

Overview of Indian Cement Industry

Udaipur Cement Works Limited

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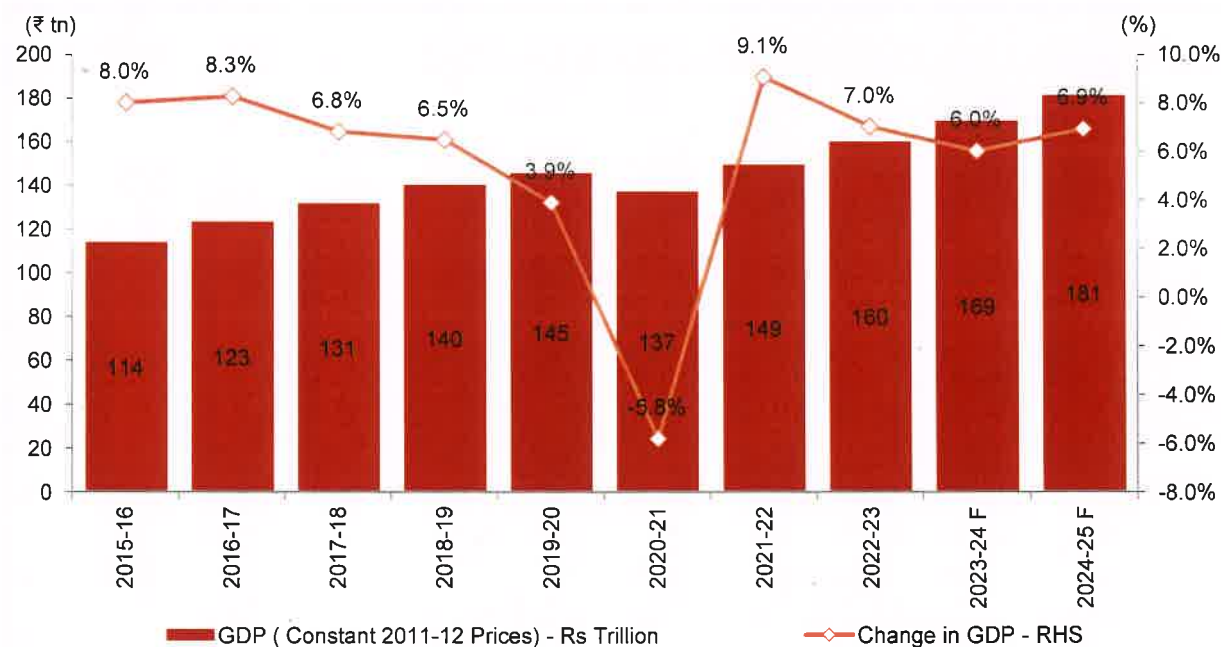
1 Overview of Indian macro-economy

1.1 Gross domestic product review and outlook

Before the pandemic, India was one of the fastest-growing economies in the world with a CAGR of 6.6% between fiscals 2015 and 2020. GDP is estimated to have shot up from Rs 105 trillion in fiscal 2015 to Rs 145 trillion in fiscal 2020 based on 2011-12 prices.

The outbreak of the Covid pandemic and the subsequent imposition of the lockdown March 25, 2020, onwards sent the Indian economy reeling, leading to an estimated 5.8% decline to Rs 137 trillion in fiscal 2021. While the economy was under pressure in the first half of the fiscal, due to the pandemic-induced, lockdown-led demand shocks and weak global demand, low oil and commodity prices provided some respite. The second half saw an uptick in mobility and in economic activity, as sentiment improved, coupled with people learning to live in the post-pandemic world. The opening up of vaccinations in the fourth quarter, albeit for a smaller section of the population, further boosted the sentiment, containing the contraction to 5.8% in fiscal 2021. The Indian government unleashed a slew of measures during the pandemic-impacted fiscal under the Aatma Nirbhar Bharat Abhiyan to boost the economy with the Production-Linked Incentive (PLI) scheme the standout tying in with the Make in India programme.

Movement of Indian GDP across years



Source: MOSPI, CRISIL MI&A Research

GDP grew 9.1% in fiscal 2022 to ~ Rs. 149 trillion on a low base, surpassing the pre-Covid-19 level of fiscal 2020. Growth in fiscal 2022 would have been higher but for the brutal second wave in the first quarter, which impacted consumer sentiment and hurt demand in contact-intensive services sectors. The resurgence of Covid-19 infections since March 2021 forced many states to implement localised lockdowns

and restrictions to prevent the spread of the infection. In the beginning of May, the country reported the highest number of daily cases. The second round of lockdowns were less restrictive for economic activity than last year. Manufacturing, construction, agriculture, and other essential activities had been permitted to continue in most states while travel too was permitted unlike the first wave where all travel services were shut. The third wave in the fourth quarter of fiscal 2022 had minimal impact on the economy attributable to high rates of vaccination and people having learned to live with the pandemic.

GDP and Macroeconomic outlook

Macro variable	FY22	FY23P	FY24P	Rationale for outlook
Real GDP (% , y-o-y)	9.1	7.0 [^]	6.0	Slowing global growth will weaken India's exports in fiscal 2024. Domestic demand could also come under pressure as the RBI's rate hikes transmit to end consumers
Consumer price index (CPI)-based inflation (% , y-o-y)	5.5	6.8	5.0	Lower commodity prices, expectation of softer food prices, cooling domestic demand, and base effect will help moderate inflation
Current account balance/ GDP (%)	-1.6	-3.0	-2.4	A moderate increase in budgeted gross market borrowing, along with expected lower inflation and the RBI's rate cuts towards the end of the fiscal will help moderate yields
Rs/\$ (March end)	75.8	82.0	83.0	While a lower current account deficit will support the rupee, challenging external financing conditions will continue to exert pressure next fiscal

Note: P – projected; [^] Second advance estimates
Source: RBI, National Statistical Office (NSO), CRISIL MI&A Research

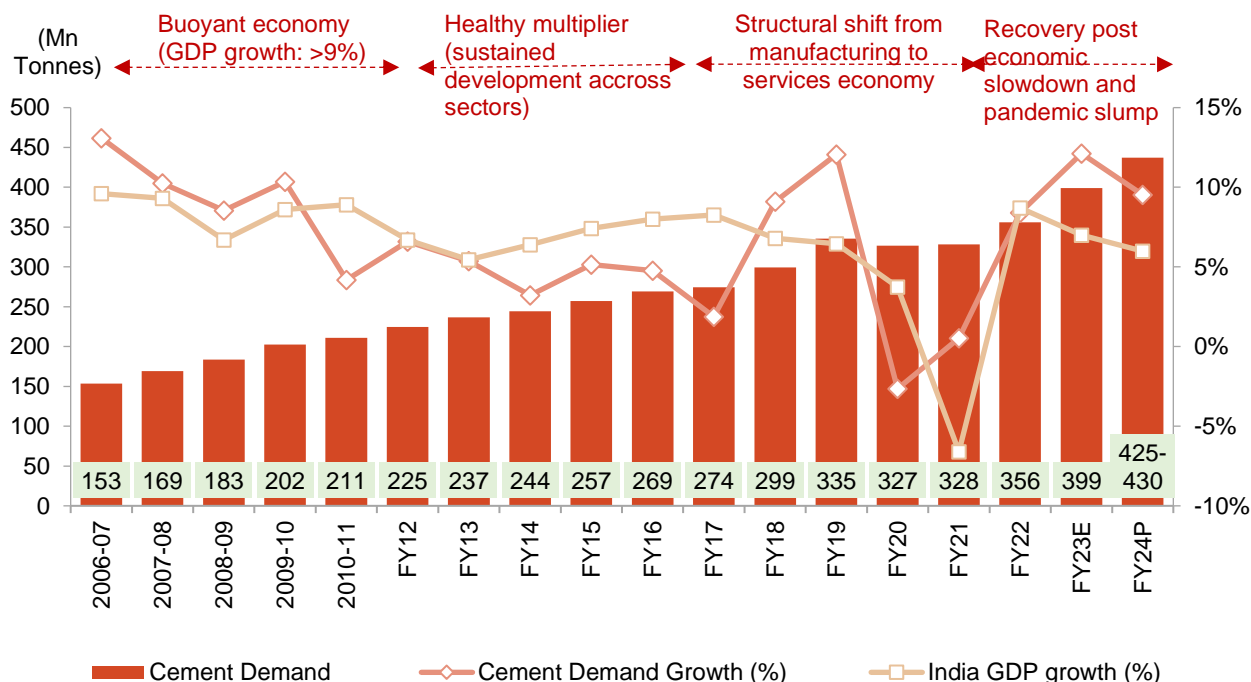
CRISIL Research expects the Indian economy to record a 7% on-year growth in real GDP in fiscal 2023 reaching about Rs ~160 trillion. While the economic recovery continues to gather pace, it faces multiple risks. Global growth is projected to slow, as central banks in major economies withdraw easy monetary policies to tackle high inflation. This would imply lower demand for our exports. Together with high commodity prices, especially oil, this translates into a negative in terms of a trade shock for India. High commodity prices, along with depreciating rupee, indicate higher imported inflation.

Over the medium term, the Indian economy is projected recording a 6-7% on year growth boosted by healthy capital expenditure by the government, domestic consumption led growth, China + 1 strategy boosting manufacturing in India coupled with the PLI scheme. Slowing global economies would drag Indian exports restricting India's GDP growth.

1.2 Cement demand growth multiplier

Rise in cement demand correlates with gross domestic product (GDP) growth as economic development requires heavy investments in infrastructure such as housing, roads, ports, etc. The cement demand growth to GDP growth multiplier (i.e., cement demand growth divided by GDP growth in the same year) witnessed an unprecedented drop in fiscals 2020 and 2021, because of the pandemic-caused economic slowdown, but recovered rapidly in fiscal 2022, with cement demand and GDP rebounding at a similar rate. Further,

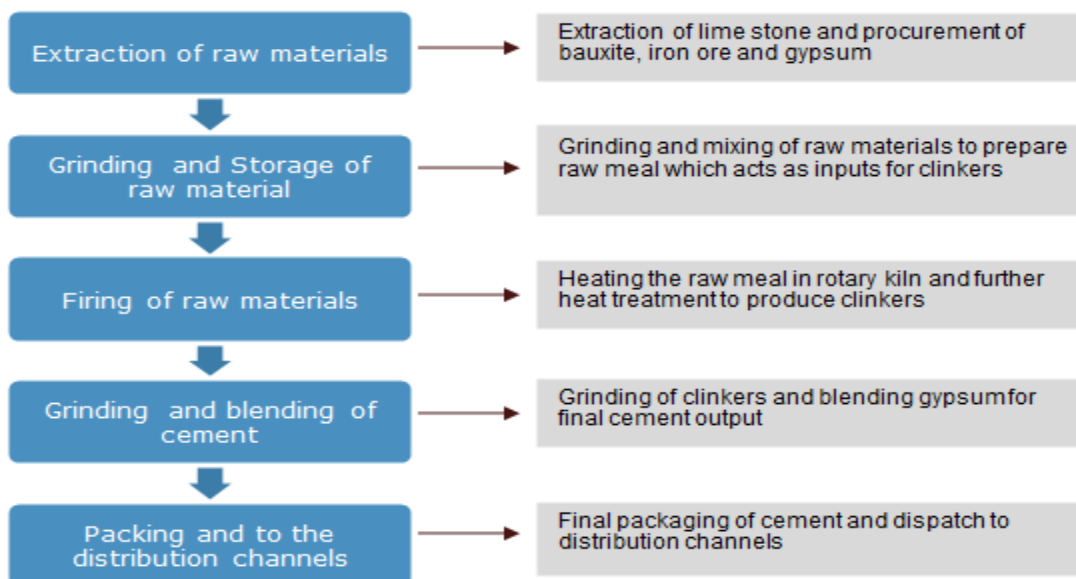
with higher cement demand growth of ~12% and GDP moderating to ~7% in fiscal 2023, cement-demand-to-GDP ratio improved sharply to ~1.7 times. We expect the multiplier to remain >1, but to decrease marginally next fiscal, as cement demand increase moderates to 8-10% on a favourable base, while GDP growth slackens to ~6% because of global economic slowdown, transmission of interest rate hikes to consumers (leading to weakening industrial activity), and as the catch-up in contact-based services fades.



Source: CRISIL MI&A Research, industry

1.3 Cement production process

Stages of cement manufacturing



Source: CRISIL MI&A Research, industry

Key inputs

Limestone is a key input to produce clinker, to which additives such as bauxite, iron ore, and gypsum are added to manufacture cement. The grades of limestone and proportion of additives used determine the quality of cement produced. Similarly, the choice of fuel depends on availability, cost, and process efficiency. Players are also considering using alternatives generated from agro waste, waste oils, animal meal, rice husk, etc to address the shortage in these inputs and their rising prices.

