Crisil
Intelligence

Market review of Indian cement sector

For JSW Cement

July 2025

by S&P Global

Crisil Intelligence

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1.1 Review and outlook of GDP growth in India

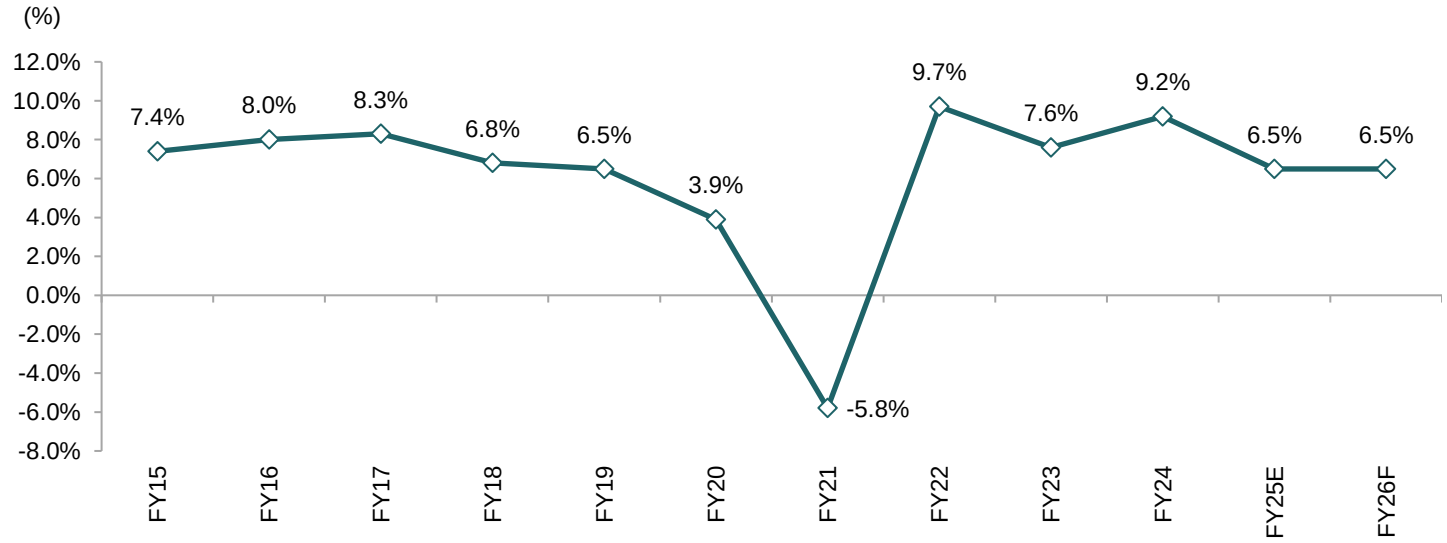
1.1.1 Review

The National Statistics Office's (NSO) second advance estimate (SAE) projects real gross domestic product (GDP) growth at 6.5% for fiscal 2025, 10 basis points (bps) higher than first advance estimate (FAE) in January. GDP growth was also revised higher 100 bps to 9.2% for fiscal 2024 and 60 bps up to 7.6% for fiscal 2023.

However, the fiscal 2025 growth number represents a significant slowdown from the previous fiscal, led by a decelerating growth in fixed investments and government consumption.

The slowdown in fiscal 2025 was driven by fixed investment (6.1% in fiscal 2025 versus 8.8% in fiscal 2024) and government consumption (3.8% in fiscal 2025 vs 8.1% in fiscal 2024). However, growth improved in private consumption (7.6% versus 5.6%) and exports (7.1% versus 2.2%), even as imports contracted (-1.1% vs 13.8%) in real terms. On the supply side, gross value added (GVA) is estimated to grow 6.4% in fiscal 2025, compared with 8.6% in the previous fiscal, driven by slowing growth in industry (5.6% versus 10.8%) and services (7.3% vs 9%), However, growth in agriculture picked up (4.6% from 2.7%).

Figure 1- Historical GDP growth and outlook



Note: E-Estimated, F: Forecast
Source: RBI, NSO, Crisil Intelligence

1.1.2 Outlook

Crisil Intelligence expects India's GDP to grow at 6.5% in fiscal 2026, driven by a combination of factors, including a recovery in private consumption, investment, and exports. The Indian economy's resilience and adaptability in the face of global challenges are expected to be crucial in sustaining its growth momentum, enabling the country to remain one of the fastest-growing major economies worldwide.

In the post-pandemic era, India's economic indicators have exhibited a gradual improvement, driven by strong domestic consumption and a decreasing reliance on global demand. Despite prevailing global geopolitical instability, India has maintained its position as one of the fastest-growing economies globally, underscoring its resilience and adaptability in adversity. The country's ability to navigate global challenges has been a key factor in its success, and this is expected to continue in the future.

However, prevailing global uncertainties and geopolitical risks are expected to require careful monitoring and management to ensure the Indian economy remains resilient and adaptable in an increasingly complex and challenging global environment. The ability of the Indian economy to navigate these challenges and sustain its growth momentum is expected to be critical in maintaining its position as one of the fastest-growing major economies worldwide.

1.1.3 Overview of global economy

The global economy is maintaining a steady pace, albeit with varying degrees of growth across different countries. In calendar year 2024, China's growth slowed to 4.8%, primarily due to a sharper-than-expected decline in consumption. This was a result of a delayed stabilisation in the property market and persistently low consumer confidence, which offset the positive effects of robust net export growth. In contrast, the euro area experienced subdued growth, mainly owing to ongoing weakness in manufacturing and goods exports, despite a recovery in consumption driven by rising real incomes.

In calendar year 2024, Japan's economic growth slowed, largely due to temporary supply disruptions, whilst the United States remained a notable exception, with its economy expanding at a rate of 2.8%. This growth was driven by strong consumption in the second half of the year. Against this backdrop, India is poised to emerge as a relatively strong performer, with real Gross Domestic Product (GDP) growth expected to reach 6.5% in fiscal year 2026. This growth is expected to be driven by a combination of factors, including a recovery in private consumption, investment, and exports.

The Indian economy's resilience and adaptability in the face of global challenges will be crucial in sustaining its growth momentum. As a result, India is likely to remain one of the fastest-growing major economies in the world. According to the first advance estimates of national accounts, India's real GDP is estimated to grow by 6.5% in fiscal 2025. Growth in the first half of fiscal 2025 was supported by the agriculture and services sectors, with rural demand improving due to record Kharif production and favourable agricultural conditions. However, the manufacturing sector faced challenges due to weak global demand and domestic seasonal conditions. Private consumption remained stable, reflecting steady domestic demand.

