

Sep 10th, 2007

Indian Cement Sector

“Concrete” Growth

SECTOR COVERAGE

The strong economic growth of over 9% yoy and diverse infrastructure ramp-up in industrial & housing sectors, SEZs etc. have helped the cement industry to witness consumption growth of ~11% yoy for the last 3 years. The capacities too have kept pace with consumption with a continuous growth of over 8% for the last 3 years. Low cost technology and extensive restructuring have helped the Indian cement companies become more financially efficient, and have hence witnessed numerous takeovers and M&A's even from the global players. Going forward, the government's thrust on infrastructure development and the surging housing demand will help the industry maintain its consumption growth. We also expect the cement sector to sustain its current demand growth and realizations on the back of heavy capacity additions by cement players (over 55mnT capacity to be added by FY10E), huge investments in various infrastructure projects (Mumbai-Delhi Corridor project etc.), and events like Common Wealth Games 2010.

Demand to outstrip Supply for next three years

Despite the concern of rising prices of cement, housing units (due to increase in interest rates) etc., we are buoyant on the infrastructure demand growth in India in the coming years. Fuelled mainly by the government's emphasis on infrastructure and housing sector development, we expect the cement demand to grow at ~11% CAGR generating an incremental domestic demand of 25mnT in next 3 years (200mnT of demand by FY10). Supply though will remain constrained over the next 36 months and will grow at a CAGR of ~9% for the same period.

Capacity Additions to affect the Demand Supply mismatch

Due to the operational constraints like equipment supplies, we expect capacity addition of approx 55-60mnT through FY07-10. This will only be ~66% of the announced capacity by the industry majors at the present juncture. Due to huge incremental capacity addition in the coming years, we expect the utilization level to decline to ~85% by FY10, from over 90% presently.

Table 1: All-India Demand Supply Scenario – deficit situation expected

All India (Mn Tonnes)	FY06	FY07	FY08E	FY09E	FY10E
Capacity	163.14	171.66	183.16	204.26	229.16
Capacity Addition	6.18	8.52	11.50	21.10	24.90
Capacity Utilisation(%)	86.9	90.48	87.42	84.08	84.34
Production	142.00	155.00	160.00	172.00	193.00
Demand	135.56	148.99	166.87	182.57	200.40
Exports	6.90	5.80	3.00	3.00	3.00
Surplus/(Deficit)	0.20	0.50	(9.75)	(13.82)	(10.11)

Source : CMA, Systematix Institutional Research

Cement prices to witness subdued growth till FY09, marginalize thereafter

We forecast cement prices to remain on an uptrend mainly due to the demand-supply mismatch resulting in a deficit across regions for the next 2 years. We expect ~10-13% increase in cement prices up to FY09 post which (1HFY10 onwards) we expect a marginal fall in cement prices mainly due to the full capacity (66% as per our estimates) coming into execution. As the cement price freeze will no longer be applicable as clarified by the government recently we thus expect the demand-supply economics to govern the cement pricing.

Imports to have negligible effect while the exports continue to decline

The cement exports have declined in FY07 compared to an increasing trend witnessed in the previous 3 years. Going forward we expect exports to decline upto ~3mtpa due to increase in domestic demand and a demand-supply mismatch. The procedural constraints in getting the import license have proved to be an obstacle for cement imports and we believe that higher freight cost would make imports unviable while having a muted effect on cement prices.

Financial summary of key players

We believe that cement majors such as *Grasim & India Cements* who have dominance in northern & southern region will be the biggest beneficiaries of the cement industry boom, as we expect their respective regions to witness a faster consumption growth as compared to other regions. We expect the south-based companies to clock the highest realisation growth. In terms of valuations though, we believe that Birla Corp is available at the cheapest valuation as compared to its peers.

Table 2: Comparative valuations of leading Indian cement players

Company	India Cements		Ultratech		Birla Corp		Grasim*		Madras Cements	
	FY08E	FY09E	FY08E	FY09E	FY08E	FY09E	FY08E	FY09E	FY08E	FY09E
EPS	26.2	26.3	73.8	81.7	53.6	57.3	228	256	356	381
P/E	10.1	10.0	13.3	12.0	5.9	5.5	13.9	10.4	10.6	9.9
EV / Ton (USD)	166	166	192	157	110	100	256	162	152	152
EV/EBITDA(Rsm)	8.3	7.3	7.9	6.8	4.0	3.7	6.5	5.8	6.2	5.5
Instd. Cap (mnT)	12.0	12.0	17	21	5.8	6.4	14.1	22.1	7.4	7.4

Source: Bloomberg Estimates, *- Industry Estimates

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INDUSTRY HIGHLIGHTS

Overview

- India is the 2nd largest cement producer in world after China. China accounts for 40% whereas India accounts for 6% of the global production, which stands at 2.27bn metric tonne.
- The Industry produced 155.3mnT in 2006-07 compared to 141.8mnT in the previous year.
- The per capita consumption of cement in India is at 125kgs, which is modest when compared to the East-Asian countries like Thailand (366Kgs), China (626Kgs) and South Korea (1216Kgs), leaving enough scope for rise in demand.
- The current scenario is that the demand in cement has mapped itself with the dispatches, which is a clear indicator of increasing demand.
- The Government's thrust on infrastructure and the heightened housing demand will augur well for the industry.
- Cement sector will sustain the current growth momentum and realizations due to huge investments in various infrastructure projects and events like Common Wealth games will fuel the growth further.

Demand has mapped dispatches is a key indicator of progress of demand

Structure

- There are at present seven clusters in cement industry.
- They are located at Satna (Madhya Pradesh), Chandarpur (North Andhra Pradesh & Maharashtra), Gulbarga (North Karnataka and East AP), Chanderia (South Rajasthan, Jawad & Neemuch in MP), Bilaspur (Chattisgarh), Yerraguntla (South AP), and Nalgonda (Central AP).
- The Cement Industry is highly fragmented consisting of 50 players and 132 manufacturing plants.
- The cement industry is regionalized since cement units are located near the limestone mines. Cement is confined to regions because of high logistic cost.
- The top ten players contribute 50% of the capacity and 66% of the production.
- The two major groups ACC- GACL (combined capacity -35.36mtpa) and Grasim – Ultratech (combined capacity -31.1mtpa) are a case in point.

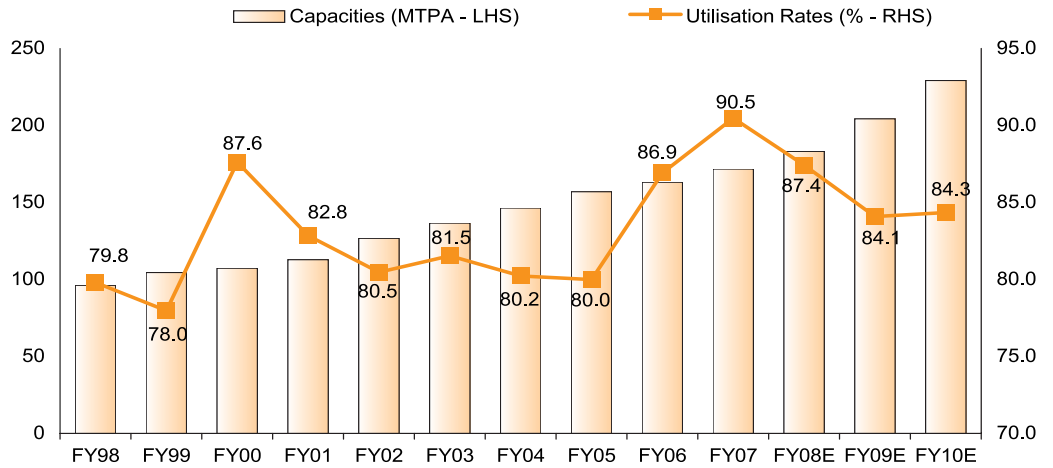
Pricing and industry dynamics

- Strong demand growth and limited capacity additions have resulted in sharp increase in prices to over Rs220/50 kg bag presently from just Rs160/50 kg bag in FY06.
- Industry has increased the blending ratio from 30% in 2002-03 to 60% in 2006-07 to meet this growing demand.
- In the last few years cement industry has been in the limelight due to consolidation.
- The recent acquisition by Holcim to increase its stake in Ambuja Cement by 20%; Grasim's acquisition of cement division of L&T which is renamed as Ultratech etc. are some specific cases.

Industry installed capacity and utilization

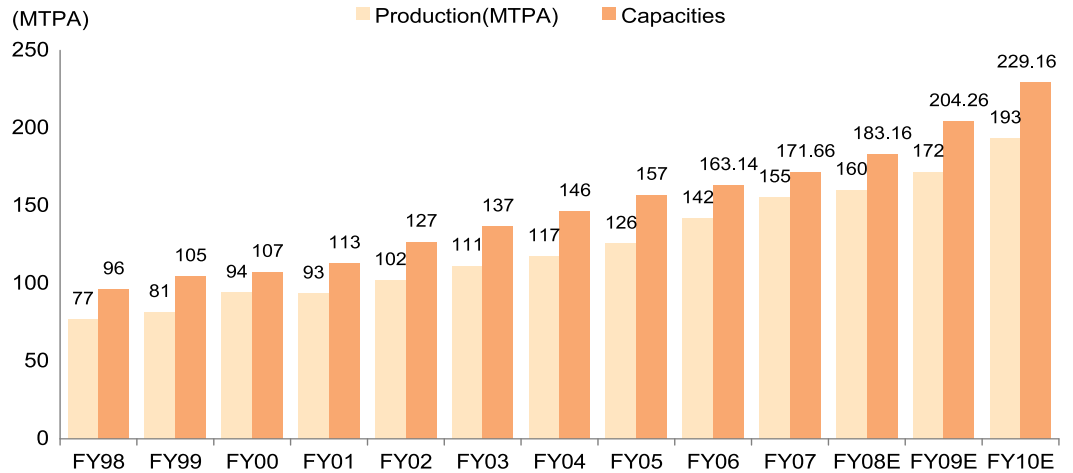
- Indian Cement Industry has an installed capacity of 172mnT as on 31st March'07 operating at 90% utilization level with production of 155mnT.
- The industry comprises of 132 large cement plants and 365 mini cement plants.
- In terms of market share top ten companies contribute 67.67% of the total production with ACC being the leader with 12% market share.

