captive producers account for around 8% of Indian production. Through the sale of coal

blocks, the government allows privately owned end users (such as electricity generators and industrial sectors such as cement manufacture) to create their own coal. The producers are known as 'captive' because the coal can only be utilized in approved operations and cannot be traded or exported, though any excess output can be sold to Coal India. Recent measures have attempted to loosen these constraints.

3.2.2 Production

The entire coal production in India in the 2018-19 fiscal year (April to March) was anticipated to be 730 million tonnes.⁵² In the same period, thermal coal accounted for 94% of India's domestic coal production, totaling 683 million tons.

In response to fast expansion in coal use in the electricity generation industry, India's thermal coal production expanded more than sixfold between 1978-79 and 2009-10.

After 2009-10, production growth slowed significantly, falling from an annual average growth rate of 6.0 percent between 1978-79 and 2008-09 to 1.1 percent between 2009-10 and 2013-14. Coal India, the state-owned coal producer responsible for more than 80% of coal production, was unable to meet its annual production targets, and its inability to meet domestic requirements since the mid-2000s was one of the key challenges underpinning India's energy policies.

Production growth has recently accelerated, with yearly average increase reaching 5.5% between 2014-15 and 2018-19.

In 2016, India surpassed the United States to become the world's second largest producer of thermal coal, trailing only China. Coal India has increased output through enhancing mechanisation and reforming its coal operations to improve efficiency, as well as advancing more projects through the rigorous approvals process and expanding current operations.

Nonetheless, production remains significantly lower than consumption, with the construction of new greenfield coal mines in India hampered by continued issues with land acquisition, regulatory processes, and insufficient transportation infrastructure. The Indian government must continue to seek reforms in order for production to keep up with rising electricity and industrial demand. The complicated regulatory and institutional frameworks for India's electricity and coal industries,

however, continue to be a hurdle to enacting these reforms.

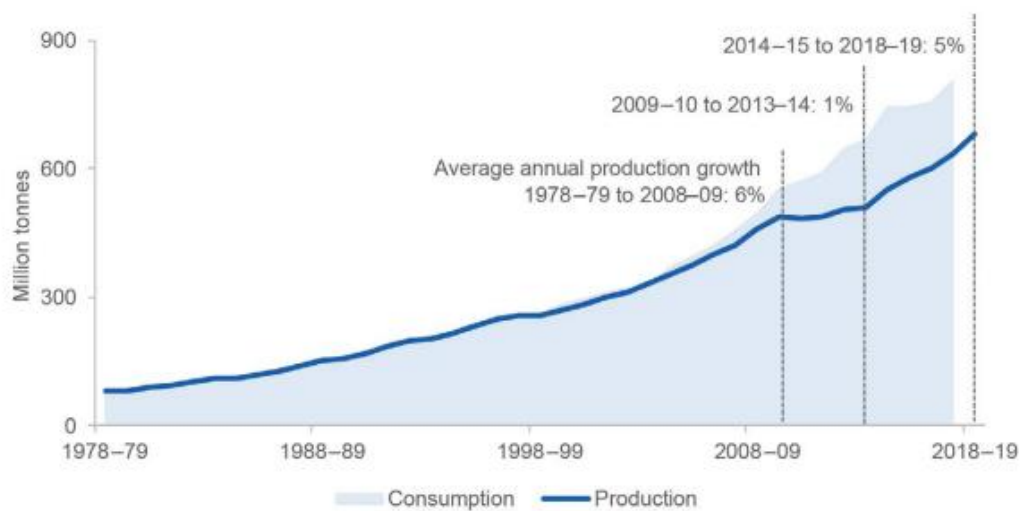


Figure 3.6: - India's thermal coal production and consumption

Chapter 4

ANALYSIS OF COAL IMPORT IN INDIA

India is one of the world's largest consumers of coal, and despite being a major producer, the country still needs to import significant quantities of coal to meet its energy demands. This has significant economic and environmental implications, with coal imports being a major burden on the economy and contributing to greenhouse gas emissions and air pollution. The Indian government has set a target to reduce the country's dependence on coal imports and increase domestic production, which is crucial for ensuring energy security and sustainable economic growth.

4.1 Trend of Coal Import in India

4.1.1 Total Import of Coal to India in Last 10 Yrs.

Year	Coking Coal		Non-Coking Coal		Total Coal		Coke & Others Coal Products		Lignite	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
2020-21	51.28828	454354.8	163.7066	706017.2	214.9949	1160372	2.45729	44688.59	0.01886	409.24
2019-20	51.83275	612668.3	196.7038	914652.2	248.5366	1527321	2.87455	60256.67	0.05425	1074.46
2018-19	51.83768	720497.6	183.5103	988707.3	235.348	1709205	4.93094	120644.9	0.01937	403.43
2017-18	47.00325	595226.4	161.2454	789543.4	208.2487	1384770	4.58478	91524.74	0.01041	116.5
2016-17	41.64379	412300.6	149.3093	590013.3	190.9531	1002314	4.34648	54019.35	0.01912	433.29
2015-16	44.56117	282519.1	159.3881	577818.5	203.9493	860337.6	3.07163	32683.54	0.00105	14.83
2014-15	43.71529	337655.6	174.0675	707410.5	217.7828	1045066	3.29388	43806.15		17.03
2013-14	36.87214	348318.7	129.9849	574973.2	166.857	923291.8	4.17053	67994.89	0.00127	23.73
2012-13	35.55697	378398.1	110.2285	490056.9	145.7855	868455	3.08065	56918.82	0.00065	10.22
2011-12	31.80101	424692.3	71.05162	363683.5	102.8526	788375.8	2.36469	47584.54		