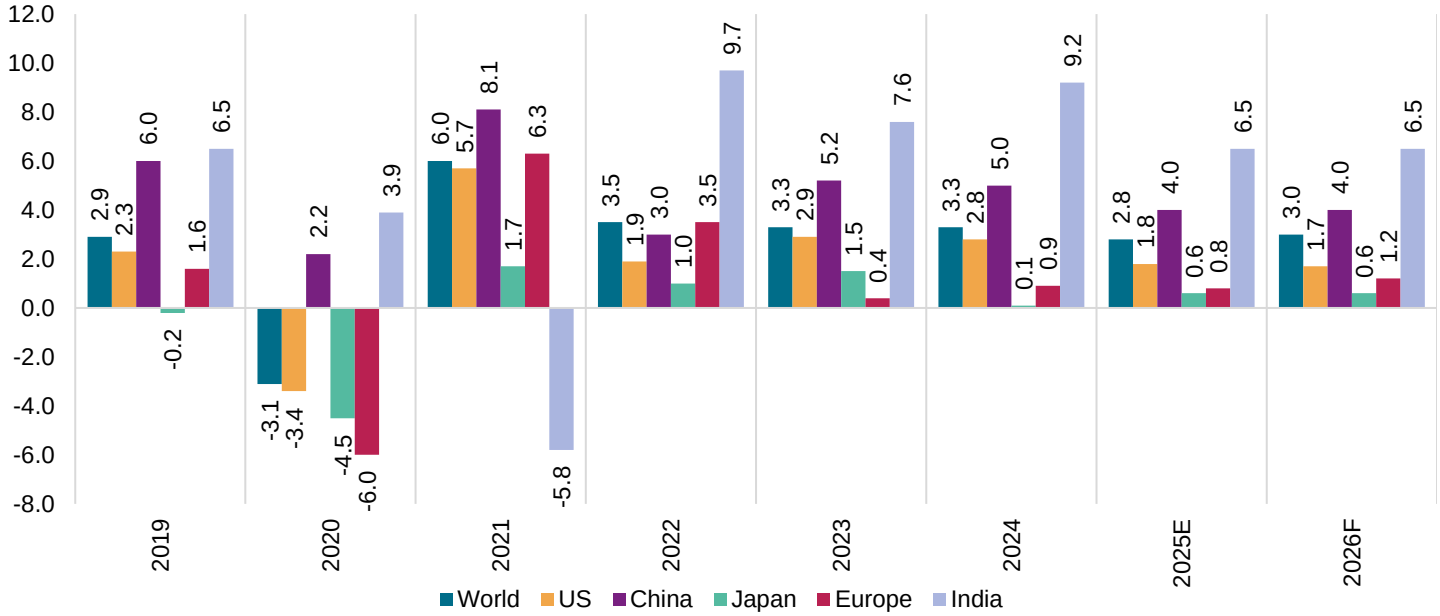
Fiscal discipline and a strong external balance, supported by a services trade surplus and healthy remittance growth, contributed to macroeconomic stability. These factors collectively provided a solid foundation for sustained growth amidst external uncertainties. Overall, India's economy is well-positioned to navigate the prevailing global challenges and maintain its growth trajectory, driven by its inherent strengths and resilience.

Table 1 - Real GDP of advanced and emerging economies

YoY (%)	CY19	CY20	CY21	CY22	CY23	CY24	CY25P	CY26P
Advanced economies	1.7	-4.5	5.2	2.6	1.7	1.8	1.4	1.5
Emerging and developing economies	3.7	-2.0	6.6	4.1	4.4	4.3	3.7	3.9

Note: E: Estimated, P: Projection
Advanced economies: The US, Germany, France, Italy, Spain, Japan, United Kingdom, Canada
Emerging and developing economies: China, India, Russia, Brazil, Mexico, Saudi Arabia, Nigeria, South Africa
Source: IMF, World Economic Outlook Update, April 2025

Figure 2- World's GDP growth YoY%



Note: India numbers are on a fiscal-year (FY) basis (Apr-Mar), where 2025 would correspond to fiscal 2026; on calendar year basis (Jan to Dec) for other countries, Europe includes 44 countries

E: Estimated, F: Forecast

Source: International Monetary Fund (IMF) World Economic Outlook, January 2025, Number for India are as per NSO and Crisil Intelligence forecast for fiscal 2026

Crisil Intelligence expects India's GDP to grow at 6.5% in fiscal 2026, based on its base case scenario. This growth is expected to be supported by several factors, including the Reserve Bank of India's (RBI) rate cuts, lower crude oil prices, and a normal monsoon. The government's capital expenditure (capex) is also expected to remain supportive, although continued fiscal consolidation efforts imply that investment prospects will depend on a sustained revival in private capex.

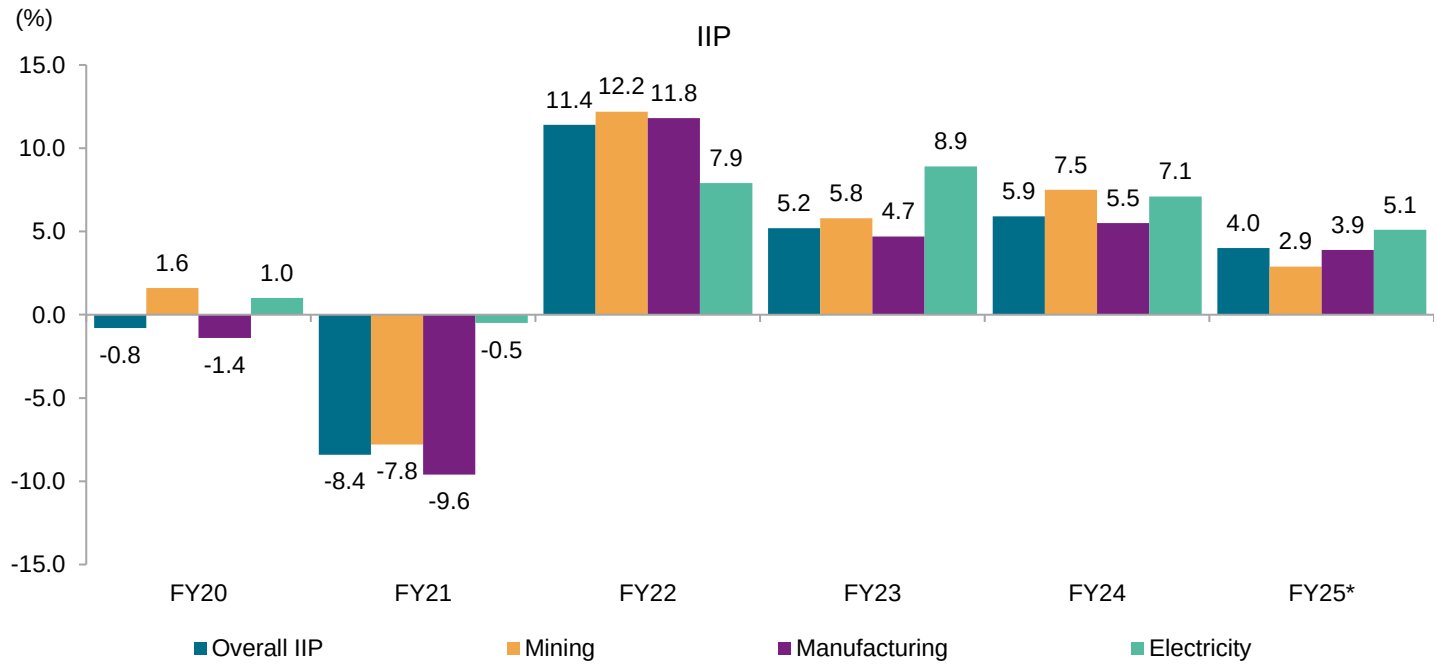
However, geopolitical developments are likely to remain a key area of concern in fiscal 2026. The potential wide-ranging changes introduced by the US administration are expected to have significant implications for the global economy, and India's exports will need to navigate the heightened uncertainties arising from the likelihood of US tariffs. Ongoing trade tensions and protectionist policies are expected to impact India's export growth, and the country's businesses will need to adapt to the changing global trade landscape.