Fig 1: Installed Capacity & Utilisation rates – reverse proportion expected



Source: CMA, Systematix Institutional Research

Fig 2: All India Production & Capacities – to witness sustained growth



Source: CMA, Systematix Institutional Research

Till now the Cement Industry had surplus capacity and so it was viable to export the same to other countries. For the last 2 years the exports have been showing an increasing trend. But with recent boom in infrastructure and construction the demand for cement has outgrown supply. This has led to a shortage of nearly 10-12mnT presently leading to a sharp increase in prices. The higher growth in consumption has led to the industry surplus to shrink to ~0.5mnT in FY07. Going forward we expect the deficit to be ~33mnT in next 3 years.

The utilization rate has increased from ~80% in FY98 to ~91% in FY07. We expect the utilization level to decline to ~85% by FY10 due to capacity additions

The industry has added 25mnT installed capacity in the last 3 years and we expect an addition of ~55-60mnT by FY10

Major Players

ACC is the largest player with an installed capacity of 20mnT by Dec'06. Ultratech has captured second slot with an installed capacity of 17mnT. GACL has capacity of 16.3mnT and ranks third while Grasim ranks fourth with an installed capacity of 14.42mnT.

Table 2: Top 10 cement players' present capacity, utilization and expected capacity addition

Company	Capacity (MnT)	Capacity Utilization (%)	Market Share (%)	Expected Capacity Addition in next 3 years (MnT)
ACC*	20.01	92.77	12.00	4.00
GACL*	15.22	108.02	10.63	4.80
Grasim	14.11	108.56	9.90	9.00
Ultratech	17.00	86.00	9.46	4.00
India Cement	8.81	99.39	5.66	4.00
Jaiprakash Associate	6.60	107.18	4.57	9.00
Century Textile	6.30	107.13	4.36	2.00
JK Group	7.02	92.38	4.19	3.00
Madras Cement	5.47	99.10	3.50	4.00
Birla Corp	5.78	90.94	3.40	0.60

Source: CMA, Systematix Institutional Research; *Year ending December

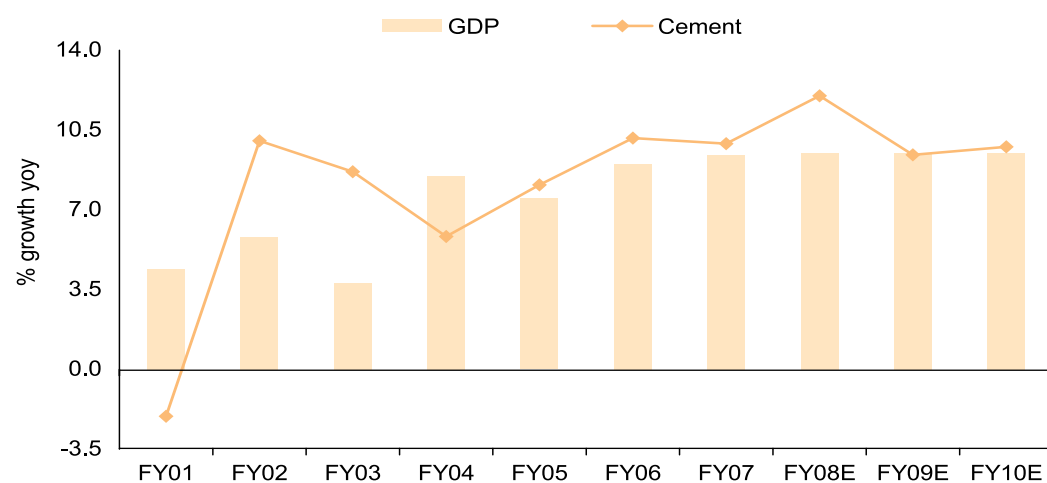
DEMAND – SUPPLY SCENARIO

We expect demand & supply to grow at a CAGR of 11% & 9% respectively upto FY10. We expect the industry to register a deficit of 9.75mnT for FY08 and deficit is likely to increase to 13.82mnT by FY09. The current capacity expansion programme is likely to bring down shrinkage in deficit to 10.11mnT in FY10. The cement industry witnessed surplus upto FY07, but going forward with the additional increase in demand by housing and infrastructure sector we expect total deficit of ~33mnT through FY08-10, in spite of capacity addition to the tune of 55-60mnT.

Cement consumption to remain correlated with GDP growth

Cement consumption is directly proportional to the country's economic growth. To sustain the GDP growth rate of 9-9.5%, India needs to spend USD300-350bn on Infrastructure development. This will lead to increase in cement consumption at the rate of ~11 % yoy for the next 3 years. The per capita consumption of cement in India is 125kgs, which is modest when compared to other Asian and global countries and provides enough scope for the sector to grow.

Fig 3: GDP & Cement consumption growth – correlation effect



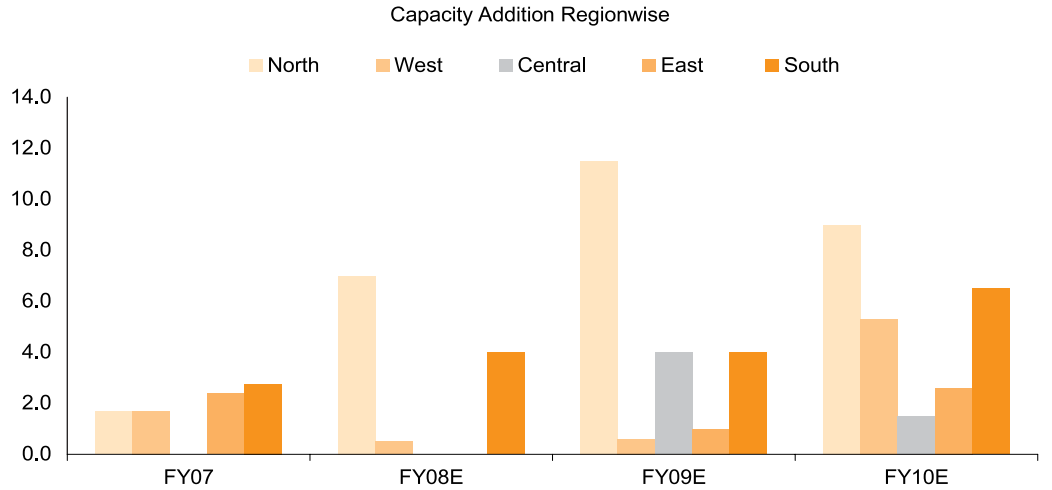
High GDP Growth leads to higher cement consumption. Cement consumption growth in India is 1.05x of GDP growth

Source: CMA, Systematix Institutional Research

Capacity Additions – 55-60mnT in next 3 years

Growth of cement industry is evident with capacity additions of 25MnT in the last 3 years and with consumption growing at ~11%. The industry is believed to have announced ~90mnT of capacity addition for the next 3 years. However, we believe that the industry will be able to add only 66% of the announced capacity i.e 55-60mnT in the next 3 years. A Greenfield plant requires ~2 years with an investment of USD100 per tonne to be fully built whereas Brownfield requires 18-20 months with an investment of USD60 per tonne. A new plant requires 6 -12 months to reach its optimum utilization levels.

Fig 4: Region wise capacity addition – North to take the lead



Source: CMA, Systematix Institutional Research

We expect the major capacity addition in Northern Region by companies like Grasim, Shree Cement etc

Due to various constraints only 64% of the total announced capacity would materialize in next 3 years

Equipment suppliers’ delivery schedules will hinder large capacity additions

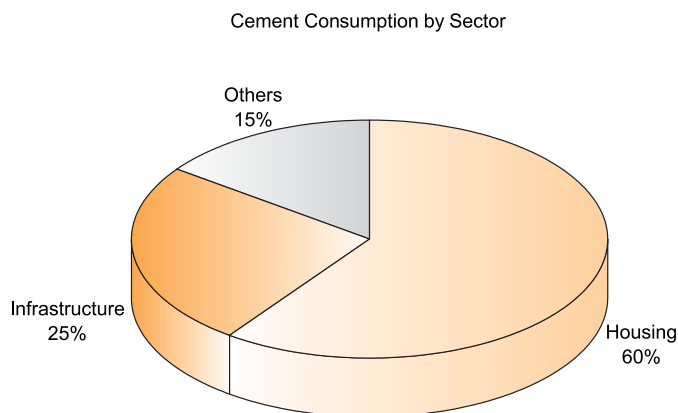
The various constraints in capacity additions are equipment supplier’s inability to deliver the equipment on time, environmental and other regulatory approvals, inadequate availability of cement contractors etc. Of all these, the biggest constraint in capacity addition will come from the plant equipment suppliers side as they can supply only 50–60mnT of equipment by 2010, regardless of the demand of the industry.

Following are the plant equipment suppliers for the Indian Cement Industry: *M/s F.L. Smidth & Co.-Denmark; MAAG-Switzerland; Pfeiffer-Germany; BHEL; L&T* etc. The following are the suppliers for power plants: *Thermax Ltd. for boiler etc.; HTC-China for turbine & Greensole system for STG.*

DEMAND DRIVERS

Housing sector leads India's cement consumption across sectors with ~60% market share maintained over the last 3-4 years. This has been followed by the Infrastructure sector at ~25% followed by other sectors like SEZs, ports etc.

