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## ***Nigerian Cement Industry***

***...a review of opportunities and recurrent price hike***

***April 2011***

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## **Executive Summary**

Rising investment in infrastructure in developing countries of the world may lead to an increase in global demand for hydraulic and Portland cement by 2013. Demand for cement has dropped in the leading consumer countries of cement, such as China, Brazil, Russia and other leading consumers prior to the recession period but still higher than the world average. Nigerian cement industry estimated value grew from about N26 billion in 2004 to N134 billion in 2008. Statistics has shown that Nigeria has the largest demand for cement in sub-Saharan Africa and about 95 per cent of the inputs for cement production are sourced for locally, Liberia's demand also grew tremendously post-conflict so as to rebuild damaged infrastructure.

There were over 190 production plants and about one quarter of them are integrated cement production units while others produce some other raw material inputs. It has been identified that global cement majors such as Lafarge, Holcim, Heidelberg cement, and Italcement controls about 45 percent of the Africa's installed capacity. North Africa dominates Africa's production capacity with 55 per cent of the total cement output potential. However, West African Sub region has witnessed appreciable growth in cement industry (by emergence of Dangote) which raised its share to about 20 per cent and this may change the regional mix in the next few years.

Establishing a cement factory is highly capital intensive which makes a cement factory very expensive to install and maintain. The cost of cement production is very high all over the world with energy being the major cost center. As a result of the backward integration policy on cement production in Nigeria by federal government in 2002, the local manufacturing output of cement has risen from 2 million tonnes to 10.5 million tonnes in 2010. Stakeholders have highlighted the following as the causes of high price of Portland cement in Nigeria:

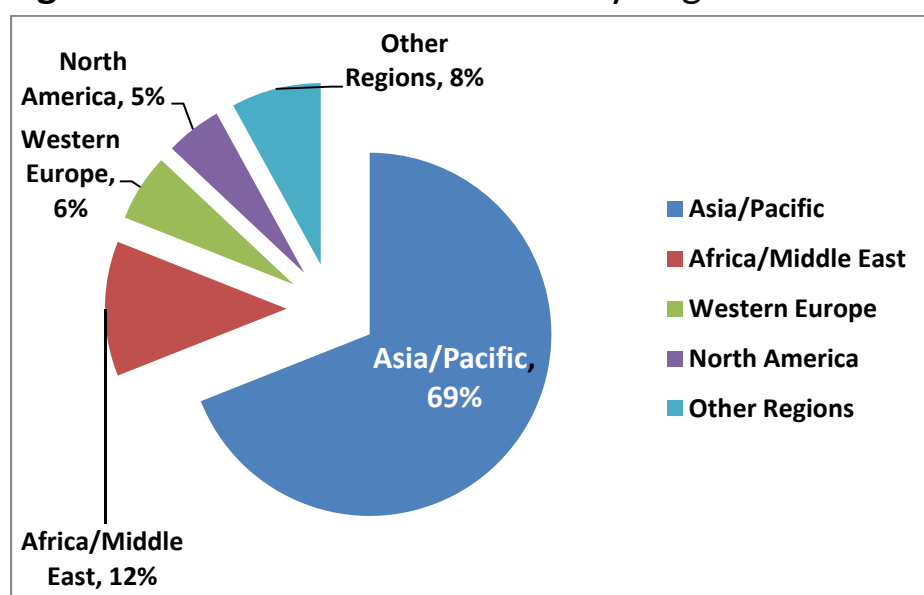
- Huge supply gap of cement where demand is higher than supply may force the price up
- Too many middle men in the supply and distribution of cement
- Unstable power supply which leads to over dependence on expensive alternative fuel which carries about 50 per cent of total cost of production
- Hoarding of cement by marketers to sustain importation
- Huge cost of transportation of cement from factory to end-users vis-à-vis poor distribution network of some cement companies
- Sheer monopoly of importation by a few players
- High tax burden on production and importation
- High capital involved in setting up more factories may lead to cement supply gap

Players in the Nigerian cement industry comprises of manufacturers and importers. There are about six manufacturers and seven importers of cement in the industry and still there is huge supply gap. Consumption of cement in Nigeria is determined by the level of housing and industrial construction, irrigation projects, roads, laying of water supply pipes, railways, drainage pipes, establishment of new universities by federal government and private individuals. Investigations have shown that road transportation of cement with trucks beyond 200 km is not economically viable for movement of cement within the country. Our future report on cement industry will X-ray environmental effects of cement production. We suggest that government should promote the newest technologies among cement manufactures in the country by encouraging all to switch on to dry method of cement production rather than the old wet method with increased emission of toxic gas in to the environment.

## Global Market: High Demand linked to Rising Investment in Africa's Infrastructure

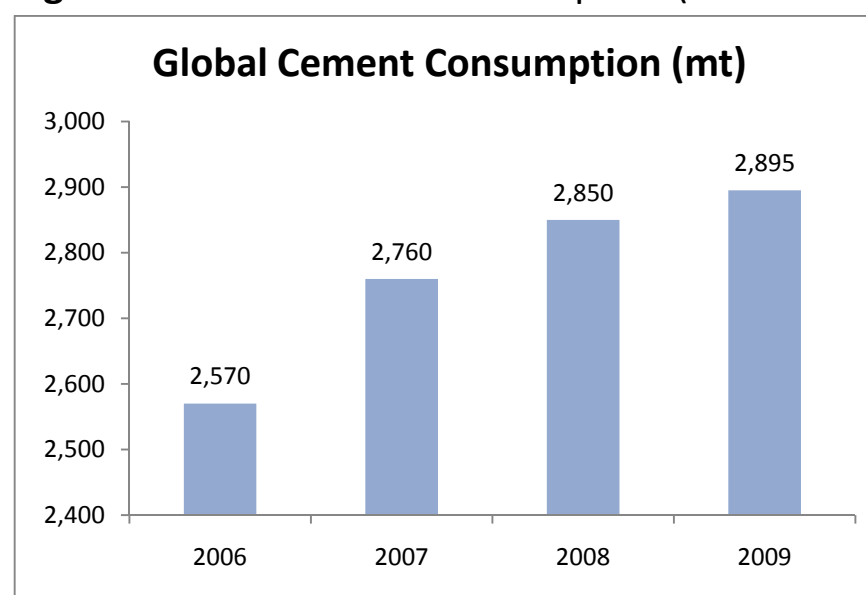
Research has forecast that the global demand for hydraulic and Portland cement may rise by 4.1 per cent per year to 3.5 billion metric tons in 2013, valued \$246 billion. This is believed to be stimulated by the rising investment in infrastructure in developing countries (mostly Africa) of the world, driven by economic growth and increased national income due to more and more discovery of mineral resources (such as recent discovery of crude oil in Ghana and Angola, further discovery of Liquefied Natural Gas and bitumen in Nigeria, further discovery of Diamonds in South Africa and discovery of other mineral resources in other parts of Africa). Due to global economic recession that commenced in 2007/2008, demand for cement has dropped in the leading consumer countries of cement, such as China, Brazil, Russia and other leading consumers prior to the recession period but still higher than the world average (figure 1).

