



Management

INTERNATIONAL TRADE OF COAL IN INDIA: TRENDS, CHALLENGES AND MEASURES FOR ACHIEVING TRADE BALANCE



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ABSTRACT

Coal is one of the most important sources of electricity and energy in Indian economy. India is world's third largest producer of coal yet it imports coal from different countries to meet its domestic requirement. With negligible amount of exports, it has resulted in trade deficit problems for Indian economy.

This paper attempts to examine the burning issue of "International trade of coal in India: trends, challenges and suggestions for Improvement" from different perspectives. Accordingly the existing literature on the subject has been reviewed with topics ranging from coal exports and imports to illegal mining, clean technology and new ways to improve the quality of coal. The objective of the paper is to find reasons for huge imports and low exports of coal with a view to achieve trade balance. To conclude, it can be said that there are many unexplored areas which researchers can take up in future in order to achieve trade balance of coal.

Keywords:

Cleaner coal technology, Coal reserves, Greenhouse gas emissions, Illegal mining.

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1. INTRODUCTION

Coal (from the Old English term col, which has meant "mineral of fossilized carbon" since the 13th century) is a combustible black or brownish-black sedimentary rock usually occurring in rock strata in layers or veins called coal beds or coal seams. Coal is composed primarily of carbon along with variable quantities of other elements, chiefly hydrogen, sulphur, oxygen, and nitrogen. The United States Energy Information Administration estimates coal reserves at 948×10⁹ short tons.

Types of coal: Coal is extracted from the ground by coal mining, either underground by shaft mining, or at ground level by open pit mining extraction. The varieties of Coal that are generally found in India are Anthracite, Bituminous, Lignite, and Peat.

Anthracite Coal is the best quality of coal and contains over 85 per cent carbon. It is very hard, compact, jet black coal having semi-metallic luster. In India, it is found only in Jammu and Kashmir and that too in small quantity.

Bituminous Coal is the most widely used coal and contains 50 to 85 per cent carbon. It is dense, compact, and brittle and is usually of black colour. Most of the bituminous coal is found in Jharkhand, Orissa, West Bengal, Chhattisgarh and Madhya Pradesh.

Lignite also known as brown coal is a lower grade coal and contains about 35-50 per cent carbon. It represents the intermediate stage in the alternation of woody matter into coal. Its colour varies from dark to black brown. It is found in Palna of Rajasthan, Neveli to Tamil Nadu, Lakhimpur of Assam and Karewa of Jammu and Kashmir.

Peat is the first stage of transformation of wood into coal and contains less than 35 per cent carbon. It is seldom sufficiently compact to make a good fuel without compressing into bricks.

USES OF COAL

The main use of coal is in the production of electricity. In India in 2012-13, 446.76 million tons coal was used by Electricity Industry. It was followed by Steel and Iron industry (16.15 million tons), Cement industry (13.11million tons) and Paper industry (2.12 million tons).Coke, a product left after heating coal, is used to manufacture iron and steel.