Fig 5: Sector wise cement consumption



Source: CMA, Systematix Institutional Research

Housing Demand

As per ASSOCHAM the real estate sector in India is expected to grow at ~14% per annum for the next three years, from the existing size of USD15bn. We expect the no. of housing units to increase from present 125mn units to 150mn units by 2010. We assume average area to be 650sq.feet per dwelling unit which turns out to be 4550mn sq. feet of area. Our model shows that 450sq.feet of dwelling unit requires 10 tonnes of cement. Hence the total requirement of cement by the housing sector by 2010 alone comes to ~115mnT. This converts into total demand of 200mnT by 2010, as housing will contribute ~55% of the total cement consumption. We expect the infrastructure sector to increase to ~30% of the total demand by 2010 from its current contribution of 25%.

Table 3: Total cement demand for the housing sector

	2006-07	2009-10(E)
No. of Dwelling units (mn Units)	125	150
Annual Increase (mn Units)		7.0
Average area per dwelling unit (sq. ft)		650
Total Area (mn sq.ft)		4550
Requirement of cement- in mnT (For dwelling 400 sq. ft -10 tonnes of cement is required.)		114
Housing Share of total cement demand		55%
Total demand of cement (mnT)		200

Source: Industry, Systematix Institutional Research

Real estate development in India is estimated to be at around USD15 billion presently which has been growing at a pace of 30% every year. Almost 80% of real estate developed is residential space and the rest comprise office, shopping malls, hotels and hospitals. This double-digit growth is mainly attributed to the off-shoring and outsourcing business, including high-end technology consulting, call centers and

Housing comprises ~60% of the cement consumption which includes both residential and commercial space.. The increasing per capita income, standard of living will help housing sector to boom

Total demand expected to be 200mnT by 2010; contribution by housing and Infrastructure at 55% and 30%.

programming houses which is estimated to have accounted for 10mn sq. ft of real estate development.

The sustained **demand from the Information Technology sector** certainly changed the urban landscape in India. It has been estimated that there is a demand for 66 million square feet of IT & ITES space over the next five years. Several multinational companies continue to move their operations to India to take advantage of lower costs. With human resources being the key element in this industry, the hiring and housing of people, both at their work place and home assume great importance. Therefore is the need to create space for people to work and live, which will in turn trigger the development of other related infrastructure. The predominant trend has been to set up world-class business centers, often campus-style establishments, bearing a distinctive corporate stamp.

The nationwide **Housing** shortage is estimated at 22.4 mn residential units and continues to increase. Housing is also the second largest employer generation of the country. Rapid population growth and growth of India's middle class is creating the demand for housing. Residential property market constitutes almost 80% of the real estate market in India in terms of volumes and has been growing at 34% annually. The residential property prices in some markets have recorded a growth of about 20 to 25% in the last two years and have witnessed substantial activity in the year 2006-07. The increase in values in the current scenario can be attributed to several factors such as:

- Stronger economic fundamentals
- Increased purchasing power
- Revision of salaries
- Lower interest rates.
- Rising employment opportunities
- Nuclearization of families has led to high disposable income with relatively smaller households.
- Substantial increased demand from NRI investors.
- High number of First Time Apartment purchasers.

Increasing Urbanization

The urban population in India will grow by 85 million over the next 10 years, the second highest in the world. This will almost be equal to the combined change in urban population in Thailand, Malaysia, South Korea, Taiwan, Indonesia, Pakistan and Vietnam. This is bound to create demand for new cities and townships.

Boom in Construction sector

Improved realizations resulted in aggregate revenue of 36 cement companies rising by a healthy 24.6% during the June 2007 quarter. As per the capex data of CMIE, fresh capacity of 3.5 million tonnes was commissioned during the June 2007 quarter. Consumption growth at 9.7 cent% continued to outpace production growth which stood at 7.5% during the quarter. Strong cement demand and modest capacity additions led to a further rise in cement prices since the start of financial year 2007-08. The cities of Chennai and Bangalore have seen the highest increase in cement prices during this period of around 6% each. Order inflows for construction companies continue to remain robust which is an indication of India's booming infrastructure spend.

Roads

For a country of India's size, an efficient road network is necessary both for national integration as well as for socio-economic development. The National Highways (NH), with a total length of 65,569 km, serves as the arterial network across the country. The ongoing programme of four-laning the 5,900 km long *Golden Quadrilateral* (GQ) connecting Delhi, Mumbai, Chennai and Kolkata is nearing completion. The ongoing four-laning of the 7,300 km North-South East-West (NSEW) corridor is to be completed by December 2009. The Committee on Infrastructure adopted an Action Plan for development of the National Highways network. An ambitious *National Highway Development Programme* (NHDP), involving a total investment of Rs2,20,000 crore upto 2012, has been established. The main elements of the programme are as follows:

- Annual growth projected at 12-15% for passenger traffic, and 15-18% for cargo traffic
- Over USD50–60 billion investment is required over the next 5 years to improve road infrastructure
- The Government of India spends about USD4 billion p.a. on road development
- India, having one of the largest road network of 3.32 million km, consists of National Highways, expressways, state highways, major district roads, other district roads and village roads with following length distribution.
- The government has approved the construction of 1,000 km of Expressways with full access control on new alignments at a cost of Rs.16,680 crore under NHDP Phase VI.

Power

- Over 1,50,000 MW of Hydel power is yet to be tapped in India.
- India requires an additional 1,00,000 MW of generation capacity by 2012.
- Renovation, modernization and life extension of old thermal and hydro power plants.

Airports

- Estimated investment of over USD15 billion for airport development over the next 5 years.

Fig 6: Other sectors, the key demand drivers across them and the expected demand

SECTOR	CHANGING SCENARIO / POSITIVES	EXPECTED DEMAND
RESIDENTIAL / HOUSING	<ul style="list-style-type: none"> • Reducing HH sizes • Rising per-capita incomes • Benign interest environment 	<ul style="list-style-type: none"> • 17.6mn HHs by 2010 – USD22bn industry by then • 15.9bn sq.ft. of residential area to be built by 2010
COMMERCIAL DEVELOPMENT	<ul style="list-style-type: none"> • Growth in IT/ITES sector • Strong economic growth - over 9% GDP growth yoy 	<ul style="list-style-type: none"> • 160mn sq.ft. of commercial development area to built by 2010 • Almost 60% to be used by IT/ITES industry
RETAIL DEVELOPMENT	<ul style="list-style-type: none"> • Rising income and economic liberalization • Exposure to global lifestyle • Easy access to credit • Proliferation of malls (organized retailing) 	<ul style="list-style-type: none"> • 700 malls to built by 2010 • Over 212mn sq.ft of retail area to be built by 2010 • Organized retailing to touch ~USD35bn by 2010
SEZS	<ul style="list-style-type: none"> • Cheap labour • Favorable regulations • Easier access to diverse resources • Large & diverse consumers for all products 	<ul style="list-style-type: none"> • Over 150 SEZs to built across India by 2010 • Will cover over 180,000 acres of space

Source: Systematix Institutional Research

SUPPLY DRIVERS

Limestone, Coal and the blending of coal with cement remain the major supply drivers for the cement companies. The cost of purchase of these products remains one of the biggest cost factors for a cement company. In India though, these commodities are available for cheap as the availability is in abundance. Going forward too we expect the supply of these products to the industry to remain a negligible hindrance, but the prices may escalate marginally due to higher mining cost of these commodities.

Limestone: Limestone is the main raw material for cement production. It is a source of calcium carbonate. Cement industry is one of the largest user of limestone and accounts for 70-80% of limestone produced in India. Limestone availability is a crucial factor since transportation of limestone is not feasible.

We estimate that if the cement production grows by 10%p.a. the total limestone requirement during the 11th five year plan will be ~2376mnT which converts into the residual limestone life to approx 67 years. The total limestone reserves of cement grade stands at 97430mnT as on Mar'06. Currently, the mining of 225mnT of limestone for cement industry is next to coal mining of 380mnT.

Coal: India ranks 3rd amongst the coal producing countries with total coal production of 295.14mnT in FY07 with coal reserves of over 260bn tonnes. Coal is one of the most important sources of energy in India with the power, steel and cement sectors being its prime consumers.

Low cost of power generation through coal and availability of huge coal reserves in India are some of the major incentives for setting up coal-based power plants in India though only 4% of the total coal produced in India is sanctioned to cement industry. The coal sanctioned to cement industry has decreased from 11.05mnT in 2005 to 10.51mnT in 2006. More importance is given to power sector for coal consumption.

Government is also planning to remove cement sector from the core sector category for the allotment of coal linkages. Due to increasing demand for coal the government plans to supply coal only to industries where prices are controlled by government and not by demand-supply scenario.

Blending: Blending ratio has been increasing in India with the increasing demand for cement. The blending ratio was 30% in 2003, which has increased to 60% in 2007. Blending helps the industry to increase the volume of cement, which in turn will help to decrease the demand supply mismatch. Going forward we expect the blending ratio to increase further to 65% by FY10.

PRICING SCENARIO

We expect the cement prices to continue its upward journey due to continued demand-supply mismatch. We expect 7-8% increase in cement prices upto FY09 and thereafter we expect the prices to soften (from 1HFY10) with the full capacity (66% as per our estimates) coming into execution. We expect the all India average cement prices to stabilize at Rs230, Rs244 & Rs233 per bag for FY08, FY09E & FY10E respectively.

Cement Prices – set for northward journey up to FY09

The cement prices have been moving northwards continuously for the last 3 years due to the regional differences in the demand –supply situation. Government has been undertaking various measures to control the prices but have failed to do so. And the picture is not expected to change for a long time now, especially with a rocketing increase in the infrastructure development in the country.

We believe that the northern region would be the key beneficiary of the increasing infrastructure due to various projects like *Common Wealth Games, Delhi- Mumbai Industrial Corridor*, etc. The western region would also benefit from booming housing sector.