**Figure 1: World Cement demand By Region**



Source: IMF, PAC Research Estimates

**Figure 2: Global Cement Consumption (2006-2009)**



Source: Cemnet

Estimated value of Nigerian cement industry grew from about N26 billion in 2004 to N134 billion in 2008. A cement manufacturer stated that the total consumption of cement grew by 8 per cent to 14.8 million tonnes in 2009 and approximately 10.5 per cent annually over the last six years. Recent happening has even confirmed that the aggregate demand for cement in Nigeria is in excess of supply and the current estimated demand stands at 18 million tones.

Statistics has shown that Nigeria has the largest demand for cement in sub-Saharan Africa and about 95 per cent of the inputs for cement production are sourced for locally, Liberia's demand also grew tremendously post-conflict so a to rebuild damaged infrastructure. Ghana cement industry is disadvantage compared to Nigeria because there are two companies producing cement in Ghana, Ghana Cement Works Limited and Diamond Cement Ghana Limited, which uses **imported** clinker and gypsum, and limestone for about 37 years for manufacturing of cement while Nigerian manufacturers import only gypsum.

### Cement Production Capacity Dynamics in Africa

A review of the Cement Facilities of Africa in relation to supply side including cement plants and their manufacturing capacity on the African continent shows the need for industrialists to intensive expanding production capacity of the commodity in Africa. As at December 2010, there were over 190 production plants and about one quarter of them are integrated cement production units. It has been identified that global cement majors such as Lafarge, Holcim, Heidelberg cement, and Italcement controls about 45 percent of the Africa's installed capacity.

**Table 1:** Cement Majors in Sub-Saharan Africa and their Parent countries

<b>Africa's Cement Majors</b>	<b>Number of Plants in Africa</b>	<b>Parent Countries</b>
<b>Dangote</b>	14	Nigeria
<b>Lafarge</b>	14	France
<b>Holcim</b>	11	U.S.A
<b>Heidelberg</b>	7	South Africa
<b>Italcement</b>	13	Italy
<b>Total</b>	<b>59</b>	

**Source:** Industry Sources, PAC Research

In terms of production capacity, North Africa dominates with 55 per cent of the total cement output potential. Nevertheless, West African Sub region has witnessed appreciable growth in cement industry which raised its share to about 20 per cent and this may change the regional mix in the next few years. Considering the age and nature of cement plants across Africa's sub region, the average output capacity also varies ranging from 0.36 million tons per year per production line in Central Africa to 1.10 million tons in West Africa. Lafarge boasts the largest number of operations in 14 African countries and every region of Africa with concentration in Egypt, Algeria and Morocco. Apart from Lafarge, Holcim and Heidelberg Cement, Italcementi and Dangote maintain the majority of their operations in only one or two regions.

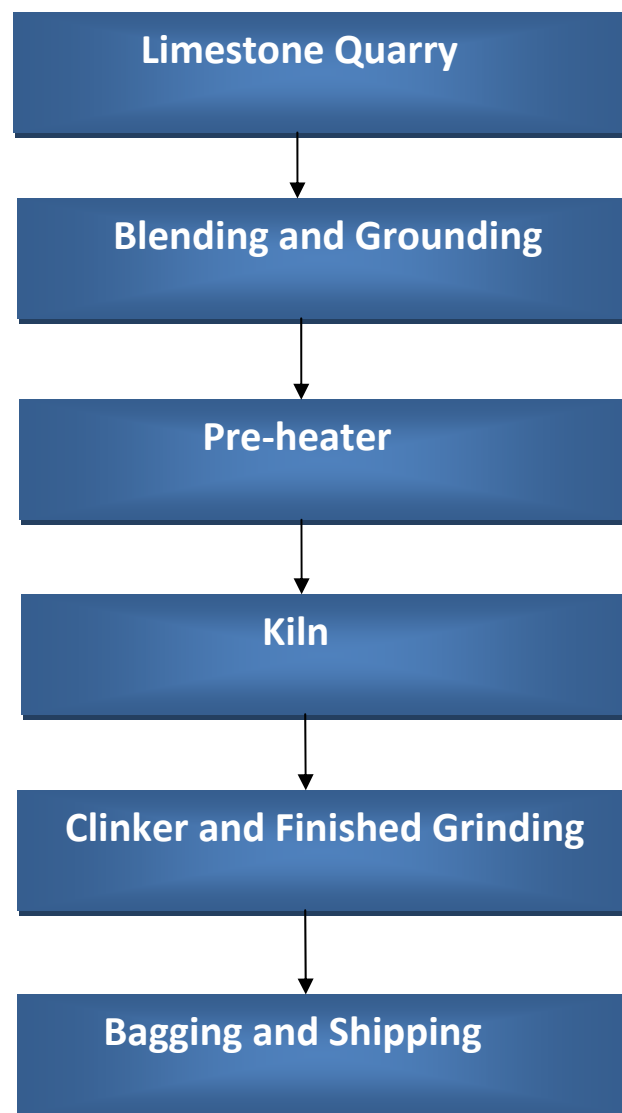
### **Cement Industry in Nigeria: An Industry X-Ray and Causes of High Cost of Cement**

Establishing a cement factory is highly capital intensive which makes a cement factory very expensive to install and maintain. The cost of cement production is very high all over the world with energy being the major cost center. Energy accounts for about 40 per cent of total cost of production of one tone of cement which requires 60 – 130 kg of fuel oil for total production process. The main source of raw material necessary for production of cement includes limestone, gypsum, clay, sand etc. Cement manufacturing plants are usually located near quarries of limestone in order to avoid the cost of transporting large tones of this essential raw material over a long distance. In March 2011, price of cement in Egypt increased by 6.65 per cent due to transportation cost.