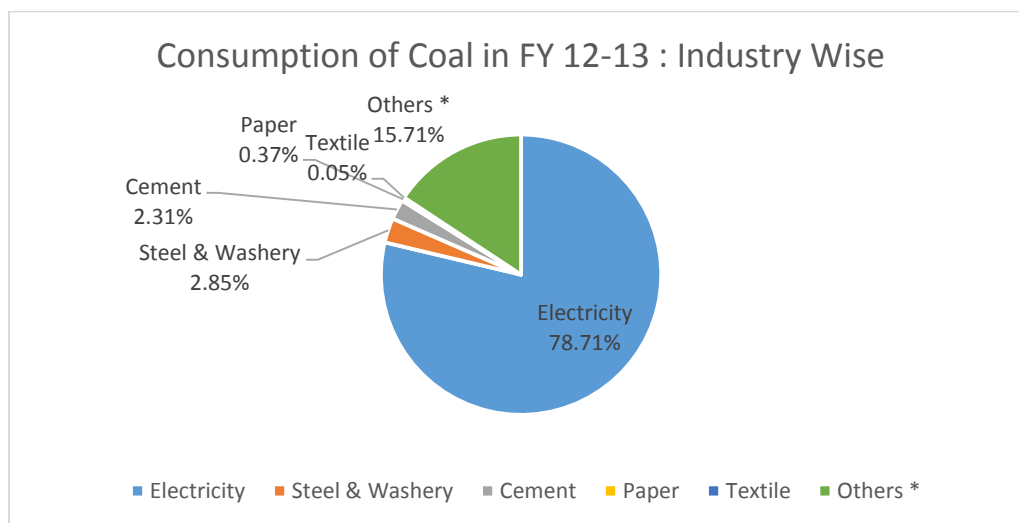


Figure 1: Consumption of Coal: Industry wise

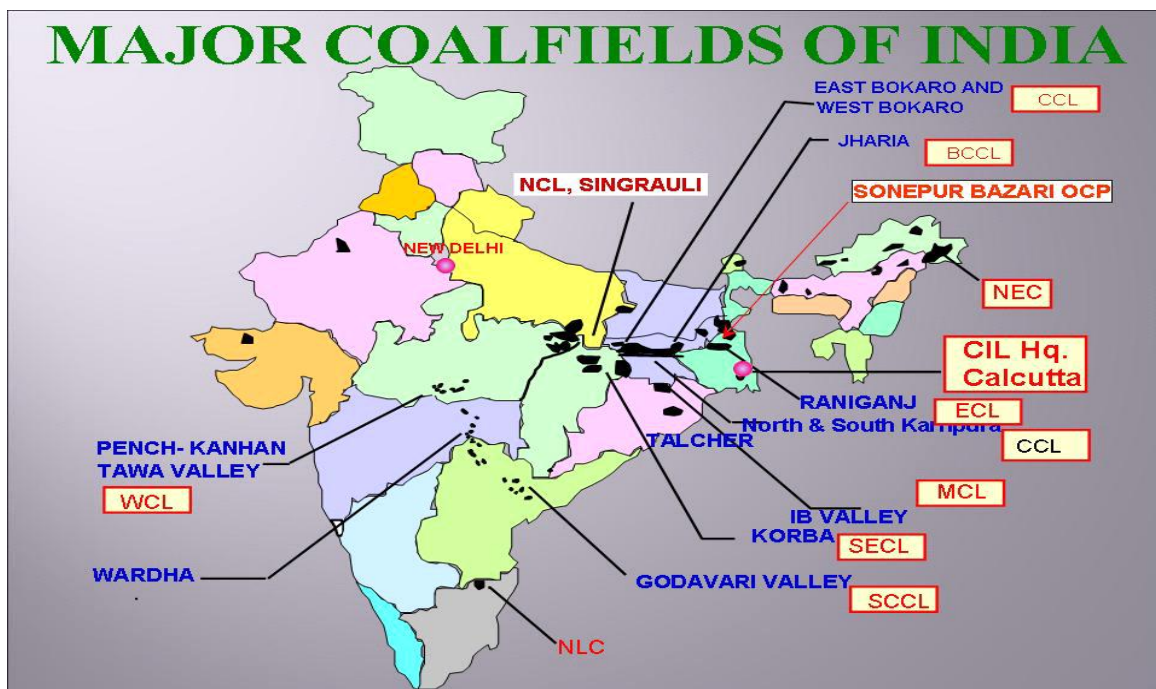


Figure 2: Major Coalfields of India

Source: Energy statistics 2015

Top Producers and Consumers of Coal: China with 3520 million tons (45.74%) was the leading producer of coal in 2011 followed by United States (12.90%), India (7.65%), E.U. (7.49%) and Australia (5.4%). China also tops the list of consumers of Coal with 4,053 million tons (50.7%) in year 2011. United states was the second largest consumer of coal with 1,003 million tons while India was third largest consumer with 788 million tons.

Indonesia was the biggest exporter of coal in year 2011 with 331.4 million tons and was followed by Australia (313.6 million tons) and Russia (140.1 million tons). In terms of net import the largest importers are still Japan (206.0 million tons), China (172.4 million tons) and South Korea (125.8 million tons). India was the fourth largest importer of coal with 101.6 million tons.