In this context, the RBI's rate cuts and the government's fiscal consolidation efforts are expected to be crucial in supporting economic growth. Lower crude oil prices are also expected to provide a boost to the economy, as they will help reduce the country's import bill and improve the trade balance. A normal monsoon is also expected to support agricultural growth, which is a critical component of India's economy.

Overall, while there are several positive factors expected to support India's economic growth in the next fiscal year, geopolitical uncertainties and trade tensions are expected to need close monitoring. The government and the RBI are expected to work together to ensure that the economy remains resilient and adaptable in the face of these challenges, and that the growth momentum is sustained over the long term.

1.2 Index of Industrial Production (IIP)

Figure 3- IIP on-year growth trend



**Note: Data for fiscal 2025 is provisional*
Source: Ministry of Statistics and Programme Implementation (MoSPI), Crisil Intelligence

Industrial output, as measured by the Index of Industrial Production (IIP) witnessed an unprecedented drop of 0.8% and 8.4% in fiscal 2020 and fiscal 2021 respectively due to stringent lockdown from March 25th amidst continued rise in covid cases and weakness in economic activity persisting in first half of the fiscal 2021. During the second half of the fiscal, several varied factors in conjunction helped sustain the recovery – pent-up demand due to festive season, a mild improvement in exports, better purchasing power of rural communities due to support from government schemes, reduced interest rates for retail borrowers, discounts, and incentives in sectors such as automotive, and higher government spending on capex. This limited the drop in overall IIP for fiscal 2021 to 8.4%.

On low base and broad-based recovery in economy, IIP witnessed a sharp rebound with a jump of 11.4% in fiscal 2022. Pent-up demand and healthy exports growth bode well for industrial activity during the fiscal. However, industrial activity moderated in fiscal 2023 with only 5.2% on-year growth as low base effect waned and industrial sector faced a grim external outlook, as aggressive rate hikes and elevated inflation (due to Russia-Ukraine crisis) hit growth in major advanced economies and global demand impacting domestic exports and inflation.

Fiscal 2024, on the other hand, saw healthy industrial performance, as indicated by 5.9% on-year growth amidst revival in government capex and exports. On average, IIP growth has been lower in the second half of fiscal 2024 compared with the first half and was largely driven by mining and manufacturing output.

IIP growth slipped to a four-year low of 4.0% in fiscal 2025 from 5.9% recorded in the previous year, dragged by poor performance of manufacturing and mining sector. Manufacturing, which has the highest weight in IIP, posted a sluggish 3.9% expansion during the fiscal while mining output growth slumped from 7.5% in fiscal 2024 to 2.9% in fiscal 2025.

Going forward, the US tariff hikes are a key risk to Crisil's GDP growth forecast for fiscal 2026. Slower global growth, along with anticipated reciprocal tariffs on India after three months, is likely to hit exports. Uncertainty about the duration and frequent changes in tariffs could hinder investments.

Crisil, however, expect the RBI's monetary easing to create some offset to the external headwinds. Interest rate cuts, income tax relief and easing inflation are expected to provide tailwinds to consumption this fiscal, while the expected normal monsoon will support agricultural incomes. Moreover, the anticipated decline in global crude oil prices, resulting from a potential global slowdown, is expected to provide additional support to domestic growth.

1.3 Interest rate

The Reserve Bank of India's (RBI) Monetary Policy Committee (MPC) cut key policy rates at its policy meeting in April by 25 basis points (bps) for the second consecutive time this year, amounting to a cumulative reduction of 50 bps in 2025. The MPC also changed its stance to accommodative, signalling that rate cuts will continue. The repo rate now stands at 6.00%, standing deposit facility rate at 5.75% and marginal standing facility at 6.25%

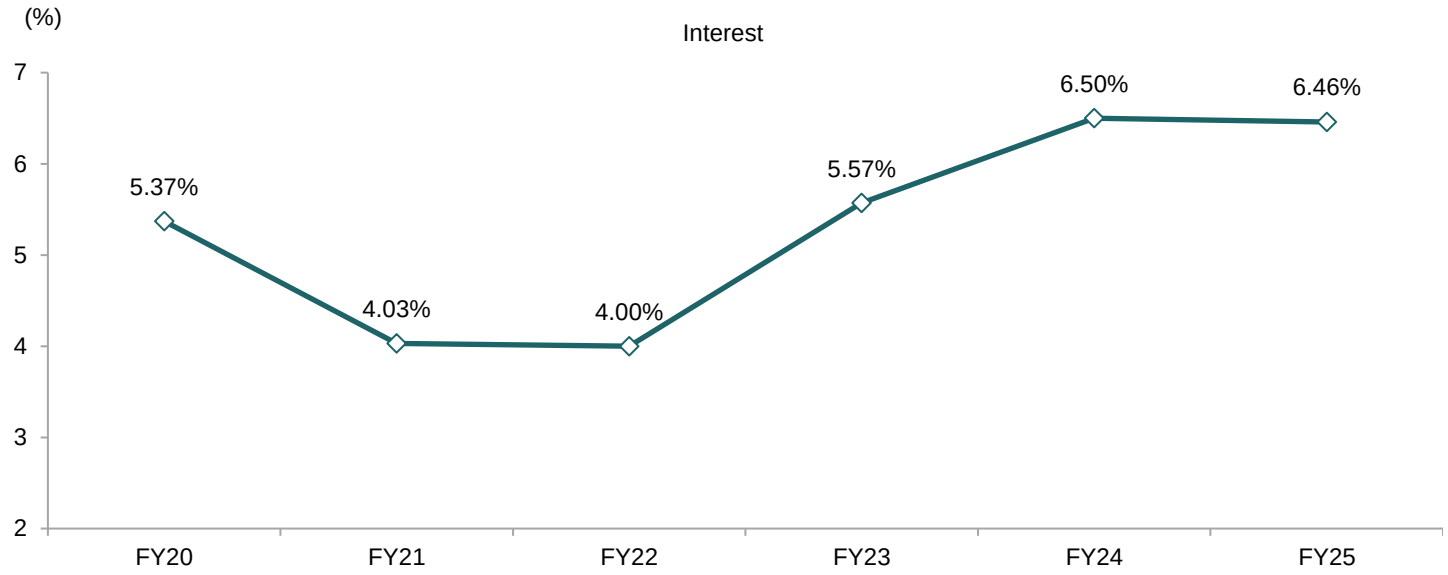
CPI inflation has fallen over the past few months. The MPC sees risks to food inflation receding on the back of healthy agricultural output. Initial forecasts of a normal monsoon in the current fiscal have raised hopes of a durable decline in food inflation. The MPC noted that the recent slide in crude oil prices bodes well for easing non-food inflation. Non-food inflation remains benign with only gold prices contributing to some uptick in recent months. Given the improvement in inflation outlook, the MPC lowered its retail inflation forecast by 20 bps to 4%.