Table 4.1: - Total Import of Coal in India to Last 10 Yrs. (Qty. in MT & value in Million Rs)

So, in this table it is clearly shows that India import more non-coking coal each year compared to coking coal.

The price for the coal (average of coking and non-coking coal) was being 5400 rupees per tonne for the year 2020-21, the price for non-coking coal was 4312 rupee per tonne where has price for coking coal was 8800 rupee per tonne so it shows that price of coking is 2 times of non-coking coal

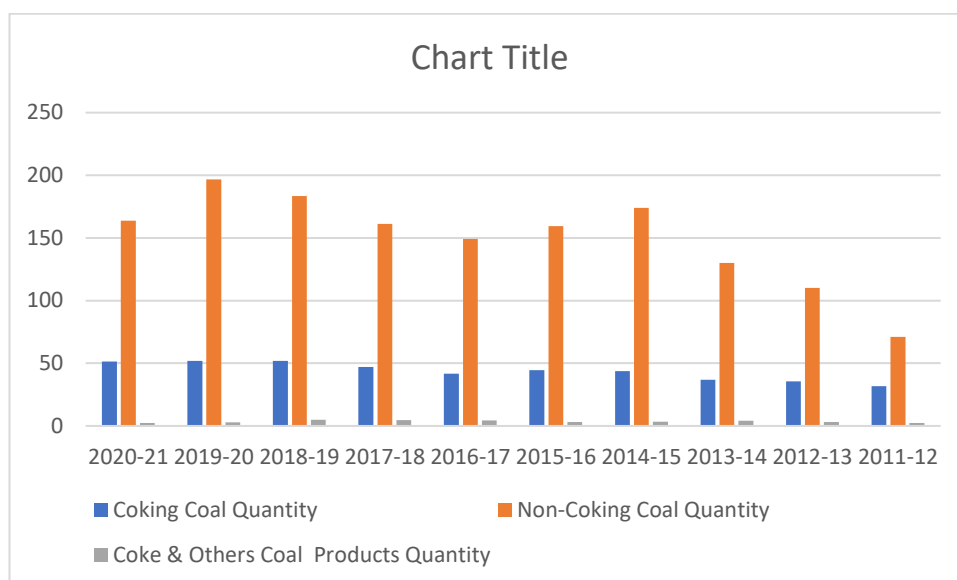


Figure 4.1: Total Import of Coal in India In Last Ten Years

4.1.2 Total Annual changes in Import of coal In Last 10 Yrs.

Year	Coking Coal		Non-Coking Coal		Total Coal	
	Quantity (In MT)	Annual Change (In %)	Quantity (In MT)	Annual Change (In %)	Quantity (In MT)	Annual Change (In %)
2020-21	51.28828	-1%	163.7066	-20%	214.9949	-16%
2019-20	51.83275	0%	196.7038	7%	248.5366	5%
2018-19	51.83768	9%	183.5103	12%	235.348	12%
2017-18	47.00325	11%	161.2454	7%	208.2487	8%
2016-17	41.64379	-7%	149.3093	-7%	190.9531	-7%
2015-16	44.56117	2%	159.3881	-9%	203.9493	-7%
2014-15	43.71529	16%	174.0675	25%	217.7828	23%
2013-14	36.87214	4%	129.9849	15%	166.857	13%
2012-13	35.55697	11%	110.2285	36%	145.7855	29%
2011-12	31.80101	39%	71.05162	30%	102.8526	33%

Table 4.2 :- Total Annual changes in Import of coal to Last 10 yrs

The table shows the annual quantity and percentage change of coking coal, non-coking coal, and total coal imports in India from 2011-12 to 2020-21. It can be observed that non-coking coal has consistently been the dominant type of coal imported into India, with a significant decline in 2020-21. Coking coal imports have been relatively stable, with a slight decline in 2020-21. Total coal imports have decreased by 16% in 2020-21 due to the decline in non-coking coal imports. Overall, the trend suggests a gradual decrease in coal imports in recent years, with a focus on increasing domestic production and reducing reliance on imports.