Stage 1: Manufacturing clinker

Step1: Limestone mining, exploration, drilling and blasting

Step 2: Crushing

Step 3: Pre-homogeneous stage

Step 4: Raw mill grinding

Step 5: Blending and storage

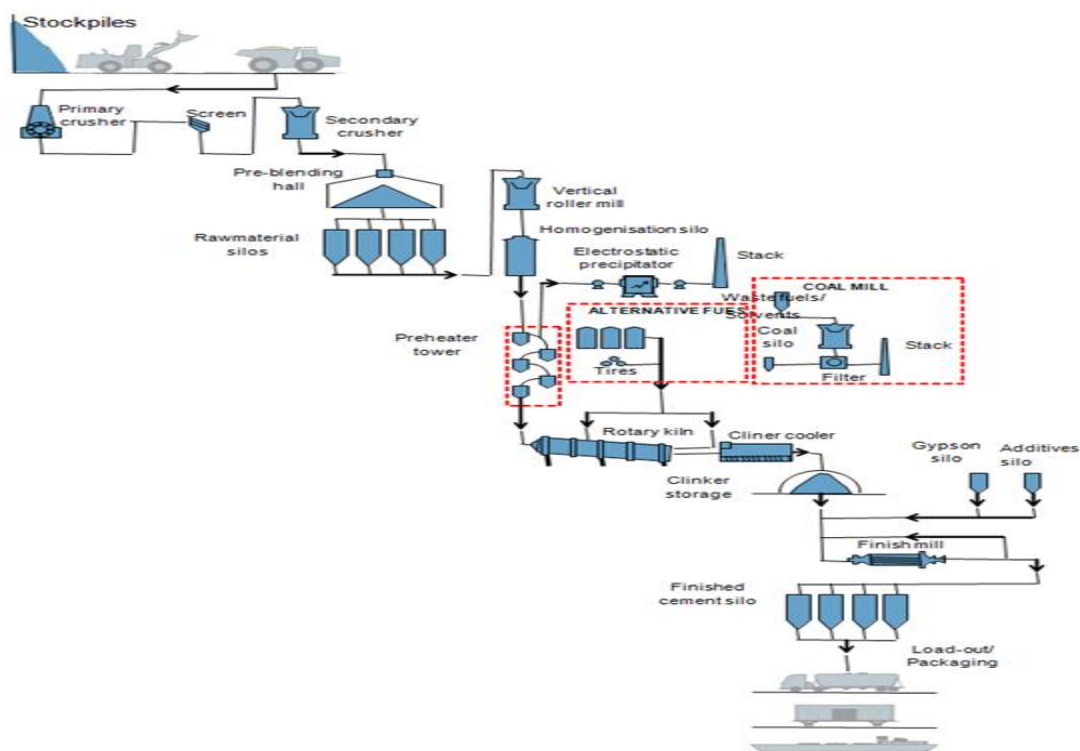
Step 6: Pre-heating stage and kiln

Stage 2: Clinker to cement

Step 1: Grinding and blending

Step 2: Blending

Cement manufacturing process



Source: CRISIL MI&A Research, industry

Heat treatment processes

There are four heat treatment processes – dry, wet, *semi-wet*, and semi-dry. Until the 1970s, wet process technology was predominantly used. However, since the early 1980s, *use of the dry process has increased significantly*.

Dry process -The dry process is commonly used globally to manufacture cement as it is more energy efficient. In the dry process, the kiln feed has moisture content of 0.5%.

Wet process - In the wet process, the kiln feed has a moisture content of 30-40% and defloculates (for reducing viscosity) to enable pumping.

Semi-wet process - In the semi-wet process, the slurry is dehydrated in a filter press to form a cake with moisture content of about 20%.

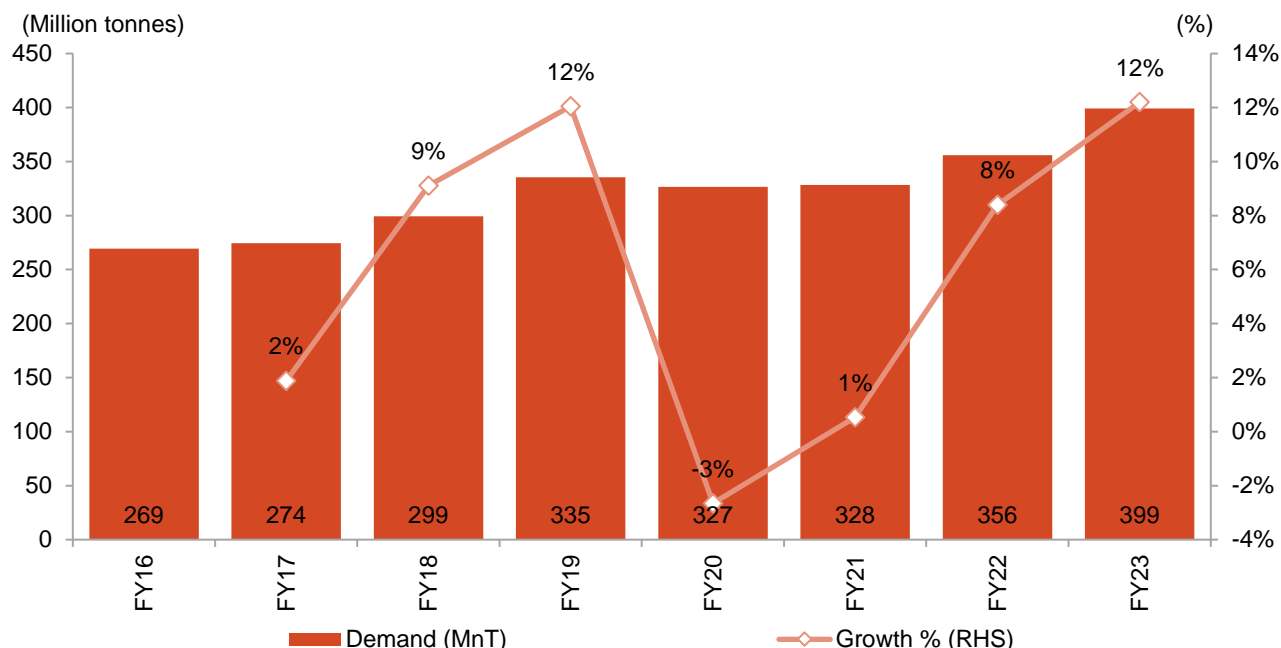
Semi-dry process - Here, the raw meal is pre-treated, as in the dry process. In an inclined rotating dish or drum, the raw meal is made into nodules of ~15 mm spheres, with moisture content of ~12%.

Use of alternative fuels

The cement industry predominantly uses coal-based power, generating 3,200-3,300 kilo joules/kg of heat. Burning fossil fuels such as pulverised coal/oil in the rotary kiln, generates high-grade heat. But, as these fuels are progressively becoming expensive and difficult to procure, there is an increasing need for alternative fuels such as agro wastes, waste oils, animal meal, and rice husk. These are being tested and used based on the manufacturing method, its cost-effectiveness, and availability.

2 Cement demand assessment

2.1 All India demand review



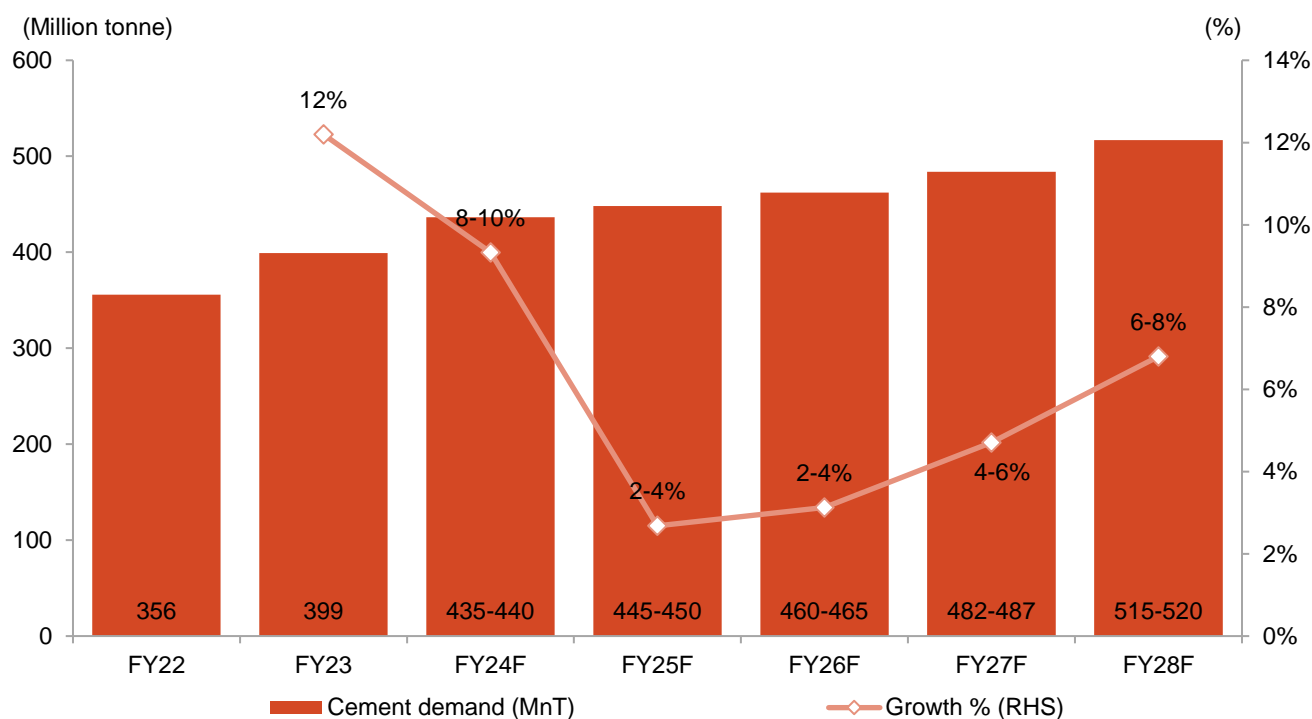
Source: CRISIL MI&A Research, industry

Domestic cement demand grew at a moderate 5.5-6.5% CAGR over fiscals 2019-2023 led by the continued thrust on infrastructure and affordable housing. In fact, majority of this growth was seen during fiscals 2018 and 2019 due to the pre-election spend as well as healthy uptick during fiscal 2023. However, demand remained weak over fiscals 2020 and 2021 due to the pandemic-induced lockdowns. On a low base, pan-India cement demand recovered 8% in fiscal 2022 and further shot up by ~12% in fiscal 2023 supported by tailwinds from strong demand for rural housing and infrastructure.

Fiscal 2021-2022: The first half of fiscal 2022 was struck by the second wave of the pandemic, which slowed the growth momentum; however, demand remained stable in the second quarter, despite the monsoon due to pent-up demand from the first quarter. Demand took an unexpected hit in the third quarter when unseasonal rains, labour unavailability due to the wedding season, sand availability issues in some states, and festivities led to a sharp slowdown in demand momentum, leading to on-year demand de-growth of ~4%. Demand recovered at a snail's pace in the fourth quarter on a sequential basis, with demand remaining muted on the back of high construction costs of building materials. Inflation hit commodities such as steel, aluminium and cement because of geopolitical tensions arising out of the Russia-Ukraine conflict, leading to supply constraints and higher prices of crude-derived commodities. This led to skyrocketing of prices of building materials such as steel, cement and aggregates, discouraging construction. Thus, after growing in double digits in the first half of the year, demand was limited to only 8% on an annualised basis in fiscal 2022.

Fiscal 2022-2023: Demand witnessed healthy ~12% growth in fiscal 2023. In the first quarter, demand witnessed robust growth of ~18% on-year on a low base and was driven by pickup in infra-activities as well as strong recovery in individual housing – both rural and urban. However, the second quarter witnessed some moderation sequentially on the back of seasonal weakness but grew ~9% on-year. Further, with the monsoon receding, easing of inflationary sentiments, traction in real estate and affordable housing as well as pickup in infra project execution ahead of elections in 2024 led to healthy ~10% on-year demand growth in the third quarter of fiscal 2023. The last quarter registered sharp ~12% growth driven by continued traction from infra and housing projects ahead of the 2024 election, leading to an over annual growth of ~12%.

2.2 All India demand outlook



Source: CRISIL MI&A Research, industry

Cement demand grew by a healthy 12% in fiscal 2023. High construction costs, which impacted demand in the early months, witnessed some cooling off in the second half of the fiscal. Demand was supported by tailwinds from strong demand for rural housing and infrastructure. The individual housing segment, especially rural, which was expected to bear the brunt of inflation in the early months of the fiscal, fared well in the second half amid cooling construction costs, higher rural income owing to healthy yields and increase in crop prices, indirectly supporting demand growth from the rural housing segment. Infrastructure continued its strong growth momentum, led by government spending, primarily across its flagship schemes such as PM Gati Shakti and the National Infrastructure Pipeline.

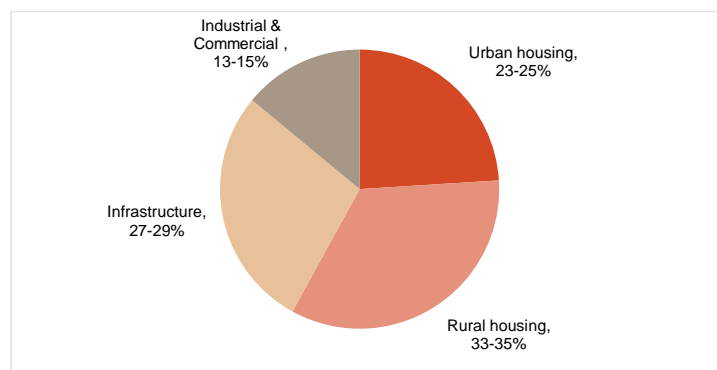
In fiscal 2024, CRISIL MI&A Research expects demand to grow further 7-9%, despite two consecutive years of healthy demand uptick, led by the government's thrust on infra and rural housing before the 2024

Lok Sabha elections. Infrastructure is expected to continue its strong growth momentum, led by increased government spending, primarily across its flagship schemes, and efforts to complete key infra projects ahead of the 2024 elections. On a high base of last fiscal, rural housing is expected to further witness healthy growth momentum in fiscal 2024 supported by higher shortage of houses and the government's push to attain the targets of the central scheme (PMAY) before elections. Although agricultural profitability is expected to remain a key monitorable amid the heat wave condition and expected El Nino in this fiscal. The industrial and commercial segments are expected to further recover in fiscal 2024, led by capex by large and mid-size players in lieu of better demand prospects, PLI implementation, infra status given to data centres and energy storage systems, pickup in creation of multi-modal logistics facilities, and healthy growth in the commercial space with the return to office. Hence, demand is expected to grow 7-9% on-year in fiscal 2024 after witnessing ~12% growth in fiscal 2023.

CRISIL MI&A Research expects cement demand to register 5-6% CAGR over the next five years, marginally lower than the 5.5-6.5% CAGR during the past five years, driven by a raft of infrastructure investments and healthy revival in housing demand.

