

TRENDS OF CAPACITY UTILIZATION OF CEMENT INDUSTRY IN TELANGANA AND ANDHRA PRADESH REGION, INDIA

Vigneshwar Mekha

*Research scholar, Department of
Geography, Osmania University,
Hyderabad, India*

Adma Kamalakar Reddy,

*Professor (Rtd), Department of Geography,
Osmania University, Hyderabad, India*

ABSTRACT:

Capacity utilization in cement industry is a preliminary indicator which not only assists to verify the utilization level of present installed capacity but also helps to delineate the necessary level of installed capacity expansion for output of a target. Moreover it exposes that the dispersal of cement plants with which one can be known the effectiveness and efficiency of cement plants in their operation process of cement manufacturing. The cement industry of Telangana and Andhra Pradesh region ranks first in terms of both installed capacity and cement production in India. At present, these states have a cement installed capacity of 60.25 Million Tonnes Per Annum (MTPA). This region is a cement surplus region due to the presence of Nalgonda cluster which is one of the seven cement clusters in India. The capacity utilization level of cement industry in this region is lagged at the rear on account of diverse reasons like insufficient supply of crucial inputs such as power, raw materials, coal, transport and infrastructure facilities. So a great deal of cement capacity that subsists in Telangana and Andhra Pradesh region used to remained not utilized for many reasons. The present study endeavours to examine how and why the capacity is under utilization. It also attempts to analyze the growth of cement industry in terms of utilization of installed capacity of cement, cement production, cement consumption levels and determinants of under utilization etc. Although the cement industry in Indian union has been making more efforts towards to improve its fullest capacity utilization and attempts on the way to better utilization will confirm fruitful to significant level.

Key words: Capacity, Utilization level, manufacturing, MTPA, consumption, clusters etc.

INTRODUCTION

The capacity utilization (CU) in cement manufacturing sector is a pilot type indicator which is not only helps to verify the utilization level of presently existing installed capacity of cement plants but also assists to delineate the necessary level of installed capacity expansion for output of a target. In modern economy the primary attentiveness has been laid on under-employment and unemployment, but the concentration on under-utilization of installed capacity of manufacturing industries has obtained very meagre. The Globalization, Liberalization and Privatization of regulatory process since 1990s in the economy of India have made changes in framework for the utilization of capacity of manufacturing sectors.

The partial decontrol policy announced on 28th February, 1982, was instrumental in phenomenal growth of the cement industry in India. The country's hopes of self-sufficiency in

production of cement were realised within a short span of five years from the partial decontrol in 1982. The decade had been unique in the history of cement industry in more than one way. During 1990s, the cement industry Telangana and Andhra Pradesh region had not only made quantitative and qualitative jumps in significant additions to installed capacities of several cement plants and adoption of new technologies, but also experienced a totally free market after lapse of almost 40 years, i.e. after total decontrol of cement from 1989. Yet there exists considerable under-utilization capacity in cement industries of Telangana and Andhra Pradesh region. The term capacity generally refers to effectiveness in resource allocation of raw materials, skilled manpower, ability of entrepreneur etc., for protecting superior capacity utilization of plants and machines.

The adoption of modern technology in processes and products, transforming the production frontier upward, is measure by the technological change while the technological efficiency change mirrors the installed capacity of the enterprises to increase the production with given inputs and accessible technology during the year, high and mighty normal operative conditions (Solow, 1957). Nevertheless, the productivity and efficiency contrasts are for eternity spurious, if the capital is not regulated as per the CU levels. Hence, the CU measure is required to estimate the production frontiers using the capital in function but not capital in place (Chandrasekhar, 1990). The CU helps to diminish the technological gaps between the developing and the developed countries (UNIDO, 1970). The fullest utilization of installed capacity facilitates to control inflation in the economy and makes industrialization process added economical (Parwinder, 1992). Thus, it is essential to measure CU in the cement industry so as to have in-depth insight into the problem of trade shortfall in this critical sector.

REVIEW OF LITERATURE:

The capacity utilization issue is very old uneasiness amongst the researchers. There are quite a lot of researchers in India those have attempted to assess the capacity utilization in Indian manufacturing at diverse levels of aggregations. The below mentioned studies attempted to estimate the trends of CU in Indian manufacturing sector in general and comprehensive level covering in cement industry.

Budin, M. And Paul, S (1961) analysed the capacity utilization of 75 cement plants in India and he found that the normal capacity utilization had improved substantially as high as 90 per cent during the period from 1951 to 1959.