Crisil believe April's rate cut was apt in an environment where risks to inflation are reducing and risks to growth are growing. Crisil expects monetary easing to continue in this fiscal 2026 in the form of rate cuts and liquidity support. This, will support India's GDP growth and offset some of the impact of the global tariff tensions.

Inflation is likely to be less of an issue this fiscal 2026 than in the previous one. Initial weather forecasts by Indian Meteorological Department predict an above-normal monsoon this fiscal, which is likely to keep a lid on food inflation. Softer international crude oil and commodity prices are expected to ease non-food inflation. Amid the sharp rise in US tariffs, any dumping of goods in India are a downside risk for domestic prices. However, extreme weather events remain monitorable amid rising disruptions from climate change. The US-led tariff war has significantly increased downside risks for global growth, which will hit India's exports. Uncertainty about the duration and frequent changes in tariffs is likely to hit investments. Rising risks to growth have spurred the need for the RBI to ease monetary policy.

Overall, easing inflation risks have increased space for the RBI to support growth through rate cuts.
Crisil expects at least two more rate cuts of 25 bps each this fiscal. Crisil also expects the RBI to remain proactive in managing liquidity conditions to enable the transmission of rate cuts to the broader economy.

Figure 4- Annual trend of Repo Rate

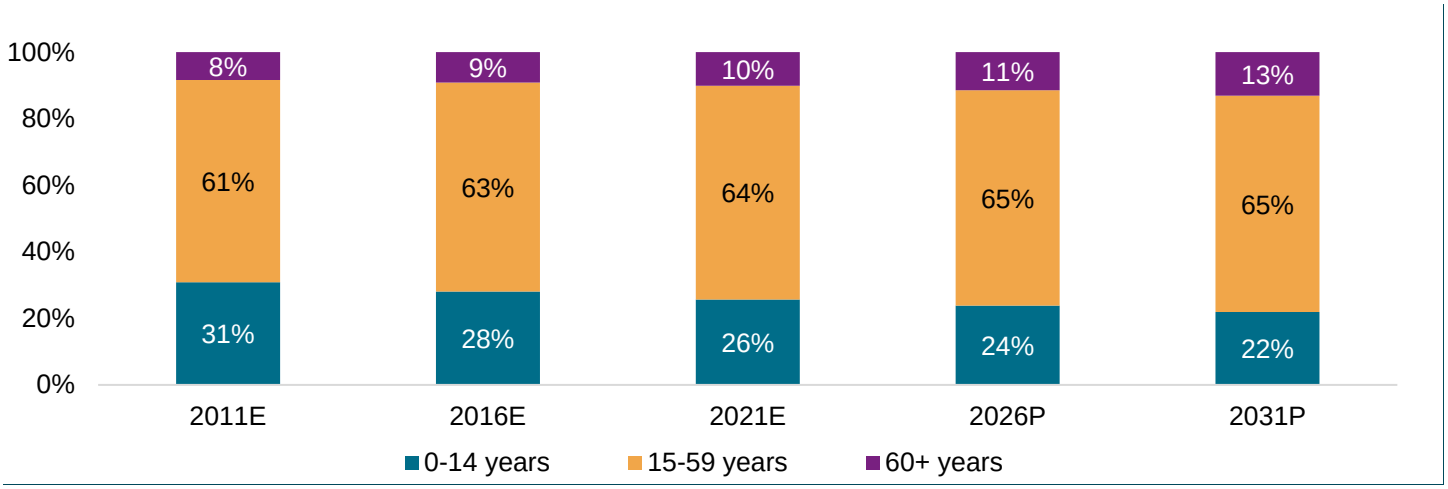


Source: Reserve Bank of India

1.4 Demographics overview

With a population of over 1.4 billion, India surpassed China as the world's most populous country in 2023 and now accounts for more than 17% of the global population. Some of India's largest states are comparable to entire countries in terms of population. For instance, Maharashtra, India's second most populous state, is comparable to Japan, with a population of over 122 million. Similarly, Karnataka and Gujarat are comparable to the UK and Thailand, respectively. However, India ranks much lower in terms of nominal per capita income, which stands at approximately $2,940. In comparison, China's and Japan's per capita incomes are four times and twelve times higher, respectively. Clearly, there is a significant opportunity for growth, with an extensive runway that underpins the country's structural growth potential.

Figure 5- India's demographic division (share of different age groups in population)



Note: E: Estimates, P: Projected
Source: Census of India 2011, Ministry of Health and Family Welfare, Crisil Intelligence

Out of India's total GDP, 60% is accounted for by consumption, which is growing rapidly due to the country's large youth population. With a median age of 28 years, India has one of the world's largest youth populations, significantly lower than China's median age of 39 years and Japan's median age of 49 years. As of March 2024, it is estimated that 64 %of India's population falls within the 15-59 age range. The large share of India's working population, combined with rapid urbanisation and rising affluence, shall support consumption and economic growth over the next several decades.