2.3 Demand segmentation by end user industry

Sectoral mix (FY23)



Source: CRISIL MI&A Research, industry

Housing

Housing demand to be driven by affordable housing and rural housing in the medium term

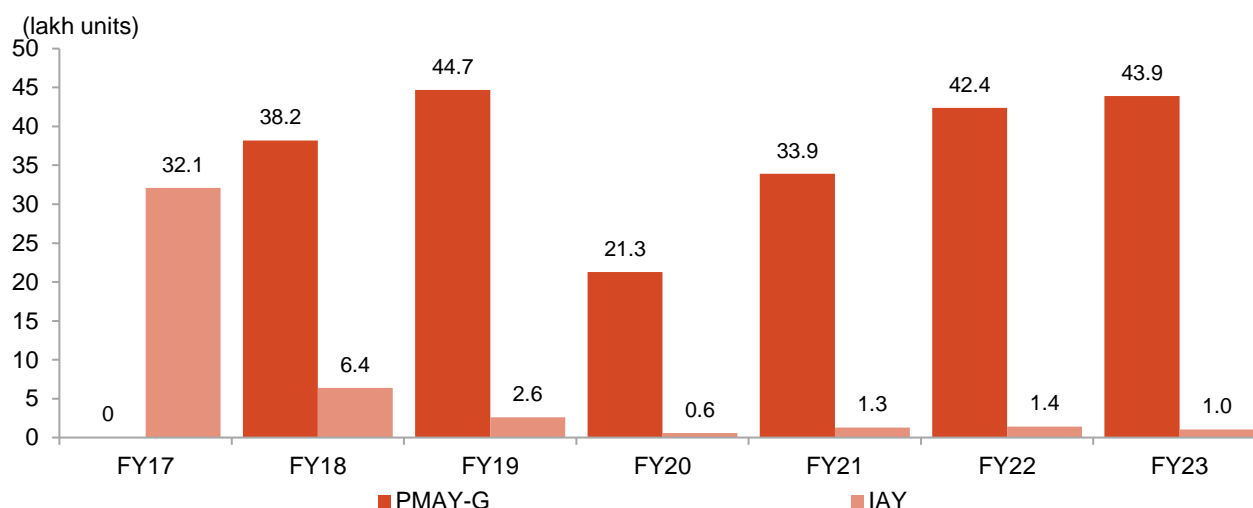
Share of the housing sector has dropped over the past five years with the sector, especially real estate, caught in a quagmire of slow economic growth, weak demand, buyer unaffordability, and high inventory. However, overall share was maintained at 55-60% on the back of the central government's push towards the Housing for All scheme. While housing will remain the key volume contributor, infrastructure would expand its share with rising investments by the central government in roads, railways and irrigation.

Rural housing demand

To achieve the Housing for All by 2022 mission, the government launched a restructured rural housing scheme, PMAY-G in November 2016, with the target of constructing 29.5 million houses with basic amenities by 2022. As of March 2023, ~25.8 million units were sanctioned, of which construction of ~21.9

million houses had been completed (~85% completion against sanctioned units), and ~3.9 million units were under construction under the PMAY-G scheme. Around 4.3 million units were constructed in fiscal 2023 and 4.2 million units in fiscal 2022 after constructing around 3.4 million units in fiscal 2021 and only ~2.1 million units in fiscal 2020. In fiscal 2022, construction picked up on a high base since higher sanctioning over fiscals 2020 and 2021 led to strong execution and construction momentum improved further in fiscal 2023 as the scheme surpassed the set timeline.

Trend in PMAY-G construction



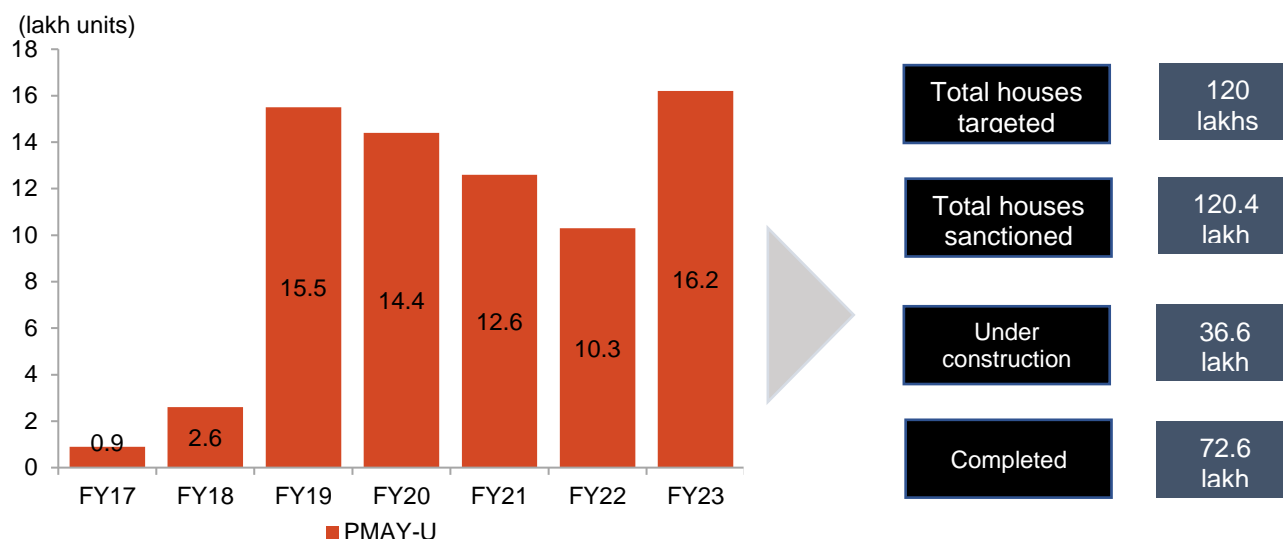
Source: CRISIL MI&A Research, MoRD (Ministry of Rural Development)

Urban housing demand

With home buyers making use of reduction in stamp duty in metro cities aided by bumper offers, residential sales numbers indicate a stunning post-pandemic recovery. The work-from-home culture and social distancing norms have boosted affordable and mid-segment home buying. Real estate construction surged in fiscal 2022 and remained strong last fiscal as RERA deadline approaches. In the longer run, falling inventory levels amid gradual pick-up in demand will aid the segment’s growth. In fact, inventory in the top 10 cities in India declined ~35% over fiscals 2019-22 and is expected to decline further going ahead.

PMAY-U is an affordable housing scheme under implementation from 2015. It seeks to achieve the objective of Housing for All by 2022. While ~1.51 and ~1.44 million units were constructed in fiscals 2019 and 2020, respectively, ~1.26 million were constructed in fiscal 2021, despite the pandemic, as construction pace was healthy in the second half. In fiscal 2022, construction momentum slowed down further to ~1.03 million units owing to weak execution in the second quarter. In fiscal 2023, construction pace recovered with fast-paced and steady execution of ~1.62 million units during the fiscal after seeing lower construction activities in fiscal 2022. While most of the targeted houses have been sanctioned (~12.04 million houses sanctioned as of March 2023), over ~7.3 million houses have already been completed (~61%) and another 3.7 million are under various stages of construction. Significant pickup in houses approved, recovery in the urban affordable housing segment, and steady release of instalments indicate that cement demand from the segment will likely maintain the momentum over the near term.

Trend in PMAY-U construction



Source: CRISIL MI&A Research, Ministry of Housing and Urban Affairs, Government of India

Note: Data as of March 2023; sanctioned units include under-construction and completed units.

Infrastructure

Within infrastructure, roads have been the largest contributor to cement demand, followed by railways, irrigation and urban infra. There is a sharp rise in the new budget for capex towards infra. The highest traction is expected from roads, with the total outlay for the Ministry of Road Transport and Highways and the National Highways Authority of India (NHAI) having increased by 25% and 15%, respectively, on-year. Total outlay for the Ministry of Railways has also increased by 15% for fiscal 2024BE against fiscal 2023RE. While there is no relief in terms of duty changes, the surge in capital outlays is likely to lead to healthy demand in the coming fiscal.

Outlay on major segments

	Budgeted outlay FY24 (Rs bn)	Revised estimates FY23 (Rs bn)	Change
Ministry of Road Transport and Highways	2586	2071	25%
Ministry of Railways	2928	2550	15%
PMGSY	190	190	0%

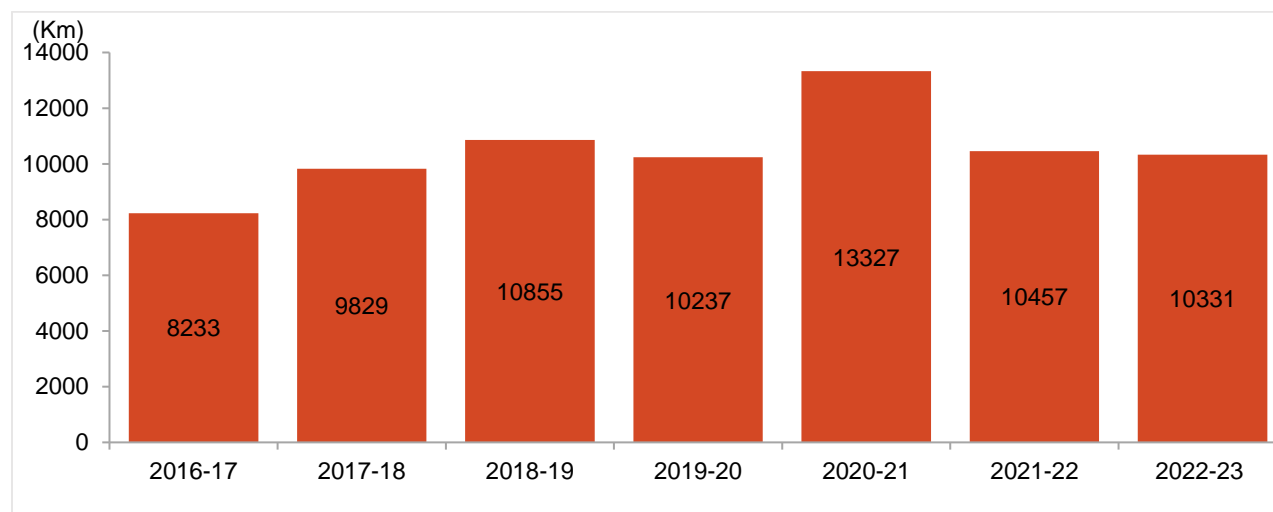
Source: CRISIL MI&A Research, Union Budget 2023-24

Roads - NHAI: Besides creating employment opportunities, capital spending for roads and highways results in a multiplier effect on several other sectors. CRISIL MI&A Research expects the increased allocation of ~25% over fiscal 2023RE towards roads and highways will spur investments and lead to healthy cement demand from the segment.

Bharatmala Pariyojana, an umbrella project of the central government launched in 2015, aims to improve efficiency in the roads sector. It is expected to supersede the National Highways Development Project (NHDP) and envisages the construction of 83,677 km of highways under the following categories: national corridor (north-south, east-west, and golden quadrilateral), economic corridor, inter-corridor roads, and

feeder roads. Bharatmala, along with the schemes currently undertaken, requires a total outlay of Rs 6.9 trillion. Phase I, comprising 24,800 km of roads and about 10,000 km of residual NHDP, has been approved at a cost of Rs 5.35 lakh crore. As of March 2023, about 24,837 km had been awarded, and about 11,789 km was completed (~35% completion of target). Remaining projects are targeted for award by 2024-2025.

Trend in national highways construction (km)



Source: Ministry of Road Transport and Highways, CRISIL MI&A Research

Roads - PMGSY: The PMGSY seeks to provide all-weather road connectivity to all eligible unconnected habitations, existing in the core network in rural areas of the country. PMGSY-I was launched in 2000, and 97% of the target was achieved. Under PMGSY-II, 75% of the target was achieved. The target for PMGSY-III is 40% lower than the length of roads constructed over the past five fiscals. Execution under PMGSY improved in fiscal 2022 as ~41,971 km was constructed against a revised target of ~50,000 km (~84% completion rate). The original target of ~61,700 km was revised downward to ~50,000 km. In fiscal 2023, target of 47,171 km was set under the scheme, of which, ~28,621 km had been constructed as of March 2023 (~61% completion rate).

Dedicated Freight Corridor (DFC): The DFC project is estimated to cost Rs 1,24,005 crore for the eastern (1,337 km) and western (1,506 km) sectors. As per the project details, Western DFC covers a distance of 1,504 km, linking Jawaharlal Nehru Port Trust near Navi Mumbai, Maharashtra to Dadri, Uttar Pradesh, passing through Vadodara, Ahmedabad, Palanpur, Madar, Phulera and Rewari. Eastern DFC covers 1,337 km, connecting Ludhiana, Punjab to Dankuni near Kolkata, West Bengal, passing through Haryana, Bihar, Uttar Pradesh and Jharkhand. Both routes account for more than 20% of pan-India primary freight in billion tonne kilometre (BTKM) terms.

As of April 2023, 2,089 km out of 2,843 km was commissioned (~73% physical progress and 88% financial progress achieved under both EDFC and WDFC). About 1.87 km land for the EDFC and WDFC is left to be acquired. EDFC and WDFC completion targets have been deferred to 2023 and 2024, respectively.

Western Expressway (financial progress – 86%)

Section	Length (Km)	Status/ Date of Commissioning
Madar-Palanpur	353	Commissioned

Makarpura-Sachin	135	Jun-23
Palanpur-Makarpura	290	Dec-23
Rewari-Dadri	127	Commissioned
Rewari-Madar	306	Commissioned
Sachin-Vaitarana	186	Jun-23
Vaitarana-JNPT	109	Mar-24

Eastern Expressway (financial progress – 90%)

Section	Length (Km)	Status/ Date of Commissioning
Bhaupur-DDU	402	Mar-23
Bhaupur-Khurja	351	Commissioned
DDU-Sonnagar	137	Commissioned
Khurja-Dadri	46	Commissioned
Khurja-Pilkhani	222	Jun-23
Pilkhani-Sahnewal	179	Jun-23

Source: CRISIL MI&A Research, The Dedicated Freight Corridor Corporation of India Ltd; Status as of April 2023

Urban infrastructure: Urban infrastructure includes construction-intensive mass rapid transit system, bus rapid transit system, water supply and sanitation (WSS) projects, smart cities, and related infrastructure development. Investment in India's urban infrastructure is driven by government schemes such as AMRUT, Swachh Bharat Mission, Clean Ganga and Jal Jeevan Mission. WSS projects, metro construction in major Indian cities, and commencement of work on 105 smart cities have boosted urban infrastructure investment in the past five years. Investments in urban infrastructure are expected to rise in fiscal 2024, led by investments in WSS under schemes such as Swachh Bharat Mission, Jal Jeevan Mission and AMRUT, and deferred investments in metro projects, a bulk of which are under implementation and have achieved financial closure.