National Council of Applied Economic Research (1966) conducted a study on capacity utilization in Metal and Non-metal industries in India for the period of 1955 to 1964. The results showed about 89 per cent in metal and 79.28 per cent of capacity utilization in the industries during the same period.

RBI Bulletin (1968) conducted a study on 62 Indian Industries for the period from 1961 to 1967 by using installed capacity methods. Capacity utilization rate had declined in Basic goods industry from 12.7 per cent in 1961 to 2.10 per cent in 1967; in capital goods industries declined from 9 per cent to 1 per cent and in consumer goods industries from 7.51 per cent to 3.58 per cent.

Sandesara, J.C., (1969) in his study assessed the capacity utilization into five good manufacturing Indian industries i.e., flour milling and grinding, biscuits, sugar and manufacture of hydrogenated oil. He analysed the data of installed capacity and actual production and observed higher capacity utilization for the period of 1946 to 1966. The outcome showed more than fullest capacity utilization of 189 per cent and 109 per cent in basic industries and refined sugar industries respectively. It proved high degree of inconsistency in capacity utilization in flour milling, biscuits and sugar confectionery but low down degree in the other two industries.

Paul, S. (1974) in his study believed the economic concept of capacity as the productivity resultant to the least point on the average cost curve of the manufacturing unit. In the study he had also taken time period of 1960 to 1970 and compared the annual rates of growth of installed capacity and utilization of installed capacity for three industrial groups in India i.e. Capital Goods, Intermediate Goods and Consumer Goods. The normal growth of installed capacity examined in all industries was 5.7 per cent whereas installed capacity utilization remained at 54.5 per cent. The outcome proved that almost half the industrial capacity in the country stays behind unutilized. During period from 1961 to 1965 it remained at 54 per cent which turn down to 52 per cent during the depression period from 1966 to 1968 and then again recovered to 54 per cent during 1969 to 1971.

Dogra (1980), in his study observed a positive relationship between the capacity expansion, capacity utilisation and the technological progress. He also analysed the reasons for slow

expansion and capacity under utilisation in Indian cement industry by investigating the cost efficiency and production behaviour of the industry.

Agarwal, A.K., and Agarwal, V.K., (1986), in their study attempted to examine the reasons and effects of capacity under-utilization in cement industry of India based on the statistical analysis and mathematical interpretations covering the both the private and public sector cement companies.

Bishwanath, G. and Renganathan, V.S., (1991) in their study examined and carried out an test of capacity utilization in 73 Indian industries for the time period from 1981-82 to 1990-91. They have stated that the growth trend rate of capacity utilization in Indian Manufacturing moved down from 1.89 per cent per annum to 1.28 per cent per annum during the period under study.

Srinivasan, P.V., (1992) had conducted a study on manufacturing industries and he observed the levels of capacity utilization for Basic, Capital, Intermediate and Consumer Goods Industry Group by using time series data on capacity utilization for the time period of 1970 to 1984. In his study he found the capacity of surplus range about 25 to 30 per cent succeeded in the sectors during same time period.

Padma, S.M., (1996) exposed capacity utilization for the period from 1960-61 to 1982-83 for two industries namely Basic and Capital Goods Industry Group. A capacity utilization of 67.63 per cent was observed in Basic Industry Group and 66.52 per cent for Capital Industry Group.

Barik, K. (2007) had examined the capacity utilization rate in Paper Industry in India for the time period of 1973-74 to 1997-98 by using data of Annual Survey of Industries. He had also observed that capacity utilization had decreased over a period from being 82 per cent in 1973-74 to 71 per cent in 1994-95.

OBJECTIVES OF STUDY:

The specific objectives of this research paper are:

- i. To evaluate the average capacity utilization of cement industry in Telangana and Andhra Pradesh region.
- ii. To assess the growth trends of capacity utilization in cement industry in Telangana and Andhra Pradesh region.
- iii. To suggest suitable measure for sustainable growth of cement industry in the study area.

