

Cement Industries in India

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ABSTRACT

Cement is a key ingredient in the construction sector and thereby in the development of the economy as it is indispensable for nation-building .and has a direct linkage with the nation's health and growth. It is also evolving from a mere commodity into a branded product. The demand for cement is strongly correlated to the rate of economic development and it gets adversely affected due to the slowdown in economic and infrastructure development activities. With a capacity of nearly 400 million tonnes, India is the second-largest cement producer in the world. In India, the Housing Sector is the biggest demand driver of cement, accounting for about 67.0 per cent of the total consumption. The other major consumers of cement include Infrastructure at 13.0 per cent, Commercial construction at 11.0 per cent, and Industrial construction at 9.0 per cent. Thus, the construction of houses in rural and urban areas remains the biggest driver of cement consumption. In Addition, public works, infrastructures development, Railways and Road constructions too create demand for Cement. Cement industry itself create employment to large labour force. Therefore, it is interesting to analyse the economics of Cement industry in India which is attempted in this paper. The main purpose of this paper is to analyse the economics of cement industry in India.

Key Words : Cement industry, Economic development, Construction sector, Make in India

INTRODUCTION

The construction industry is the branch of manufacturing and trade based on building, maintaining, and repairing structures. This includes drilling and solid mineral exploration and consists of the Real estate as well as the Urban Development segment. In the financial year 2021, infrastructure activities accounted for a 13.0 per cent share of the total foreign Direct Investment (FDI) inflows of USD 81.72 billion and employs 51 million people and thus, is the second largest employment sector in India¹. India aims to become the third-largest construction market globally by 2025. The major types of raw materials used for construction in India are steel, bricks, sand, cement, and wood. Cement is mainly used as a binder in concrete, which is a basic material for all types of construction, including housing, roads, schools, hospitals, dams, and ports, as well as for decorative applications (for patios, floors, staircases, driveways, pool decks) and

items like tables, sculptures or bookcases. Cement is the main ingredient in a concrete mixture and play the most important role of the mix, such as work ability, compressive strength, drying shrinkage, and durability. Through the process of hydration, cement particles react with water, binding the aggregate, and the strength matrix develops².

Cement industry is having forward linkage with many construction activity which are labour intensive in nature and hence assumes important in India. With this backdrop, it makes necessary to make an analysis of cement industries potential and growth, which is attempted in this paper.

Objectives:

The main aim of this paper is to analyse the present status and nature of growth of cement industry in India. The specific objectives are

1. To review the importance of cement in

construction sector and cement industry in India.

2. To analyse the nature of demand and supply of cement in India.

METHODOLOGY

This paper is descriptive and analytical in nature. Reviewing the literature on cement industry is done for understanding the existing knowledge on Indian cement Industry. Based on secondary data analysis of cost of production, demand and supply trend and other economic issues related to cement and cement industries are attempted. The focus is mainly on cement and cement industries in the construction sector of India.

Cement:

Cement can be defined as a substance which can unite two or more pieces of other substance together to form a unit mass. Cements, is a fine powder which when mixed with water and allowed to set and harden can join different components together to give a mechanically strong structure. Hence, used in construction sector which is used as a bonding material for bricks or for bonding solid particles of different sizes (rubble masonry) to form a monolith. Cement is one of the important building material among other in construction industry. Cement has replaced traditionally used building materials, like clay and lime, which ruled high for hundreds of years, in construction from last Century. It has an ability to hold the structure together. Cement is now used in many construction trade items like plain cement concrete, Reinforced Cement Concrete, mortar, plaster, grouts, paints and in pre-cast elements. One of the characteristics of a developed country is its growing infrastructure and hence cement is an important element for the development of country and its economy. Traditionally, used natural materials like lime has many limitations, while modern binder materials like polymers, epoxy etc. are very costly and hence, cement is the best alternative³.

It was just about 200 years ago that Cement as we know it today was developed. Joseph Aspdin of England first patented the manufacture of a very improvised type of cementitious material for building construction in 1824. The hardened cement paste resembled the natural stone occurring at Portland in England. Hence it was named as Portland cement. In an ordinary building construction, cement accounts to about 10 to 12.0 per cent of the cost of construction. In some other major constructions like bridges, it's very much more⁴.

The reasons for its popularity and universal acceptance are, Cement can be produced in large volumes in controlled condition, packed and transported over long distances. It is several times stronger binding material than lime and clay and can be mixed and used at will with locally available materials at site. When stored properly in ordinary atmosphere does not deteriorate or react for reasonably longer time and when mixed with water, starts setting very early and acquires sufficient strength in a day or two, where as other binding materials require much longer time. When water is added to quick lime, lot of heat is generated, but in case of cement, heat generated is unnoticeable and much lesser. It can withstand compressive stresses well. Where tension and shear stresses occur, it gives good bond to steel reinforcement and transfers excess stresses to steel. It is produced from the materials like limestone, hematite, bauxite, clay etc. which are abundantly available in upper crust of the earth. It imparts strength and durability to building elements. Not only that with cement, the speed of construction also gets faster and it is comparatively cheaper material.