Sagarmala: As part of the Sagarmala programme, more than 800 projects have been identified for implementation. The estimated cost is around Rs 5.5 lakh crore. This programme includes logistics projects from various categories such as modernisation of existing ports and terminals, new ports, terminals, roll-on-roll-off (RoRo) and tourism jetties, enhancement of port connectivity, inland waterways, lighthouse tourism, industrialisation around ports, skill development, and technology centres.

Status of investments under Sagarmala (March 2023)

Project pillar/ theme	Total		Completed		Under implementation	
	No. of Projects	Project cost (Rs crore)	No. of Projects	Project cost (Rs crore)	No. of Projects	Project cost (Rs crore)
Port modernisation & new port development	241	249,660	89	31,214	152	218,446
Port connectivity enhancement	209	142,226	69	32,005	140	1,02,221
Port-led industrialisation	33	1,19,846	9	45,865	24	73,981
Coastal community development	82	1,13,58	21	1,559	61	9,798
Coastal Shipping and IWT	237	16,994	33	1,705	204	15,289
Total	802	540,083	221	1,12,349	581	4,27,734

Source: Ministry of Shipping, CRISIL MI&A Research

Industrial and commercial segments

Cement demand from the industrial and commercial segments is expected to have grown by 12-14% on-year in fiscal 23 and further 6-8% in fiscal 2024, after growing 20-22% in fiscal 22 on a low base of fiscal 2021. In fiscal 2021, major industrial sectors were already operating below optimum utilisation levels, and Covid-19 led to a further fall in utilisations across industries owing to the lockdown and subdued buyer sentiment. The depressed utilisations and stretched financials of players led to deferral of planned capex for fiscals 2021 and 2022 as companies looked to conserve cash in uncertain times. However, the capex announced after the imposition of lockdown was revised upwards due to faster-than-expected recovery in the economy in the second half of fiscal 2021 and higher utilisation levels for large players. Hence, players announced fresh rounds of capex, which will be implemented in upcoming fiscals. Also, timely implementation of the PLI scheme will boost industrial construction this fiscal.

Hence, cement demand from the segment is projected to grow 6-8% in fiscal 2024 led by: 1) greenfield/brownfield capacity expansions by large cement, steel and auto components manufacturers; 2) healthy utilisation levels of large players, leading to more capex; and 3) timely implementation of the PLI scheme.

Segment-wise demand growth outlook

The infrastructure segment's share in cement demand has been on the rise over the past decade because of a surge in the central government's capex, which nearly doubled from 11-13% in fiscal 2013 to 27-29% in fiscals 2022-23. Over the period, the share of housing, industrial and commercial in cement demand shrank.

We expect the infrastructure segment's share to rise further to 33-35% in fiscal 2028, because of the consistent increase in central and state capex on roads, railways, metros, airports, and irrigation.

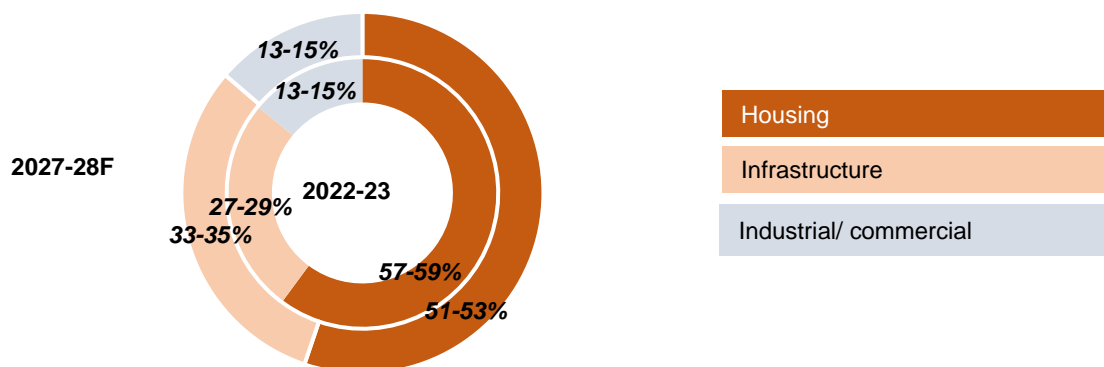
Segment-wise demand growth outlook

Segment	FY18-23*	FY24F	FY24-28F *
Housing	4.5-5%	7-9%	2.5-3.5%
Infrastructure	9.5-10.5%	12.5-14.5%	9-11%
Industrial and commercial	3.5-4%	6-8%	5-6%
Overall	5.5-6.5%	8-10%	5-6%

Source: CRISIL MI&A Research

Note: *CAGR

Segment-wise share in total demand



Source: CRISIL MI&A Research

In the longer run, cement demand will be led by the infrastructure and housing segments, which have been the key drivers in the past as well. The housing segment will continue its moderate growth trajectory with rural housing outpacing the urban segment on the back of lower development base and continued rise in concretisation.

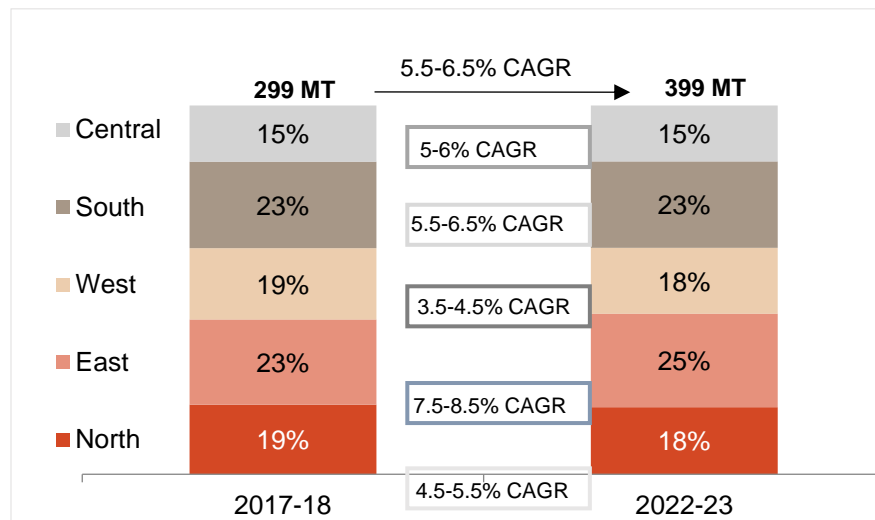
On the other hand, the share of industrial and commercial segments is expected to remain steady at 13-15%. While government initiatives such as PLI scheme and Atmanirbhar Bharat are expected to boost industrial segment demand, the commercial space is expected to lag due to the rise in commercial real estate inventory and gaining popularity of work-from-home culture.

2.4 Regional demand overview and outlook

2.4.1 Overview of regional demand

Over fiscals 2018-23, the eastern region (Odisha, Bihar and West Bengal), followed by the southern region (Karnataka, Tamil Nadu and Andhra Pradesh/Telangana) saw strong demand growth, led by a surge in infrastructure construction and rural housing. Moreover, the eastern region witnessed the highest growth since it was less affected by Covid-19-led demand disruptions as it has more rural areas than urban. Overall, cement demand logged a healthy CAGR of 5.5-6.5% over the five-year period, mainly dragged down by the economic slowdown in fiscal 2020 and pandemic-caused disruptions in fiscal 2021.

Regional cement demand trend

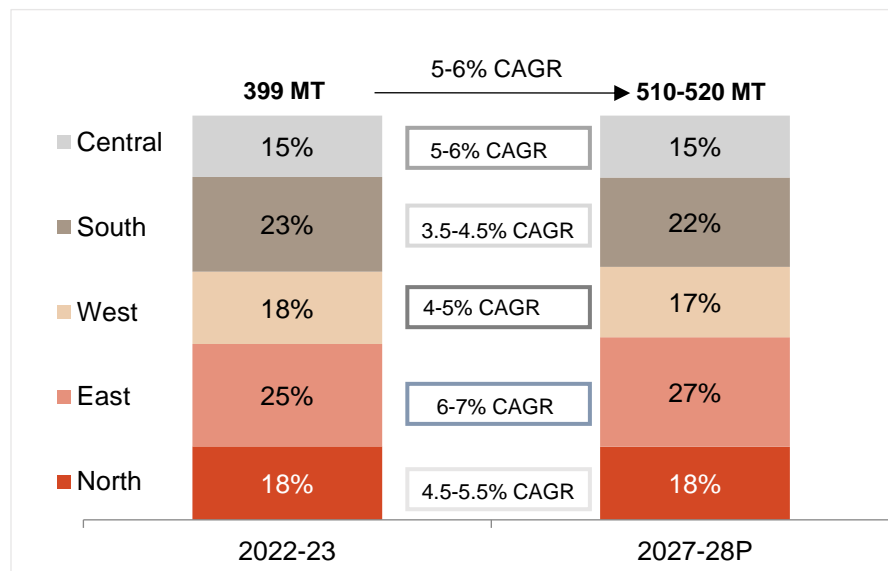


Source: CRISIL MI&A Research

CRISIL Research expects cement demand to increase at a moderate 5-6% CAGR between fiscals 2023 and 2028. The eastern and central regions are expected to exhibit robust growth on back of higher housing shortage and a lower base in terms of per-capita cement consumption, followed by north. This interplay of demand dynamics would push up the eastern region's share in overall cement consumption to ~27% in fiscal 2028 from ~25% in fiscal 2023.

The western and southern regions are expected to witness moderate growth over fiscals 2023-28. Demand in the southern region is supported by real estate and urban housing projects, and road and irrigation infra project. The western region has high-budget infra projects under execution, such as the Mumbai-Ahmedabad bullet train, the trans-harbour link, and metro projects in Mumbai. However, these regions already have the highest per-capita cement consumption, which will limit their demand growth potential.

Shift in region-wise demand over the next five years



Source: CRISIL MI&A Research

North: Demand to increase at a steady pace over the next five years

Outlook (fiscals 2024-28): CRISIL MI&A Research estimates a healthy growth rate of 8-9% this fiscal on a moderate base. Various infrastructure projects such as roads, metros, DFC, etc., will drive growth in the region, but real estate will remain a key monitorable over the medium term. Over fiscals 2023-28, CRISIL MI&A Research expects cement demand in the region to log 4.5-5.5% CAGR. Key infrastructure and metro projects, and smart city-related development will drive cement demand in the region. Real estate development in the key existing and emerging pockets will gradually support demand as well. However, demand for housing in the region is expected to remain moderate because of low levels of housing shortage and higher levels of pucca/concrete houses.

Region	Housing	Infrastructure	Commercial/Industrial	FY18-23	FY23	FY24P	FY23-28P
North	↑	↑	↑	4.5-5.5%	8-9%	8-9%	4.5-5.5%

Source: CRISIL MI&A Research, industry

West: Pickup in infrastructure and real estate projects to support healthy growth

Outlook: Demand is estimated to grow further at a healthy 8.5-9.5% in fiscal 2024 after having rebounded sharply in the past two fiscals. The urban housing and real estate sectors are expected to see a moderate pickup. The infrastructure segment (roads, motorways, and metros) will continue to support growth. CRISIL MI&A Research expects cement demand in the region to log a 4-5% CAGR over the forecast period, marginally higher than growth seen in the previous five years. Infrastructure development, including urban infrastructure projects for metros, expressways, and national highways, as well as state roads in Gujarat, the Mumbai-Ahmedabad bullet train, the trans-harbour link, and coastal roads, will, along with a gradual pickup in demand for real estate and urban affordable housing, support demand in the region.

Region	Housing	Infrastructure	Commercial/Industrial	FY18-23	FY23	FY24P	FY23-28P
West	↑	↑	↑	3.5-4.5%	9-10%	8.5-9.5%	4-5%

Source: CRISIL MI&A Research, industry

East: Social infrastructure and housing development to boost demand

Outlook: CRISIL MI&A Research expects demand to grow further at a healthy 11-12% in fiscal 2024 on an already high base of fiscal 2023. Rural housing (IHB and PMAY-G) and infrastructure (roads and railways) development will propel cement demand over fiscals 2024-2028. Demand in this region is expected to log a 6-7% CAGR during the period. With the lowest per capita cement consumption in the country and a 30-35 million housing shortage identified in the region, CRISIL MI&A Research expects demand for cement to remain healthy in the long term. Further, an uptick in infrastructure investments is also expected via key projects, such as metro development in Kolkata, Patna and Ranchi; the DFC; several road and rail connectivity projects in the north-east; smart-city-related development in Odisha (Bhubaneswar), West Bengal (Newtown Kolkata), Jharkhand (Ranchi), Bihar (Bhagalpur), and Chhattisgarh (Raipur); and several other road and highway projects. Industrial demand is also expected to

be healthy on the back of investments by the government and private players in the railways, power, cement, and steel sectors.

Region	Housing	Infrastructure	Commercial/Industrial	FY18-23	FY23	FY24P	FY23-28P
East	↑	↑	↑	7.5-8.5%	15.5-16.5%	11-12%	6-7%

Source: CRISIL MI&A Research, industry

Central: Housing and infrastructure development to drive healthy growth

Outlook: CRISIL MI&A Research expects demand in the central region to grow 9.5-10.5% in fiscal 2024 owing to infrastructure construction, a pickup in urban housing development in Uttar Pradesh and healthy rural housing demand in Madhya Pradesh. Over fiscals 2024-2028, cement demand in the region is expected to log a 5-6% CAGR, almost on a par with growth seen in the previous five years. Key infrastructure projects in the region, such as metro projects in Bhopal, Meerut, Agra and Indore; smart-city-related development in Madhya Pradesh (Bhopal, Indore, and Jabalpur) and Uttar Pradesh (Lucknow); road and highway projects; irrigation projects and the waterway project across Varanasi-Haldi will back cement demand. Further, housing demand in the new emerging pockets of Meerut (after metro linkage to the NCR) and Aligarh, and development in the key centres of Indore, Bhopal, and Noida will continue to boost demand.