4.2 Port-wise trend of Coal import in India

4.2.1 Port-wise trend of Coal Import in India during Last 8 Yrs. (Qty. in Million tonnes)

PORT WISE IMPORT OF TOTAL COAL TO INDIA DURING LAST EIGHT YEARS (Qty. in Million Tonnes)								
Port Names	Years							
	2020-21	2018-19	2017-18	2016-17	2015-16	2014-15	2013-14	2012-13
Dhamra(Chandbali)	15.26822	11.47818	11.866	12.734	11.511	13.64	9.497	
Ennore Sea	6.5633	9.05528	7.106	8.803	5.908	6.721	5.948	1.506
Gangavaram Port	17.52793	18.33146	16.505	11.237	15.162	13.895	9.478	9.837
Hazira Port, Surat	5.50349	5.88282	5.105	3.943	2.529	1.718	1.376	
Jaigad	7.72781	7.88487	5.947	3.057	0.098			
Kandla Sea	15.97361	14.85973	12.825	11.336	12.057	9.224	6.193	4.249
Kolkata Sea	12.53275	13.46971	10.112	9.356		9.544	7.965	6.573
Krishnapatnam	18.32326	21.88474	18.845	16.21	12.505	13.355	12.96	13.555
Magdalla Port Sea	6.5259	8.8295	6.978	5.421	5.489	4.526	4.098	4.692
Marmagoa Sea	8.941	7.63125	10.147	10.737	11.022	7.891	4.817	6.569
Mundra	16.49608	24.20036	19.698	14.893	13.632	24.221	18.693	13.725
Newmangalore Sea	3.12586	5.55458	5.664	5.752	5.549	7.656	6.756	6.312
Paradip Sea	17.0895	18.8269	19.823	15.998	15.901	16.215	14.107	16.627
Tuticorin Sea	5.25541	6.81572	6.52	9.439	8.275	5.187	5.933	5.086
Visakhapatnam Sea	11.17234	14.94651	11.918	8.651	12.977	15.427	11.232	11.278
Total	168.0265	189.6516	169.059	147.567	132.615	149.22	119.053	100.009

Table 4.3 PORT WISE IMPORT OF TOTAL COAL TO INDIA DURING LAST EIGHT YEARS (Qty. in Million Tonnes)

The table shows the port-wise import of total coal to India in million tonnes over the last eight years, from 2012-13 to 2020-21. The total coal import has varied year-on-year, with a peak in 2018-19 at 189.65 million tonnes and a decline in 2020-21 at 168.03 million tonnes. Krishnapatnam port has consistently been one of the top ports for coal imports, with a peak of 21.88 million tonnes in 2018-19. Mundra port has also been a significant contributor, with a peak of 24.20 million tonnes in 2018-19. Other notable ports for coal imports include Gangavaram, Dhamra, and Paradip..

4.2.2 Port-wise trend of Coal Import in India during Last 8 Yrs. (value in Million Rs.)

PORT WISE IMPORT OF TOTAL COAL TO INDIA DURING LAST EIGHT YEARS (Value in Million Rs.)								
Port Names	YEARS							
	2020-21	2018-19	2017-18	2016-17	2015-16	2014-15	2013-14	2012-13
Dhamra (Chandbali)	114040.4	132096.4	119222.5	97068.1	60479	85255	65497	
Ennore Sea	29089.51	47767.58	30110.76	31608.7	27176	36368	28745	5246
Gangavaram Port	98800.37	146472.8	126122.5	72100	67626	81203	68595	75351
Hazira Port, Surat	17166.69	24787.44	21232.72	12885.6	9006	5873	4641	
Jaigad	53373.08	69631.09	42359.4	17639.6	488			
Kandla Sea	76754.2	91814.36	72047.79	45913.3	47434	40480	26091	16998
Kolkata Sea	91896.7	154715.7	109572.7	69968.2	55423	63199	64773	61026
Krishnapatnam	86382.23	147909.8	102827	70809.3	53404	68784	70102	68145
Magdalla Port Sea	28239.48	51031.75	38660.07	25671.4	22782	21318	20318	22575
Marmagoa Sea	68142.52	83984.91	97103.74	88331.4	62054	57123	44366	61417
Mundra	77708.42	132667.4	100385.8	63105.3	52424	104254	80350	65710
Newmangalore Sea	14546.04	38503.43	31713.04	25944.9	23010	38226	35412	32820
Paradip Sea	127496.4	200584.7	184452.4	115871	76444	90605	99703	114194
Tuticorin Sea	17496.31	28525.89	25835	33456	30432	22884	24310	21688
Visakhapatnam Sea	72520.17	128959.6	100412.8	58140.5	57379	83172	82618	89478
Total	973652.5	1479453	1202058	828513.3	645561	798744	715521	634648

Table 4.4:- Port wise import of total coal to India During last 8 yrs

Among the ports listed, the highest value of coal was imported through the Paradip Sea port, which imported 127496.4 million Rs. worth of coal in 2020-21, followed by Gangavaram Port with 98800.37 million Rs. and Krishnapatnam with 86382.23 million Rs