Importance of Cement Industry in India:

The Cement industry in India is one among the country's foundational industries. In India (Madras) organized cement production began in 1904. It is essentially a weight-loss enterprise. As a result, the industry's localization is in the area where the raw resources are available. Coal, limestone, and gypsum are their primary raw resources. Madhya Pradesh has the most limestone reserves, therefore it is more developed in this business⁵. In addition to limestone, sea shells, sludge from chemical fertilizers, and slag from the iron and steel sector have recently been employed as raw materials. The cement industry is the second greatest essential primary and basic industry for India's economic development, second only to the iron and steel industry. The cement industry is a basic industry that contributes significantly to the development of other industries, construction, and even agriculture. Every industry requires cement, and cement is an integral component of industrial infrastructure. Cement is an important material in the infrastructure sector. It has important economic significance due to its long and diversified supply chain contributing 5.4 per cent of global GDP, 7.7 per cent of global employment and. India's cement industry is a vital part of its economy, providing employment to more than

a million people, directly or indirectly.

The Indian cement industry is majorly dominated by regional players, since cement being a bulk commodity, transporting it over long distances is not economically viable. Of late, consolidation happened as big players acquired smaller regional players. India has a lot of potential for development in the infrastructure and construction sector and the cement sector is expected to largely benefit from it. Some of the recent initiatives, such as the development of smart cities, affordable housing etc.; is expected to provide a major boost to the sector. Since the cement is freight intensive industry, the industry is spread broadly into five regions *viz.*, North, South, West, East and the Central region.

India is the world's second-largest cement producer, accounting for more than 7.0 per cent of worldwide installed capacity. In 2020, India's total cement manufacturing capacity was around 545 million tonnes (MT). The private sector accounts for 98.0 per cent of overall capacity, with the public sector accounting for the remaining 2.0 per cent. The Indian cement industry is dominated by a few companies. The top 20 cement producing Companies account for almost 70.0 per cent of total cement production in India. Because India has a large amount and quality of limestone reserves all over the country, the cement sector has enormous expansion potential. The additional 350 micro cement plants account for at least 210 big cement plants, which have an installed capacity of 410 MT across the country. In India, there are 77 large cement facilities, the bulk of which are in Rajasthan, Andhra Pradesh and Tamil Nadu⁶.

In the recent past, Foreign players such as Lafarge-Holcim, Heidelberg Cement, and Vicat have invested in the country. Therefore, factor which aids the growth of this sector is the ready availability of raw materials for making cement, such as limestone and coal. Some major investments in Indian cement industry are as follows:

- In May 2020, the acquisition of Emami Cement Ltd. by Nuvoco Vistas Corp. Ltd. (part of the Nirma group) was approved by the Competition Commission of India (CCI). In February 2020, Nirma Group announced acquisition of Emami Cement Limited (ECL) for an enterprise value of Rs. 5,500 crore (US\$ 786.95 million).

- In October 2019, UltraTech Cement announced plans to invest Rs. 940 crore to increase the production of premium products for strengthening its position in eastern markets. Also, UltraTech completed the acquisition of Century Textile's cement business, with

the scheme of demerger becoming effective from October 1, 2019.

- JK Cement planned to invest Rs. 1,700 crore (US\$ 246.7 million) to increase its production capacity to 15 million tonnes by end of 2020.

Production and Growth Trends:

A month-on-month comparison from the Office of the Economic Advisor in August 2020 shows that despite a negative growth, the cement industry rebounded to (-3.5%) growth in September 2020 compared to the previous month that has witnessed a decline of (-14.6%) in August 2020. For lockdown, the industry has seen its biggest decline in April-May 2020. Steel and cement have been badly affected by the Covid-19 pandemic as construction remained largely suspended across the country due to labour shortages and social distancing norms. On the other hand, the Year-on-Year (YOY), growth shows that despite a positive growth in 2019 (13%) in 2020 the YOY growth rate becomes zero, in 2021 the YOY growth rate becomes negative (-10.6%) due to the Covid-19 crisis and subsequent lockdown measures to combat the pandemic due to which economic activity came to a standstill⁷.

Like other industries Cement industry also affected by Covid-19, resulted in negative growth during 2020-21

RESULTS AND DISCUSSION

The production and consumption trend of Cement in India is shown in Table 1.