Region	Housing	Infrastructure	Commercial/Industrial	FY18-23	FY23	FY24P	FY23-28P
Central	↑	↑	↑	5-6%	12-13%	9.5-10.5%	5-6%

Source: CRISIL MI&A Research, industry

South: Demand to grow, majorly led by infrastructure projects

Outlook: CRISIL MI&A Research expects cement demand to increase 7.5-8.5% on-year in fiscal 2024, led by continued traction from infrastructure project executions, primarily for roads, expressways, and metros, among others. Over fiscals 2024-2028, demand in the region is expected to log a 3.5-4.5% CAGR. States with poor growth in the past, such as Tamil Nadu and Karnataka, are expected to witness an upward bias on the back of growth in the state infrastructure segment. The Bengaluru-Chennai, Bengaluru-Mysore, and Chennai-Salem expressways, along with the Namma Metro construction in Bengaluru, Kochi metro, and irrigation projects, among others, will drive incremental cement demand during the five years. Corporates implementing a return to office/ hybrid model of working will also indirectly boost cement demand from the real estate sector.

Region	Housing	Infrastructure	Commercial/Industrial	FY18-23	FY23	FY24P	FY23-28P
South	↑	↑	↑	5.5-6.5%	12.5-13.5%	7.5-8.5%	3.5-4.5%

Source: CRISIL MI&A Research, industry

2.5 Demand segmentation by product type:

The major types of cement products are:

- Ordinary Portland cement (OPC)
 - Portland Pozzolana cement (PPC)
 - Portland slag cement (PSC)
 - Composite
1. **OPC:** One of the most used cement types globally, OPC is a hydraulic cement that becomes water-resistant once curing is done with water. Mostly used as construction material for building houses, bridges, pavements, and so on, it is also used for making of concrete and mortars.
 2. **PPC:** PPC is a special blended cement and is manufactured by intergrinding clinker with high-quality processed fly ash along with gypsum. PPC is a type of portland cement characterised by the presence of pozzolana particles such as fly ash and volcanic ash, which are added to OPC in the ratio of 15% to 35%, as specified by the Bureau of Indian Standards (BIS). Due to the presence of pozzolana particles, it becomes a cement which, despite using lesser OPC, has greater durability and strength. Since it uses a lesser concentration of cement, it is cheaper and more environment friendly than OPC. PPC is used in the construction of marine structures, masonry mortars, hydraulic structures, dykes, sewage pipes, and dams, among others.
 3. **PSC:** It is a blended cement created using 35-70% slag, 25-65% clinker, and 3-5% gypsum, as specified by the BIS. Slag is, essentially, a non-metallic product comprising more than 90% glass with silicates and aluminosilicates of lime. Due to its low heat of hydration, it is considered as the best cement to be used for mass construction.
 4. **Composite:** Composite cement is a mixture of high-quality clinker, fly ash, granulated slag, and gypsum. The typical range of these components is 35-65% clinker, 15-35% fly ash, 20-30% granulated slag, and 3-5% gypsum. For composite cement, the BIS allows slag and fly ash to comprise 40-65% of the cement mass.

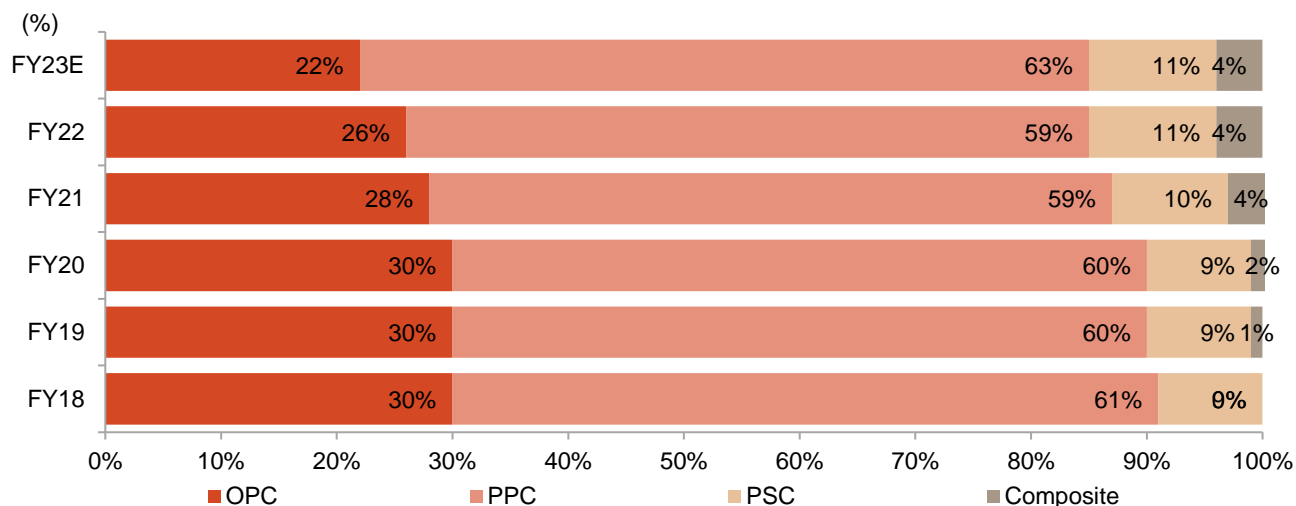
Cement-to-clinker ratios for cement types

Cement type	Minimum clinker requirement	Cement-to-clinker ratio
OPC	95%	1.05
PPC	60%	1.67
PSC	25%	4.00
Composite	35%	2.86

Source: CRISIL MI&A Research

Note: Proportion of clinker is for the best-case scenario. For example, OPC cement must contain at least 95% clinker as per BIS norms

Proportion of blended cement by product:



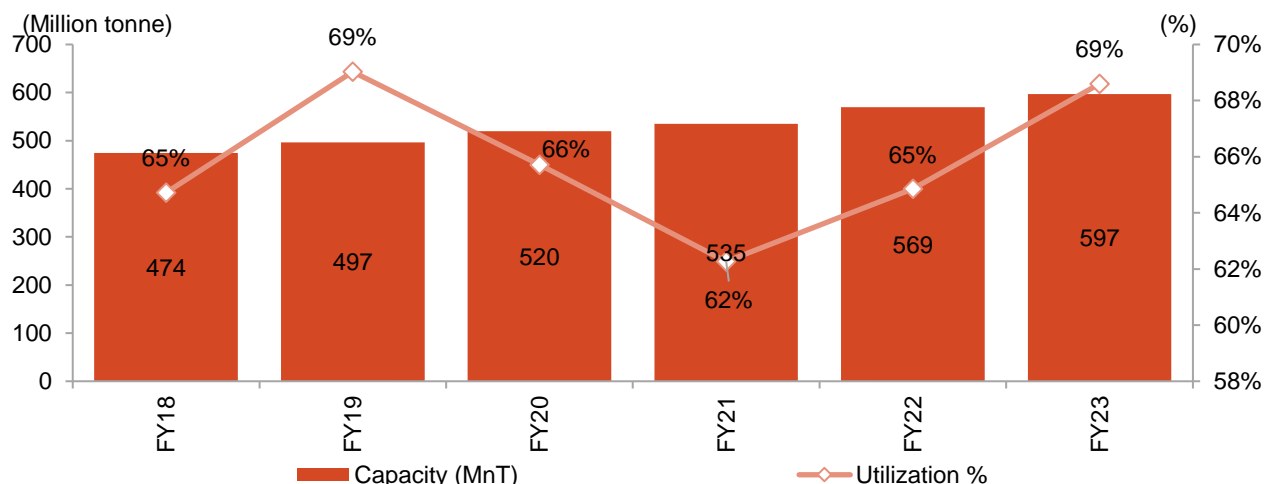
Source: Industry, CRISIL MI&A Research

The share of blended cement in the Indian cement industry has been rising, with PPC accounting for the highest share, of 62-64% as of the Financial Year ended March 31, 2023. By blending fly ash or slag with OPC, cement producers can lower power, fuel, and raw material costs, thereby improving their operating margins. The western and northern regions of India have a higher share of PPC than the eastern and central regions. Using blended cements reduces embodied greenhouse gas emissions. The usage of blended cement instead of traditional concrete makes sense environmentally, economically, and functionally, making it a viable and cost-effective option for individual home builders.

Permission to use PPC in works of state public works departments (earlier only OPC was permitted) have been driving the increase in the blending ratio.

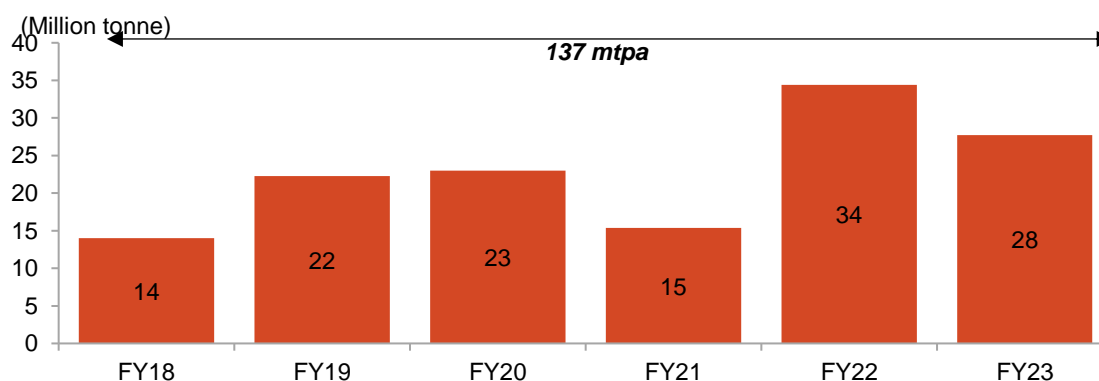
3 Cement supply assessment

3.1 Historical capacity and capacity utilization



Source: CRISIL MI&A Research

Total capacity additions



Source: CRISIL MI&A Research

Player-wise capacity growth

The large and mid-sized players have used both organic and inorganic route to grow. While UltraTech Cement has seen the maximum capacity additions in absolute terms, other large players such as Dalmia Bharat and Shree Cement have aggressively added capacity as well. Among the mid-sized players, JK Cement, JK Lakshmi and Ramco Cements have seen healthy capacity growth, led by organic growth with their expansion to newer regions.

Player-wise installed capacity

MTPA	FY18	FY19	FY20	FY21	FY22	FY23
Ultratech Cement	103.9	107.4	110.6	110.6	113.8	126.2
Shree Cement	34.9	37.9	40.4	43.4	46.4	46.4
Dalmia Bharat	25.0	26.5	27.3	30.7	35.9	41.1
ACC Limited	33.4	33.4	33.4	34.5	36.1	36.1

Ambuja	29.7	29.7	29.7	29.7	31.5	31.5
Nuvoco Vistas	18.3	19.6	22.1	22.1	23.6	23.6
The Ramco Cement	16.5	16.7	18.8	19.4	19.4	20.9
JK Cement	10.5	10.5	14.0	14.7	14.7	20.7
Birla Corporation	15.4	15.4	15.4	15.4	19.3	19.3
Chettinad Cement	12.0	12.0	15.1	15.1	17.1	17.1
JSW Cement	11.3	12.7	13.9	13.9	16.5	16.5
India Cements	15.6	15.6	15.6	15.6	15.6	15.6
JK Lakshmi	12.5	12.5	13.3	13.3	13.9	13.9
Wonder Cement	6.8	8.8	11.0	13.5	13.5	13.5
Kesoram Industries	7.3	7.3	7.3	7.3	10.8	10.8
Penna Cement	7.0	10.0	10.0	10.0	10.0	10.0
My Home Industries	10.0	10.0	10.0	10.0	10.0	10.0
Orient Cement	8.0	8.0	8.0	8.0	8.5	8.5
Sagar Cement	4.3	5.8	5.8	5.8	8.3	8.3
Star cement	4.4	4.4	4.4	6.4	6.4	6.4
Heidelberg Cement	5.2	5.2	6.3	6.3	6.3	6.3
Sanghi Industries	4.1	4.1	4.1	6.1	6.1	6.1
Prism Cement	7.0	7.0	7.0	7.0	5.6	5.6
Mangalam Cement	4.0	4.0	4.0	4.0	4.4	4.4
NCL Industries	2.0	2.7	2.7	2.7	2.7	2.7
Deccan Cement	2.3	2.3	2.3	2.3	2.3	2.3
KJS Cement	2.3	2.3	2.3	2.3	2.3	2.3
Saurashtra Cement	1.4	1.4	1.4	1.4	1.4	1.4

Source: Source: CRISIL MI&A Research, company annual reports

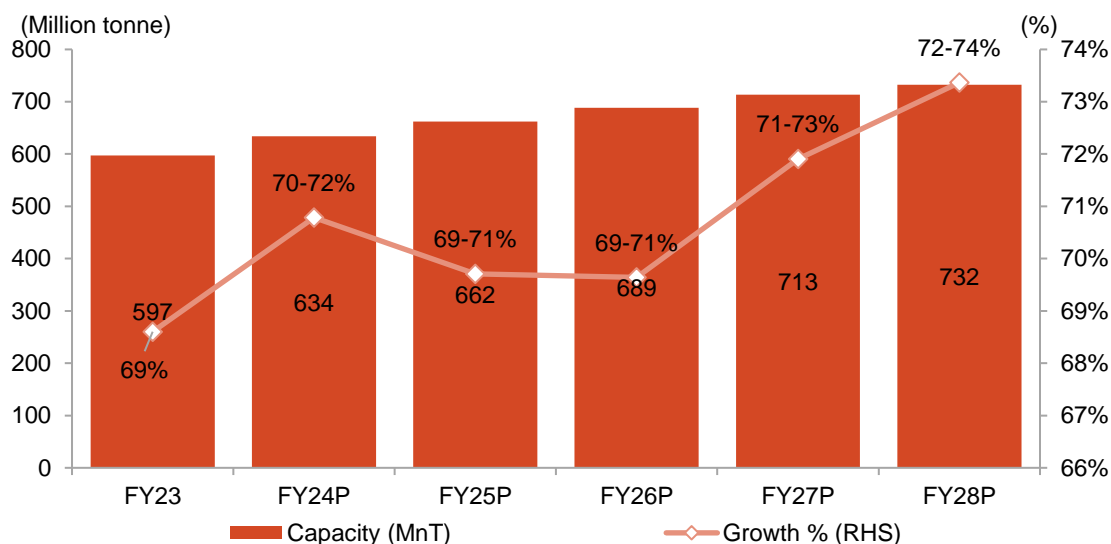
Note: Only India operations have been considered for UltraTech and Shree Cement; only grey cement sales have been included for JK Cement and UltraTech Cement. Kesoram Industries reclassified capacity in 2022. Company-wise installed base is mentioned, includes capacity additions through expansion, de-bottlenecking and capacity reclassification.