In Dhamra port for the year 2020-21 the value of coal is 7468 rupees per tons but in 2018-19 the value for coal was 11506 rupees per tons and 10043 for year 2017-18 i.e. 54% reduce value of coal Compared between 2020-21 and 2018-19 and increase in values of 14.54% compare between 2018-19 and 2017-18

As studied the value in 2020-21 as been reduced compared to their previous price and values are high in 2018-19

The value of coal in krishnapatnam port for 4715 rupees per ton as the average value low compare in his segment

4.3 Port Wise Import of Coking Coal to India

4.3.1 Top major and minor port in India handled Coking coal since 2012 (qty in million tonnes)

Dhamra (chandbali) and gangavaram port are minor port and other in the table are major ports

Dhamra is in Orrisa state and towards Bay of Bengal and gangavaram is in Telangana state towards Bay of Bengal

All the port in this table are facing toward Bay of Bengal the reason be that the coking coal are Australia and Indonesia.

PORT WISE IMPORT OF COKING COAL TO INDIA DURING LAST 8 Yrs.(Qty. in Million Tonnes)								
Port Names	Years							
	2020-21	2018-19	2017-18	2016-17	2015-16	2014-15	2013-14	2012-13
Dhamra(Chandbali)	8.2732	6.88597	6.387	7.119	6.469	6.914	3.828	
Gangavaram Port	4.48199	5.51235	5.412	4.92	5.709	5.443	4.78	4.63
Kolkata Sea	7.06796	7.98574	6.628	5.329	5.389	5.687	5.214	4.412
Krishnapatnam	3.29359	3.7441	2.121	2.093	3.137	3.383	2.12	1.384
Marmagoa Sea	5.83726	4.7674	5.675	5.421	5.829	4.988	4.072	5.407
Paradip Sea	9.51412	10.02944	10.068	8.08	7.32	6.732	6.458	5.636
Visakhapatnam Sea	5.35149	5.51963	5.507	4.054	5.028	6.008	6.796	6.5
Total	43.81961	44.44463	41.798	37.016	38.881	39.155	33.268	27.969

Table 4.5- port wise import of coking coal to india

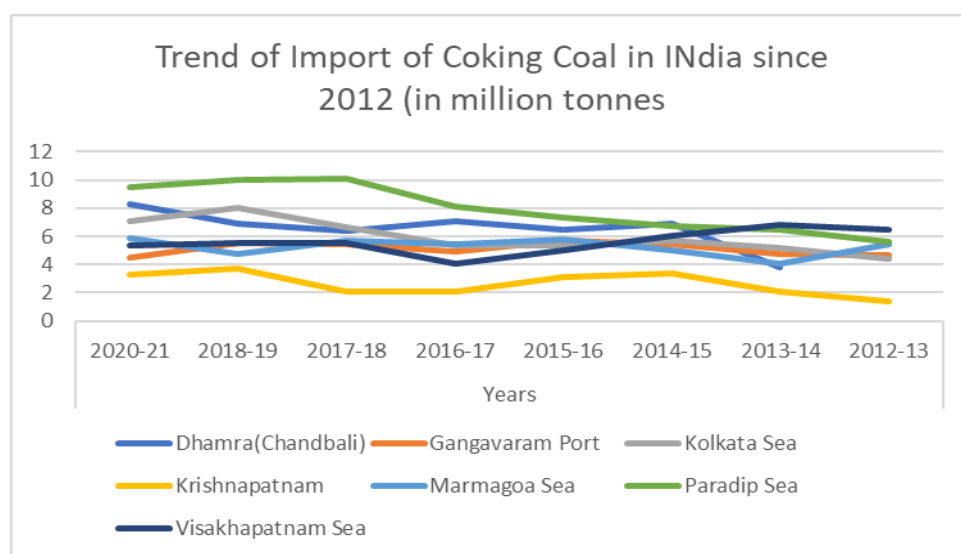


Figure 4.2 trend of import of coking coal india

Paradip port is the highest in handling coking coal with the average of 7.97 million tonnes followed by Kolkata port with average of 5.96 million tonnes and the least is Krishnapatnam port with 2.65 million tonnes

4.3.2 Top major and minor port in India handled Coking coal since 2012 (values in million rupees)

Gangavaram Port as the least value per tons of coking coal with 8543.83 rupees per tons followed by Marmagoa port with 8694.4 rupees per tons and the highest by Visakhapatnam with 9181.14 rupees per tons

lowest is best but grade of coals quality also master of the value of coal

PORT WISE IMPORT OF COKING COAL TO INDIA DURING LAST EIGHT YEARS (Value in Million Rs)								
Port Names	Years							
	2020-21	2018-19	2017-18	2016-17	2015-16	2014-15	2013-14	2012-13
Dhamra(Chandbali)	73803.69	94461.29	82844.74	69650.39	40674	53010	34466	
Gangavaram Port	38293.81	76727.11	71311.14	48841.34	35943	41542	45593	51119
kolkata sea	63794.89	115763.5	86875.2	51523.55	34800	44766	50411	49663
Krishnapatnam	26367.89	48048.95	26402.9	17404.63	19997	24691	18703	13446
Marmagoa Sea	50753.24	62996.48	66443.2	58675.26	37470	39481	38899	55078
Paradip Sea	86167.21	141336.7	127738.8	80857.49	46143	52512	63914	63556
Visakhapatnam Sea	49132.79	80116.22	70456.25	42598.34	31873	46586	64092	71632
Total	388313.5	619450.3	532072.2	369551	246900	302588	316078	304494