1. DATA BASE AND METHODOLOGY

The present research paper is purely based on secondary data. The principle sources of secondary data are annual reports of cement plants, Cement Manufacturer's Association, Hyderabad reports, Statistical hand books and published journals, The Survey of Cement Industry and Directory, the websites of respective cement enterprises and government websites etc. The study required data collection techniques, statistical techniques for percentages, averages, annual compound growth rates, standard deviation are also used. Further, the study required graphical and diagrammatic techniques for analysis and presentation of accessible data. To measure the utilization of installed capacity the production function method has been used. The following formula is adopted:

$$\text{Capacity Utilization (CU) percentage} = (P/IC) \times 100$$

Where,

CU - stands for Capacity utilization percentage

P - Stands for Actual annual production

IC – stands for Annual Installed Capacity

The above noted formula for Utilization of Capacity will be reproduced in the following way and the results would be identical in the case of both the methods. The following equation give the estimate of under-utilization of capacity is:

$$\text{Under-utilization of Capacity (UC) percentage} = (1 - P/IC) \times 100$$

Where,

UC - stands for Capacity Under-utilization percentage

P - Stands for Actual annual production

IC – stands for Annual Installed Capacity

The sample size of study includes each and every major cement plant covered in the study area. The present has covered a time period from Financial Year (FY) 2004-05 to FY 2015-16 (12 years). It is also forecasted the growth of cement production and capacity utilization rate up to 2024-25.

RESULTS AND DISCUSSION:

Andhra Pradesh state is the 8th largest state in terms of size in India an areal extent of 1,63,000 km². Telangana became the newest and 29th state in Indian union, which has covered out of United Andhra Pradesh state on 2nd June, 2014. It has an areal extent of 1,12,077 km² and it is the 12th largest state in terms of both areal extent and population size in India. The region of Telangana and Andhra Pradesh together account for the largest limestone reserves in Indian union. This region is also home for about 40 percent of major cement plants out of 210 major plants in the country as of March 2015. Out of Seven cement clusters in the country the region is home to Nalgonda Cluster. As of March 2016, this region has an installed capacity of 89.12 MTPA. Accordingly, the region of Telangana and Andhra Pradesh is cement surplus region exporting cement to other states such as Maharastra, Karnataka, Tamilnadu, Odisha and West Bengal as well as surrounding markets in the country. The largest cities like Hyderabad, Warangal, Nizamabad, Karimnagar, Vijayawada and Vishakapatnam are within the region and they are major urban markets for cement demand.

The Telangana and Andhra Pradesh region has been the largest cement producer in cement industry. The region is richest in cement grade limestone deposits. Hence, this region has been surplus in cement supply for a long time. Over the last Fifteen years the installed capacity of cement industry in this region has gone up from 17 MTPA in FY 2000-01 to more than 89 MTPA in FY 2015-16.

CEMENT PRODUCTION SCENARIO:

The installed capacity of cement plants is constantly exposed an ever-increasing trend in the study period. This growth in the cement capacity is owing to the producers' impressive efforts towards the improvement of increasing market. The below table 1 reveals that the average installed capacity of all major cement plants in the Telangana and Andhra Pradesh was increased from 23.01 MTPA in FY 2004-05 to 55.91 MTPA in FY 2010-11. Further, the annual installed capacity increased to 89.34 MTPA in 2014-15; a decline of 0.13 MTPA to 89.21 MTPA in FY 2015-16. The Compound Annual Growth Rate of this period recorded as 0.13 per cent with the standard deviation of 25.12 and the average or mean installed capacity during the study period is about 51.01 MTPA.

Table 5: Annual Installed Capacity and Cement Production of cement industry in Telangana and Andhra Pradesh Region (2004-05 to 2015-16)

S. No	Year	Installed Capacity (in MTPA)	Cement Production (in MTs)	Production growth rate (in %)
1	2004-05	23.01	14.23	7.40
2	2005-06	23.57	16.67	17.15
3	2006-07	24.93	19.92	19.50
4	2007-08	29.38	23.96	20.28
5	2008-09	32.12	29.15	21.66
6	2009-10	44.61	32.44	11.29
7	2010-11	55.91	45.27	39.55
8	2011-12	56.35	45.01	- 0.57
9	2012-13	69.45	45.64	1.40
10	2013-14	74.25	45.44	- 0.44
11	2014-15	89.34	49.95	9.93
12	2015-16	89.21	49.97	0.04
Mean		51.01	34.80	12.71
CAGR		0.13	0.12	---
Standard Deviation		25.12	13.59	12.53