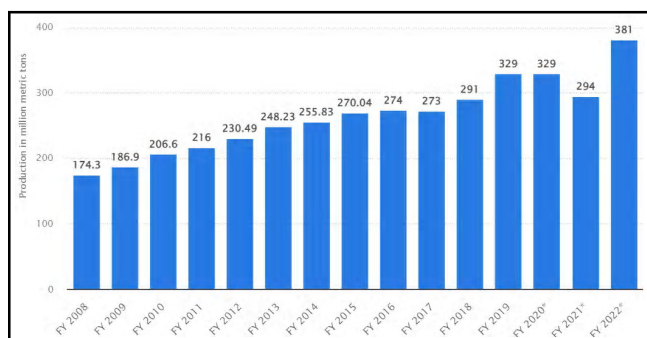
The production of Cement in India during 2022 was 381 million metric tonnes, accounting for 22.83 per cent of growth rate driven by demands in roads, urban infrastructure and commercial real estate. Growth in Infrastructure and real estate sector, post-COVID-19 pandemic, is likely to augment the demand for Cement.

In Union Budget 2022-23, there was a higher allocation for infrastructure to the tune of US\$ 26.74 billion in roads and US\$ 18.84 billion in railways is likely to boost demand for cement. Under the housing for all segment, 8 million households will be identified according Rs. 48,000 crore (US\$ 6.44 billion) set aside for Priminister Awas Yojana⁸. The government approved an outlay of Rs. 199,107 crore (US\$ 26.74 billion) for the Ministry of Road Transport and Highways, and this step is likely to boost the demand for cement. Several government schemes such as MGNREGA, PM Garib Kalyan Rozgar Abhiyan and state-level schemes such as Matir Srisht (West

Table 1: Production and consumption volume of cement in India (million metric tonnes)

Year	Production	Consumption
2008	174.3	163.4
2009	186.9	177.5
2010	206.6	196.4
2011	216	210.2
2012	230.49	230
2013	248.23	243
2014	255.83	249
2015	270.04	257
2016	274	272
2017	273	270
2018	291	289
2019	329	328
2020	329	327
2021	294	349
2022	381	379

Source: Statista 2023



Source: Statista 2023

Fig. 1 : Production volume of Cement In India (million metric tonnes)

Bengal) and public work schemes (Jharkhand) have aided demand In October 2021, Prime Minister, Mr. Narendra Modi, launched the 'PM Gati Shakti - National Master Plan (NMP)' for multimodal connectivity. Gati Shakti will bring synergy to create a world-class, seamless multimodal transport network in India⁹. This will boost the demand for cement in the future.

The year-on-year data as per the report published by Statista shows that From 2009 to 2022, the volume of cement consumption in India has increased at a steady pace¹⁰. In 2019, India was the second largest producer of cement in the world. The country had about eight per cent of the global installed capacity that year.

Consumption of cement at this time stood at around 328 million metric tons. The market has been dominated by the private sector, having about 98.0 per cent of the total production capacity¹¹. Demand for cement was estimated to increase in the coming years. This shows an increase in the installed production capacity as well. Housing and real estate were the major consumers of the material in 2019, accounting for over 60.0 per cent of the domestic demand. During 2022 the consumption of cement in India rose to 379 million tonnes accounts for 5.7 per cent of the growth rate¹².

The Government of India is strongly focused on infrastructure development to boost economic growth and is aiming for 100 smart cities. The Government also intends to expand the capacity of railways and the facilities for handling and storage to ease the transportation of cement and reduce transportation cost. These measures would lead to an increased construction activity, thereby boosting demand for Cement.

Production Cost :

Production cost of Cement plays a significant role in the market price fixation as in other goods and services. Market price need to be maintained at low and stable. Major cement manufacturers in India have adopted various cost minimizing measures as subdued crude oil and pet coke prices have helped to check electricity and fuel cost¹³. Reduced Railway freight has helped to combat logistics cost. Raw materials costs remained also under control due to moderate gypsum and fly ash prices. Many cement producers are eyeing rural demand as a booster; The Ambuja company's clinker and cement plants in Rajasthan was scheduled to be commissioned in June quarter of 2021, which was delayed by around six months due to the pandemic. New capacity is likely to augment volume of sale in the North and West markets. J K cement has set up a new Green-eld facility of 0.7 million tonnes in Gujarat completing the company's grey cement expansion plan of 4.2 million tonnes per annum for 2021¹⁴. The grey cement grinding plant in Balasinor (in the Mahisagar district of Gujarat) is part of the company's expansion plan of grey cement of 4.2 mtpa, which is likely to enhance local employment opportunities as well. Gujarat has emerged as the largest cement plant in the world. It also has expansion plans for grey cement in Madhya Pradesh¹⁵.

Clinker capacity wise, top-10 Companies and their regional breakup is given in Table 2.