Capacity additions that were announced on the back of strong demand growth in fiscals 2018 and 2019 came online in the second half of fiscals 2021 and 2022, mounting pressure on the already low utilisation levels. Around 34 MTPA capacity was added in fiscal 2022, taking the total capacity base to 569 MTPA. With sharp recovery in demand, operating rates rose from lows of 62% to 65% during the year.

After witnessing healthy additions in fiscal 2022, capacity addition execution moderated in fiscal 2023 to ~28 MTPA (inclusive of grinding and integrated units). Higher input costs, led by rising power, fuel and freight prices, which rose further in the first half of 2022, affected the industry's profitability, thereby slowing down capex plans of players. However, strong demand growth led by infra and housing propelled healthy additions during the year as well as healthy operating rates at ~69%.

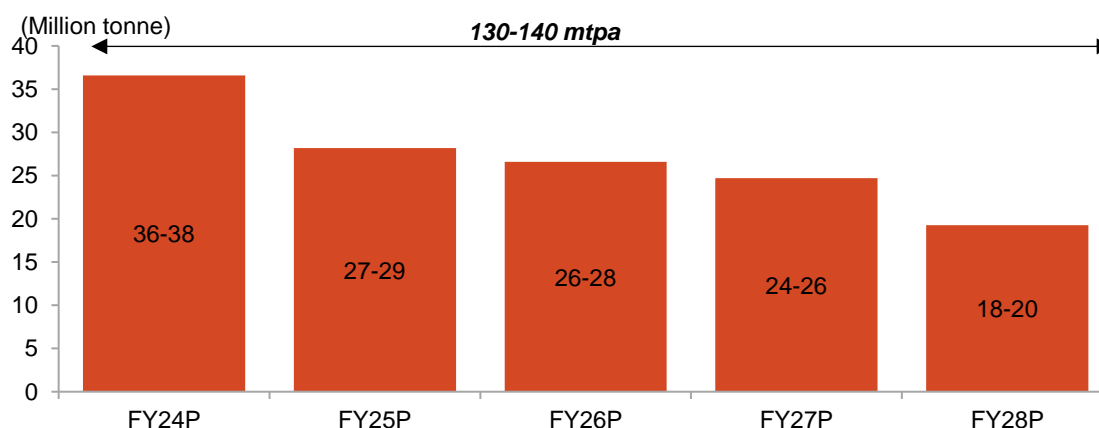
3.2 Installed capacity and growth outlook for next five years

Installed capacity and Utilization rates outlook



Source: CRISIL MI&A Research, company annual reports

Capacity additions estimated over the next five years



Above capacities include only concrete capacity addition plans over FY24-28 including announcements
Source: CRISIL MI&A Research, company reports

CRISIL Research estimates that the cement industry would add 130-140 MTPA of grinding capacities over fiscals 2024 to 2028. Improving demand expectations in the medium term and efforts to gain higher market share has triggered a wave of new-capacity announcements, especially by large players. With rising demand, operating ratings are expected to improve going forward and remain in the range of 70-74% in the coming five fiscal.

As of fiscal 2023, overall installed capacity stood at ~597 MTPA. Assuming 130-140 MT of capacity additions, the total installed capacity is estimated to be 725-735 MTPA by fiscal 2028. CRISIL MI&A Research expects most capacities (~90%) over the next five years to be added by large and mid-size players, as they have better financial capability to sustain in challenging times. We believe large companies will be able to fund capex through internal accruals. Their comfortable gearing levels give them the financial flexibility to raise debt, if required, for the investments.

Key capacity additions

Co. Name	State	Region	Cement Capacity (MT/PA)	Year
Shree Cement	Jharkhand	East	0.50	2023-24
ACC	Uttar Pradesh	Central	2.20	2023-24
ACC	Madhya Pradesh	Central	1.00	2023-24
Ultratech Cement	Rajasthan	North	0.80	2023-24
Ultratech Cement	West Bengal	East	1.30	2023-24
JSW Cements	Tamil Nadu	South	0.80	2023-24
KJS Cement	MP	Central	1.30	2023-24
NCL Industries	Telangana	South	0.40	2023-24
Ultratech Cement	Bihar	East	2.20	2023-24
Dalmia Cement	West Bengal	East	0.60	2023-24
Dalmia Cement	Karnataka	South	0.90	2023-24
JSW Cements	Maharashtra	West	2.10	2023-24
Shree Cement	West Bengal	East	3.00	2023-24
Shree Cement	Rajasthan	North	3.50	2023-24
Ambuja Cement	Punjab	North	1.50	2023-24
Chettinad Cement	Karnataka	South	2.50	2023-24
JSW Cements	Odisha	East	1.00	2023-24
Birla Corp	Uttar Pradesh	Central	1.00	2023-24
Nuvoco Vistas	Haryana	North	1.20	2023-24
Star Cement	Assam	East	2.00	2023-24
Tamil Nadu Cement	Tamil Nadu	South	0.28	2023-24
Heidelberg	Madhya Pradesh	Central	0.45	2023-24
NCL Industries	Andhra Pradesh	South	0.66	2024-25
Ramco Cements	Odisha	East	0.90	2023-24
Wonder Cement	Uttar Pradesh	Central	2.50	2023-24
Dalmia Cement	Tamil Nadu	South	2.00	2024-25
JSW Cements	West Bengal	East	1.20	2024-25
Dalmia Cement	Tamil Nadu	South	1.00	2024-25
Dalmia Cement	Andhra Pradesh	South	1.00	2024-25
Ultratech Cement	Jharkhand	East	2.50	2024-25
Ultratech Cement	Uttar Pradesh	Central	1.80	2024-25
JSW Cements	Karnataka	South	2.00	2024-25
JSW Cements	Andhra Pradesh	South	1.20	2024-25
JSW Cements	Odisha	East	1.80	2024-25
JK Cement Ltd.	Uttar Pradesh	Central	2.00	2024-25
JK Cement Ltd.	Madhya Pradesh	Central	1.50	2024-25
Udaipur cement	Rajasthan	North	2.50	2024-25
Wonder Cement	Gujarat	West	2.50	2024-25
Shree digvijay Cement	Gujarat	West	1.80	2024-25
Ultratech Cement	Uttarakhand	North	1.00	2024-25
Ultratech Cement	Tamil Nadu	South	1.20	2024-25
Penna Cement	Rajasthan	North	1.50	2024-25
Ambuja Cement	Punjab	North	2.00	2024-25
Ambuja Cement	West Bengal	East	2.00	2024-25
Ambuja Cement	West Bengal	East	2.00	2024-25
Chettinad Cement	Odisha	East	2.00	2025-26 to 2027-28
Shree Cement	Andhra Pradesh	South	3.00	2025-26 to 2027-28
Adani Cementation	Gujarat	West	2.00	2025-26 to 2027-28
Deccan Cements	Telangana	South	1.20	2025-26 to 2027-28

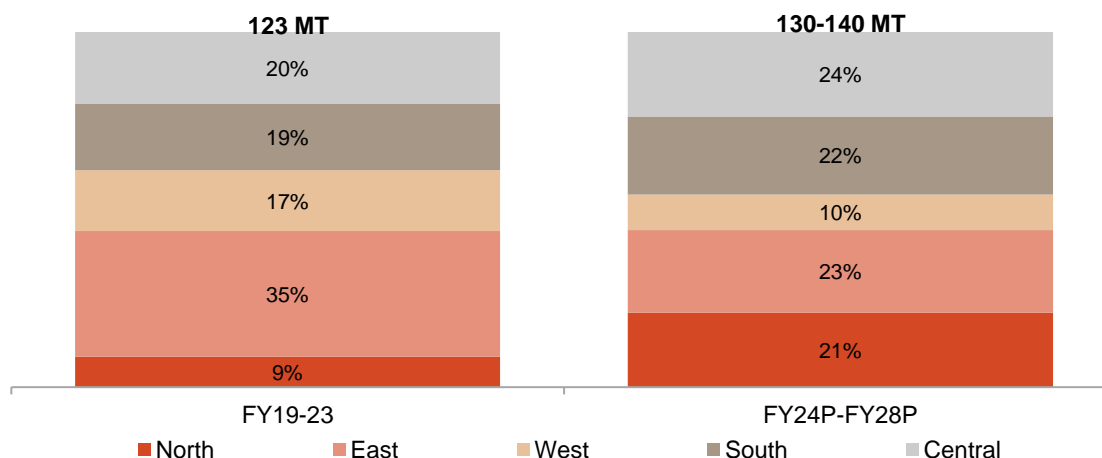
Deccan Cements	Telangana	South	0.80	2025-26 to 2027-28
JSW Cements	Uttar Pradesh	Central	2.50	2025-26 to 2027-28
Ultratech Cement	Andhra Pradesh	South	1.80	2025-26 to 2027-28
Penna Cement	Punjab	North	1.00	2025-26 to 2027-28
Ultratech Cement	Punjab	North	2.60	2025-26 to 2027-28
Ultratech Cement	Tamil Nadu	South	2.70	2025-26 to 2027-28
KJS Cement	Uttar Pradesh	Central	2.00	2025-26 to 2027-28
Penna Cement	Andhra Pradesh	South	2.00	2025-26 to 2027-28
Ambuja Cement	Punjab	North	4.00	2025-26 to 2027-28
Ambuja Cement	West Bengal	East	4.00	2025-26 to 2027-28
Ambuja Cement	Uttar Pradesh	Central	2.00	2025-26 to 2027-28
Ambuja Cement	Punjab	North	1.00	2025-26 to 2027-28
Star Cement	Assam	East	2.00	2025-26 to 2027-28
Ambuja Cement	Gujarat	West	3.75	2025-26 to 2027-28
Ambuja Cement	Uttar Pradesh	Central	3.30	2025-26 to 2027-28
Ambuja Cement	West Bengal	East	2.00	2025-26 to 2027-28
Shree Cement	Punjab	North	5.00	2025-26 to 2027-28
JSW Cements	Madhya Pradesh	Central	2.50	2025-26 to 2027-28
Birla Corp	Bihar	East	1.20	2025-26 to 2027-28
Penna Cement	Rajasthan	North	2.00	2025-26 to 2027-28
Ultratech Cement	Rajasthan	North	1.80	2025-26 to 2027-28
Ultratech Cement	Chhattisgarh	East	2.70	2025-26 to 2027-28
My Home	Odisha	East	3.00	2025-26 to 2027-28
Ultratech Cement	Madhya Pradesh	Central	4.50	2025-26 to 2027-28
Prism	Uttar Pradesh	Central	2.00	2025-26 to 2027-28
Orient Cement	Telangana	South	1.50	2025-26 to 2027-28
Dalmia Cement	Uttar Pradesh	Central	5.00	2025-26 to 2027-28
Ramco Cements	Karnataka	South	1.00	2025-26 to 2027-28
Orient Cement	Karnataka	South	2.00	2025-26 to 2027-28
Orient Cement	Rajasthan	North	2.00	2025-26 to 2027-28
Heidelberg	Gujarat	West	3.00	2025-26 to 2027-28
My Home	Telangana	South	1.75	2025-26 to 2027-28

Note: Year of commissioning is as per CRISIL MI&A Research estimates; Capacity is in MTPA
Source: CRISIL MI&A Research, company reports and announcements

3.3 Regional supply dynamics

Over fiscals 2019-23, the north, east and central collectively comprised ~64% of overall capacity additions with the east accounting for the largest share over the years, as players set up plants in the fast-growing eastern region. Over fiscals 2024-28, east and central regions are expected to drive capacity additions followed by south, north and west. Improving demand outlook over the medium term and push to gain market share have triggered a wave of capacity addition announcements by cement manufactures, especially large players.