Table 4.6 port wise import of coking coal to india

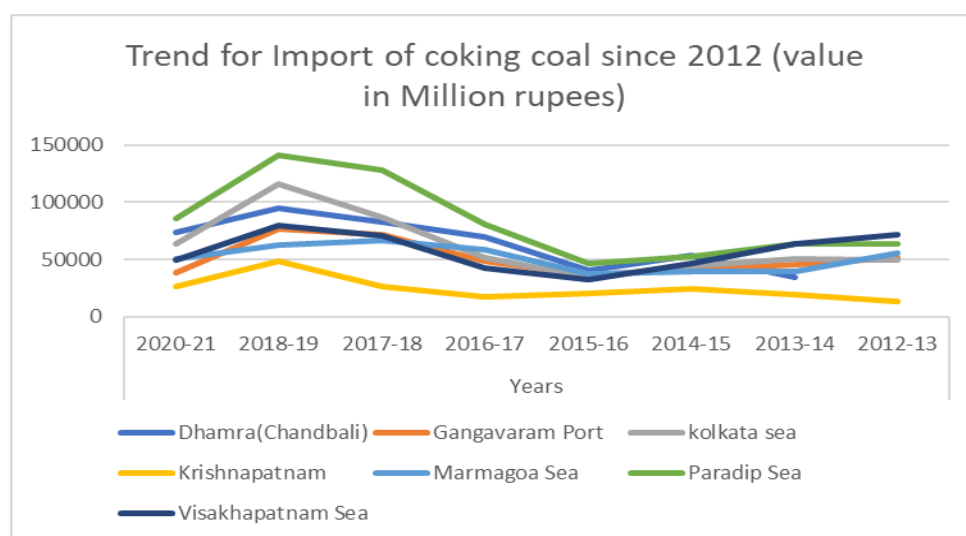


Figure 4.3- trend for import of coking coal to India

4.4 Port wise Import of Non-Coking coal in India

4.4.1 Top major and non-major ports in handling non-coking coal since 2012-13 (Value in Million Tonnes)

The table shows the port-wise import of non-coking coal to India in million tonnes during the last Eight years, from 2012-13 to 2020-21. Non-coking coal is a type of coal that is used primarily in thermal power plants for generating electricity.

As per the table, the total import of non-coking coal increased from 104.92 million tonnes in 2012-13 to 163.71 million tonnes in 2020-21, which is a significant increase. Among the ports, Mundra imported the highest amount of non-coking coal in most of the years, followed by Krishnapatnam and Kandla Sea.

PORT WISE IMPORT OF NON - COKING COAL TO INDIA DURING LAST EIGHT YEARS (Qty. in Million Tonnes)								
Port Names	Years							
	2020-21	2018-19	2017-18	2016-17	2015-16	2014-15	2013-14	2012-13
Dhamra(Chandbali)	6.99502	4.59221	5.478	5.615	5.041	6.726	5.668	
Gangavaram Port	13.04593	12.81915	11.093	6.317	9.453	8.452	4.698	5.207
Kandla Sea	15.1314	14.21088	12.253	10.909	11.678	8.741	5.873	3.921
Krishnapatnam	15.02967	18.14064	16.724	14.117	9.369	9.972	10.84	12.17
Magdalla Port Sea	6.5259	8.53082	6.132	4.375	4.606	3.905	3.596	3.929
Mundra	15.94719	22.94375	18.731	13.972	12.532	22.998	17.443	12.318
Paradip Sea	7.57538	8.79745	9.755	7.918	8.582	9.483	7.649	10.991
Tuticorin Sea	5.25541	6.81572	6.52	9.439	8.275	5.187	5.933	5.086
Visakhapatnam Sea	5.82085	9.42688	6.411	4.597	7.949	9.419	4.436	4.778
Total	163.7066	183.4	161.27	149.31	156.38	168.39	131.25	104.92

Table 4.7- port wise import of non-coking coal

Mundra port handled average of 17.11 million tonnes for eight years which is highest in the list and This port is a non-major port which is in Gujarat towards Arabian sea. Followed by krishnapatnam port average of 13.29 million tonnes and which also a non-major port in Telangana toward Bay of Bengal

Lowest in the list is dhamrai port with average of 5.01 million tonnes.

4.4.2 Top major and non-major ports in handling non-coking coal since 2012-13 (Value in Million rupees)

Below is a table of port-wise imports of non-coking coal to India over the past eight years. The values are in millions of rupees.