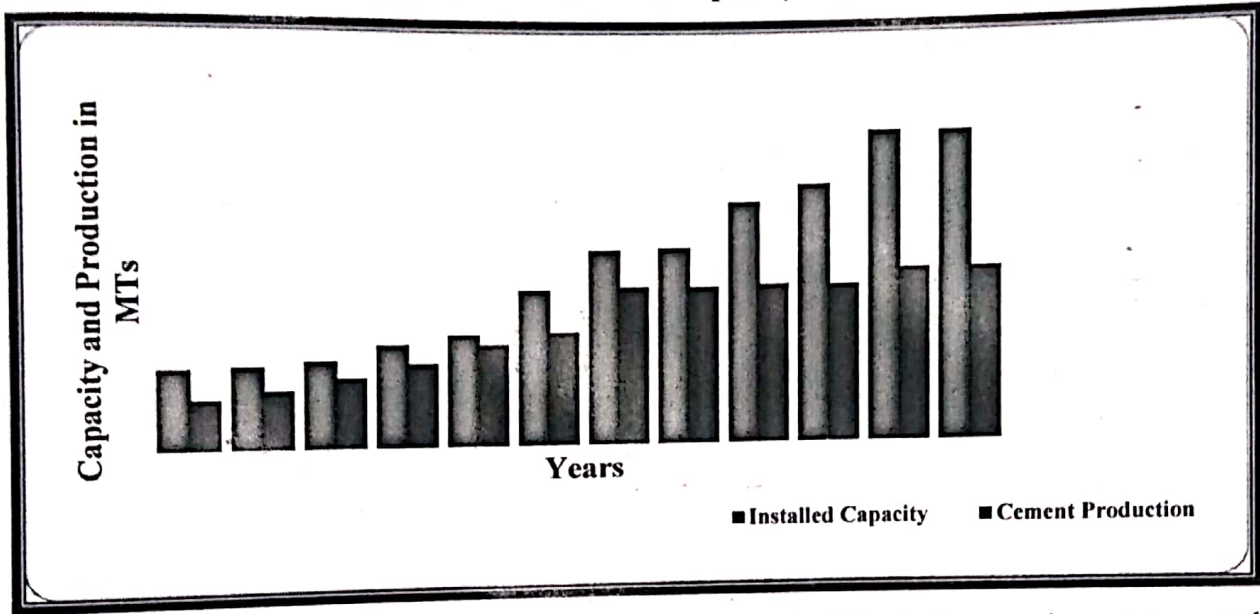
Source: i. Cement Manufacturer's Association, Hyderabad

ii. The Survey of Cement Industry and Directory, 2017.

The cement production of Telangana and Andhra Pradesh region witnessed about 14.23 MTs in FY 2004-05, which has increased to 45.27 MTs in FY 2010-11, a decline of 0.16 MTs to 45.01 MTs in FY 2011-12 (see figure 1). There from it never looked back and steadily increased to 49.97 MTs in FY 2015-16 with CAGR of cement production for the study period has been witnessed 0.12 per cent with standard deviation of 13.59 and the average cement production registered as 34.80 MTs (see table 1).

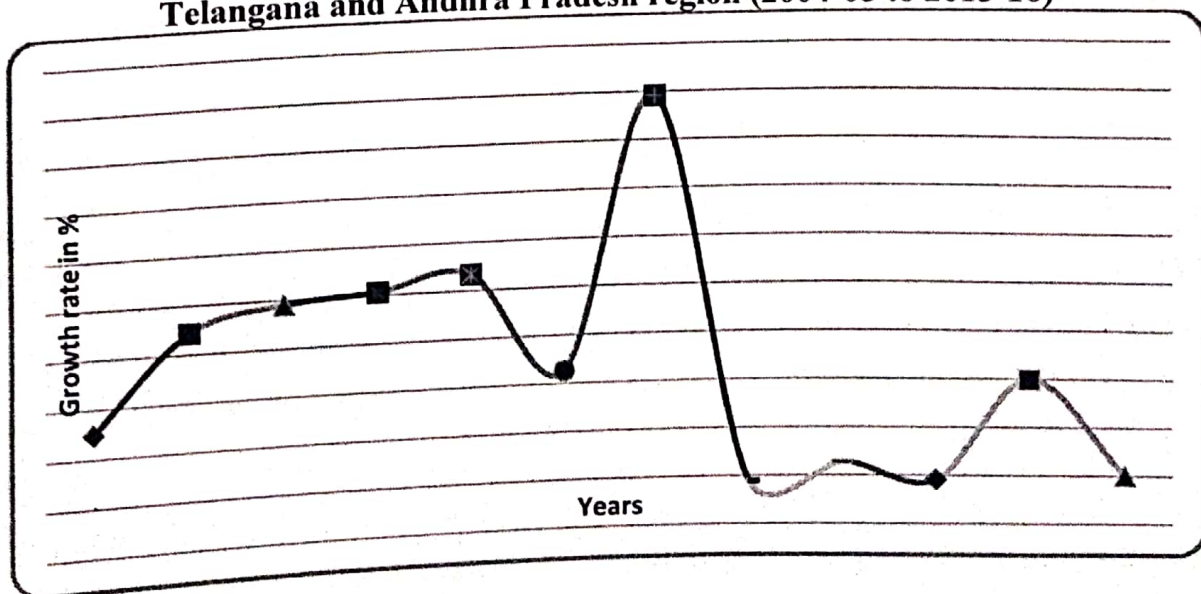
The annual growth rate of cement production increased from 7.40 per cent in FY 2004-05 to 39.55 per cent in FY 2010-11. Thereby it has been moving up and down from FY 2009-10 to FY 2015-16 and the growth rate has been witnessed very low as 0.04 percent in 2015-16 (see figure 2). The average growth rate of cement industry in study area is registered as 12.53 per cent during the period.