Urbanisation

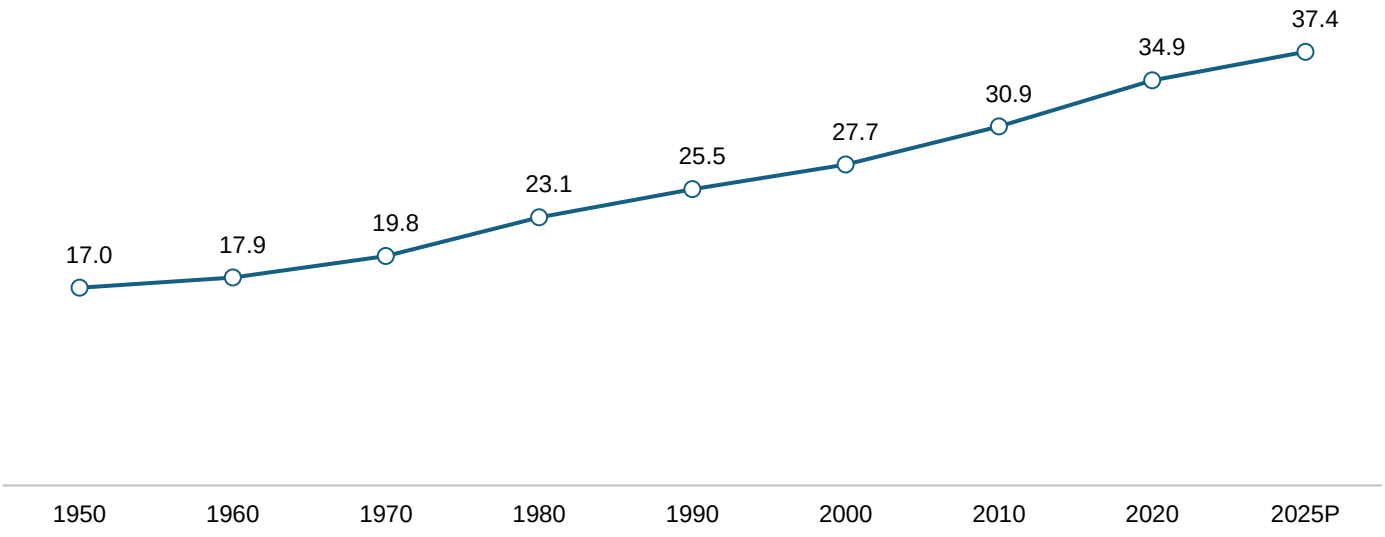
Urbanisation provides an impetus to housing demand in urban areas as migrants from rural areas require dwelling units. The share of urban population in total population has been consistently rising over the years and stood at about 35% in 2020. This trend in urbanisation has pushed the demand for houses in urban areas and, consequently, urban housing cement demand.

People from rural areas move to cities for better job opportunities, education, better lifestyles, etc. A family living in a rural area may migrate to an urban area as a whole or only a few people (generally earning members or students) may migrate, while a part of the family continues to retain the native house. Nearly 40-42% of the country's population is expected to live in urban locations by 2030, which will drive the demand for housing in these areas.

Urbanisation has a twin impact on housing demand. On the one hand, it reduces the area per household, and, on the other, there is a rise in the number of nuclear families, which leads to the formation of more households.

Urbanisation is one of India’s most important economic growth drivers, as it will drive substantial investments in infrastructure development, which, in turn, is expected to lead to job creation, development of modern consumer services and increased ability to mobilise savings. India’s urban population has been rising consistently over decades. In 1950, it was 17% of total population. As per the World Urbanization Prospects: The 2018 Revision by the United Nations (UN), it was estimated at ~35% by 2020. This is expected to reach ~37% by 2025.

Figure 6- Urban population (% of total population)



Note: P - projected
Source: Census 2011, World Urbanization Prospects 2021: The 2018 Revision (UN)

Factors, such as urbanisation and favourable demographics, are likely to manifest in higher growth in per-capita income and increased propensity to spend on discretionary items, including household appliances, mobiles & personal computers.

Increasing nuclearisation

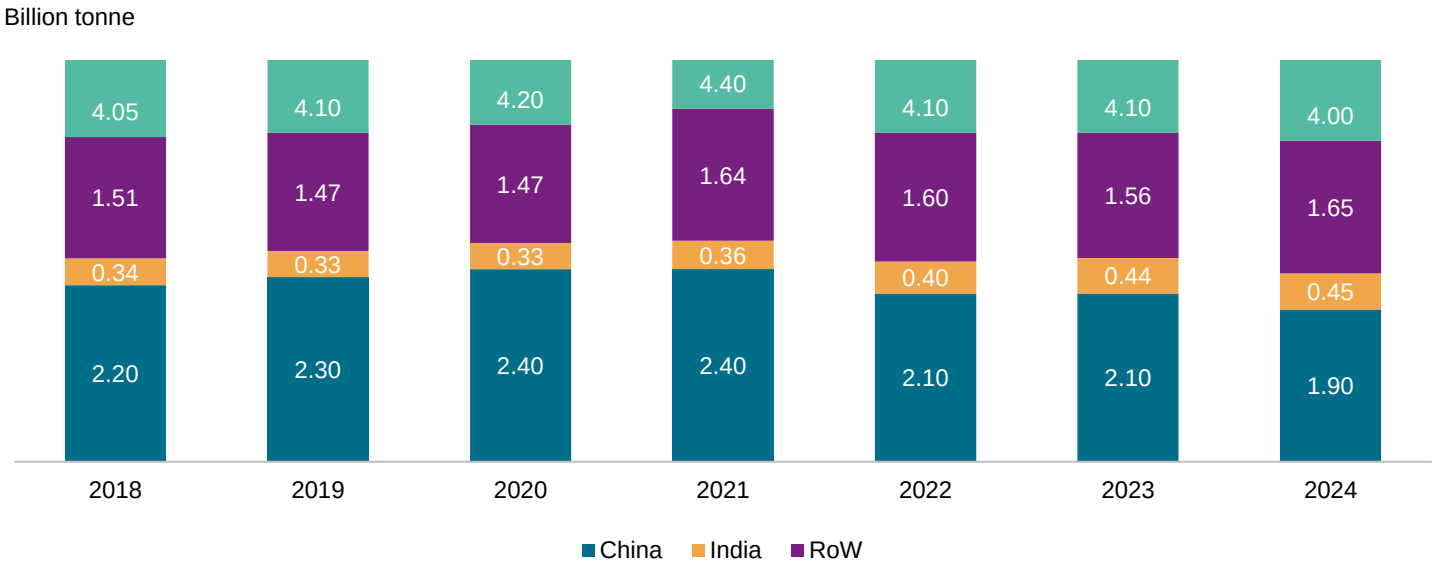
Nuclearisation refers to formation of multiple single families from one large joint family; each of these families lives in separate houses while the ancestral house may be retained or partitioned to buy new houses. Nuclearisation in urban areas is primarily driven by changing lifestyles, individualism, changing social/cultural attitudes and increased mobility of labour in search of better employment opportunities. These trends are expected to continue in the future which will aid cement demand as urban housing demand piles up.

Increasing nuclearisation of families is driving up consumption expenditure. In the recent past, the number of nuclear families, as a percentage of total household population, has increased.

2 Global cement industry overview

Global cement production in 2024 stood at ~4.0 billion metric tonne. The production had remained almost stagnant over the previous six years, with the highest production of 4.4 billion metric tonne recorded in 2021.

Cement production comparison — India vs China and rest of the world (RoW)



Note: India's production data are on fiscal year (Apr-Mar) basis and that of others on calendar year basis; Data above bars represent total cement production by world for that particular year

Source: United States Geological Survey – Mineral Commodity Summaries, Crisil Intelligence

China is the largest producer of cement globally, accounting for almost half of the overall cement production. A major portion of the cement produced in the country is consumed domestically. India comes a distant second, accounting for 7-11% of world's production.