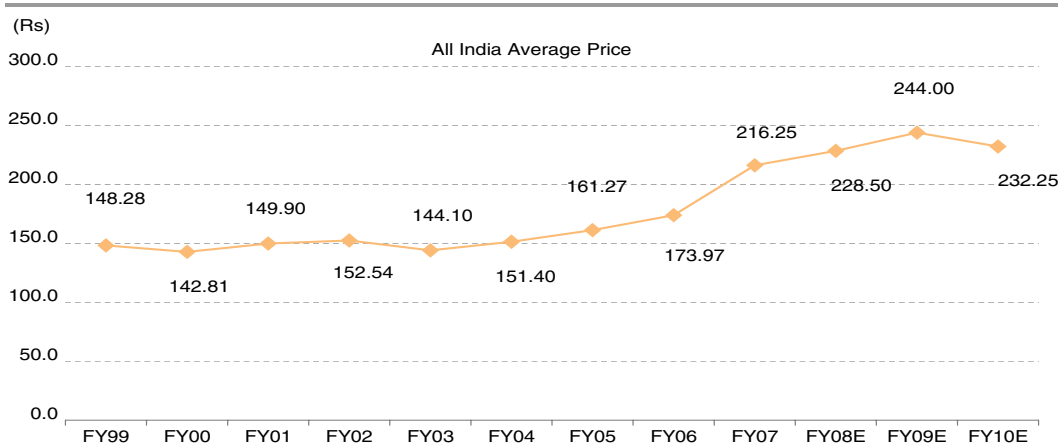
Southern region is the highest producer and also leads the race in consumption. The development activity in Hyderabad alone will give rise to an additional demand of 2-3 million tonnes a year with major projects like outer ring road, satellite townships and international airport creating a huge demand for cement. All India Average Cement prices have increased by ~20% during FY07 due to demand-supply mismatch and other political reasons.

Table 4: Region-wise cement prices (half-yearly)

Region	Current Price Per bag	1HFY08E	2HFY08E	1HFY09E	2HFY09E
South	230	230	237	245	253
North	220	220	227	235	243
West	230	230	237	246	253
East	210	210	217	224	232
Average Price	222	222	235	238	245

Source: Systematix Institutional Research

Fig 7: All India Average Price



Source: Systematix Institutional Research

The All India Average Cement Prices have increased by ~43% to Rs.216/ 50 kg bag in last 9 years

REGION-WISE SCENARIO

The demand for cement has posted healthy growth of 10% yoy, inline with India's economic growth. Currently the southern region has been leading the show with 13% consumption growth and is expected to grow by 11% CAGR from FY07-FY10E. We expect the demand for cement in South to increase in the coming years in view of better infrastructure required for the IT companies. Demand in north India has grown by over 11% during these years and we expect that with projects like *Commonwealth Games, Delhi-Mumbai Industrial Corridor* project etc. coming into fray, this region will take the lead in the consumption in the next three years. We expect this region to witness a ~17% consumption growth CAGR over FY07-10E. The western region on the other hand has shown a growth of 10% and will continue to maintain at the same rate. The central region has grown by 9% whereas eastern region exhibited a growth of 10% during this period.

Region-wise price scenario – north and south to remain the costliest

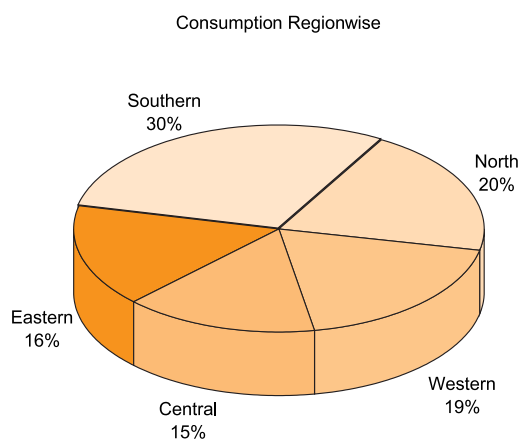
We expect the growth in prices in northern and the southern regions to outperform the east & west regions on account of higher demand in these regions. We estimate a price growth of 5-7% in the northern & southern regions over FY07-H109E, with a ~3% growth in eastern and western India. However we expect the prices to soften in all of these regions from 2HFY09 by ~5%.

Table 5: Region-wise price Increase Scenario

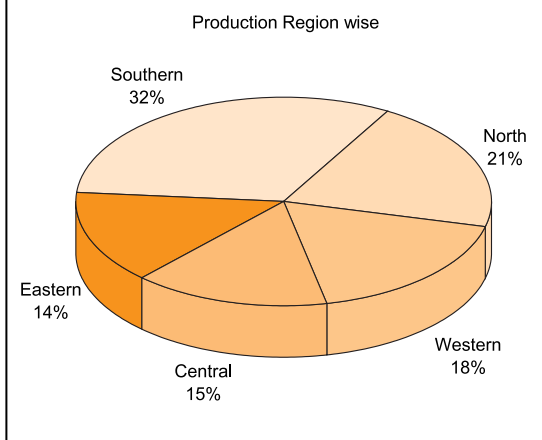
Region	Current Price per bag	1HFY08E	2HFY08E	1HFY09E	2HFY09E	1HFY10E	2HFY10E
South	Rs.220/-	5.0%	3.0%	3.5%	3.5%	-3.0%	-2.0%
North	Rs.210/-	5.0%	3.0%	3.5%	3.0%	-2.0%	-2.0%
West	Rs.240/-	4.0%	3.0%	2.5%	2.5%	-3.0%	-2.0%
East	Rs.210/-	5.0%	2.0%	3.0%	3.0%	-4.0%	-3.0%

Source: Systematix Institutional Research

Fig 8: Region-wise consumption pie...



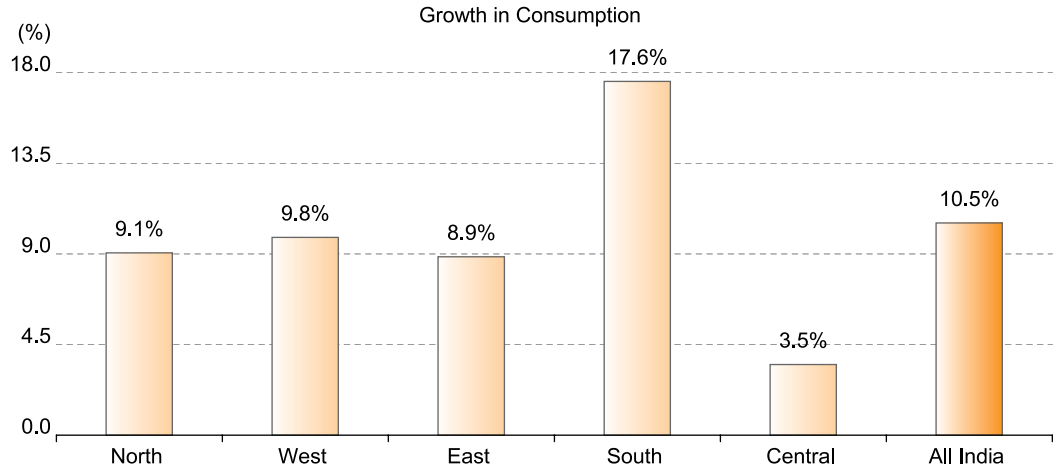
...and region-wise production



Source: CMA, Systematix Institutional Research

South India is leading the race with highest cement consumption growth at 17.57% during last 3 years

Fig 9: Cement consumption growth over June-04 to June-07



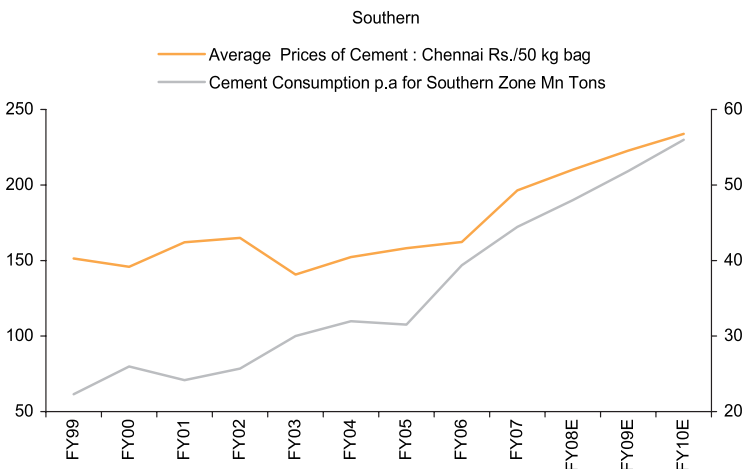
Source: CMA, Systematix Institutional Research

We expect the demand-supply mismatch to continue and the deficit is likely to be ~10mnT by 2010. This will lead to the prices to grow at 7-8% yoy up to H1FY09 thereafter we expect the prices to soften by ~5%.

Southern Region – Leader in consumption

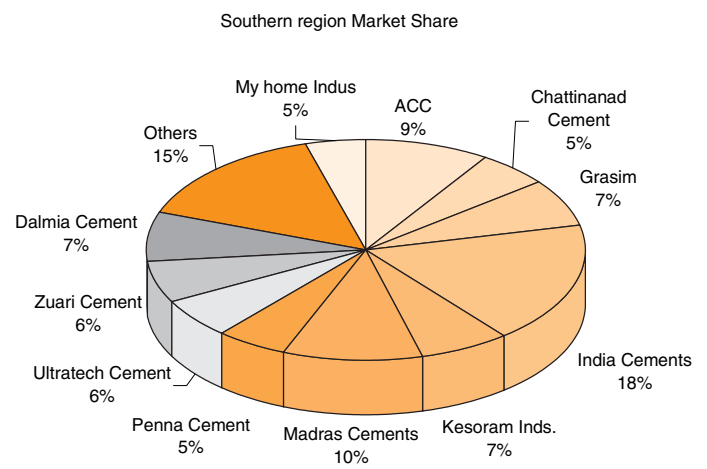
Southern region leads the race by contributing 30% of the total domestic consumption and 32% of the total production. This region has an installed capacity of 57mnT with 91% utilization level for FY07. **Going forward we believe that 14.5mnT of capacity would be added in next 3 years by companies like India Cement Ltd, Madras Cement Ltd, etc.** Cement demand is likely to grow in double digits due to significant government spending on IT parks, various irrigation projects, SEZ's, etc. Despite the heavy rains, prices in south has gone up by Rs.10 per bag in Q1 FY 07-08.