Table 1: Major Producers and consumers of Coal

Major producers of Coal (In MT)					Major consumers of coal (In MT)				
Country	2009	2010	2011	Share	Country	2009	2010	2011	Share
China	2973	3235	3520	45.74%	China	3188	3695	4053	50.70%
United States	975.2	983.7	992.8	12.90%	United states	997	1048	1003	12.50%
India	556	573.8	588.5	7.65%	India	705	722	788	9.90%
European Union	538.4	535.7	576.1	7.49%	Russia	204	256	262	3.30%
Australia	413.2	424	415.5	5.4%	Germany	248	256	256	3.30%

Source: BP statistical review of world energy 2012

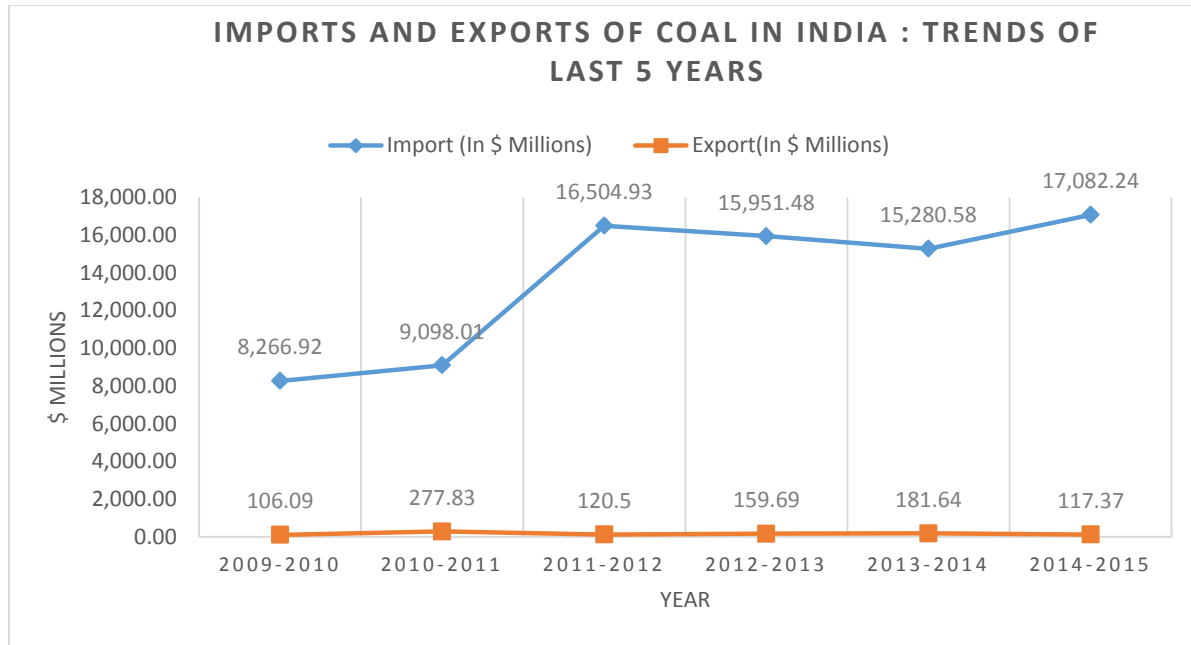


Figure 3: Imports and Exports of Coal in India

Source: Portal of Directorate General of Foreign trade

2. OBJECTIVES OF THE STUDY

- To study and analyse recent trends in production, consumption, export and import of coal in India.
- To understand and analyse factors responsible for import of coal.
- To analyse factors responsible for low production and exports of coal.
- To Study the role of trade barriers and non- trade barriers in India's Coal trade performance.
- To find solutions for reducing import of coal and becoming self-dependent in production of coal.