Figure 4: showing trends of installed capacity and cement production



It is clear from the analysis that the demand for cement in the study area is not targeted that much of expected of it. It is also observed that the cement plants in the study area are experiencing problem of over installed capacity.

Figure 5: Showing Annual Growth rate of Cement Production in Telangana and Andhra Pradesh region (2004-05 to 2015-16)



TRENDS OF CAPACITY UTILIZATION

The make use of of the customized capacity of enterprise for producing cement is known as the capacity utilization.

Table 6: Average annual capacity utilization and growth rate of Cement Industry in Telangana and Andhra Pradesh Region (2004-05 to 2015-16)

S. No	Year	Capacity Utilization (in %)	Growth rate of Capacity utilization in percentage (Base year 2004-05)
1	2004-05	61.84	--
2	2005-06	70.73	14.36
3	2006-07	79.90	12.98
4	2007-08	81.55	2.06
5	2008-09	90.75	11.28
6	2009-10	72.72	- 19.87
7	2010-11	80.97	11.35
8	2011-12	79.88	- 1.35
9	2012-13	65.72	- 17.73
10	2013-14	61.20	- 6.87
11	2014-15	55.91	- 8.64
12	2015-16	56.01	0.19
Average		71.43	9.72
Standard Deviation		11.36	12.11

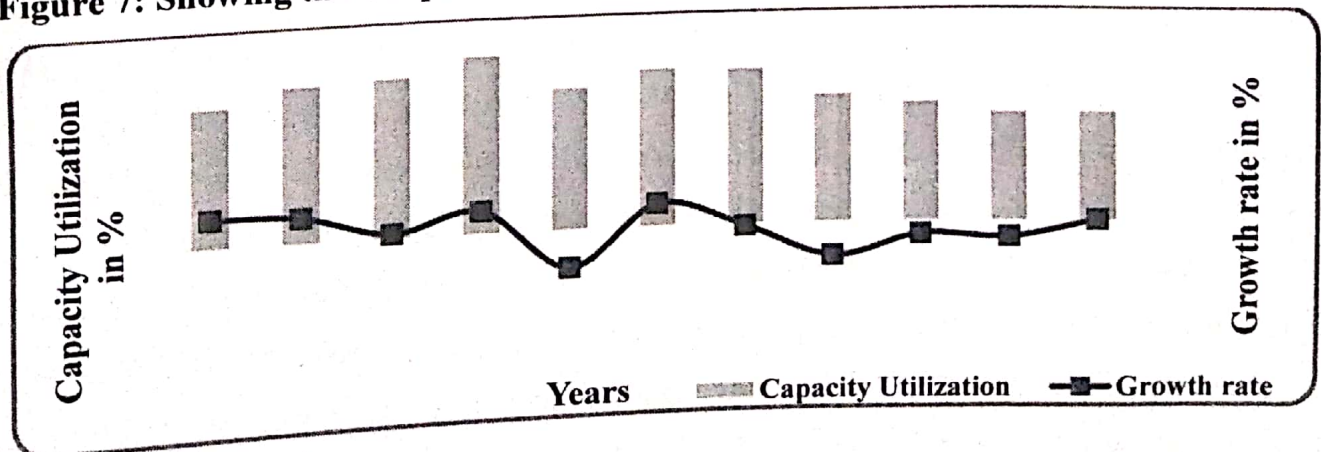
Source: Cement Manufacturer's Association, Hyderabad.