#### **Cement Production process**

The production starts with mining of limestone in the quarry which is crushed and analyzed in the laboratory before they are ground to a finer form with heavy wheel type rollers. The materials are pre-heat before they enter the kiln to save energy. Kiln is the heart of the cement making process and the world largest moving industrial equipment. Fuel such as powdered coal and natural gas are used to fire the raw materials at 1480 degree to convert the raw material into molten form called clinker. Clinker is cooled by forced air and ground into super fine powder. The finished product is conveyed to silos where it is bagged or shipped in bulk by trucks or rail.

Figure 3: Cement Production process

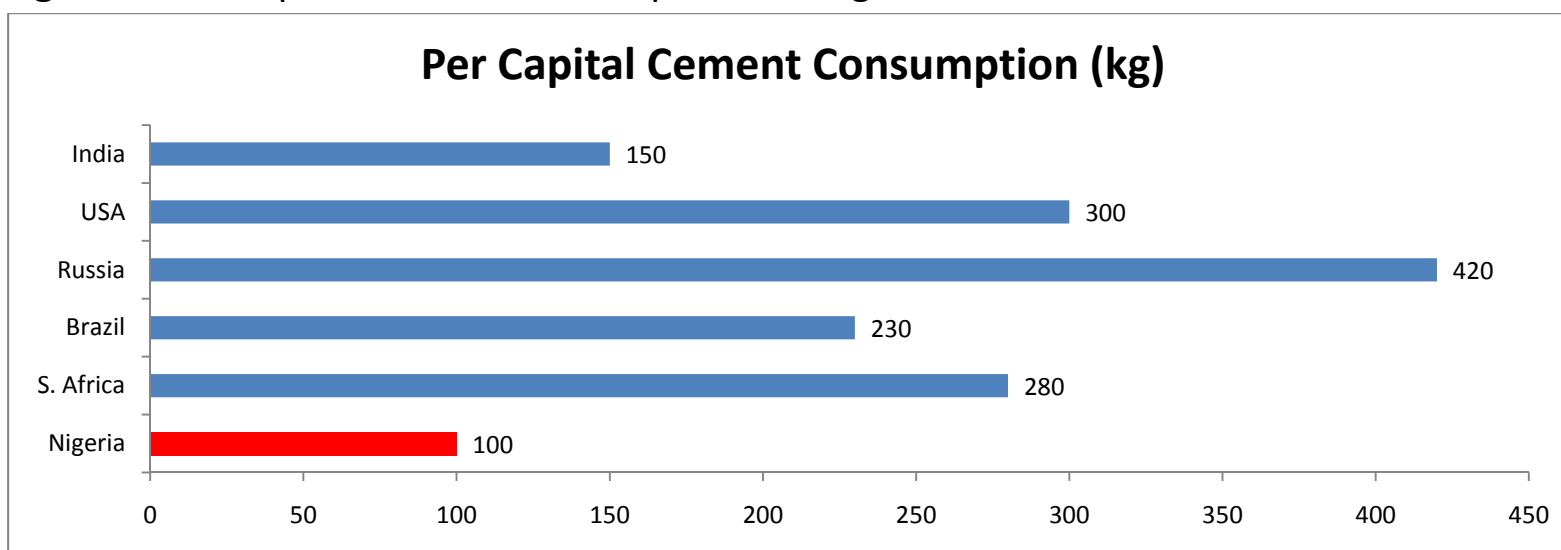


Source: Portland Cement Association

### Nigerian Cement Industry and Distribution

Due to the federal government backward integration policy on cement production in Nigeria by President Olusegun Obasanjo in 2002, the local manufacturing output of cement has risen from 2 million tonnes to 10.5 million tonnes in 2010. Continuous increase in local production will propel the country into a cement exporting country like most Asian countries. Nigerian cement market is oligopolistic in nature the number of cement producers is less than 10. Requirements for setting up of factory are the major entry barriers which include high cost of heavy machineries and equipment, highly skilled manpower, expensive distribution channels and availability of limestone in desired locations.

Figure 4: Per Capital Cement Consumption among Selected Countries



Source: Cemnet

As a result of the prominent entry barrier which led to the existence of few manufacturers of cement in Nigeria, demand for the product is far higher than supply and this has resulted in upward trend in price of Portland cement despite low per capita usage (consumption per head) by global standards (Figure 4). A bag of cement, which was procured at between N1,500 and N1,600 in March 2010 currently sells between N2,000 and N2,200 in Lagos and N2,200 and N2,400 in Abuja.

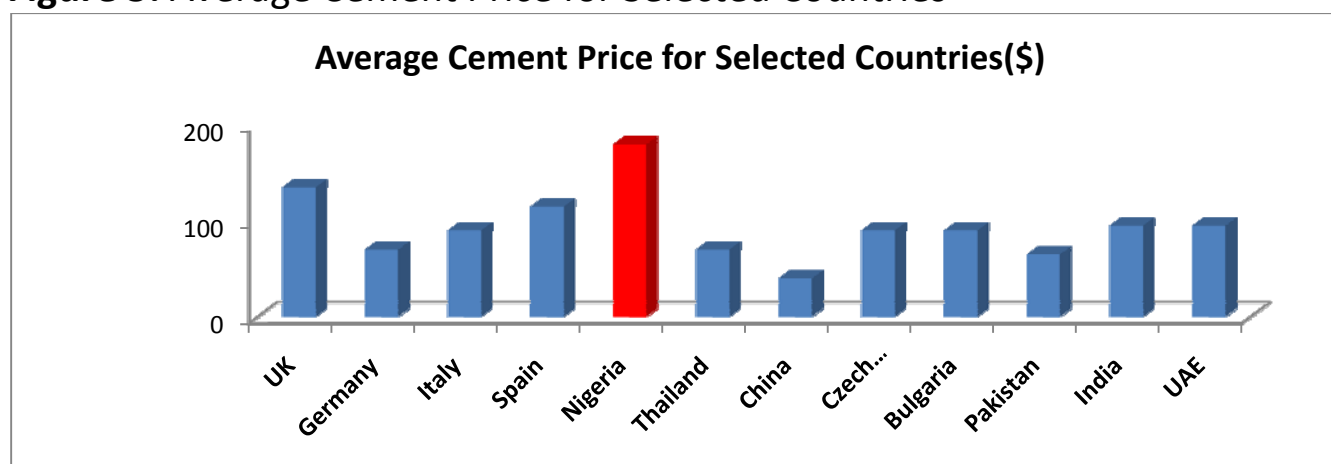
### **Causes of Upward Rise in Price of Cement in Nigeria**