3. LITERATURE REVIEW

The Literature Review is based on Research Papers, Thesis and Journals and articles. The Section concludes with a summary of entire review. The literature review has been divided in two parts. In first part, Summary of different Research papers and Thesis studied are written and in second part, Articles related to topic is reviewed. The Research is analytical and comparative. Not much work has been done in this field. Literature review has been concluded by identifying the research gap and thus the research problem has been framed.

3.1. RESEARCH PAPERS AND THESIS

Directorate general of commercial intelligence and statistics' report provides an insight to the foreign trade performance of India during 2009-10 to 2011-12. The percentage growth of trade deficit of India was 49.7% in 2008-09 which decreased to -2.9% due to the global slowdown. However Indian economy started recovering from this slowdown and registered

percentage growth of 5.6% in 2010-11. India's imports grew from Rs. 1683467 crores in 2010-11 to 2345463 crores in 2011-12, an annual growth of 39.32% in 2011-12. Along with this, the country's exports also grew from Rs. 1136964 crores in 2010-11 to Rs. 1465959 crores in 2011-12, an annual growth of 28.94 % during 2011-12. As a consequence, India's trade deficit increased by a whopping 60.93 % during 2011-12. India's export and import performance has been analysed after dividing it in 3 sections viz. country wise, port wise and commodity-wise.

World institute of Sustainable energy's report (2013) attempted to realistically assess the future of coal-based thermal power generation in India. Thermal power is the most important source of electricity in India. It was found that that India is getting increasingly dependent on imported coal for power generation. Moreover the domestic production is likely to peak after 2031/32 making the problem worse. India also is facing CAD (current account deficit) and import of fossil fuel could result in highly unsustainable levels of CAD.

It is also argued that higher prices of coal will increase the cost of electricity. There will be an adverse effect on environment and forest due to coal based projects. On the other hand, Renewable power is cheaper and more eco-friendly than coal-based power. Prices of solar power also have fallen significantly. It was found using econometric approach that 75% clean electricity by renewable resources is possible by 2050. Benefits of this green transition (re-use of land, lesser use of water, reduction in emissions and less pollution etc.) are also explained. All in all this study dispelled the myth that coal is eternally essential for India's economic development and insisted that a green transition is urgently required and can be achieved.

Coal Industry Advisory board (2002) According to researchers coal accounted for 37% of world electricity production and it is expected that coal will continue to play a major role in world energy supply for many decades so there is a need to encourage deployment of cleaner coal technologies. Collaboration between coal producers and electricity generators could improve coal's contribution to sustainable development through product stewardship. Technology can immensely help in reducing adverse environmental impact of coal. Coal is abundant, safe to store, available and affordable and has not diminished with time.

Researchers have used two case studies – One of USA (developed country) and other of a developing country to show that clean coal technologies can result in savings and reduction in factors responsible for degrading the environment. Government should put in place policies that will accelerate innovation, investment in and rapid deployment of cleaner coal technologies. Recent initiatives like Global Mining Initiative by ten of world's largest mining, minerals and metals companies, 10 principles by world coal institute were welcomed by the researchers.

Innes says that Coal export trade (different from coal shipment business) was small in India even with so long sea board. It was economical to route coal by sea since major coalfields are near Calcutta. There was coastwise trade among Indian ports excluding Burma. Almost whole requirement of coal in Burma was fulfilled by India. In 1920 India exported 1.25 million tons coal to major countries but an embargo by Indian government reduced it to 77000 tons in next 2 years. This embargo opened the doors for exporters of South Africa and Japan. Indian coal committee was set up but India was not able to recapture its lost market initially till further assistance in 1936. Grant of 8 anna rebate enabled India to consolidate its position in Ceylon,

Straits and captured market in far east (Manila and china) .Export of coal also brought additional traffic to railways and ports and thus more revenue and employment.