Table 2 signifies the capacity utilisation trend of major cement plants in Telangana and Andhra Pradesh region. The trend of capacity utilization in cement industry in the region has been increased from FY 2004-05 to FY 2008-09. The percentage of capacity utilization in 2004-05 was accounted of 61.84 per cent which is chosen as base year for the present evaluation. It has increased to 70.73 per cent in FY 2005-06, 79.90 per cent in 2006-07, 81.55 per cent in FY 2007-08 and grew to 90.75 per cent in FY 2008-09. The trend capacity utilization has changed the direction in FY 2009-10 by declining to 72.72 per cent and it is followed by significant rise of 8.25 per cent and witnessed 80.97 per cent in FY 2010-11. Thereafter, it has started to decline

and consisted of 79.88 per cent in FY 2011-12 followed by further dramatic fall of 14.16 per cent in FY 2012-13, continued fall of 4.52 per cent in 2013-14, decline of 5.29 per cent in FY 2014-15. After these years, the cement industry in Telangana and Andhra Pradesh region has started to recover and it has been witnessed of 56.01 per cent growth of capacity utilization in FY 2015-16. It is forecasted that the growth of capacity utilization would reach to 60 per cent in FY 2017-18, and 75 per cent in 2024-25 by crossing 100 MTs of cement production. The capacity utilization trend in cement industry of the study area had been registered overall 71.43 per cement and 11.36 is its standard deviation.

The growth rate of capacity utilization of Cement Industry in Telangana and Andhra Pradesh region has been evaluated by choosing 2004-05 as the base year. The figure 3 discloses that the cement sector in the study region has been witnessed frequently ups and downs in the growth rate over the period from FY2004-05 to FY 2015-16. This cement sector has a growth rate of 14.36 per cent in FY 2005-06. But it has decreased slightly to 12.98 per cent in 2006-07 followed by further decreased to 2.06 per cent in FY 2007-08. This growth rate increased to 11.28 per cent in FY 2008-09, and again it has dramatically moved down to -19.87 per cent in 2009-10. In the year FY 2010-11 the growth rate moved up to 11.35 per cent. After FY 2011-12, this growth rate has been moving down and reached to -1.35 per cent, -17.73 in FY 2012-13, -6.87 in 2012-14 and in 2014-15 it was -8.64 per cent. Thereafter, the growth rate started to move up and it has increased to 0.19 per cent in 2015-16. It is projected that the capacity utilization growth rate would be reached mark 1.16 per cent in FY 2017-18 and 20.29 per cent in FY 2024-15. During the period the capacity utilization growth rate has shown overall 9.72 per cent and the 12.11 is its standard deviation.

Figure 7: Showing the Graphical Presentation of Capacity Utilization and Growth rate



The above figure 3, the graphical presentation of capacity utilization in cement industry in study area indicates that the range of capacity utilized revolving around 60 to 80 per cent only. The cement industry in this region has been adopting modern technology in cement manufacturing process since 1990s. As a result of this, the cement installed capacity; capacity utilization and cement production were also increased constantly from FY 2004-05 to FY 2008-09. However, the capacity utilization in the study area has been looking down since FY 2009-10 onwards due to decreasing growth rate of construction industry. The separate Telangana state movement reached its final stage in November 2009 and continued till yet the separate Telangana state formed on 2nd June 2014 from united Andhra Pradesh state. With this the growth rate in real estate sector had been looked back. The real estate sector is the main driver for cement demand in the country followed by infrastructure, industrial and commercial sectors.

Since 2014-15 the growth rate of GSDP and industrial growth rate also started to grow steadily after the reorganisation of united Andhra Pradesh into separate Telangana state and Andhra Pradesh state. Now there a common theme between both Telangana and Andhra Pradesh states is that the budgets allocation has been increased spending on irrigation projects and rural development which promises glowing for increased cement consumption. The Government flag ship programmes in Telangana such as Mission Kakatiya, Mission Bhagiratha, 2BHK for houseless families and Construction new capital city in Andhra Pradesh etc are indicative of growth potential of cement demand in near future. It is expected that these measure to positively contribute to higher growth for cement demand in the study region.

Government of India has been generous massive boost to diverse infrastructure projects, shelter facilities and transportation networks leading the cement industry in India budding at an enviable pace (Report of Cement industry in India, 2010).

Cement Industry sector has spectator maximum average rate of capacity utilization i.e. 78 per cent during 2001-02 to 2011-12. Within the cement industry, from 2004-05 onwards, development of housing sector, industrial and infrastructure sectors have performed as the principal growth drivers for Cement Industry to amplify its capacity utilization (Economic Survey Report on Indian Cement Industry, 2009). Besides, the NDA-II Government under the leadership of Narendra Modi, the prime minister of India, has been initiated many flagship programmes like construction of 6/8 lines highways and smart cities etc with vision of making India as Supreme power in Economy under the flag ship programmes of "Make in India".