Nigerian citizens have lamented the hardship being posed to them by the skyrocketed increase in price of cement. In many parts of the world, pressure on the price of cement has been attributed to various source of energy for different stages of production and transportation of cement to end users. Energy sources such as petrol, diesel, electricity and coal have direct impact on the market price of cement; any change in price of any of these may affect the price of cement. Recent study in South American Cement industry shows that cost of energy accounts for 50 per cent cost of production. The following have been highlighted as the causes of high price of Portland cement in Nigeria:

- Huge supply gap of cement where demand is higher than supply is a factor that may force up the price of cement
- Too many middle men in the supply and distribution of cement
- Unstable power supply which leads to over dependence on expensive alternative fuel which carries about **50 per** cent of total cost of production
- Hoarding of cement by marketers to sustain importation
- Huge cost of transportation of cement from factory to end-users vis-à-vis poor distribution network of some cement companies
- Sheer monopoly of production and importation of cement by a few players
- Rise in prices of other raw materials may lead to high cost cement
- High tax burden may also impact on price of cement
- Unfavorable government policy on production and importation
- High capital involved in setting up more cement factories may lead to the supply gap of cement

Although cement market is not a perfect market where price of commodity is always at equilibrium and demand is equal to supply for price to really be determined by market forces i.e. price can go upward or downward at any point in time. This means the price of cement could continue to go up if urgent measures are not taken by government. High cost of cement has adverse effects on the economy and in the real estate sector. Most contractors decided to reduce the standard number of cement for mixing concrete and also in the block making process during construction of buildings so as to make up for the incessant increase in cost of cement.

**Figure 5: Average Cement Price for Selected Countries**



**Source:** Dangote Cement Company

Distribution network is very critical to cement business in Nigeria and all over the world since factories are located near limestone deposits which are usually far away from their markets. Statistics has shown that major Nigerian manufacturers have established distribution channels for their products to ensure that cement gets to the distributors all over the country at competitive price and eventually to end users. For instance, Dangote cement has invested massively in haulage to ensure that the product gets to the end users at the appropriate rate. Presently, the company has 3,000 trucks where each lifts 600 bags of cement. In the same vain, Lafarge WAPCO recently flagged off its Logistics Project with the planned acquisition of over 1000 state-of-the-art trucks to enhance its logistic system where 75 brand new trucks were commissioned.

## Major Characteristics of Cement Industry

### Homogenous Product

Cement is considered as a standard product because of its homogeneity status, all kinds of Cement are considered to be homogenous when they are perfect substitute and consumers perceived no actual or real differences between the products offered by different firms. The only instrument for competition in a cement industry is price where if Company A lowers its price to gain market share, company B may follow suit so as to retain its customers.

### Capital Intensive

The high cost of constructing a cement plant has ranked the industry among the most capital intensive industries in any country. Long time periods are therefore needed before investments can be recovered and plant modifications have to be carefully planned and must take account of the long-term nature of the industry. This makes cement industry to be low labour intensive due to the development of modern automated machinery and continuous material handling devices. In the Europe, the cement factory represents 58, 000 direct jobs but a modern plant is usually manned by less than 150 people.

### Requires High Energy Usage

Cement manufacturing requires high consumption of fuel from the first stage of production till the last stage. Each tonne of cement produced requires 60 to 130 kilogrammes of fuel oil or its equivalent, depending on the cement variety and the process used, and about 105 KWh of electricity may be used which also means high cost.

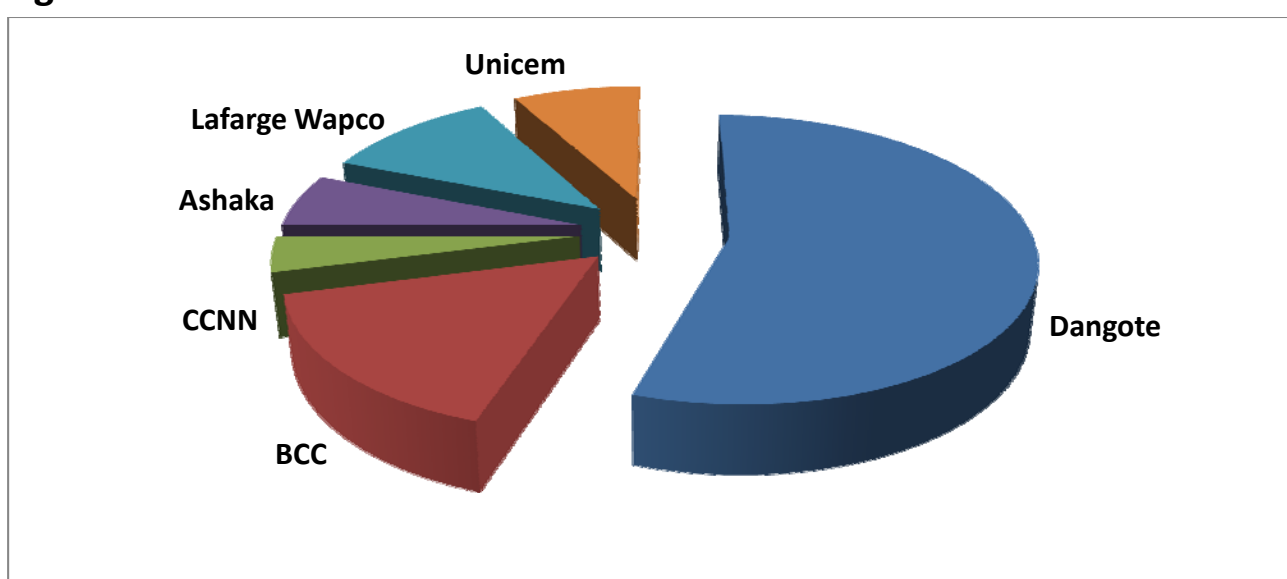
### Heavy Material Input and Output

Cement production requires heavy material input such as limestone, transportation of limestone as a major raw material in cement production is cumbersome and this is the reason while cement factories are located very close to limestone deposit. The finished good, cement, is also very heavy and requires huge cost of transportation which impacts on price of cement.

**Major Players in Nigerian Cement Industry**

Players in Nigerian cement industry are mainly manufactures and importers. There are about six manufacturers and seven importers of cement in the industry and still there is huge supply gap. The volume of production locally went up dramatically from 2.5 million tonnes in 2004 to 10.5 million tones in 2010 due to the commencement of production by Obajana (Dangote) Cement and Unicem in 2007 and 2009 respectively. Dangote controls about 60 per cent of the cement market share while other manufacturers share the remaining 40 per cent (Figure 4).

