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Cement Industry – Transformation from Concrete to Green

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Abstract:

The cement industry, a highly competitive, interms of infrastructure development and boosting investment is witnessing technological advancement at one end and cost control measures on the other. The construction business depends most on it and is the worlds second most used material. China being the world leader, Indian cement industry claims position ahead of United States and Japan. Cement Production accounts for an increase in 2022 of 12.1% since 2021. The favourable announcements made in union budget expects a steep rise in the estimated consumption. Year 2000 to 2022 has marked a remarkable increase in FDI inflows of cement and gypsum products, of approximately US\$ 5.49 billion . The Indian cement companies are amongst the world's greenest cement manufacturers. The present study tries to explore the growth prospects of the Industry.

Keyword – Cement Industry, capacity, growth, demand

Introduction

Porbandar, Gujarat witnessed the set up of its first cement Industry in the year 1914 in the name Indian cement company limited. The factory set up at Madras in the name south India Industrial limited is said to be first against the largerset up in Gujarat. The British standard committee being responsible for the “ Artificial Portland Cement” marketed the company’s product to Mumbai, Karach and Madras. Prior to this establishment, cement was imported from England at a higher rate, with eventual realization of cheap labour and domestic demand, the cement company got its place in India. In 1915, the next set up was arranged in MP followed by another in Rajasthan in 1916. In 1925, first cement manufacturers association was formed and in 1936, the first Associated Cement Companies Limited (ACC was formed).

In India, the cement industry is a significant and well-established manufacturing industry (Banerjee, 2015). The country has sufficient raw materials, skilled labour, machinery, equipment, and technological know-how to grow (Deolalikar, 1989). It is a basic as well as a consumer business (Li, 2017). Today, it is one of India's most important and capital-intensive sectors (Jeyachitra, 2010). Cement is a popular product, but due to its extensive usage, it is subject to hefty taxation (Sahoo, 2006).

The cement industry is one of the most important and well-established manufacturing industries in the Indian economy(Mehta, 2014). Cement is required by businesses, factories, and households, as well as for the construction of dams, highways, and bridges, among other things(Das, 1987).

Cement is referred to as "Magic Powder" (Kemp, 2003). It has made several contributions to the growth of contemporary civilisation, making it the most essential construction material. (Naik, 2008). India is the world's second largest cement manufacturer (Panigrahi, 2013), accounting for more than 7% of worldwide installed capacity (Chouhan, 2021). In India, the installed capacity of cement is 553 MTPA, with a production capacity of 298 MTPA (Dixit, 2022). It had 322 MTPA of integrated capacity spread among 163 facilities, and 103 grinding mills contributing more than 101 MTPA in total. In 1950-51, there were 22 active units with a total installed capacity of 3.3 million tonnes (CHELLASAMY).The installed capacity was increased to 5.4 million tons, which was the first five-year plan's goal. Since then, the industry has expanded manifold(TODAY, 2011).Over 410 MT of installed capacity is accounted for by 210 major cement plants, while over 350 small cement plants have an estimated output capacity of roughly 11.10 MT. The top five cement businesses in India

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account for 48% of the country's 550 MT capacity (ibef.org). In fiscal year 2022, inland cement output was 356 million tonnes, up from 296 million tonnes in fiscal year 2021. In terms of volume, cement consumption reached 355.46 million tonnes in fiscal year 2022 and is expected to reach 450.78 million tonnes by the end of fiscal year 2027 (Shukla, 2023). India's cement industry is anticipated to grow 116% by 2030, at a CAGR of 6.60% (Shiv Sharma, 2018).