No doubt, the 100 per cent of capacity utilization is impossible owing to diverse reasons, shortage of raw materials and interruptions in operation of enterprises. The factors that are lagged behind the fullest utilization of installed capacity are like poor performance of critical inputs, abrupt power cuts, incorrect choice of technology, poor infrastructure facilities, labour problems, teething problems etc.

FACTORS RESPONSIBLE FOR UNDER-UTILIZATION OF CEMENT CAPACITY

It is examined from the above analysis is that the capacity utilization has come down excessively. This means the cement industry has been facing diverse constraints of inadequate production growth and the trouble of under-utilization of capacity. A relevant question that obviously comes up in mind is that which factors are mainly responsible to the constraint of low utilization of installed capacity in cement industry. They are as the following below:

1. SHARTAGE OF RAW MATERIAL:

The cement industry is mainly based on consumption of minerals in manufacturing process. Limestone is the commonly used raw material in cement production. Besides, laterite, marls, sea sand, chalks, china clay, fly ash etc., are also used for manufacturing cement. The fewer supply of raw materials for major enterprises leads to the under-utilization of capacity.

2. ABRUPT POWER SUPPLY:

The unexpected power cuts to cement industry are major and serious constraint that hindering the fullest utilization of installed capacity. The cement industry is such kind industry which needs huge power uninterrupted and regular way of power supply. Telangana and Andhra Pradesh region has been facing this problem since last 30 years. Without proper supply of power, there would no cement manufacture can be finished and the result in loss of competitiveness and causing under-utilization.

3. OPERATIONAL RELIABILITY:

The operational reliability is another constraint of cement industry that comes next only to abrupt power supply which hinders the capacity under-utilization. The sudden and unexpected breakdown of technology and the old unmanageable equipment hampers the capacity utilization in the given industry.

4. TEETHING PROBLEMS:

Another bottleneck faced by cement industry in upholding its fullest installed capacity is teething problems. The modern machines and technology does not work efficiently and successfully for some time in the beginning. Perceptibly all through that time the cement industry could use its fullest capacity.

5. SHARTAGE OF COAL:

Coal occupies about 80 per cent share of raw material used for cement production in the study area. This coal helps the cement industry in two ways specifically, as a raw material and as a source of power. The natural shortage of this raw material hampers the supply of coal in sufficient quantities then the major cement plants have to face state of affairs of capacity under-utilization.

6. INFRASTRUCTURE POO PERFORMANCE:

Besides, the frequent disruption in power supply and supply of water, the poor performance of infrastructure is also a major bottleneck in capacity utilization of cement industry. The cement industry requires the transportation of raw materials from source point to manufacturing point and also movement of cement to market areas. The cement companies facing the problem of carrying high cost structure and high cost of transport to deficit areas, it results in loss of competitiveness for the production of cement.

7. INADEQUACY OF CEMENT DEMAND:

The utilization of installed capacity has been adversely effected by scarcity of capital. There are many major cement industries which have possessing high capacity but suffer from poor demand for the products of cement. The mega projects which are facing investment shortages also stop the raw material supply/technological tools which lead to capacity under-utilization.

8. MANAGEMENT INEFFICIENCY:

The managerial shortfalls hinder the capacity utilization of a firm. The lack of co-ordination and prediction among the managers, executives and works manager leads troubles to fullest capacity utilization of industry. The management operational effectiveness, better organization structure and maintenance of equipment, and production system control etc. are the resources available that assists to increasing rate of capacity utilization.

FINDINGS AND SUGGESTIONS

- i. The cement plants in Telangana and Andhra Pradesh region are biased district level very near to the limestone deposits and surrounding of large markets. More mini cement plants should be improved by government and incentives should be given to rural entrepreneurs in establishment of mini cement plants.
- ii. The cement industry in the study area is behind the Research and Development (R&D). The required funds should be sanctioned for R & D and the research should be growth and goal oriented.
- iii. The study also found that mechanical failures have been occurred with the auxiliary equipments. The cement industry needs a well-conceived human resource development and it should cover all sections of industry for training.
- iv. The cement industry is experiencing problem of overcapacity and the expansion of cement installed capacity in the region increased more than four folds since 2004-05 to 2015-16. The cement industry in study area should be consolidated rather than expansion of installed capacity.
- v. The capacity utilization of cement industry in the study area has been performing very poor in contrast to the other regions in India. There should be a centralized monitoring agency especially for major cement plants and that should be kept under the monitoring of Cement Manufacturer's Association, New Delhi.
- vi. The cement plants should adopt modern manufacturing technology and should be endeavoured computerised kilns and equipments/machines to gain operating knowledge at minimum cost.
- vii. The cement plants in the study area are suffering from mechanical problems since 1990s. Hence it is recommended to incorporate the world class technology in cement manufacturing process.
- viii. The industry facing problems of abrupt and inadequacy of electric power supply. The major cement plants should be start initiating the Captive Power Plants based on the resources available in the vicinity. So that the uninterrupted power supply can be possible, as a result of it the optimum capacity utilization can be achieved.