**Figure 4:** Cement Manufacturers and their Market Share



**Source:** Industry Sources, PAC Capital Research Estimates

The biggest player in Nigerian cement production is no other company but Dangote Group , but several other major entities dominate their respective regions. Lafarge WAPCO dominates the south-west markets while Ashaka cement controls sales in the north-eastern region of the country. Benue Cement (BCC) and Obajana Cement Company have their sales concentrated in the north and central markets, both recently merged to become Dangote Group. The UNICEM cement company and the Cement Company of Northern Nigeria (CCNN) are strategically positioned to serve the south-eastern and the north-western markets respectively. This scattered location of the cement factory the fragmentation of cement market in the country is partly due to high haulage costs as a result of the lack of durable transport infrastructure such as rail and partly due to the availability of limestone, which is main raw material in cement production, in different parts of the country. Capacities of most of the cement manufacturing companies vary from one company to the other.

**Table 2:** Installed Capacities of Cement Manufacturers in Nigeria as at 2009.

Company	Parent Company	Installed Capacities (Million tonnes)
Ashaka	Lafarge South Africa	0.80
Lafarge WAPCO	Lafarge South Africa	2.20
CCNN	BUA	0.50
BCC	Dangote	0.50
Edo Cement	BUA	0.35
Obajana Cement	Dangote	4.50
Ibeshe	Dangote	0.00
UniCem	Holcim/Lafarge S.A./Flour Mills	2.50
<b>Total</b>		<b>11.35</b>

**Source:** Companies Data, PAC Research

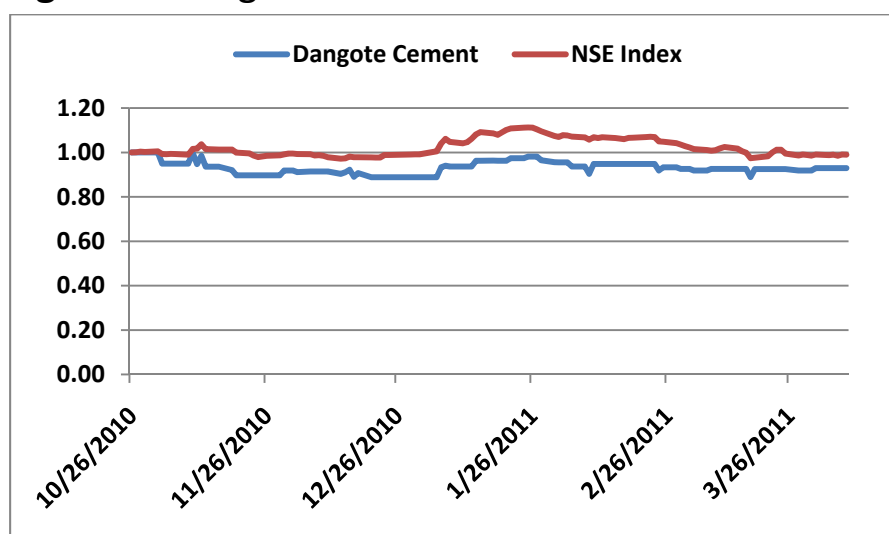
Expository reviews of the quoted cement companies are given below to dissect their business background, price trend on the floor of the Nigerian Stock Exchange, financial results and opportunities.

## Dangote Cement Plc

### Business Background

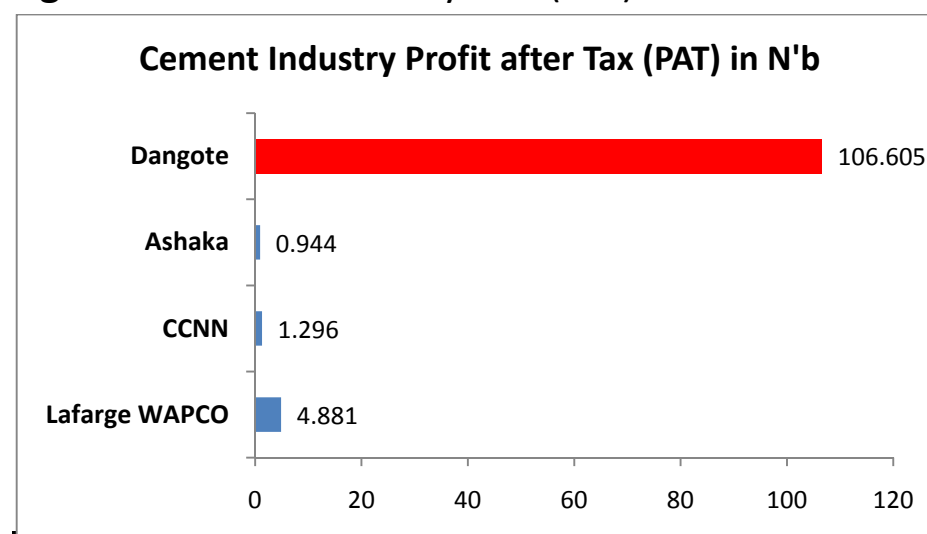
Dangote Cement Plc, incorporate as Obajana Cement in November 1992 prior to the planned special sale of shares, is 95 per cent owned by Dangote Industries Limited. After a while, Dangote Industry Limited decided to consolidate all the cement entities within the Dangote Group into a single entity by transferring all the cement assets into Dangote Cement Plc. Prior to this, Dangote Cement offered to merge with Benue Cement Plc with the goal of consolidating the cement producing entities of Dangote Industries Limited in Nigeria under a single entity presenting a robust platform for the enlarged Dangote Cement Plc. The current Dangote Cement Plc comprises of Obajana Cement Plant, Ibese Cement plant, Benue Cement Plant, Lagos Cement Terminal and Dangote Onne Terminal. Further to plans for an African expansion, Dangote Industries Limited is currently establishing cement plants and terminal across Africa. Some of the countries include Liberia, Angola, Ghana, Sierra Leon, Republic of Benin, DRC, Congo Brazaville, Senegal, South Africa and Zambia. Back in Nigeria, recent merger between Dangote Cement and Benue Cement Company on the floor of Nigerian Stock Exchange made Dangote Cement to constitute 25 per cent of the entire market capitalization.