The data shows that in the year 2020-21, the highest value of non-coking coal imports was through Mundra port (72,192.5 million rupees), followed by Kandla Sea (69,024.95 million rupees), and Gangavaram Port (60,506.56 million rupees).

Overall, the total value of non-coking coal imports to India has fluctuated over the past eight years, with the highest value recorded in 2018-19 (988,300 million rupees) and the lowest value recorded in 2012-13 (461,534 million rupees).

PORT WISE IMPORT OF NON -COKING COAL TO INDIA DURING LAST EIGHT YEARS (Value in Million Rs)								
Port Names	Years							
	2020-21	2018-19	2017-18	2016-17	2015-16	2014-15	2013-14	2012-13
Dhamra(Chandbali)	40236.7	37635.08	36377.72	27417.71	19805	32245	31031	
Gangavaram Port	60506.56	69745.71	54811.31	23258.69	31683	39662	23003	24233
Kandla Sea	69024.95	82285.21	64792.38	42266.23	44642	36378	22725	13477
Krishnapatnam	60014.34	99860.86	76424.14	53404.63	33407	44092	51399	54699
Magdalla Port Sea	28239.48	47521.7	30475.9	18307.96	17362	16816	15893	16381
Mundra	72192.5	115602.9	89538.66	55032.3	45254	94972	69182	52186
Paradip Sea	41329.15	59247.88	56713.59	35013.17	30300	38093	35789	50638
Tuticorin Sea	17496.31	28525.89	25835	33456.02	30432	22884	24310	21688
Visakhapatnam Sea	23387.37	48843.36	29956.52	15542.1	25506	36586	18526	17845
Total	706017.2	988300	789540	590013	568405	707585	581001	461534

Table 4.8 port wise import of non-coking coal to India

The prices per million tonnes of non-coking coal for the year 2020-21 varied across different ports in India. The highest price was at Dhamra (Chandbali) at Rs. 5752.19 per million tonnes, followed by Krishnapatnam at Rs. 4637.96 per million tonnes, and Magdalla Port Sea at Rs. 4561.70 per million tonnes. The lowest price was at Visakhapatnam Sea at Rs. 3329.20 per million tonnes. The other ports fell in between these price ranges. Overall, the average price per million tonnes of non-coking coal for the year 2020-21 in India was approximately Rs. 4557.90.

4.5 Import of Coal by Major port for the year 2022

4.5.1 Import of Non-coking coal by major port in India

Import of Non-coking coal by major port in india	
port name	Year
	2022
kandla	10.254
Vizag	8.667
Paradip	4.314
Ennore	4.2606
Tuticorin	3.439
Kolkata	2.814
Marmagoa	2.628
Mumbai & JNPA	2.228
Mangalore	2.094
Total	40.6986

Table 4.9- import of non-coking coal by major port in India

The data shows the import of non-coking coal by major ports in India for the year 2022. The total amount of non-coking coal imported by these ports is 40.6986 million tonnes. Kandla port has imported the highest amount of non-coking coal at 10.254 million tonnes, followed by Vizag at 8.667 million tonnes and Paradip at 4.314 million tonnes. Ennore and Tuticorin ports have imported 4.2606 million tonnes and 3.439 million tonnes of non-coking coal respectively. The remaining ports, namely Kolkata, Marmagoa, Mumbai & JNPA, and Mangalore have imported less than 3 million tonnes of non-coking coal each.

4.5.2 Comparing between major port and non-major port for non-coking coal handled for the year 2022

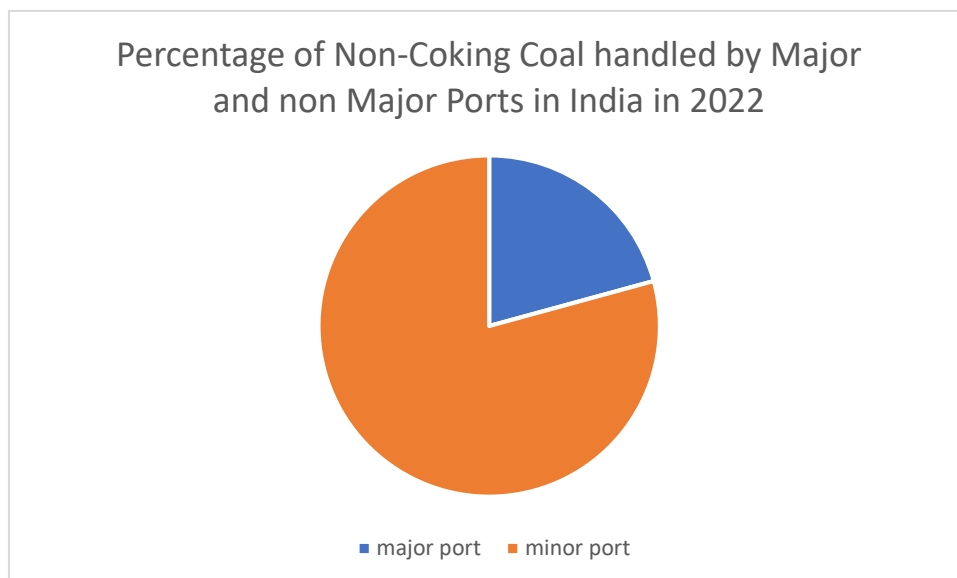


Figure 4.4 pie chart on non-coking handled by major port and non-major port

The major ports imported 40.6986 million tonnes of non-coking coal in the year 2022, while the minor ports imported 155.441 million tonnes. The total import of non-coking coal in India in 2022 was 196.1396 million tonnes.