CONCLUSION

The rapid approval of mega projects, particularly, major irrigation projects and projects of infrastructure should be ensured for the revitalization of cement industry in Telangana and Andhra Pradesh region. The liberalizing of tariffs and exports of cement products would boost up the consumption of cement in foreign and domestic markets. The introduction of incentives to mini cement plants and increasing R & D facilities for the growth of cement industry will surely assist in increasing utilisation of installed capacity. The Government should focus mainly on infrastructure development, housing for all poor families, improved transmission and regular supply of power, liberalised policies etc assist the cement industry to improve its growth rate and more profitable to the industry in near future with maximum utilization of installed capacity. The construction of irrigation projects and government flag ship programmes in Telangana like Mission Kakatiya, Mission Bhagiratha, 2BHK housing for all houseless families, expansion of ORR in Hyderabad and the construction of Amaravathi city, a new capital city of Andhra Pradesh state would lift up the optimum utilization of installed capacity most important to grow up of this cement industrial sector in Telangana and Andhra Pradesh region.

REFERENCES

1. Agarwal, A.K., and Agarwal, V.K., (1986), Cement Industry in India – A critical Study of Capacity Utilization, Commonwealth Publishers, New Delhi, pp. 11- 18.
2. Barik, K., (2007), Capacity utilization in Indian paper industry, Working paper, School of Social Science, Indira Gandhi National Open University.
3. Bishwanath, G. and Renganathan, V.S., (1991), Capacity Utilization in Indian Industries, Indian Economic Journal.
4. Budin, M. And Paul, S., (1961), Utilization of Indian Industrial Capacity 1951 to 1959, Indian Economic Journal, Vol. IX, pp. 28-30.
5. Dogra, P.L., (1980), Cement Industry in India, a Ph.D thesis, University of Delhi, Delhi.
6. Hazra S., (1965), Firm size and Efficiency in Manufacturing, The Economic Weekly, August, pp. 186-190.
7. Kemal, A.R. and Talat Alauddin (1974), Capacity Utilization in Manufacturing Industries of Pakistan, The Pakistan Development Review, Vol. 13, No. 3.

8. Kumar, S. and Arora, N. (2009), Analyzing Regional Variations in Capacity Utilization of Indian Sugar Industry using Non-parametric Frontier Technique, *Eurasian Journal of Business and Economics*, 2 (4).
9. Lalwani S. J., 1984, Capacity utilization in cement industry- *Productivity*, Nalanda press, Calcutta, pp- 301-307.
10. Mehta M.M, 1955, Inter-relationship between Size, Location and Integration, *Indian Economic Journal*, April 1955, pp-144-149.
11. NCAER, (1966), Cement Industry in India, Problems and Prospects, National Council of Applied Economic Research, New Delhi.
12. Padma, S.M., (1991), Economic measure of capacity utilization in some selected industries in India: 1960-61 to 1982-83, Delhi School of Economics.
13. Paul, S. (1974), Industrial Performance and Government Controls, *The Indian Economy: Performance and Prospects*, University of Bombay.
14. Poddar V., 1966, Cement Industry Vol-I and Vol-II, Dalmianagar: Fohtas Industries, pp 124-129.
15. Ramanadhan K., 1973, Indian Cement Industry - An Economic Analysis, a PhD thesis, Bombay University, Bombay, pp-185-220.
16. Reserve Bank of India Information Bulletin, (1968), August.
17. Sandesara, J.C., (1969), Capacity Utilization in Indian Industry: A Study of the Food Manufacturing Industries. *Indian Journal of Industrial Relations*, Vol. 5, No.1, pp. 28-38.
18. Srinivasan, P.V., (1992), Excess capacities in Indian industries –Supply or demand constraints, *Economic and Political Weekly*. November, pp. 11-13.
19. Vijayaragavan T and Rajamohan S, 2007, Performance of Cement Industry in the World, *Science Tech Entrepreneur*, pp-12-20.
20. Vishvanathan, U. and Mukhopadhyay, H., (1991), On the measurement of capacity utilization: The case for the Cement industry in India, Paper presented at the Annual Conference of the Econometric Society, New Jalpaiguri.
21. www.cma.com.
22. www.ibef.org.
23. www.Industrialchronicle.com