Figure 5: Dangote Cement Plc vs NSE Index



Source: NSE

Figure 6: Cement Industry PAT (N'b)



Source: Companies Annual Reports

### Analysis and Recommendation

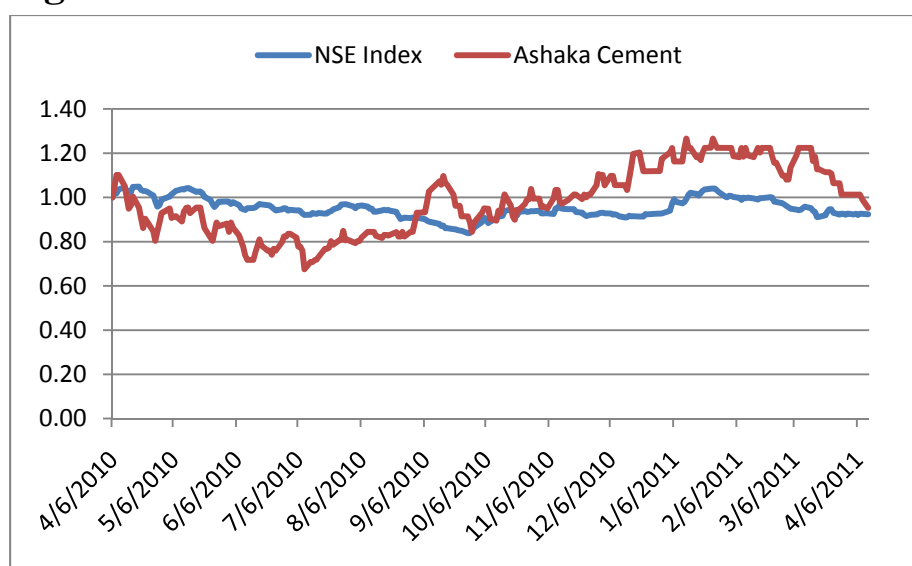
Dangote Cement Plc has entered the league of cement majors in Africa with tentacles in greater part of West African sub region and beyond. The company has potential to capture African cement market and send non-African Multinational cement companies back to their home countries. The cement giant currently trade at N125.50 on the floor of the Nigerian Stock Exchange and recently gave wonderful dividend to shareholders as a result of the highest PAT in the industry, this shows that the company has the potential to perform better in the coming financial year. We encourage **long term** investment in the company.

## Ashaka Cement Plc

### Business Background

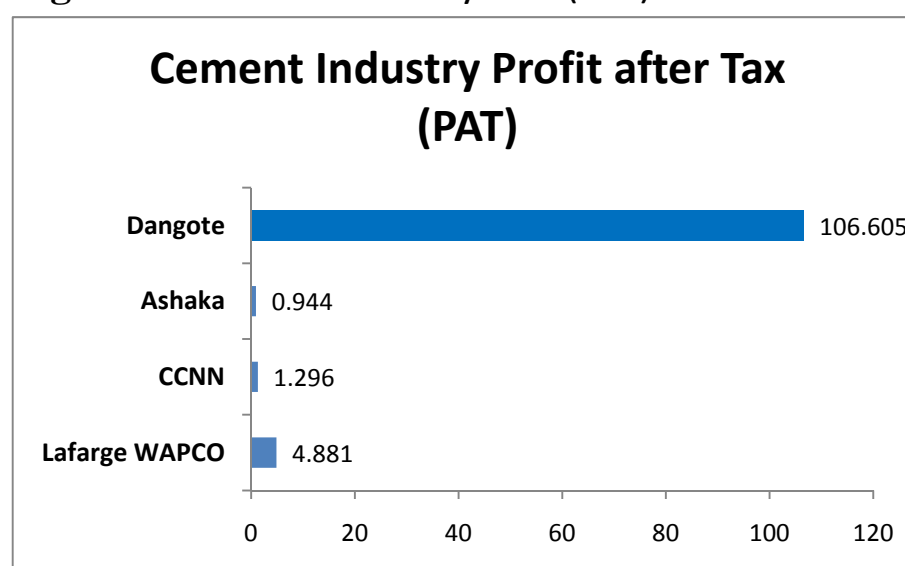
Ashaka Cement Plc is a subsidiary of Lafarge Group, a world leader in cement manufacturing. Ashaka became part of the Lafarge group in July 2001 after the acquisition of Blue Circle Industries Plc and since that time Lafarge has continued to support Ashaka’s operations to improve performance resulting in better returns to all its stakeholders. Ashaka Cement values the partnership with Lafarge because of the tremendous benefits we have derived from its corporate programs. This was seen to have resulted in improved performance, better results and profitability for the benefit of Ashaka’s shareholders, employees, customers and the hosting communities. Ashakacem’s principal activities are the manufacturing and marketing of cement products. The Group controls a unique portfolio of businesses, Cement (57%); Aggregates and Concrete (35%); Gypsum (8%). Lafarge designs and produces building materials to meet the requirements of people throughout the world for housing, transport, healthcare, education and essential infrastructure for economic growth and social progress.

**Figure 7: Ashaka Cement Plc vs NSE**



Source:

**Figure 8: Cement Industry PAT (N'b)**



Source: Companies Annual Reports

### Analysis and Recommendation

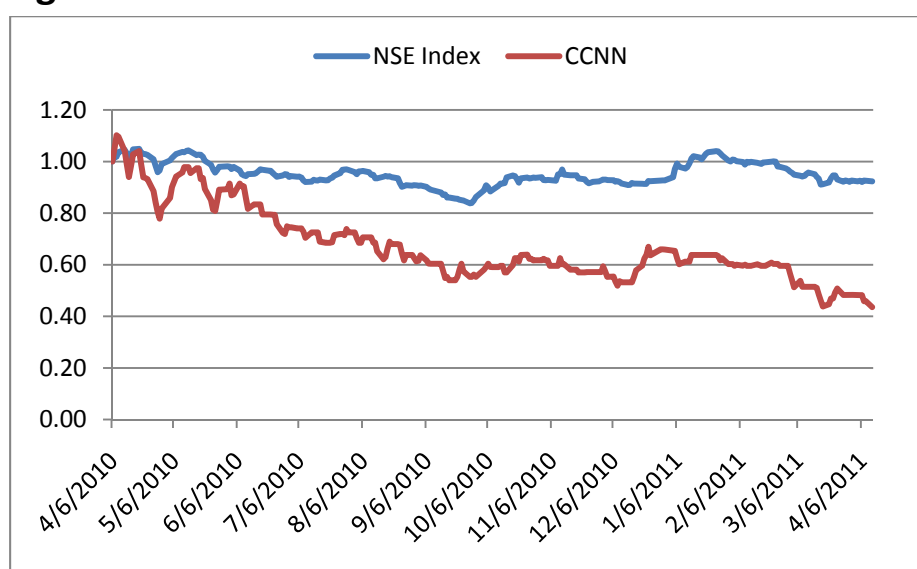
Ashaka Cement has shown consistent improved performance over years. Ashaka cement’s strategic focus falls on improved performance and sustainable development of its production facilities in order to grow output and enhance competence by a way of investment on some projects like power project, Kiln up rating project, roller press refurbishment, coal project and water improvement project. All these are expected to increase the company’s capacity so that it can further deepen its market share and translate to profitability. Ashaka cement trades at N22.40, we recommend **long term** investment for prospective shareholders.