Prior to reforms full govt control on production distribution and fixation of price were there and the production capacity in 1982 was just 29 million tons but post reform the industry responded enthusiastically and production capacity was increased 153 million tons in 2004-2005. So it was the substantial expansion of 124 million tons in 25 years and Since it was deregulated, the Indian cement sector has drawn massive investments from both domestic and international investors(Panwar, 2004). FDI was US\$ 5.49 billion between April 2000 and June 2022(IBEf, 2023). Market size of the industry, the cement production capacity stood 537 million tons per year in 2021-22 among which there are over 350 small cement plants with a projected capacity of 11.10 million tonnes per year (Govt of India, Ministry of mines, 2022). The private sector owns 98% of total capacity, while the state sector owns the remaining 2%. Few companies dominate the Indian cement industry, with the topmost 20 cement producers accounting for nearly 70% of the nation's total cement production(IBEf, 2023). 210 major cement plants in all have an installed capacity of more than 410 million tons. Out of those, 77 are located in the states of TN, AP, and Rajasthan and directly or indirectly employ more than millions of people. Moving forward, the housing and real estate sectors in India currently face the highest demand for cement, accounting for over 65% of the country's total consumption. Some of other leading consumers of cement include private infrastructure 20% and industrial development at 15%. As of 2017-18, India's total cement manufacturing capacity was about 460 million tonnes. Now its consumption is expected to grow by 5% in FY 2019 supported by a pick-up in the housing segment and higher infrastructures spending. Currently the industry is planning to produce 300 mega tons in order to meet its domestic demand and 5 megatons for export requirements. Infrastructure and industrial construction are anticipated to account for around 20% and 25%, respectively, of the total cement consumption, while housing sector accounts for about 55%. Large domestic companies like UltraTech Cement, Dalmia Bharat, and Chettinad Cement, among others, make up the majority of the Indian cement industry. Multinational corporations are present through locally branded affiliates like LafargeHolcim-owned ACC and Ambuja Cements.

Production of Cement (post 50s to early 20s)

Year	Cement (in million tons)	Year	Cement (in million tons)
<i>1950-51</i>	2.70	<i>2014-15</i>	276.93
<i>1960-61</i>	8.00	<i>2015-16</i>	283.45
<i>1970-71</i>	14.30	<i>2016-17</i>	279.97
<i>1980-81</i>	18.60	<i>2017-18</i>	297.71
<i>1990-91</i>	48.80	<i>2018-19</i>	337.32
<i>2000-01</i>	99.20	<i>2019-20</i>	334.37
<i>2011-12</i>	223.50	<i>2020-21</i>	299.94
<i>2012-13</i>	235.11	<i>2021-22</i>	294.40
<i>2013-14</i>	256.04	<i>2022-23</i>	380.00

(The data has been taken from economic survey 2012-13, Table A-32 and Indian Bureau of Mines)
 By 2027 the demand for cement in India is expected to touch 419.92 MT. Various investment schemes sanctioned by government to help private sector companies burgeon in the industry and

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thus reported a budget for an affordable housing fund of Rs. 25000 crore in 2018-19 under the national housing bank to bestow credit support to homebuyers. Between FY16 and FY22, India's cement output is expected to expand at a CAGR of 5.65%, driven by demand from road, urban infrastructure, and commercial real estate projects. From FY16 to FY22, cement consumption in India is expected to rise at a CAGR of 5.68%. Furthermore, current predictions show that growth in several sectors, including housing, commercial, and industrial building, would drive cement consumption to 550-600 million tonnes per year by 2025.

From Problems to prospects -

The dependence of Industry is on the economic circumstances. With the growth of infrastructure and allied construction industry, Growth of the cement industry is favorably correlated with economic boom phases of economy. In 2021, the Tier 1 and Tier 2 cities are surging for demand of affordable houses with ticket size of 40-50 lakh.

Profit margins of Cement companies are already low. On the contrary it has dependency on power supply, reserves of limestone and so has close knit with stock market.

Legal factors, regulatory norms and environmental issues put much stress on cement industries. They are all responsible for adding to companies cost especially the environmental factors as cement industry contributes more than 8% of total earth's CO₂ emissions. Advances in technology and innovation provide the sector with a cost advantage, resulting in the expansion of the cement industry and the entire economy. For example, when cement manufacturing switched from the wet manufacturing process to the dry manufacturing method, they saved 5% to 10% of their whole cost structure. Being close to limestone mines or waterways is advantageous for businesses. A benefit is easy accessibility of transportation. The majority of cement factories are situated within a 30- to 40-kilometer radius of good-quality limestone quarries.

The cement industry in India faces several challenges, including ecological concerns, land purchase, and logistics issues. The industry is a significant contributor to carbon emissions, and the government has implemented several measures to reduce its environmental impact.

The Cement Industry has to pay number of taxes like unreasonable high excise duty and sales tax and also it has to pay royalty on the limestone and coal. It has been estimated by development council for cement industry that the actual burden which the industry has to bear accounts for 35% of the retail prices of the cement and this high burden has made this cement industry uncompetitive.