Chikkatur (2005) says that the Indian coal reserve will last for 50-60 years. Over the past few months, many power plants, including National Thermal Power Corporation (NTPC) plants, have pulled back on generation because of coal supply shortages and critically low coal stock levels. The gap between domestic coal supply and coal demand (for power and other industries) is expected to increase in the coming year. Current power plants are operating at efficiencies far from optimum. CenPEEP has noted that every power plant in the country can improve its efficiency at least by 1-2 per cent. National mission for improving power plant efficiency is therefore urgently needed. A national "Cleaner Coal Technology (CCT)" programme must be formulated to strategically plan for the development, demonstration, and commercial deployment of newer and more efficient coal utilisation technologies in the country. Co-operation and collaboration with China, as well as the US, could prove to be quite useful for India's CCT programme.

New technologies, such as supercritical and ultra-supercritical pulverised coal, circulating fluidised bed combustion (CFBC), and integrated gasification combined cycle (IGCC) technologies, have much higher efficiencies than the current subcritical pulverised coal technology.

Anand & Prasad (2013) Researchers have studied and analysed the domestic production supply and demand of coal in India. The supply of coal is constantly falling short of demand for coal which is leading to more import of coal. Talking about import of coal, an important feature of the trend in imports is the sharp rise in the share of non-coking coal from about 40 % in 2003-04 to over 76 % in 2012-13. Australia remains a major source accounting for over 75% of the coking grade coal while Indonesia accounts for over 80 % of non-coking coal. Coal is under OGL and users are free to import coal directly according to requirement. Sector wise demand supply balance have been studied and suggestions for reducing dependence on imported coal like more domestic production, use clean coal technologies, adequate rail links for coal evacuation etc. have been explained.

Haque's (2013) paper has suggested different measures which should be taken to increase coal supplies in India. Indian coal are has high ash content (35-38% compared to 10-15% of imported coal) and washing can help in reducing the ash content by 7-8%. This also results in lower emissions.

Researcher has suggested ways to increase coal supplies by performance improvement, time bound action on pending mining applications, single window committee for quicker decisions, online web portals and payment facilities and demanded same facilities which are available to oil and gas sector under NELP. Doubling of railway routes, reallocation of railway networks and enhancement of port capacities and evacuation efficiencies are some of the suggested ways for improving coal transport.

Hoda et al. (2014) The present condition of India in international production networks had been compared by researchers with China, Malaysia, Thailand and South East Asia as a whole in this paper.

It was found that India was lagging behind in logistics, labour laws, power supply and taxation initiatives. Also there were many entry and exit barriers in India as compared to other South East Asian countries.

This has resulted into less investment by international MNCs in manufacturing sector. Taxation incentives, reduction of tariff on capital goods, FDI in defense production, increasing gateway infrastructure are some of the recommendations of the researchers for attracting MNCs in India.

Sharma (2014) This paper reviewed the energy sector in India, focusing on the energy trade and its barriers and limitations and on the promotion of energy trade between India and other countries, particularly the ASEAN members. It suggested that India has the capacity to boost its energy trade in both domestic and international markets.

The tariff barriers in India, like in other countries, have negative impacts such as inflationary pressures, government control and political considerations in economic matters, imbalance in demand-supply chain, strains on international trade relations. India's energy trade with its neighbors is very limited. In fact, the full potential is yet untapped. At present, cross-border energy trade is limited to Bhutan, India, and Nepal only. Apart from that inadequate infrastructure and connectivity Issue, lack of Trust and unfavorable political climate and information barrier and lack of transparency are other barriers in development of trade between India and ASEAN.

Anderson and Warwick (1997) This paper outlines the circumstances under which coal reform could not only improve the economy but also lower greenhouse gas emissions globally. The process of lowering coal subsidies and trade barriers has already begun, with some EU economies (most notably Belgium and the UK) already advanced in dismantling their coal production subsidies and others (France and Germany) beginning to do so.

Researchers have done a partial equilibrium analysis and general equilibrium analysis for finding effects of dismantling coal subsidies.

Results showed that the gradual removal of production subsidies in the OECD and the removal of distortions to coal markets in developing and transition economies can potentially reduce global emissions of carbon dioxide by up to 8 per cent relative to emissions that otherwise would have been experienced.

3.2. ARTICLES

Lahiri-Dutt (2007) Researcher explains the illegal coal mining in the eastern part of India (particularly from Raniganj in West Bengal to Dhanbad in Jharkhand) .Representations of these illegality hide unpleasant social realities of coal mining tracts, poor environmental performance of the state owned mining sector (CIL)and social disruption.