## Cement Company of Northern Nigerian (CCNN) Plc

### Business Background

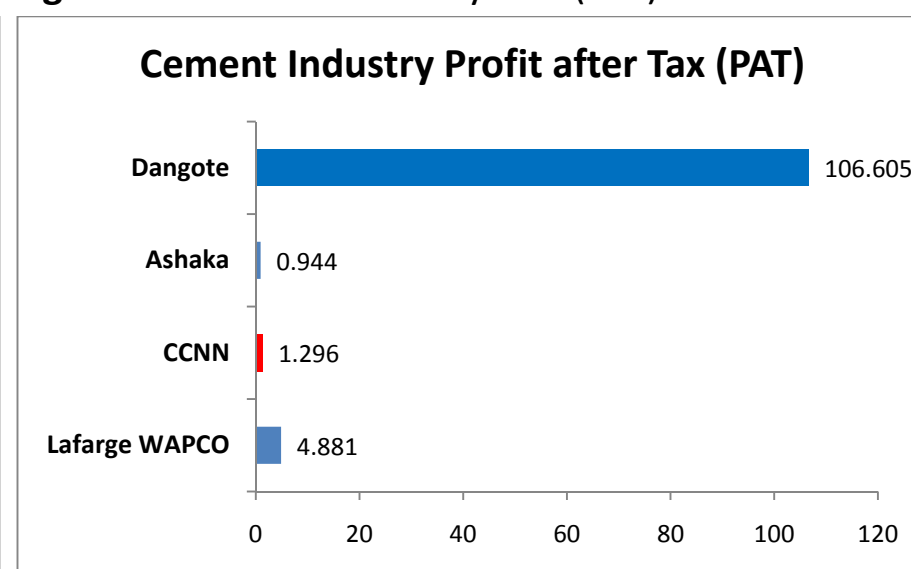
Cement Company of Northern Nigeria Plc (CCNN) was established by Alhaji Sir Ahmadu Bello, Sardauna of Sokoto. It was incorporated in 1962 and began production in 1967 with an initial installed capacity of 100,000 tonnes per annum, using the wet process of production. The need to meet the increasing demand for cement necessitated the expansion of the Plant with the commissioning of a Second line with an installed capacity of 500,000 tonnes per annum in 1985 by, the then Head of state, Major General Muhammadu Buhari. In 1992, Federal Government, in its privatization and commercialization programme, disinvested about 20% of its holding in the company and sold it to the Nigerian public. In July, CCNN was penciled down by Bureau of Public Enterprise (BPE) for full privatization where Scancem International of Norway, a member of **Heidelberg Cement** group was appointed as core investor and technical partner of the Company.

Figure 9: CCNN vs NSE Index



Source: NSE

Figure 10: Cement Industry PAT (N'b)



Source: Companies Annual Reports

### Analysis and Recommendation

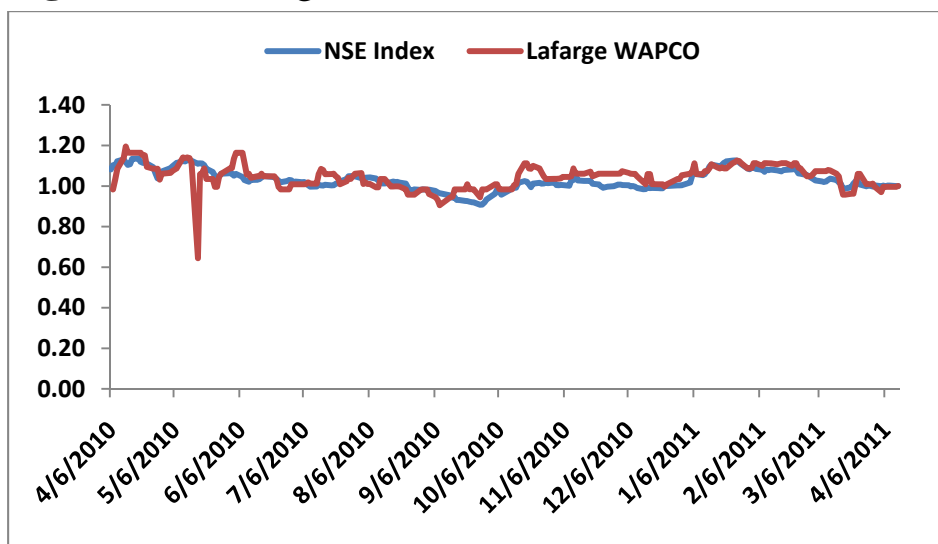
CCNN has stand test of time taking into consideration its long years of existence. The company's desire to embark on facility development programme is expected to improve performance. It is important to acknowledge the fact that the company has been fair in rewarding shareholders over the years. The existing investors can **hold** on to their investment.