In terms of percentage, the major ports accounted for 20.74% of the total import, while the minor ports accounted for 79.25%.

4.5.3 Import of coking coal by major port in India

Import of coking coal by major port in india	
Port name	Year 2022
Paradip	7.07
Kolkata	6.9
Vizag	4.11
Margagoa	3.69
Ennore	1.17
Mangalore	1.02
Kandla	0.1
Total	24.06

Table 4.10 – import of coking coal by major port in India

In the year 2022, the total import of coking coal through major ports in India was 24.06 million tonnes. The highest amount of coking coal was imported through Paradip port with 7.07 million

tonnes, followed by Kolkata with 6.9 million tonnes and Vizag with 4.11 million tonnes. Margaoa, Ennore, Mangalore, and Kandla ports also imported coking coal in smaller quantities.

4.5.4 Comparing between major port and non-major port for coking coal handled for the year 2022

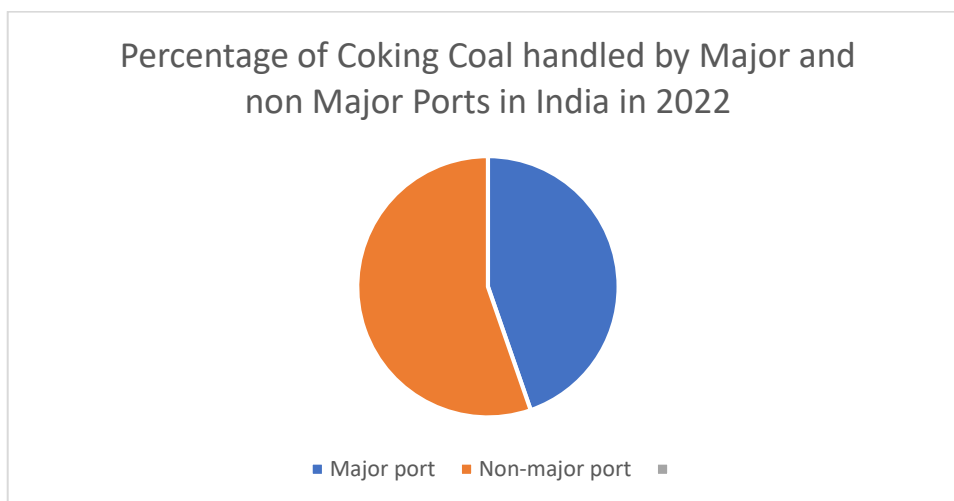


Figure 4.5 pie chart of coking coal handled by major and non-major port in India

Based on the given data, the import of coking coal by major ports in India in the year 2022 was 24.06 million tonnes. Non-major ports imported 29.781 million tonnes of coking coal, making the total import of coking coal 53.841 million tonnes. This represents 44.69% of the total import through major ports, and 55.31% of the total import through non-major ports.

4.6 Source Country Wise Import of Coal to India during 2020-21

Country	Coking Coal		Non-Coking Coal		Total Coal	
	Quantity	Value	Quantity	Value	Quantity	Value
Australia	37.03592	330966.1	17.91685	96819.95	54.95278	427786.1
Canada	2.85008	26276.88	0.11327	939.38	2.96335	27216.26
Indonesia	1.39758	10258.5	91.137	330907	92.53458	341165.5
Mozambique	1.66873	14253.59	1.90079	9175.35	3.56952	23428.94
Russia	1.32849	8932.85	5.4209	36626.42	6.7494	45559.27
Singapore	1.86032	16214.61	2.62558	12333.95	4.4859	28548.56
South Africa			31.14339	142954.6	31.14339	142954.6
U S A	3.89487	36453.16	8.30863	49781.4	12.2035	86234.56
Total	51.28828	454354.8	163.7066	706017.2	214.9949	1160372

Table 4.11 Source country wise import of coal to india

The table shows the quantity and value of coking coal, non-coking coal, and total coal imported by India from various countries in the given year. Australia is the largest supplier of coal to India, providing 37.04 million tonnes of coking coal and 17.92 million tonnes of non-coking coal, totaling 54.95 million tonnes. Other significant coal suppliers include Indonesia, South Africa, and the USA. The total amount of coal imported by India from all countries combined is 214.99 million tonnes, with a total value of 1160372.03 units.