Fig 10: Expected cement price increase in south India...



Source : CMA, Systematix Institutional Research

...and the company-wise share in south India presently

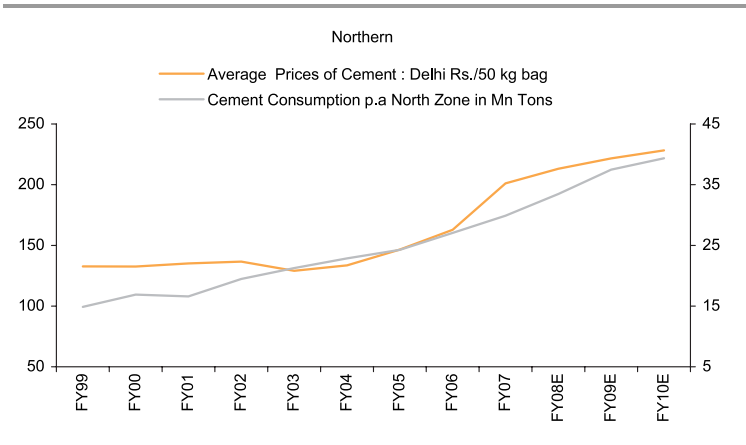


Northern Region – Emerging as a new leader with highest Capacity Additions

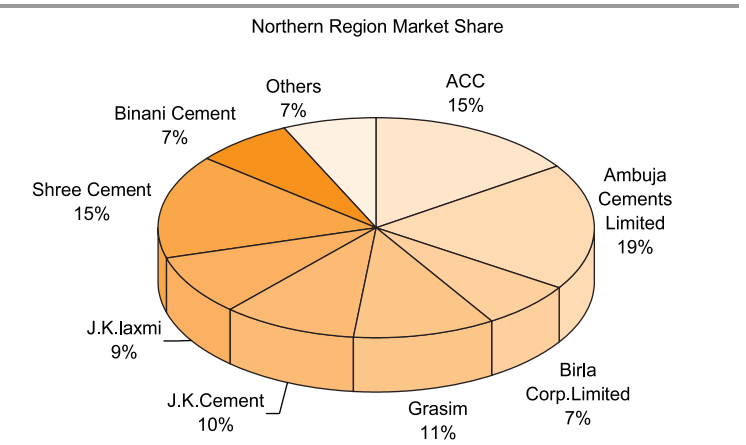
We expect the demand supply mismatch to continue and the deficit would be ~2mnT in the next 3 years. Thus the prices will grow at the rate of 7-8% upto FY09 thereafter we expect the prices to soften by ~ 5%.

Northern Region contributes 20% of the total domestic consumption and 21% of the total production. Easy availability of limestone has been attracting ne capacity additions. This region has an installed capacity of 36.58mnT with 87.75% utilization level for FY07. Going forward we believe that 27.5MnT of capacity would be added in next 3 years by companies like Shree Cement Ltd, JP Associate etc. The prices have increased in tandem with demand growth. Cement demand is likely to grow in double digits due to Common Wealth Games, Delhi-Mumbai Industrial Corridor, etc.

Fig 11: Expected cement price increase in north India...



...and the company-wise share in north India presently



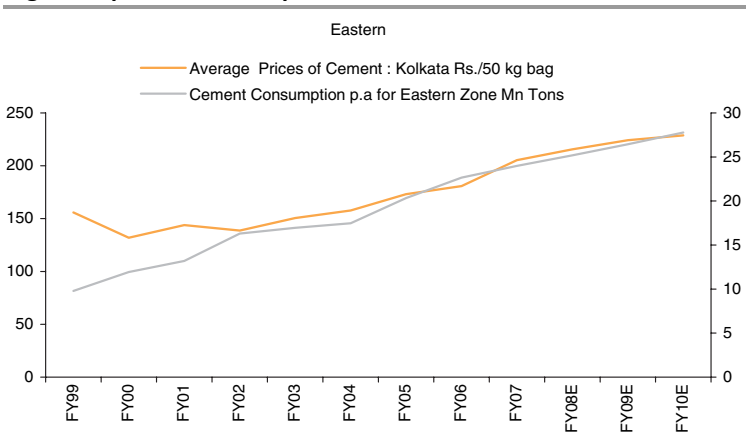
Source: CMA, Systematix Institutional Research

Eastern Region - Low Availability of Limestone

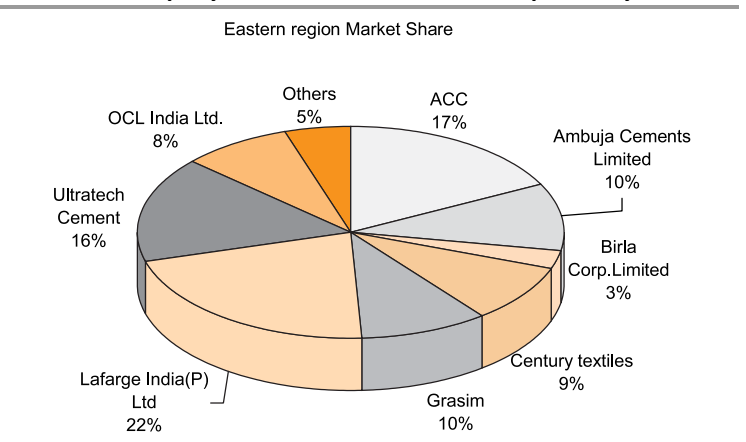
We expect that the deficit to be ~5.6mnT in the next 3 years. Thus the prices will grow at the rate of 5-7% upto FY09 and thereafter we expect the prices to soften by 5-6%.

Eastern Region contributes 16% of the total domestic consumption and 14% of the total production. This region has an installed capacity of 28.97mnT with 82.97% utilization level for FY07. Going forward we believe that 3.6MnT of capacity would be added in next 3 years by companies like ACC, Kesoram Industries etc. Due to low availability of limestone capacity addition would be low.

Fig 12: Expected cement price increase in eastern India...



...and the company-wise share in eastern India presently



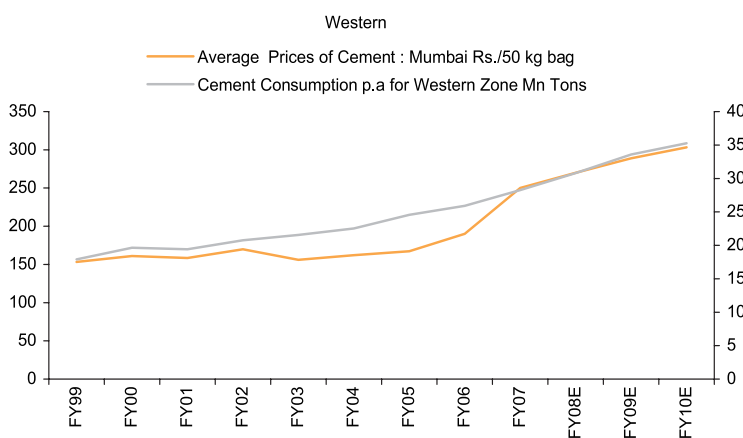
Source: CMA, Systematix Institutional Research

Western Region- Likely exports due to coastal presence

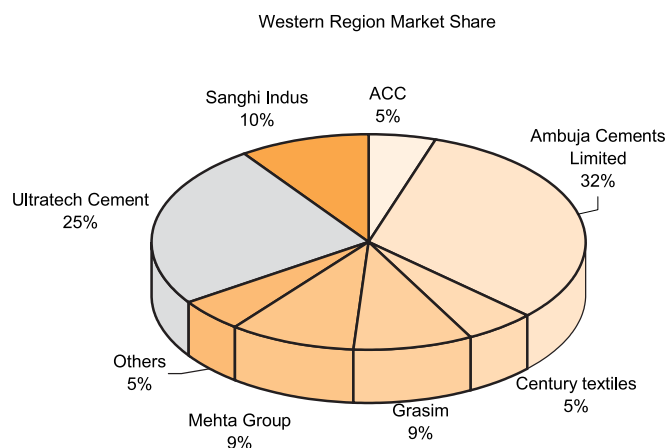
We expect the demand supply mismatch to continue and the deficit would be ~10.47mnT in the next 3 years. Thus the prices will grow at the rate of 6-8% p.a upto FY09 thereafter we expect the prices to soften by 5-7%.

Western Region contributes 19% of the total domestic consumption and 18% of the total production. This region has an installed capacity of 32.33mnT with 89.11% utilization level for FY07. Going forward we believe that 6.4MnT of capacity would be added in next 3 years by companies like GACL, Century Textile, etc. The prices have increased sharply due to demand supply mismatch. Cement demand is likely to grow in double digits due to high demand for housing, exports due to costal region etc.

Fig 13: Expected cement price increase in western India..