A veteran from the coal industry felt that around 70-80 million tons of coal is produced in India annually in addition to the official production figure but since CIL is not working efficiently these coal are illegally mined and marketed in India and foreign. The monopoly of CIL is also resulting in degradation of environment in such areas.

Researcher feels the monopoly of CIL in coal mining industry will break and in future there will be 3 layers of Indian coal industry first, globalized sector – Where MNCs will come into play second, State Level Where CIL will play an important role and last, Small local private entrepreneurs who will exploit the poor locals of mining area.

Illegal marketing and distributing of coal is more dangerous than illegal mining of coal. Legally mined coal can also be converted into illegal coal by distributing and marketing it illegally through rail wagons.

We should frame policies rules and regulations which will help in sustainable development of local communities. We should acknowledge their rights over local natural resources.

Kumar et al. (2012) say that apart from crude oil, Coal imports increased 80.3% to \$17.6 billion in 2012-13. Also, Coal is not exported except limited amounts to Nepal and neighbouring countries so gross and net import is more or less same.

Coal production may reach 795 MT in 2016-17 but the issues affecting coal production like land acquisition, rehabilitation and resettlement, law and order and evacuation infrastructure will also have to be addressed in a time-bound manner. Even then the demand-availability gap would reduce to 186 MT which has to be adjusted by coal import. Hence, coal imports may just be a chink in the armour of India's BOP.

India has a coal mining productivity of 0.58 tons per year, which is 1/10th of the US. This is a serious concern and needs to be addressed immediately.

Government must immediately usher competition in the coal sector by privatizing Coal India Ltd and its major subsidiaries. It will infuse both capital and technology in our mining sector, will lead to the enhancement of our domestic production. Coal supply to power companies should be as per the New Coal Distribution Policy 2007

Palo (2014) says that India has huge coal reserves, enough to meet domestic demand and also for exports, but the country imports millions of tons of coal every year due to low production and regulatory bottlenecks. India adds about 3-4 billion tons to every year to its reserves due to the exploration by the state-owned Coal India Limited (CIL). CIL, which accounts for over 80% of all coal production in India, has about 456 coal mines, but production does not take place in 27 out of those mines or about 6% of total mines held by CIL. Government says that this is mainly due to delay in obtaining Environment and Forest (EC & FC) clearances, delay in land acquisition, rehabilitation and resettlement issues, lack of infrastructure and difficult mining conditions. Government is looking for coordinated efforts with Railways for movement of coal. The government also plans to sell about 10% of its stake in Coal India under its disinvestment programme for 2014-15.

According to **Raghavan (2015)** most recent projections made by the government seems to indicate that the gap between exports and imports of goods with China would go up from around \$ 36.2 billion now to an unsustainable level of \$ 80 billion in another two years. However half the Indian imports from China are machinery and equipment which India can potentially replace with domestic production, the real reason for concern is the humongous imports of energy especially oil and coal whose volumes continue to steadily escalate. India's trade deficit with Saudi Arabia and Iraq, the two largest sources of oil, alone was \$ 41.7 billion in 2013-14 which is substantially larger than its trade deficit with China.

So rather than worry about trade deficits due to the growing hunger for machinery and raw material needed by its industry, including that from China, India would do well to focus on efforts to reduce its burgeoning dependence on energy imports which remains the Achilles' heel of the Indian economy.

4. CONCLUSION

In this paper, an attempt has been made to study trends, and challenges of international trade of coal in India. The literature on international trade of coal has been analysed by segregating extant studies on different parameters with focus on cleaner coal technologies. To conclude, it can be said that the area of International trade of Coal of India holds promising prospects for future researches as it has many facets which are still unexplored or underexplored. Due to huge imports of coal and increasing consumption, it becomes essential to understand and analyse the most recent trends in coal's international trade and find out measures to reduce import of coal in India as well as boosting the exports of coal so that we can become self-sufficient in coal production and consumption.

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