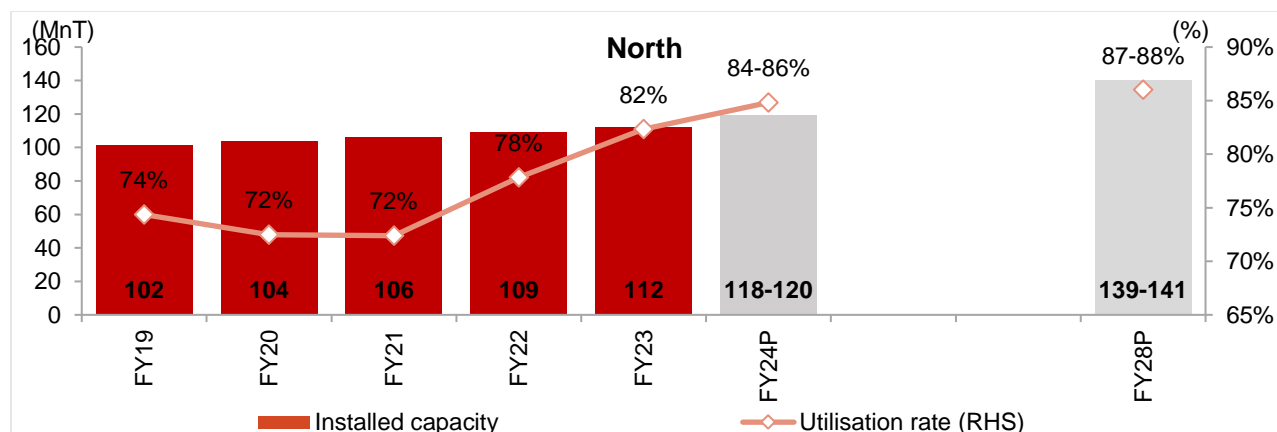
Regional break-up of capacity additions



Source: CRISIL MI&A Research, industry

1) Capacity, growth and utilisation in the north

In fiscal 2021, utilisation was stable despite the pandemic-caused lockdowns as demand recovered in the second half of the fiscal. However, utilisation improved in fiscal 2022, with few capacity additions and robust demand revival on the back of government spending and pick-up in construction, leading to ~78% utilisation levels in the region. In fiscal 2023, utilisation levels picked pace and reached ~82% amid lower capacity addition. Utilisation levels are expected to further reach to 87-88% in fiscal 2028 amidst lower capacity additions and healthy demand growth.

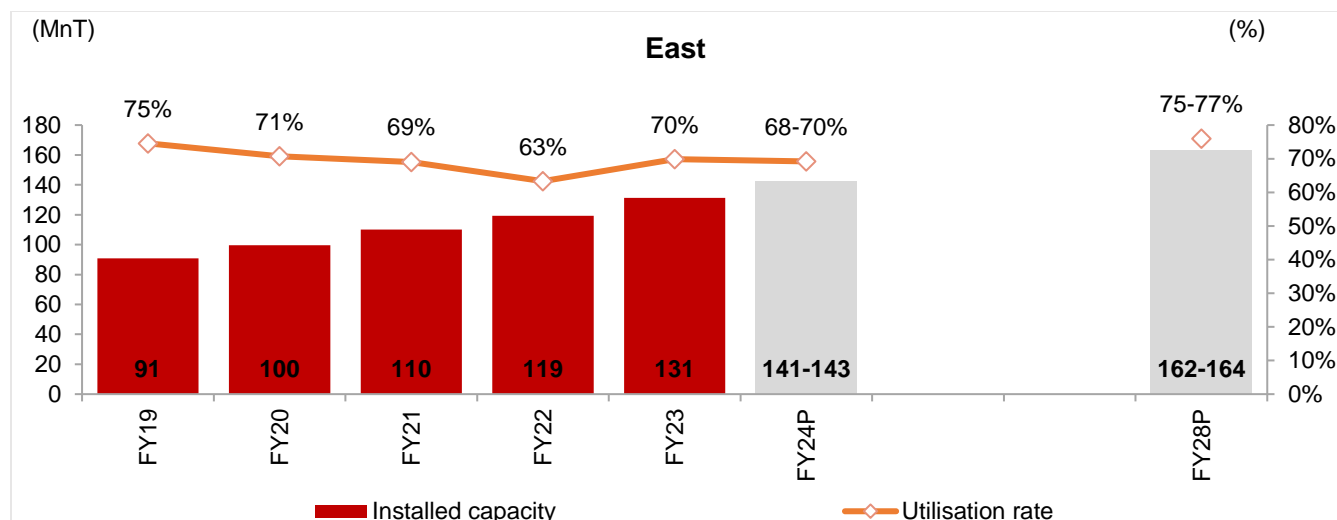


Source: CRISIL MI&A Research, industry

Note: Capacity utilisation is calculated on effective capacity – based on the date of commissioning of the plant; capacity utilisation is calculated as production in the region by effective capacity and does not take into consideration inter-regional movement

2) Capacity, growth and utilisation in the east

The eastern region was able to better tackle the pandemic owing to a large share of rural areas and lower congested urban settlements, and, hence, the decline in utilisation levels was lower at ~69% in fiscal 2021. However, utilisation levels, dropped to ~63% in fiscal 2022 amid higher capacity additions and weak demand due to sand issues and untimely rainfall. However, in fiscal 2023, utilization rebounded to 70% on back of robust demand growth supported by traction in rural housing and infra pus; In fiscal 2028, utilisation levels are expected to trend 75-77%, with surge in capacity additions and inbounds from the south

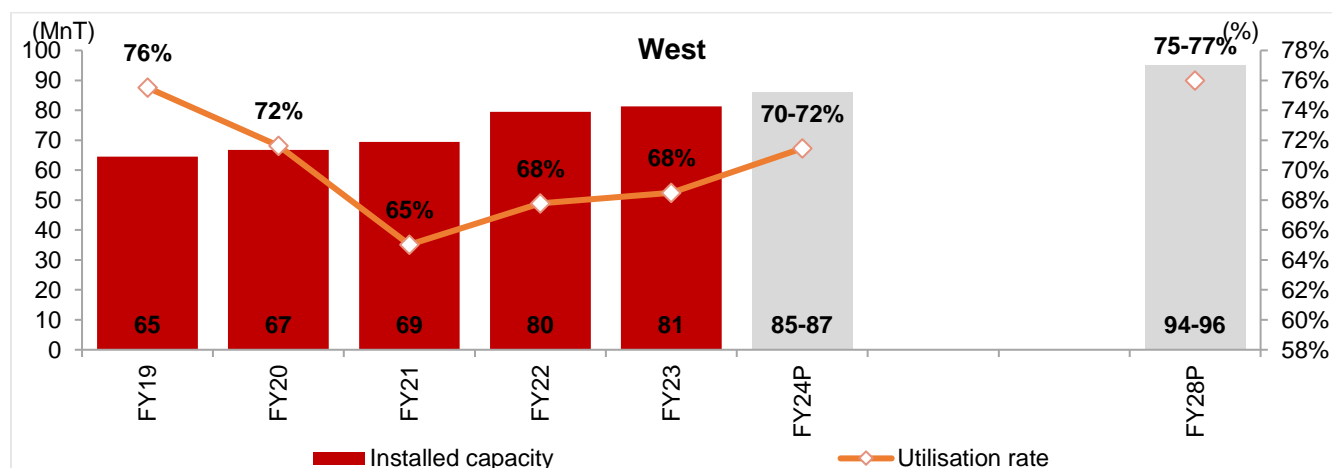


Source: CRISIL MI&A Research, industry

Note: Capacity utilisation is calculated on effective capacity – based on the date of commissioning of the plant; capacity utilisation is calculated as production in the region by effective capacity and does not take into consideration inter-regional movement

3) Capacity, growth and utilisation in the west

The western region was the most impacted region in fiscal 2021, due to stringent lockdown conditions leading to production shutdown, which lowered utilisation to ~65% from a high of ~72% in fiscal 2020. However, in fiscal 2022, ~10 MT capacity was installed in the west, which limited the rise in utilisation levels despite healthy demand, leading to ~68% utilisation rate. Utilisation levels were maintained at similar ~68% rate. Operating rates are projected to rise in fiscal 24 with moderate capacity additions and lower inbound cement movement from the south (Karnataka) and north, leading to lower cement supply amidst a healthy demand outlook. Also, going forward, these levels are expected to reach 75-77% on account of the slower pace of capacity additions over the next five years and healthy growth in demand.



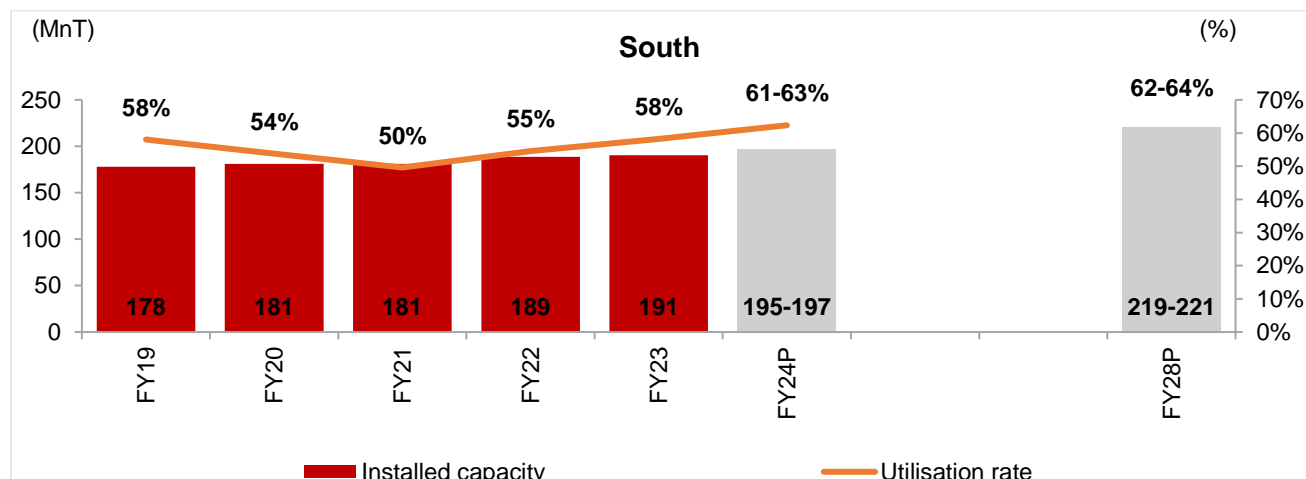
Source: CRISIL MI&A Research, industry

Note: Capacity utilisation is calculated on effective capacity – based on the date of commissioning of the plant; capacity utilisation is calculated as production in the region by effective capacity and does not take into consideration inter-regional movement

Capacity, growth and utilisation in the south

In fiscal 2021, utilisation was low at 50% amid extended local lockdowns because of the severity of the pandemic. In fiscal 2022, utilisation inched up to pre-pandemic levels of fiscal 2020 at ~55%, led by smart recovery in demand and modest capacity additions. Improved demand from infrastructure and housing

sectors and moderate capacity additions propelled utilisation to ~58% in fiscal 2023 and expected to improve to 61-63% in fiscal 2024. The southern region is expected to continue to witness low-capacity utilisation as against other regions going forward owing to a wide gap between capacity and production over the years. Utilisation rates are projected at 62-64% in fiscal 2028 due to higher capacity additions.

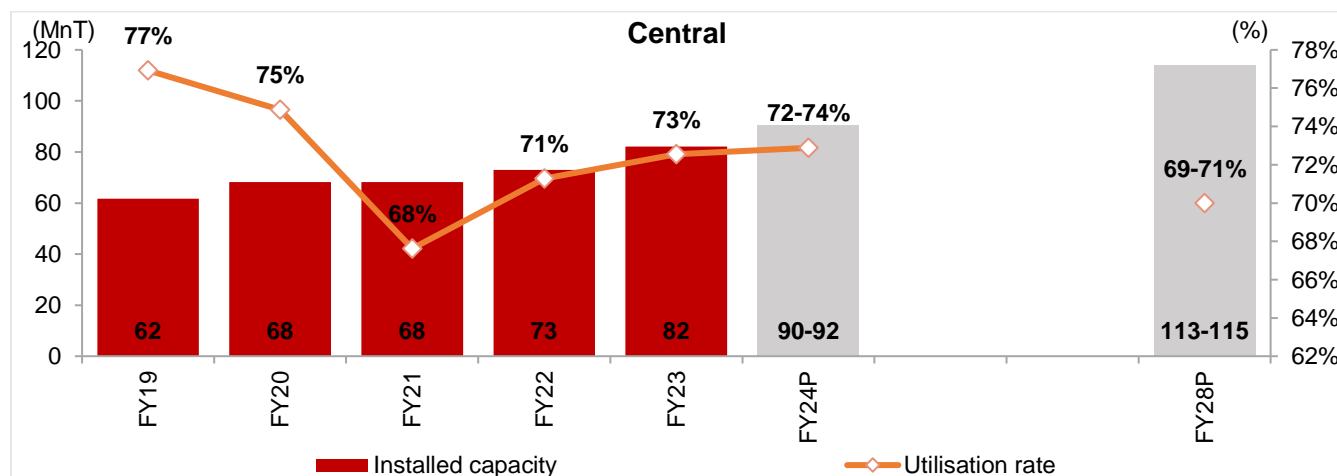


Source: CRISIL MI&A Research, industry

Note: Capacity utilisation is calculated on effective capacity – based on the date of commissioning of the plant; capacity utilisation is calculated as production in the region by effective capacity and does not take into consideration inter-regional movement

4) Capacity, growth and utilisation in the central

Capacity utilisation in the central region stood at ~68% in fiscal 2021 due to production shutdowns in the first quarter. However, the region saw a sharp recovery in operating rates in fiscal 2022, as demand rebounded, leading to ~71% utilisation level in the region. The central region witnessed marginal rise in utilisation levels to 73% in fiscal 2023 and expected to hover at 72-74% in fiscal 2024 on back of increasing demand, however, higher capacity additions in the region to limit pickup in utilisation levels. In fiscal 2028 operating rates are expected to remain subdued at 67-69% as incremental supply will outpace incremental demand in the region on the back of higher capacity additions.



Source: CRISIL MI&A Research, industry

Note: Capacity utilisation is calculated on effective capacity – based on the date of commissioning of the plant; capacity utilisation is calculated as production in the region by effective capacity and does not take into consideration inter-regional movement

4 Price, Cost and Profitability overview

4.1 Pricing overview and outlook

Overview of cement prices



Note: Cement prices are average pan-India retail (dealer prices for <25 bags) prices (Rs 50 kg per bag) for CAT A brands, and are inclusive of dealer margins and GST

Source: CRISIL MI&A Research

Cement prices rose by ~3% in fiscal 23 to protect margins from continued input cost inflation. Power and fuel costs (accounting for 29-31% of industry costs), which were already elevated, further rose because of rally in crude oil prices and supply constraints caused by the Russia-Ukraine war in late-fourth quarter of fiscal 2022. Pet coke prices followed crude oil prices and sharply rose in March 2022 followed by rise in coal prices. The effect of high commodity costs (which comes with a lag), impacted industry profitability in the first quarter of fiscal 2023. Hence, to protect margins, prices rose by 4-5% in Q1FY23. Going forward, prices witnessed marginal rise of ~2% in Q2FY23 on-year basis while dipped by ~4% sequentially. Further, prices rose by ~3% sequentially in Q3 post seasonally weak construction period led by price hikes in early period of the quarter. In the last quarter prices rose only marginally on-year by ~1% limited by highly competitive intensity amidst healthy demand growth period and easing cost pressures as industry focus shifted to capture demand in busy construction season.