During 2018-2024, developing nations such as India and Vietnam have been some of the fastest growing economies in terms of cement produced. During the period, cement production in India logged the highest compound annual growth rate (CAGR) of 5.04% among the top seven cement producing countries. In 2024, China remained the largest producer, accounting for 48% of the overall volume. The country's production remained in a range of 1.9-2.5 billion tonne over 2018-2024.

Share of top seven cement producing countries in global production

Country	Production in CY18 (million tonne)	Share (%)	Production in CY24 (million tonne)	Share (%)	CAGR 2018-23 (%)
China	2,200	53.80%	1900	47.50%	-2.41%
India	335	8.20%	450	11.25%	5.04%
Vietnam	90	2.20%	110	2.75%	3.40%
United States	87	2.10%	86	2.15%	-0.19%
Turkey	73	1.80%	82	2.05%	1.96%

Country	Production in CY18 (million tonne)	Share (%)	Production in CY24 (million tonne)	Share (%)	CAGR 2018-23 (%)
Iran	58	1.40%	72	1.80%	3.67%
Brazil	53	1.30%	68	1.70%	4.24%
Others	1,193	29.30%	1,332	33.30%	1.85%
Total (rounded)	4,050		4,000		-0.21%

Notes: India's production data are on fiscal year (Apr-Mar) basis and that of others on calendar year basis
US includes Puerto Rico
Others include Indonesia, Russia, Saudi Arabia, Egypt, Japan, Korea, Mexico and the remaining countries of the world
Source: United States Geological Survey-Mineral commodity summary, Crisil Intelligence

2.1 Per capita cement consumption in leading cement producing countries vis-à-vis India

India's per capita cement consumption stands at 290-340 kg, way below the world average of 470-520 Kg. China has the highest — 1,320-1,370 Kg. Per capita cement consumption of some of the leading cement producing countries is as follows:

Per capita cement consumption of leading cement producing countries (2024)

Country	Per capita cement in KGs
China	1,320-1,370
Turkey	940-990
Egypt	400-450
Japan	350-400
United States	240-290
India	280-330
Brazil	290-340
World	470-520

Note: The figures are Crisil estimates, arrived at by assessing various data points from sources such as United Nations Comtrade database (for trade data of cement), US Geological survey and world population estimates published by The World Bank
Data on calendar year basis
The US includes Puerto Rico
Source: United States Geological Survey-Mineral commodity summary, United Nations Comtrade database, The World Bank, Crisil Intelligence

There is significant potential for the Indian cement industry to grow because of the country's low per capita consumption. Also, despite a low per capita cement consumption, the country is the second largest cement consumer in the world.

3 Indian cement industry overview

3.1 Budget allocation and capital outlay across major segments

Infrastructure segment

The central government's total budget for fiscal 2026 (Budget Estimate) is Rs 19.79 lakh crore, comprising: (i) total expenditure through the budget (Gross Budgetary Support - GBS), (ii) resources of public enterprises (Internal and Extra-Budgetary Resources - IEBR), and (iii) grants-in-aid for the creation of capital assets (Grants-In-Aid - GIA). This represents a 16.4% increase from the revised estimate for fiscal 2025.

The budgetary capital expenditure for infrastructure ministries, including the Ministry of Railways, Ministry of Road Transport and Highways, Ministry of Rural Development, Ministry of Housing and Urban Affairs, Ministry of Power, Ministry of New and Renewable Energy, Ministry of Jal Shakti, Ministry of Ports, Shipping and Waterways, Ministry of Civil Aviation, and the Department of Atomic Energy, is Rs 10.7 lakh crore, up 11.6% from the revised estimate for fiscal 2025.

Each infrastructure-related ministry will develop a three-year project pipeline that can be implemented through the Public-Private Partnership (PPP) mode. States are also encouraged to create similar pipelines. To support states in infrastructure development, an outlay of Rs 1.5 lakh crore is proposed for 50-year interest-free loans as capital expenditure and incentives for reforms.

In the second phase of the asset monetisation plan, the government aims to generate Rs 10 lakh crore by monetising a pipeline of assets between fiscals 2025 and 2030.

Table 2 – Budgetary allocations to core infrastructure ministries

Ministry/Department	FY25RE				FY26BE				FY26BE over FY25RE
	GBS (Rs crore)	IEBR (Rs crore)	GIA (Rs crore)	Total (Rs crore)	GBS (Rs crore)	IEBR (Rs crore)	GIA (Rs crore)	Total (Rs crore)	
Ministry of Railways	2,52,000	13,000	-	2,65,000	2,52,000	13,000	-	2,65,000	**0%**
Ministry of Road Transport and Highways	2,72,481	-	8,735	2,81,216	272,241	-	9,602	2,81,843	**0%**
Ministry of Rural Development	4	-	1,28,346	1,28,350	4	-	1,55,319	1,55,323	**21%**
Ministry of Housing and Urban Affairs	31,662	42,095	20,735	94,492	37,623	62,207	46,067	1,45,897	**54%**
Ministry of Power	1,127	70,710	14,775	86,611	658	85,838	17,075	1,03,572	**20%**
Ministry of New and Renewable Energy	7	31,701	15,134	46,843	7	35,460	24,508	59,975	**28%**
Ministry of Jal Shakti (Department of Water Resources, River Development and Ganga Rejuvenation)	323	2	14,361	14,686	556	2	17,413	17,971	**22%**

Ministry/Department	FY25RE				FY26BE				FY26BE over FY25RE
	GBS (Rs crore)	IEBR (Rs crore)	GIA (Rs crore)	Total (Rs crore)	GBS (Rs crore)	IEBR (Rs crore)	GIA (Rs crore)	Total (Rs crore)	
Ministry of Ports, Shipping and Waterways	1,342	8,509	681	10,532	1,761	7,123	846	9,731	**(8%)**
Ministry of Civil Aviation	102	3,913	656	4,670	70	4,194	301	4,565	**(2%)**
Department of Atomic Energy	12,497	12,585	905	25,987	11,978	13,131	964	26,073	**0%**
Total capex – Infrastructure ministries	5,71,544	1,82,514	2,04,328	9,58,386	5,76,900	2,20,955	2,72,095	10,69,949	**12%**
Total capex – Other ministries	4,46,885	1,99,927	95,563	7,42,375	5,44,190	2,10,636	1,55,097	9,09,924	23%
Grand total	10,18,429	3,82,441	2,99,891	17,00,761	11,21,090	4,31,591	4,27,192	19,79,873	**16%**

Note: Fiscal 2025RE: fiscal 2025 Revised estimates
'Revised Estimate' - is an estimate of the probable receipts or expenditure for a financial year, framed in the course of that year, with reference to the transactions already recorded and anticipated for the remainder of the year.
Fiscal 2026BE: fiscal 2026 Budgeted Estimates
'Budget Estimates' - are the detailed estimates of receipts and expenditure of a financial year
Source: Budget documents, Ministry of Finance