Coal being an imp input in the production of cement. Its cost forms 15% to 20% of the total cost of cement production and not only the quality of coal supplied is poor, much has to be spent on the transportation of the coal as the coal mines are quite far off from the cement plants. Supply of power is not only insufficient but also irregular in this particular industry and cost of power also forms 40% of the total cost of the cement production. So cement plant needs regular and adequate supply of power but the state electricity boards are found incapable to meet the demand, so this is creating great problem for this industry. This industry has to pay heavy cost of transportation which make up approx. 20% of the cement price and most common mode of transport is railways where wagons are in short supply and after the introduction of own your wagon scheme by Indian Railways Cement Factories have purchased their own wagons to ensure the availability of the wagons for the dispatch of the cement.

Underutilization of built capacity is a common occurrence in the cement business, particularly at facilities located in the country's eastern area. Demand in this region has been lower than cement production, forcing companies to squander precious resources such as power and human talents.

Many cement plants have been using uneconomical wet processes technology and this involves high labor and maintenance cost. Under this obsolete technology great deal of electricity and coal get wasted.

India's economy is rapidly expanding. The industry has great potential for development in future. Progressive infrastructural development projects are expected to come up. Since cement is a necessary component of all types of construction, demand for it both domestically and internationally seems to be growing steadily.

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This industry would benefit from staying current with cutting edge world class technology. There is an urgent need to implement cutting-edge technology such as pre-heaters and pre-calcinatory units, as well as pollution control devices, a change to more ecologically friendly practises such as green cement, and the establishment of captive power units.

The future of sustainable construction is green cement free of slag and fly ash. The ease it offers in disposal which can reduce environmental pollution. With technology associated with it, the use of waste and fossil fuel can be economical and eco friendly. India opening for development has great prospects for using it to construct roads, bridges and dams.

Experts claim that green cement is the future of sustainable construction with all the right reasons.

Vision 2030 -

Demand for cement is projected to increase as a result of increased infrastructure funding (\$26.74 billion for roads and \$18.84 billion for railroads).

Under the initiative PM AwasYojna, 8 million households will be recognized, accordingly Rs. 48,000 crore (US\$ 6.44 billion) will be set aside for all housing segment.

The Union government's approval of a Rs.199,107 crore (US\$ 26.74 billion) budget for the Ministry of Road Transport and Highways is expected to boost cement demand.

PM Gati Shakti - National Master Plan (NMP)' for multimodal connectivity was introduced by Prime Minister Mr. Narendra Modi in October 2021. Gati Shakti will work in harmony to build India a top-notch, seamless multimodal transport network. As a result the consumption of cement will increase in future.

The Union Budget allocated Rs. 13,750 crore (US\$ 1.88 billion) for the Urban Rejuvenation Mission, as well as Rs. 12,294 crore (US\$ 1.68 billion) for the Swachh Bharat Mission, Smart Cities Mission, and AMRUT (IBEF, 2023).Cement is one of the crucial component for building a country's robust and healthy infrastructure and contributes significantly to the welfare and economic growth of the country.In continuity of the developmental projects announced by government the demand of cement is expected to reach 550-600 million tons per annum (MTPA) by 2025.

In India the cement demand is primarily driven by the housing industry, which accounts for 67% of overall consumption in India. Development of Infrastructure accounts for 13% of cement use, followed by commercial building (11%), and industrial construction (9%). India has huge limestone sources of great quality and quantity, providing the cement business with enormous growth potential. Demand will lead to an increase in capital expenditure and credit profile of cement manufacturers will remain stable forcing stable profits.

The governments push for Housing (via Pradhan Mantri Gram SadakYojna) and Roadways (via Pradhan Mantri Awas Yojana) have been one of the leading generators of cement demand recently. The industry is going through the merger phases , the market is moving form seller market to aggressive buyer market. The success of ACC, Ambuja, Utratech, Sshreeram, Adani Holcim can lead more smaller companies like nuvoco, vista, ramco to join.Moreover green cement is indeed the future of construction and will soon serve as a great replacement for conventional cement owing to its high tensile strength and resistance against corrosion. Green homes are rated high this is a great motivator for the builders to go green.

A part form being most populous nation by 2020, India will prosper as third largest economy and over the decade it will undergo tremendous transformation. The cement Industry will have to be major contributor by going beyond business as usual and focus only on building more, building wide, building bright and Right India.

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