...and the company-wise share in western India presently

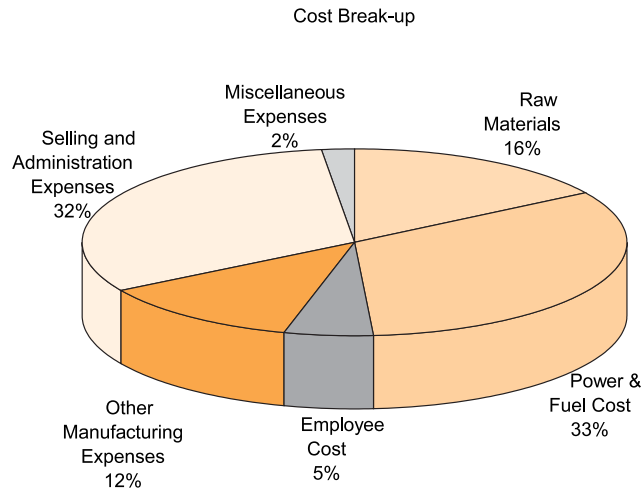


Source: CMA, Systematix Institutional Research

COST ANALYSIS

Our analysis has revealed that the total expenditure as a percentage of sales of major companies across the sector has dropped to ~69% in FY07 as compared to 82% in FY05-06 mainly on account of increase in volume and prices of cement. We expect total expenditure to further drop by 3% on account of increase in prices by ~6% for the next 2 years. It is likely to stand at 66% and 63% for FY08 and for FY09 respectively. This will increase the operating margins of the companies by the same % but is not likely to have a positive impact on the PAT margins as there will be higher depreciation charge on account of current capacity expansion.

Fig 14: Average cost structure break-up for a cement company (as a % of total expenses)



Power & Fuel cost accounts 33% where as Selling & Distribution accounts for 32% of the total expenditure

Source: Bloomberg, Systematix Institutional Research

Raw Materials

The raw material cost accounts for ~31% of the total cost of sales (*Total expenses minus S&A expenses*) and ~14% of total sales. We expect this % to remain the same going forward.

Limestone: Limestone is the main raw material for cement production Cement is the biggest user of limestone; other industries that use limestone are iron & steel, fertilizer and chemicals. Usually 1.4-1.5 tonnes of limestone is used for producing 1 tonne of cement. Since 50-60mt of limestone availability is vital for 1mnT cement, it should be in the vicinity of the cement plant. Going forward, we do not expect limestone cost to be a significant factor in the total cost of raw materials for the cement producers.

Gypsum: When ground clinker comes in contact with water it tends to become hard instantaneously. Gypsum is hence used to achieve desired setting time for cement. Gypsum is used as a retarding agent and ~5% of gypsum is added during grinding of clinker.

Granulated Blast Furnace Slag: Other raw materials like blast furnace slag and flyash are used in cement production. Blast furnace slag is a waste material obtained from iron smelting furnaces. Fly ash is the waste material obtained from thermal power stations. According to BIS norms maximum 35% flyash can be used in cement produced whereas

currently the industry is using 25% flyash. Flyash helps to increase the volume of cement.

Energy and Freight Cost

Power and fuel cost account for ~40% of the total cost of sales (Total expenses minus S&A expenses) and ~18% of the net sales for a cement company.

Going forward, we expect the power and fuel cost (as a % of both total cost of sales and net sales) to increase marginally due to an expectation of increase in coal prices. The major costs for the cement sector are coal, power and transport costs, contributing nearly 50-55% of the total cost. We expect the overall energy and freight cost to increase by 4-5% yoy till FY10.

Coal

Coal plays an important role in cement production and accounts for ~15% of the production cost. It provides thermal energy for the operation of kiln and acts as a constituent in clinker. For 1 tonne of clinker 200-230 kg of Coal is required. Cement industry consumes non - coking coal as fuel for heating their kiln and also for their thermal captive power plant. Government has increased the royalty on coal produced and consumed domestically. Earlier royalty was charged at a specific rate. Now it will be charged at an ad-valorem rate of 14%. This will affect the major coal-consuming sector like power, cement and steel.

Southern companies source their coal from Singareni Collieries whereas the Northern Companies source it from Coal India. Singareni Collieries which supplies coal to all south based companies has hiked the royalty by Rs.300/tonne. Cement industry mainly uses imported coal and only 20-25% of domestic coal is consumed. Hence we believe that the increase in royalty will not impact the coal cost.

To meet the growing demand of coal government has differentiated it into 7 grades. The classification is based on the Useful Heat Value.

Table 6: Calorific value of different quality of coal

Grade	Useful Heat Value (Kcal/Kg)
A	Over 6200
B	5600-6200
C	4940-5600
D	4200-4940
E	3360-4200
F	2400-3360
G	1300-2400

Source: Coal Ministry

Power

Cement is a power intensive industry. The power requirement for cement industry is 80-90 units for 1 tonne of cement produced and accounts for ~15% of the total cost of sales (Total expenses minus S&A expenses).

For a dry plant 15 MW power plants are required. Hence for 172mnT of installed capacity, cement industry will require 2600MW of power. The power from grid is expensive as compared to power from captive power plants with the cost from power grid at Rs3.5-4.0/unit compared to Rs2-2.25/unit from captive power plants. . Hence

cement manufacturers have understandably started increasing the number of captive power plants.

With more and more companies setting up their own captive power plants, we expect the power cost per tonne of cement to come down marginally in the coming years.

Freight Cost

Freight cost accounts for ~10% of the total cost. Currently most of the plants are located near the limestone mines. Cement being a bulky commodity leads to high freight cost. The overloading judgment by the Supreme Court has further increased the freight cost for the cement industry. The road transportation cost is more expensive compared to railway freight cost, but of the total dispatches road accounts for 60-65% while rail accounts for 34-39%, with the remaining 1% being through sea route. To control this surging freight cost, companies are trying to increase the dispatches through railway. Railway ministry has announced various incentives like customized packages for cement industries, reduction in freight rate for minerals like limestone, iron –ore, additional discounts on freight in open wagons, etc. We expect the freight cost to continue to increase, albeit at a slower pace and account for almost the same % to the total cost as it does presently.

TAX STRUCTURE

Cement remains the highest taxed amongst the entire essential infrastructure sectors. Various government taxes and duties put together constitute over 70 percent of the ex-factory price. Cement Industry is a major contributor to the exchequer with excise duty alone working out to be over Rs55bn annually.

Positive government moves too not having a major impact on the industry

In January 2007, the Central Government removed the customs duty of 12.5% on cement. But it had no major effect on cement prices. Subsequently, the Union Budget 2007-08 introduced differential excise duty based on retail price, wherein if the MRP exceeded Rs190 per 50 kg bag, then the excise duty on cement stood increased from Rs400 per tonne to Rs600 per tonne. As the average cement price in India was above Rs 190 a bag, it resulted in higher tax incidence for the industry.

Taking advantage of the demand-supply scenario, cement companies increased cement prices by Rs10-Rs12 per 50 kg bag with immediate effect. Cement prices in Mumbai were increased to Rs238 per bag, from Rs226 per bag. Subsequently, on account of government pressure, the cement industry agreed not to hike prices for a year. The industry has also decided to pass on the benefit of whatever sops it receives from the government to the users. The industry, however, refused to roll back the price hike, after the increase in excise duty.

Thus, as a step to control inflation, the government removed the countervailing duty and special additional duty of customs on import of cement. However, due to infrastructure bottlenecks associated with imports, there were no significant imports. As a result, cement prices failed to soften.

Change in excise structure

The government eventually changed the excise duty from a flat dual structure to ad-valorem at 12% of the MRP above Rs190 per bag and up to Rs250 per 50 kg bag. The concessional duty of Rs350 per tonne for cement sold below Rs190 per bag continues. This has resulted in a decrease in excise tax on cement sold below Rs250 a bag. Even after the removal of countervailing duty and special additional duty, there were no significant imports. Thus, players operating in regions where demand was strong did not pass on the benefit to consumers. Prices in Mumbai continued to remain rising at current MRP of Rs260/50 kg bag. Industry pays Royalty on Limestone at the rate Rs40 per tonne. Royalty on non-coking coal is Rs65-165 (depending on grade).

IMPORTS

The government has taken several measures to curb the northward movement of cement prices. One of the measures taken by the government has been to allow import of cement, mainly from the slightly cheaper countries like Pakistan.

BIS norms eased to entertain imports

Government has recently eased BIS norms for import of cement by allowing MMTC to import cement from Pakistan having exemption to BIS certification for 150 days from the date of recording the BIS application. The bottlenecks like lack of bulk storage, handling facilities and congestion at the port will make imports of cement difficult. MMTC has to ensure the quality of cement, which takes atleast 28 days. Cement is a perishable commodity with shelf life of 3 months. Further more the freight cost would make imports unviable. Thus we believe that imports of cement will very negligible.

However, Imported cement – not a threat

Importing cement from Pakistan is not feasible due to various bottlenecks like security issues, availing import license, bottlenecks at ports etc. Pakistan can export less than 1mnT of cement and the export will be possible only through railways (Imports through road are not possible due to security issues). However there are constraints for imports through rail too with no automatic loading machines, only 1 railway track etc.

Besides, in Pakistan 75-80% of the capacity is located in North of Pakistan and remaining 20-25% is in South of Pakistan, and with the exporting ports located in south Pakistan importing cement through sea route will not be feasible due to internal freight cost. Besides, the cost of cement in Pakistan has increased by ~Rs20/bag and therefore the landed cost in India has become almost equal to the domestic cement prices. Also considering the fact that the potential cement imports of 2MMT is hardly 4% of the total cement consumption of the West and the North, we believe that the impact of the imports on the industry prices will be muted.

But viability through sea may change the picture

If the imports through sea become viable then it will depress the pricing power of the players in Western region like ACC, Sanghi Inds, Ultratech, GACL etc. The cement players in the South though would not be directly affected as the additional cost of inland transportation will narrow down the price differential.