Roads & Railways

The overall gross budgetary outlay for the Ministry of Road Transport and Highways (MoRTH) more than doubled from Rs 1.28 lakh crore in fiscal 2019 to Rs 2.72 lakh crore in fiscal 2025RE. Against this backdrop, the roads and highways capex estimate for fiscal 2026 is expected to witness a sharp moderation in growth rate and is almost at par with fiscal 2025. The entire allocation of Rs 2.72 lakh crore is expected to be via GBS, as the IEBR limit has been completely eliminated to reduce the National Highways Authority of India's (NHAI) dependence on market borrowings. In line with the National Monetization Plan, NHAI's Total Asset Monetization Program has crossed Rs 1 lakh crore, which includes Rs 48,995 crore through the Toll-Operate-Transfer (TOT) model, Rs 25,900 crore through Infrastructure Investment Trusts (InvIT), and Rs 42,000 crore through securitization. NHAI has already identified and published an indicative list of 33 assets to be monetised during 2024-25, which is expected to yield more than Rs 50,000 crore in the current fiscal. The MoRTH is expected to monetise assets worth Rs 40,314 crore in 2023-24, out of the total monetisation receipts of Rs 97,000 crore in the last financial year.

Furthermore, NHAI is expected to modify the Build-Operate-Transfer (BOT) model with fast-tracked clearances to award more projects, as the share of this model has dipped to negligible levels in recent years. Large developers are likely to be interested in BOT projects amidst dipping profitability in the Hybrid Annuity Model (HAM) due to competitive bidding. Notably, if successful, the shift towards the BOT model could reduce the funding burden on the Ministry, as 100% of the construction cost is borne by the developer in this model, which is expected to reduce the fiscal burden by around 10-15%.

The Railway capital expenditure is budgeted at Rs 2.65 lakh crore, which is exactly at par with fiscal 2025RE. Under the Railway Ministry, three key economic railway corridors have been announced under the PM Gati Shakti initiative: (i)

energy, mineral, and cement corridors, (ii) port connectivity corridors, and (iii) high-traffic density corridors. These projects are aimed at facilitating multi-modal connectivity, thereby enhancing logistics efficiency and reducing operational costs by around 5-7%. The development of the three new rail corridors, along with the completion and full operationalisation of the Dedicated Freight Corridor (DFC), is expected to improve logistical efficiency and aid the government in achieving its target of reducing the overall logistics cost.

Table 3- Budgeted allocation for Roads and Railways

Segment	Budgeted outlay FY26 (Rs crore)	Revised estimates FY25 (Rs crore)	Increase/(Decrease) %
Ministry of Road Transport and Highways	2,81,843	2,81,216	0%
Ministry of Railways	2,65,000	2,65,000	0%

Source: Budget documents, Ministry of Finance

Metro and MRTS and Urban Rejuvenation Mission

The government intends to expand metro rail and other urban infrastructure projects, such as the Namo Bharat initiative, to more cities, with a focus on rapid urbanisation. To achieve this, the central government has allocated Rs 31,106 crore for FY26BE, which is approximately 26% higher than the Rs 24,601 crore allocated in FY25RE. Currently, over ~1000 km of metro rail is operational in the country, while another ~1100 km is under construction.

The Government of India launched the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and the Smart City Mission (SCM) on 25 June 2015, with the aim of improving living conditions in 500 and 100 cities, respectively, across India. At least one city from every state or union territory was selected under the SCM to implement the concept of a 'smart city'. The goal was to be accomplished by improving infrastructure and services such as water supply, sanitation, energy, mobility, education, and healthcare. As of March 2025, out of a total of ~8,063 projects, ~7,504 projects have been completed, and a further ~559 projects are under various stages of execution.

To further boost infrastructure spending, the government has approved a budget of Rs 10,000 crore in FY26BE for the development of over 500 smart cities. The focus is on providing adequate and clean water supply, sanitation, solid waste management, efficient transportation, affordable housing for the poor, reliable power supply, robust IT connectivity, e-governance, safety and security of citizens, healthcare, and education.

Table 4- Budgeted allocation for Metro and MRTS and Urban Rejuvenation Mission

Segment	Budgeted outlay FY26 (Rs crore)	Revised estimates FY25 (Rs crore)	Increase/(Decrease) %
Metro & MRTS	31,106	24,601	26.44%
AMRUT and Smart Cities mission	10,000	8,000	25.00%

Source: Budget documents, Ministry of Finance

Housing segment

The Pradhan Mantri Awas Yojana (PMAY) was introduced in 2015 to provide affordable housing for all by the end of 2022. Due to delays in completion, the timeline was revised to fiscal 2024 and 2025 for PMAY-Gramin (PMAY-G) and PMAY-Urban (PMAY-U), respectively. The announcement to bring an additional three crore houses under the ambit of PMAY over the next five years is a positive development. For one, it will reduce the housing shortage in urban and rural areas. The incremental target will support the cement and building construction segments, too, as it will lead to incremental cement demand. It will also support other allied building and construction activities.

Under the PMAY-Urban 2.0 housing scheme, the construction of ~1 crore additional houses, or ~81% of the previous target of ~1.2 crore houses, over the next five fiscals was announced in Budget 2025. Further, it received a separate allocation of Rs 3,500 crore in Budget 2026. This is likely to revive interest in the weakening affordable housing segment, with developers increasingly shifting focus towards the premium and luxury segments in tier I and tier II cities.

The increase in the PMAY-Gramin target by 2 crore houses, or ~68%, from the previous target of ~3 crore houses, is also a positive development. Execution under the PMAY-Gramin scheme has been encouraging so far, with ~83% of houses constructed out of sanctioned units as of Mar'25.

While PMAY focuses on affordable housing, thereby catering to the low-income group, the announcement of enabling policies and regulations for efficient and transparent rental housing markets with enhanced availability would benefit eligible middle-class households who live in rented houses, slums, chawls, and other unauthorised colonies.

The government's continued focus on housing is expected to provide an impetus to the real estate sector as well as its stakeholders, such as developers, engineering, procurement and construction contractors, and allied industries such as steel, cement, etc.