CHAPTER-5

FINDING AND SUGGESTION

5.1 FINDINGS OF THE STUDY

Major findings of the study based on the analysis of secondary data are summarized and presented as under:

- In India, Coal demand is increasing with a very high rate that's why India becomes Second Largest Importer of coal products. Coking Coal and Non – coking coal are the major Coal products imported and have high shares among the Coal products imports.
- The total import of coal to India in 2021-22 increased to 191.818 MT, Compared to 2020-21 where it was 152.70 MT increased in 25.61%
- Mundra (Gujrat), krishnapatnam Port (Chennai), Gangavaram Port (Andhra Pradesh), Kolkata Sea (Kolkata), Dhamra (Orissa), Paradip Sea (Orissa), are the port which has major contribution in Import of Coal from Other Countries like Australia, Indonesia etc.
- Kolkata Sea (Kolkata), Dhamra (Orissa), Paradip Sea (Orissa), Visakhapatnam Sea (Andhra Pradesh), Marmagoa Sea (Goa) etc. are the port which has major contribution in Import of Coking-Coal from Other Countries like Australia.
- Mundra (Gujrat), krishnapatnam Port (Chennai), Kandla sea (Gujrat), Gangavaram Port (Andhra Pradesh), Visakhapatnam Sea (Andhra Pradesh), Dhamra (Orissa), Paradip Sea (Orissa) etc. are the port which has major contribution in Import of Non- Coking Coal from Other Countries like Australia, Indonesia etc.
- Indonesia is the largest exporter of Thermal coal in India from last 10 yrs. In 2020 -21 India import 91.13 MT of thermal coal from Indonesia.
- Australia is the largest exporter of Metallurgical coal in India from last 10 yrs. In 2020 -21 India import 37.03 MT of metallurgical coal from Australia
- In 2020-21, highest coal Import by Major Ports is Kandla Port (15.97) and Visakhapatnam Port (11.172 MT).
- There is no doubt that export of India coal products have faced growth in the previous years, but on comparing with Import of coal it has marked very less growth.
- As we know that, India has one of the largest coal reserves, but annual output from the monopoly miner Coal India has not been adequate to meet the demands of a diverse industry such as power plants, steel mills, cement and fertilizer units that's why India imports to

compensate the lack of good quality coal, especially coking coal from the mining sources in the country.

5.2 SUGGESTIONS

- Government could increase as much as possible for the auctioning of coal mines in India for commercial mining to make the India self – reliant in energy sector. By increasing the coal mining in India it will provide direct as well as Indirect Employment to people.
- Developing countries always have growth opportunities in any sector so it also has an opportunity to grow in coal sector. As, India has largest Coal reserve, largest exporter of coal but also a largest importer of coal because of the higher demand so Government could look into some policies which encourage mining of coal by providing a management to new instruments, contracts and incentives.
- Government needs to find out the alternative of railway projects for long distance off take routes for coal transport which delayed for long periods of time.
- There is a need to Review the framework for pricing coal grades from grades based on coal extracted to grades based on carbon needed for end use.
- Need to Increase market participation and raise finance: The ability to raise competitive finances should also be enhanced with a competitive coal mining sector in the country.

5.3 CONCLUSIONS

Coal is the backbone of India's economic and development growth and will continue to be so. India has the fifth largest coal reserves in the world, and is also the second largest coal producer and importer in the world. The challenge for India is that the difference between domestic supply and demand is phenomenally growing. Imported coal fills the void, Despite India's attempts to reduce the amount of coal import's, the demand for coal continues to outstrip all of the acts. It is hard to see this trend reversing anytime soon, unless there is a considerable delay in India's economic and infrastructure development plans. Here are two main reasons why India continues to increase its coal imports.

- Available land-
India has the world's second largest population, and is a heavily crowded country. And you

have to evacuate the people who are already living there to build new mines and facilities. The issue is where you'll find vacant land to build new townships in India, which is a major reason why new coal mines have not come online in India.

- Lower cost of imported coal-

In the past few years, the international price for coal has fallen significantly as do the rail freight costs. Imported high-energy coal is now a lower cost to a large number of coal-fired power plants than similar coal purchased from Coal India. While the cost of imported coal has fallen, domestic coal prices have risen over the same period. This leads many Indian power companies to increase their purchasing of imported gas. India's biggest power producer, NTPC, is reportedly considering rising its share of high-energy coal imported from India.

The Indian government may want to end coal imports up-to 2024 years; however, this timetable simply does not seem to be feasible. For coal imports increasing dramatically over the past few years, a similar pattern will be realized in 2015 forecasts. Coal transport and the lower cost of imported coal can change in India's favour, but the land availability issue will only be exacerbated as Indian's huge population continues to grow.

In the future demand of Coal products in India will surely rise mainly for coking coal products. So government need to take some effective steps to decrease the import of coal from other countries and increase the coal mining's in India by helping the private Coal generating companies like NTPC, which will provide direct as well as Indirect Employment opportunities to people.

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