Table 7: Calculation of the landed cost of imported cement to India

Import Prices	Through Karachi Port
FOB Prices (USD / MT)	67
Freight Cost (USD/MT)	25
CIF Prices (USD/MT)	92
Import Duty & CVD etc.	0
Landed Prices (USD/MT)	92
Landed Cost (Rs/MT)	3735.2
Port Handling Charges	300
Total Landed Cost	4035.2
Dealer Margin	81
VAT @ 12.5%	502.18
Price at Port	4618.38
Price (Rs/50 kg bag)	230.92
Inland Freight & Octroi	10
End User Price	240.92

Source: Systematix Institutional Research

BIS norms eased for easy imports of cement in India. However it is not viable due to various infrastructure bottlenecks

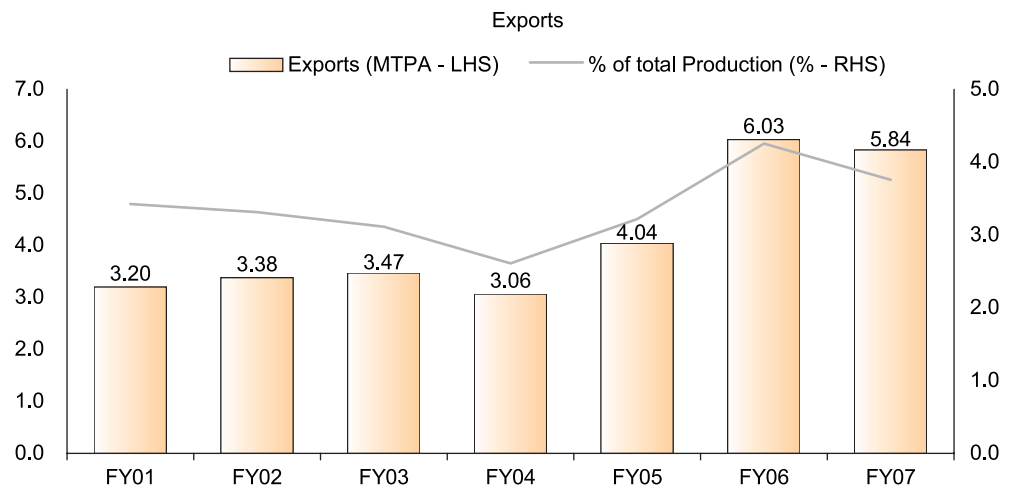
EXPORTS

India exported about 5.6mnT of cement in FY07 (3.6% of total production) and 6.9mnT in FY06 (4.2% of total production). The reason for this decline in cement exports has been the increasing demand-supply mismatch and the prices in domestic market being more lucrative than export markets. The increasing infrastructure and construction activities in the middle-East countries has also led to an increasing demand for cement, but due to various constraints the exports have decreased.

Exports have remain buoyant till FY06, but fell thereafter

Cement is a bulky and perishable commodity hence transporting it will increase the freight cost in-turn leading to increase in prices. Exporting cement is feasible only through sea because the road freight cost is very high. In this context, western region has the advantage due to the proximity to coastal areas.

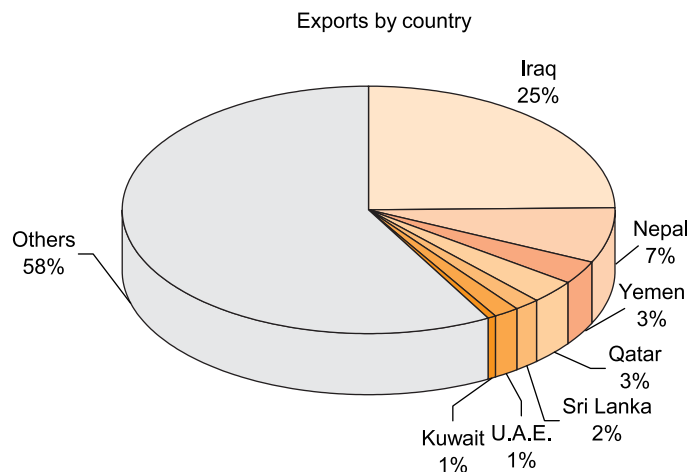
Fig 15: Export trend for the last 7 years...



Exports have decreased in FY07 compared to increasing trend witnessed in the previous 3 years. Going forward we expect exports to decline upto ~3mtpa due to increase in domestic demand

Source: CMA, Systematix Institutional Research.

Fig 16: ...and the countries who are the main consumers of India's exports



Source: CMA, Systematix Institutional Research

India exports cement through sea route to countries in Indian Subcontinent, South East Asia and Middle East Countries due increasing infrastructure

MERGERS & ACQUISITIONS – THE WAY AHEAD

The booming demand for cement, both in India and abroad, has attracted global majors to India. This has led to the Indian cement industry witnessing a flurry of mergers and acquisitions within the domestic players, bringing smaller players under the unification of larger companies and the larger companies under global players. This has led to more than a quarter of the total capacity pie being controlled by global majors.

Global companies eyeing India

In 2005-06, four of the top-5 cement companies in the world entered India through mergers, acquisitions, joint ventures or Greenfield projects. These include France's *Lafarge*, *Holcim* from Switzerland, Italy's *Italcementi* and Germany's *Heidelberg Cements*. While *Lafarge* is investing over USD500 million in India to expand capacities by six million tonne, *Italcementi* will invest USD174 million over the next two years in various Greenfield and acquisition projects.

Company-wise India plans

Holcim

The Holcim Group entered India in January 2005 through a strategic alliance with Gujarat Ambuja Cement Limited (GACL) and increased its stake to 67% subsequently. ACIL, the holding company of GACL, in turn holds around 35% stake in ACC and 97% stake in Ambuja Cement Eastern Limited (ACEL). In Jan'06, Holcim acquired 14.8% stake in GACL following it up with another 3.7% over the next few months. This took Holcim's total holding in the company to 18.5%. Its holding further increased to 28% when ACEL merged with GACL. Recently, Holcim acquired additional 3.9per cent stake in ACIL and made an open offer for additional 20% to take its stake above 60%.

Holcim has further increased its stake in ACC by taking its total holdings to 41.6%. Holcim is now the largest shareholder in the company. Holcim now commands around 25% of the total market share with 34.2 mt capacities through ACC and Ambuja. The other large group, Birla, controls another 31.2 mt of the country's cement capacity through group companies Grasim Industries and Ultratech Cements.

Lafarge

The French cement major, *Lafarge*, has acquired the cement plants of Raymond and Tisco in the recent past, and currently has an installed capacity of 6mtpa. It plans to double its capacity to 12mnT over the next five years by adopting the Greenfield expansion route.

Italcementi

Italy based *Italcementi* has entered into a strategic alliance with the K.K. Birla Group promoted *Zuari Industries* having cement plants in Andhra Pradesh with a capacity of 3.4mtpa.

Heidelberg

Heidelberg Cement has entered into 50:50 joint-venture with S P Lohia Group controlled *Indo-Rama Cement*. *Heidelberg Cement* is expected to take a 50% controlling stake in *Indo-Rama's* grinding plant of 0.75mtpa at Raigad in Maharashtra. *Heidelberg* is also planning to take over *Mysore Cement* of S K Birla group at a consideration of USD93mn.

PRODUCT MIX

There are various types of cement like Grey cement (consisting of OPC and PPC), White cement and Ready mix cement. The realizations in OPC are higher by Rs15-20 per bag compared to PPC. However the difference in cost of production is only Rs5 per bag hence providing better margins in OPC. However the demand for PPC is on increasing trend. The share of PPC has increased in India's cement production from 30% in 2003 to 60% in 2007. We believe that going forward it will increase to ~65%. The total grey cement production in India, constitutes of ~39% OPC, 60% PPC and 1% of special cement.

Grey cement

Grey cement consists of OPC and PPC. There are also other cements like Portland Slag cement, Oil well cement, Sulphate resistant cement, Low heat cement etc. OPC cement is available in three grades, (53, 43 & 33) and the grading depending on their comprehensive strengths. 53 Grade cement is highly comprehensive with high durability.

Ordinary Portland cement (OPC)

OPC is produced by inter-grinding high quality cement clinker prepared in a rotary cement kiln with high purity gypsum. Each metric ton of OPC requires approximately 0.95 metric tons of clinker and approximately 0.05 metric tons of gypsum. OPC is available in 3 types of grades- (53grade –43grade –33grade)

53 -grade high end OPC

This quality of cement must have a 28-day compressive strength of no less than 53 MPa. 53 grade OPC is made by exposing clinker to the grinding process for more hours, resulting high density and strong cement. The 53 grade OPC is priced higher because it requires significant amount of power, finer grinding. It is used for

- Pre-cast concrete
- Pre- stressed concrete components.

43 –Grade OPC

This is commonly used cement in all constructions including plain and reinforced cement concrete, brick and stone masonry, floors and plastering. It is also used in the finishing of all types of buildings, bridges, culverts, roads, water retaining structures, etc. It surpasses BIS Specifications (IS 8112-1989 for 43 grade OPC) on compressive strength levels.

33- Grade OPC

This is used in general civil construction work. It should have 28-day compressive strength of no less than 33 Mpa. This type of OPC is more commonly used for mass concreting and plain cement concreting and is produced on a made to order basis.