Table 2: Estimated clinker capacity wise top-10 companies and their regional breakup in 2020 (in Million Tonnes)

Sr. No.	Company	Northern Region	Central Region	Western Region	Eastern Region	Southern Region	Total
1.	UltraTech	18.22	15.07	18.31	8.98	17.50	78.08
2.	ACC	3.80	2.94	3.27	4.51	9.10	23.62
3.	Shree Cement	15.64	N.A.	N.A.	3.96	3.96	23.56
4.	Ambuja	7.84	N.A.	6.44	3.58	N.A.	17.86
5.	Dalmia	N.A.	N.A.	N.A.	5.91	8.62	14.52
6.	India Cements	1.09	N.A.	N.A.	N.A.	9.80	10.89
7.	Chettinad Cement	N.A.	N.A.	N.A.	N.A.	10.49	10.49
8.	J K Cement	8.12	N.A.	N.A.	N.A.	2.15	10.27
9.	Ramco Cements	N.A.	N.A.	N.A.	N.A.	10.11	10.11
10.	Birla	3.11	6.50	N.A.	N.A.	N.A.	9.61
	Total	57.82	24.51	28.02	26.94	71.73	209.02

Source: AMSEC Research (14 October 2020), Company websites

The future prospectus of the Cement Industry in India:

Cement companies are on an expansion spree and are expected to add 80-100 million tonnes of fresh capacity by 2025 despite the looming challenges on rising input cost and uncertainty on the demand front.

– With a well deleveraged balance sheet, the industry will add an incremental capacity of 33 million tonnes this fiscal with Aditya Birla Group's UltraTech Cement accounting for a chunk.

– Gearing for growing demand and intense competition from new entrant Adani Group in the cement business, UltraTech Cement has drawn plans to increase its installed capacity to 159 million tonnes per annum by 2025 by adding 42 million tonnes per annum of capacity across the country along with grinding units and bulk terminals. The company's capacity has already increased 41.0 per cent to 120 million tonnes per annum in the last fiscal from 85 in 2018¹⁶.

– Last May, Gautam Adani-led Adani Cement acquired majority stake in ACC and Ambuja Cement for \$10.5 billion from Holcim AG. Ranked second and third largest, both the companies have a cumulative installed capacity of 70 million tonnes per annum.

– Shree Cement, which has a production capacity of 43 million tonnes per annum, will add 3.5 million tonnes per annum cement capacity with an investment of ₹3,500 crore.

– JK Cement plans to invest Rs. 1,161 crore over the next two years to expand its capacity by 5.5 million tonnes per annum from 20 million tonnes per annum.

– Dalmia Bharat has drawn a Rs. 9,000-crore plan

to increase its cement capacity to over 48 million tonnes per annum by 2024 from the current 36 million tonnes per annum. It has acquired the stressed asset of 9.4 million tonnes per annum of Jaiprakash Associates.

– India's cement demand is expected to reach 550-600 million tonnes per annum by 2025 with the housing sector accounting for about 67.0 per cent of the total consumption. The other major consumers of cement are infrastructure at 13.0 per cent, commercial construction at 11.0 per cent, and industrial construction at 9.0 per cent.

– Consumption of cement in India is expected to reach 450.78 million tons by the end of 2027. The spurt in demand from sectors such as housing, commercial construction, and industrial construction will lead to an increase in consumption.

In the next 10 years, India could become the main exporter of clinker and gray cement to the Middle East, Africa, and other developing nations of the world. Cement plants near the ports, for instance, the plants in Gujarat and Visakhapatnam, will have an added advantage for export and will logistically be well-armed to face stiff competition from cement plants in the interior of the country. India's cement production capacity is expected to reach 550 MT by 2025¹⁷. The cement demand in India is estimated to touch 419.92 MT by 2027 driven by the expanding demand of different sectors, *i.e.*, housing, commercial construction, and industrial construction.

Conclusion:

Cement industry is having a forward linkage with construction industry, and the development of both these

industries are mutually linked, given the sustained growth in the housing sector, the government's emphasis on infrastructure (both at the national and the state level), and increased global demand, the prospect for India's cement industry is exceedingly promising. The dynamics of the Indian cement industry are undergoing a gradual shift. The cement industry shows great prospects in recent years. The bygone decade has been very crucial for the Indian cement sector. The cement business is intertwined with a country's economy both forward and backward. Given the massive architectural necessities of a developing and industrializing country, as well as its achievements in terms of direct and indirect jobs, the cement industry's value offer is even greater for a growing and transforming economy like India. As the construction sector expands, and the rate at which it grows indicates the demand for cement industries to meet this increased demand, the supply side should also need to expand. However, the question is the ingredients (raw materials) or resources for the production of the cement are sufficiently available or not. Further, one should keep in mind that extracting such resources, should not cause any environmental damage.

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