Going forward in fiscal 2024, CRISIL MI&A Research expects cement prices to decline by 1.5-2.5% Rs. 380-385 per 50 kg bag, on an already high base of fiscal 2023 in line with declining inflationary sentiments and easing input costs. Also, the entry of new players into already competitive markets, inorganic expansion by large players, and continued capacity addition in low utilisation level regions will be deterrents to price competitiveness and put pressure on prices.

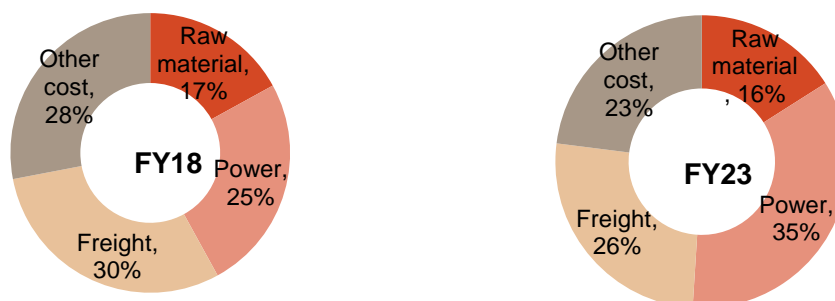
4.2 Key cost break-up

The cement industry is power-intensive, with the power requirement of cement plants varying in accordance with the heat treatment process used. Most of the raw material cost (which accounts for a large component of cement production cost), is incurred in procuring limestone. As cement is a low-value, high-volume commodity, transporting it also involves significant costs.

The major costs associated with cement production are on account of:

- Power and fuel
- Raw materials
- Selling expenses
- Other expenses

Change in share of cost components (FY18 to FY23)



Note: Sample set used to calculate cost of sales comprises 21 companies accounting for >80% of the industry sales

Source: CRISIL MI&A Research

4.3 Cost and Profitability

Cement industry has seen two consecutive years of margin contraction with margins declining by 400-450 bps and 450-550 bps in fiscal 2022 and fiscal 2023 respectively. Margins are estimated to have nosedived to 15-16% in fiscal 2023 after seeing highs of ~25% in fiscal 2021. The fall in margins is majorly on back of elevated power & fuel costs which is estimated to have increased by 36-37% and 33-34% in fiscal 2022 and fiscal 2023 respectively.

Player's profitability was impacted in fiscal 2023 with the rally in crude oil and coal prices during the first half of the fiscal due to geopolitical tensions between Russia and Ukraine. The Brent crude oil price, which was hovering at \$70-80 on average in fiscal 2022, crossed the \$120-per-barrel mark in June 2022, taking prices to average \$96 for fiscal 2023. They bottomed below the \$100-mark in August 2022, post which they have been declining, hovering at \$80-82 per barrel, and provided some moderation from all-time highs during the latter half of fiscal 2023.

International coal prices had reached new heights, with Australian coal (GCV 6300 kcal/kg) prices soaring to \$430 per tonne in Septemeber'22. However, prices started witnessing corrections from October'22

onwards from all-time highs due to tepid demand from Europe (on account of relatively warm winters during December) and China (festive season). On the contrary, Indonesian non-coking coal prices which crossed \$320 per tonne in July-Aug'2022 saw trend reversal and declined to average \$148 per tonne in Q4FY23 as end users in China and India relied on domestically produced coal. At an overall level, international coal prices (the average of Australia, South Africa and Indonesia non-coking coal) cooled down with ~16% and ~33% qoq decline in Q3FY23 and Q4FY23 respectively. Thus, overall power and fuel costs are estimated to have increased by 33-34% in fiscal 2023 on an already high base of 36-37% rise in fiscal 2022.

Also, raw material cost jumped 6-7% in fiscal 2023 since fly-ash and slag prices continued to climb northward on account of demand acceleration and inflation. Freight costs inched up in fiscal 2023 by 2-3% on back of elevated diesel prices. However, higher volumes through the railways and new capacity additions in east led to lower lead distances, resulting in limited price rise despite elevated diesel costs. Hence, overall cost of sales rose by 12.5-13.5% on-year, led by higher power, fuel and freight costs, which is estimated to erode margins by 450-550 bps to 15-16% in fiscal 2023. Pick-up in realisation and healthy uptick in volume cushioned against any further margin downfall in fiscal 2023.

Annual Profitability trend

	FY21	FY22	FY23E	FY24P
Net realisations	▲ 2-3%	▲ 5.5-6.5%	▲ 5-7%	■ (1-2)%
	Rs 252/bag	Rs 267/bag	Rs 280-285/bag	Rs 277-282/bag
Power & fuel costs	▼ (5.5)-(6.5)%	▲ 36-37%	▲ 33-34%	▼ (11)-(13)%
Raw material	▲ 8.5-9.5%	▲ 3-4%	▲ 6-7%	▼ (4)-(6)%
Freight expenses	■ 1-3%	▲ 6-8%	■ 2-3%	■ (1)-(3)%
Cost of sales	▼ (1.5)-(2.5)%	▲ 11-13%	▲ 12.5-13.5%	▼ (6-8)%
Operating margin	▲ 350 bps	▼ 430 bps	▼ ~(500) bps	▲ 450-550 bps
	25.1%	20.7%	15-16%	19.5-21.5%

Source: CRISIL MI&A Research, industry

In fiscal 2024, margins are expected to expand by 450-550 basis points (bps) to 19.5-21.5%. Crude oil prices are expected to witness 12-15% dip in fiscal 2024 with price corrections in place. Pet coke, being a derivative of crude, is expected to moderate in line with crude prices. Raw material costs are also expected to moderate on a high base (4-6% on-year decline), led by declining inflationary sentiments and better availability. Further, freight costs to marginally dip by 1-3% as diesel prices to decline moderately but, the decline in diesel prices will be much lower than expected 12-15% drop in crude oil prices during the fiscal. Other costs to moderate in line with reducing packaging costs (led by declining crude oil prices) as well as taming inflation.

Overall, the cost of sales is expected to reduce by 6-8%, largely on account of lower power & fuel costs and raw material costs, which will lead to 450-550 bps margin expansion in fiscal 2024 to 19.5-21.5%. With easing input costs, margins are expected to bounce back after being hit for the previous two consecutive fiscals. Despite marginally lower realisation in fiscal 2024, the cement industry is expected to witness profitability revival amidst declining input costs.



5 Peer Comparison/ Competition Benchmarking

To give overall competitive landscape in cement industry in India:

The Indian cement industry is highly fragmented and competitive, with the presence of a few large players and several medium and small players. We face competition from the top five players, including UltraTech Cement, Ambuja Cements, ACC, Dalmia Cement and Shree Cement which accounted for 46-48% of the total market share as of the Financial Year ended March 31, 2023.

The cement sector has seen consolidation, with large cement makers taking over regional heavyweights, and struggling companies being taken over through competitive bidding under the Insolvency and Bankruptcy Code. The acquisition of Murli Industries and Kalyanpur Cements by Dalmia Cement and transfer of Jaypee's assets to UltraTech Cement led to the consolidation of more than 20 MTPA capacity. Detergent maker Nirma acquired 13 MTPA of Lafarge India's assets and Birla Corporation took over 5.5 MTPA capacity of Reliance Cement. Meanwhile, in May 2022, Adani Group and Holcim signed a binding agreement for the sale of the Holcim's cement business in India. The business comprises Holcim's 63.1% stake in Ambuja Cements, which owns a 50.1% stake in ACC Cement, and a 4.5% direct stake in the company.

Udaipur Cement Works Limited (UCWL)

UCWL is a subsidiary of JK Lakshmi Cement Limited. It is part of the JK Organisation (JKO) business conglomerate, having presence in in the fields of Cement, Tyre, Paper, Agri Genetics, Dairy Products, Education, etc. The Company has an integrated cement manufacturing unit with an installed cement production capacity of 2.2 million tons per annum (MTPA). The Company has sales presence in India across northern, western, and central regions. In FY23, revenue surged by ~18% on an already high base but profitability dipped further with operating margin at 13% and net profit margin at 3%.

JK Lakshmi Cement

JK Lakshmi Cement Ltd was established in 1982, with an integrated plant in Rajasthan's Sirohi district with 0.5 million MT total capacity. JK Lakshmi cement specializes in manufacturing Cement, Gypsum Plaster and Ready-Mix Concrete (RMC). The company has a strong presence in the country's northern and western regions. At a consolidated level JK Lakshmi has seven plants located across the states of Rajasthan (2), Gujarat (2), Haryana, Odisha and Chhattisgarh with combined capacity of 14 MTPA. JK Lakshmi posted revenue of INR 43,422 mn for 9MFY23 with operating margin of 11.9% and net margin of 5.4%.

JK Cement Limited

JK Cement, an affiliate of the JK Group, has grey cement capacity of 18.7 million tonnes per annum (MTPA) and white cement capacity of 1.2 MTPA. Its Grey Cement manufacturing units are based in Mangrol and Gotan in Rajasthan and Muddapur in Karnataka and a grinding unit at Haryana. The company also has 102.5 MW of thermal power plants (CPP), 23.2 MW of waste heat recovery units, and 1.2 million tonnes of wall putty capacity. Company commissioned 4 MTPA of capacity in the central region in Q3FY23 taking total capacity of the company to 18.7 MTPA as of Dec-2022. Company clocked in revenue of INR 69,301 mn during 9MFY23 with operating margins at ~14% during the period.

Mangalam Cement



Mangalam Cement Ltd (MCL), incorporated in 1978, manufactures cement and clinker. MCL sells its cement under the brand, Birla Uttam Cement, through both trade and non-trade channels. The company has an aggregate capacity of ~4.4 MTPA. The company's plants are located at Kota (Rajasthan) and Aligarh (Uttar Pradesh). The key markets include Uttar Pradesh, Rajasthan, and Madhya Pradesh. The company had set up two captive thermal power plants of 17.5 MW each. Apart from this, the company owns 13 windmills at Jaisalmer, Rajasthan, with a capacity of 13.65 MW generation per day. During 9MFY23, company generated revenue of INR 13,422 mn at an operating margin level of 7.7%.

Nuvoco Vistas Limited

Nuvoco Vistas Corp. Ltd, a Nirma Group company, is the fifth largest cement manufacturer in India. The company is also the manufacturer and retailer of other building materials. The company started operations in India in 1999 via acquisitions, and since then have emerged as one of the major players in India. The company is one of the premium cement manufacturers in India along with the likes of Ultratech Cement, ACC Cement and Ambuja Cement etc. Nuvoco Vistas became the leading player in the East following the acquisition of Nu Vista Limited (formerly Emami Cement Limited) at an enterprise value of INR 5,500 crore in June 2020. Company's current total capacity stands at 23.6 MTPA. Company's profitability dwindled during 9MFY23 with net loss soaring to INR 1,852 mn and revenue at INR 76,577 mn.

Gujarat Sidhee Cements Ltd

Gujarat Sidhee Cement Ltd (GSCL) was set up as a joint venture between Gujarat Industrial Investment Corporation and the Mehta group. The Mehta group has a majority stake in Saurashtra Cement Ltd as well. In addition to cement, the group is also present in sectors such as sugar, packaging, electrical cables and agro chemicals. The company markets cement under the brand name Sidhee and currently has capacity of 1.4 MTPA.

Sagar Cements Ltd

Sagar Cements Ltd was incorporated in 1985 in Andhra Pradesh. The company manufactures various varieties of cement, such as ordinary Portland cement, Portland pozzolona cement and sulphate resistant cement, which are sold under the brand name, Sagar. The company's plants, totaling 8.25 million tonne per annum (mtpa) of capacity, with 3 MT manufacturing facility at Mattampally, Suryapet Dist., Telangana, 1.5 MT grinding facility at Bayyavaram, Visakhapatnam, Andhra Pradesh, 1.25 MT manufacturing facility at Gudipadu, Anantapur Dist., Andhra Pradesh, 1 MTPA manufacturing facility at Jeerabad, MP and 1.5 MTPA at Jajpur, Odisha.

Sanghi Industries Ltd

Sanghi Industries Ltd is the flagship company of the Ravi Sanghi Group. The company produces 53 grade ordinary Portland cement and Portland pozzolana cement. Sanghi Industries Ltd. is a mid-size player having a cement capacity of 6.1 mtpa in Kutch, Gujarat. Sanghi industries sells Ordinary Portland Cement (OPC53 & OPC43), Portland Pozzolana Cement (PPC), and Portland Slag Cement (PSC) in Indian Markets of Gujarat, Rajasthan, Maharashtra and Kerala and International Markets of Middle East, Africa and the Indian Sub-continent. It also sells Ready Mix Concrete (RMC) in Ahmedabad and Rajkot markets. SIL also has a private jetty for exporting clinker to nearby countries such as Sri Lanka and Middle East and African countries. Company's profitability was impacted during 9MFY23 with net loss at INR 2211 mn at an operating income of INR 7,027 mn.



Saurashtra Cement Ltd

The Indian Arm of the Mehta Group comprises of Saurashtra Cement Limited (SCL), marketing cement under the brand name HATHI & SIDHEE. The company manufactures Portland Pozzolana Cement (PPC), Ordinary Portland Cement (OPC 53 grade), Portland Slag Cement (PSC) types of cement and clinker to suit customer's requirements located in Gujarat, Maharashtra, Rajasthan, Madhya Pradesh and the West Coast of India. Company's total capacity stands at 1.4 MTPA as on date.