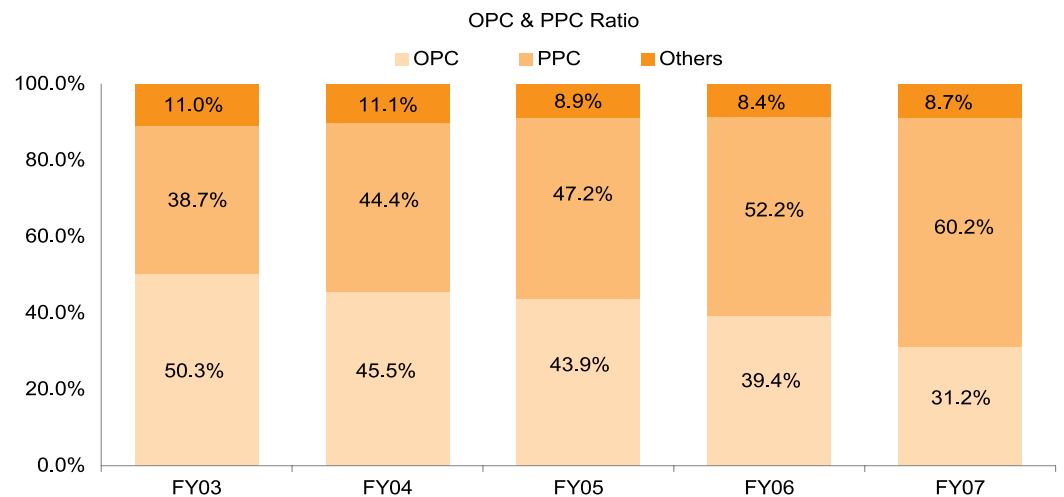
Blended Cement - Fly ash based Portland Pozzolana Cement (PPC)

This is specially blended by inter-grinding higher strength Ordinary Portland Cement (OPC) clinker with high quality processed fly ash, where portion of the clinker is replaced with fly ash. This imparts a greater degree of fineness to Fly-ash based PPC cement and improves workability properties while mixing, and makes concrete more

corrosion resistant and impermeable. This enables the cement manufacturer to produce a higher quantity of cement per ton of clinker. This unique, value-added product has hydraulic binding properties, which is not found in ordinary cements. Each ton of PPC requires approximately 0.75 tons of clinker, 0.05 tons of gypsum and 0.20 tons of fly ash, a pozzolanic material that is a by-product of thermal power plants.

PPC has durability that is equivalent to OPC and can be mostly used in place of OPC. It has advantage due to low heat of hydration and corresponding resistance to exposure to various environmental chemicals such as salt water. PPC has various advantages like superior performance under curing conditions, reducing the risk of cracking, higher resistance to acids, better durability, etc.

Fig 17: Changing ratio of OPC, PPC and others over the years



Source: Industry, Systematix Institutional Research

The increasing demand for cement has led to increase in blending cement from ~39% in FY03 to ~61% in FY07 and is expected to go upto 65%

Portland Slag Cement (PSC)

PSC is manufactured by blending and inter-grinding OPC clinker and granulated slag in suitable proportions. It has certain extra advantages when compared to Ordinary Portland Cement.

- Reduction in free lime leaching.
- Ultimate higher strength.
- Improved workability reduced bleeding as well as segregation and corrosion.
- Denser, less permeable concrete and mortar.
- Better resistance to sulphates, chlorides, and CO2 and alkali-aggregates reaction.
- Less heat, reduced plasticity and drying shrinkage.
- Increased static modulus of elasticity.
- Increased serviceability with less deflection of members and micro cracks and reduced cost of construction and maintenance.

PSC benefits the structure, protects the environment by reducing CO2 emissions and helps conserve energy. Thus it is often referred to as eco-friendly cement.

White Cement

It distinguishes itself from the Grey cement due to its white colour. Each ton of white cement requires approximately 1.33 tons of limestone, 0.02 tons of gypsum and 0.2 tons of additives including white clay, feldspar and fluorspar. It is used in

- Floor tile fixing
- Glass fibre reinforced concrete
- Pointing for brick and stone works and as pre-cast cladding panels.

There are only three plants in India. Grasim and J.K Cement are the only two players who dominate the White Cement market. White cement is a niche market. It is used for flooring, painting etc.

Ready Mix Concrete (RMC)

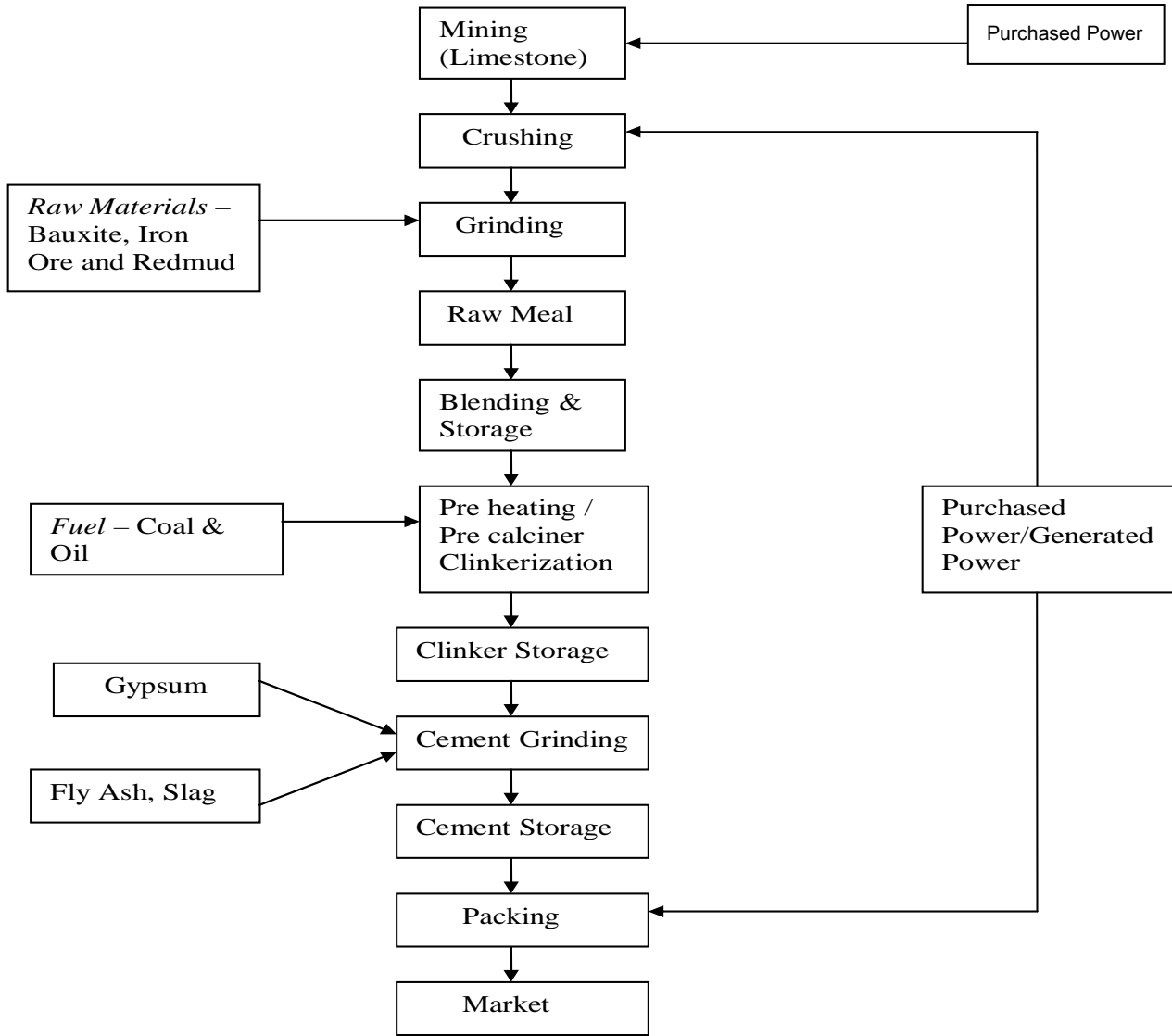
RMC business is still into the infancy stage in India as compared to other developed countries like Japan where its consumption is nearly 70% of its total cement production. RMC is a high quality concrete produced under strictly controlled conditions in a Centralized automatic batching plant and supplied to the customers in transit mixers. RMC involves low capital investment, reduction in packaging cost as well as reduction in damages during transit.

OUTLOOK

The Indian Cement Sector is likely to witness high demand growth in correlation with economic growth driven by a booming housing sector, increasing infrastructure development such as state and national highways.

- The impact of high demand growth was evident in the continuous northward movement of prices. Booming housing sector, construction of public utilities, schools in rural areas apart from several private and public infrastructure projects will also give tremendous boost to the cement consumption in the state. Most importantly, irrigation projects, etc will trigger unprecedented demand for the next 5-7 years.
- Expected Capacity addition of approx 55-60mnT going forward 3 years which accounts for approx 66% of the total announced capacity because of various capacity addition constraints like:-equipment supplier capacities, manpower constraints etc...
- Average cement prices likely to witness ~10% growth in next 3 years; prices will grow at ~5%-6% CAGR for next 2 years due to demand surpassing supply and expected to soften further.
- We believe that going forward Northern region would witness high demand growth due to various projects like Common Wealth Games, Delhi Mumbai Industrial Corridor etc. Southern region is also expected to witness high growth due to various IT parks, SEZ's, etc. Western Region will benefit due to growing housing sector, SEZs etc.
- Imports are not likely to pose any threat due to various infrastructure bottlenecks like congestion at ports, bulk handling capacity, no automatic loading machine, and the landed cost of imported cement will be at par with the domestic prices, etc.
- Exports are likely to decline due to increasing demand supply mismatch in the domestic market. The domestic prices are more lucrative compared to export prices.
- We believe that blending ratio will increase to ~65% which in turn will lead to increase in volumes.
- Government initiatives on Infrastructure development - USD50-60 bn investment required for developing road infrastructure, Bharat Nirman for developing rural infrastructure, increased allocation in developing irrigation projects, etc
- The industry is ramping up production capacity, attracting the top cement companies in the world, and sparking off a spate of mergers and acquisitions to spur growth.

Appendix-1: Cement Manufacturing Process – a detailed picture



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- 3. Neither the company nor an affiliate company of Systematix Shares & Stocks (I) Ltd. has received a mandate from the companies in the report.*
- 4. Systematix Shares & Stocks (I) Ltd. or its affiliates do not hold any paid up capital in the companies mentioned in the report.*

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