## Lafarge WAPCO Plc

### Business Background

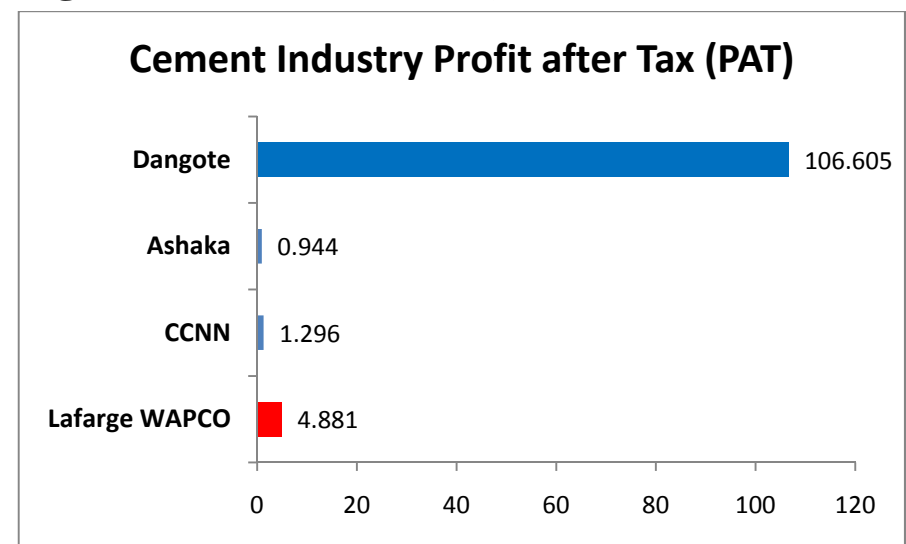
Lafarge WAPCO was established as a result of the country’s vision to gain economic freedom alongside its national independence. Lafarge WAPCO, formerly West African Cement Plc (WAPCO), was established at a time when the country was solely dependent on importation in the fifties from England into the country. Having fulfilled the national desire to establish a cement manufacturing company, Lafarge WAPCO, since its operation in 1960, has made tremendous contribution to the availability of cement in Nigeria. The company’s brand, Elephant Cement, is of impeccable standard and quality with strength, maturity, resilience, durability and reliability. The company has consistently won the NIS Certificate for product quality by the Nigeria Standard Organization for over two decades now. The Elephant brand has helped to build edifices, brought monumental projects to life, create a serene atmosphere and positively impacted the lives of Nigerians socio-economically.

**Figure 11: Lafarge WAPCO vs NSE Index**



Source: NSE

**Figure 12: Cement Industry PAT (N'b)**



Source: Companies Annual Reports

### Analysis and Recommendation

Prior to the emergence of Dangote Cement Plc in the Nigerian cement industry in Nigeria, WAPCO was the industry leader with highest market share. At present, WAPCO market share covers the entire western region. It has been noticed that the company’s dividend payment has decreased considerably since 2006 and the reason could be linked to the entry of Lafarge into the company and commencement of production by Dangote group. The company has potential for long term growth.

## **Investment Opportunities**

In the current situation of cement industry in Nigeria, the industry has been perceived as a potential investment hub for more international cement giants as demand – supply gap continue to be on the increase. In view of the upcoming massive infrastructure projects in Nigeria and the rest of Africa, the cement consumption is expected to advance which is anticipated to strengthen long-term investments viability of the Nigerian cement industry. We have observed that housing sector is currently the major consumer of cement in Nigeria and roughly accounts for over 50% of the total cement consumption in the country. As a result of the housing deficit of 17 million, the demand for cement is expected to go up for the country to fill this gap and other need for cement consumption. If more investors are allowed into the industry by a way of equity financing, the expected expanded capacity will not only enable players to tap the opportunities in the domestic demand, but will also increase their export considerations. The following forms of investment opportunities can also be considered in the industry:

- Establishment of a Greenfield Cement plant, this can be done by sourcing for fund locally or by inviting international cement majors in form of Foreign Direct Investment (FDI).
- Buying into an existing nonperforming cement plant is another popular option in Nigeria, this can be done by the use of Special Purpose Vehicle (SPV), direct equity financing etc.
- Opportunities also abound in the importation of raw materials such as gypsum for production
- There can also be pre-investment due diligence for invited foreign investors before eventual investment.
- There are immense opportunities in importation of cement and construction of terminals for bagging

## **Investment and Production Challenges in Nigeria**

- a. Very high starting and maintenance capital of a cement factory
- b. Poor power and energy supply for cement manufacturing
- c. High supply gap which leads to high price of cement
- d. Dwindling government policies which is affecting investment in the industry
- e. Lack of modern technologies in the production of cement

## **Conclusions**

The consumption of cement in Nigeria is determined by factors influencing the level of housing and industrial construction, irrigation projects, roads, laying of water supply pipes, drainage pipes, establishment of new universities by federal government and private individuals. Growth in population and level of urbanization in major cities like what we are currently experiencing in Lagos and Port Harcourt are also other factors that confirm the imminent demand for cement in Nigeria and other parts of Africa. All these including the supply gap of cement in Nigeria shows that future investments in Nigerian cement industry will be a viable venture.

Investigations have shown that **road transportation of cement with trucks** beyond 200 km is not economically viable for movement of cement within the country. We implore federal government to fast track construction of new rail ways and rehabilitation of the existing ones and provision of many wagons for transportation of cement within the country, this may also relax the pressure on price of cement.

On a final note, our future report on cement industry will X-ray environmental effects of cement production. We suggest that government should promote the newest technologies among cement manufactures in the country by encouraging all to switch on to dry method of cement production rather than the old wet method which increases emission of toxic gas in to the environment.

## **Prognosis**

During the course of this work, we discovered that cranes are been loosened in the Middle-East (Dubai) and Europe in relation to construction and infrastructural development. Our projection is that those cranes are coming down to the developing countries, most especially African continent, where infrastructural facilities are lacking and civil wars which led to the destruction of buildings and structures are predominant. These factors are contributing to the high demand for cement in Nigeria and the continent.

**Appendix 1: Comparison between Indian and Sub-Saharan Africa Cement Industries**

Comparison Elements	India	Sub-Saharan African (Excluding South Africa)
Characteristics of the cement industry	140 large cement plants 365 mini cement plants	15 large cement plants 60 mini cement plants
Major market players	Lafarge Italcementi Group Heidelberg Cement Holcim Aditya Birla Group	Lafarge Holcim Heidelberg Dangote
Installed Capacity	210 Mtpa (2008)	41.7 Mtpa (2007)
Production	174 Mtpa (2008)	17.3 Mtpa (2004)
Consumption	170 Mt (2008)	44.8 Mt (2007)
Per capital cement consumption	140 kg per capital	70 kg per capital
Capacity Utilization	94 % (2008)	54 % (2008)
Annual Growth Rate	10 % (2007)	9.4% (2007)
Price of Cement	USD 5.50 (per bag of 50 kg)	USD 8.4 - 15.6 (per bag of 50 kg)
Process types	98% dry process (2008)	66% dry process (WBCSD, 2002)
Thermal energy use	760 kcal/kg of clinker	800 - 1000 kcal/kg of clinker
Electric energy use	85 kWh/t of cement	105 - 140 kWh/t of cement

**Appendix 2**



**Lime stone blocks in a cement factory**



**A cement factory in the U.S.**

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