Table 5- Budgeted Allocations to PMAY

Sr no	Segment	FY26BE (Rs crore)	FY25RE (Rs crore)	Growth in FY26BE over FY25RE (%)
1	PMAY Urban	19,794	13,670	45%
2	PMAY Urban 2.0	3,500	1,500	133%
3	PMAY Gramin	54,832	32,426	69%

Note: PMAY (G) figures include just the programme component
Source: Budget documents, Ministry of Finance

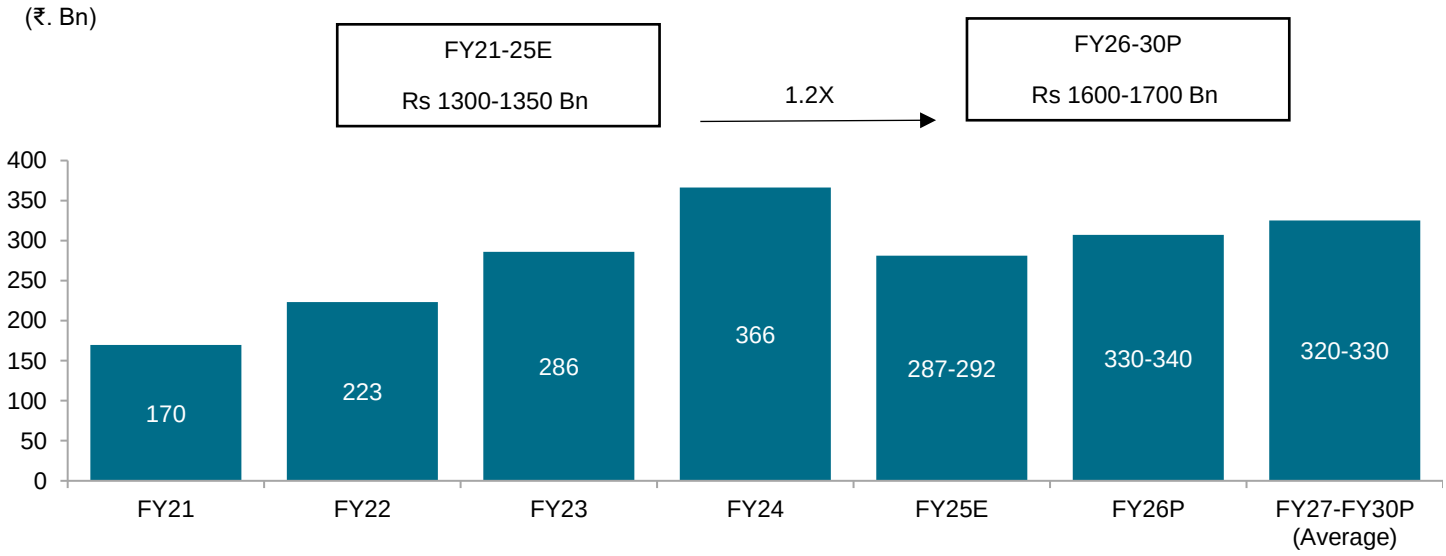
3.2 Expected capital expenditure in cement sector

The Cement Industry in India is estimated to have witnessed an investment of Rs. 1300-1350 bn in the past five years (fiscal 2021-2025E) with regards to adding new capacities, brownfield expansions, debottlenecking, and maintenance of existing plants. With healthy demand outlook and increased competitive intensity, the players, especially the large ones, are implementing sizeable capex over the next five years with the aim to capture the market share. Robust demand has bolstered the balance sheets of large players and mid-sized players with strong market presence, prompting them to expand capacity on the back of healthy cash accrual and credit profile.

Over the next five years (fiscal 2026-2030), it is anticipated that around 250-250 million tonnes per annum (MTPA) of grinding capacities will come online, necessitating an investment of around Rs. 1600-1700 billion. This represents a healthy increase, equivalent to about 1.2 times the capital expenditure incurred over the previous five-year period. Given

their strong balance sheets and high liquidity, a large part of this capex is expected to be incurred by the large players funded from their internal accruals.

Figure 7- Estimated investment in cement Industry in India

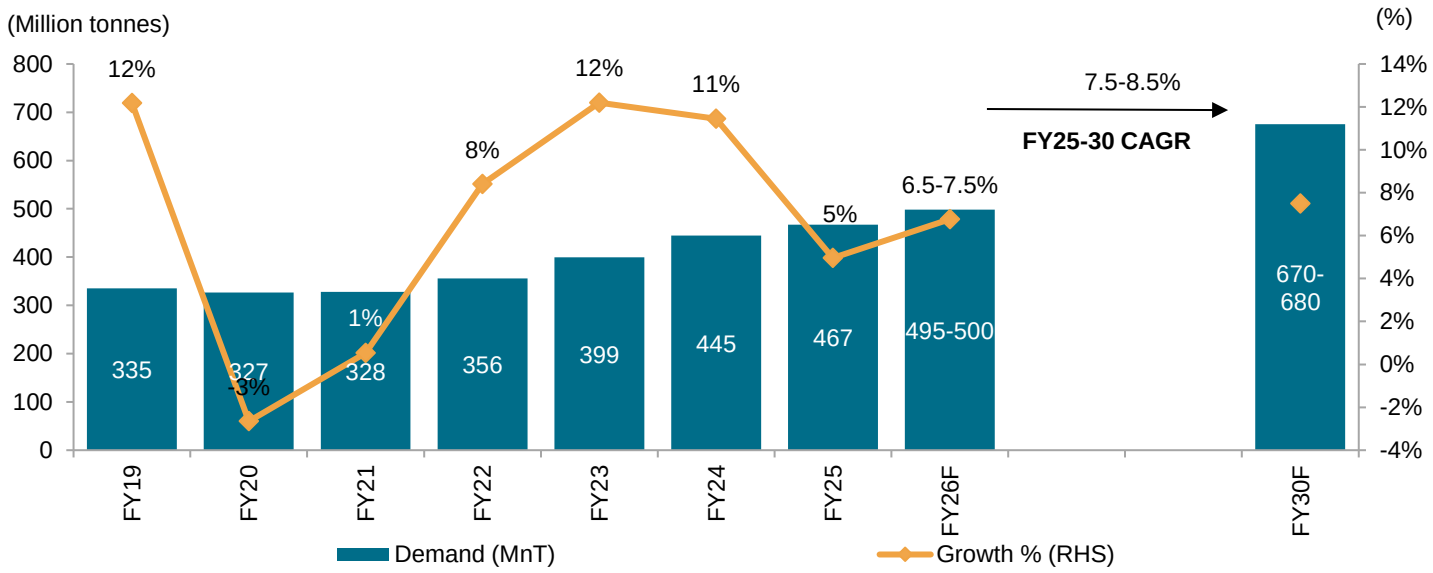


Source: Crisil Intelligence
Note: E- Estimated, P-Projected

4 Cement demand analysis – Pan India

4.1 Pan-India cement demand review and outlook

Figure 8 - Cement demand review and outlook



F: Forecasted; Growth percentage for FY25-30 indicates CAGR for 5-year period
Source: Crisil Intelligence

Domestic cement demand grew at a healthy ~7% CAGR over fiscal 2020 to 2025, despite pandemic-induced slowdown, majorly led by sustained government thrust on infrastructure and affordable housing. In fact, a large part of the growth was due to healthy uptick in fiscals 2022 and 2023, while in fiscals 2020 and 2021, demand was weak because of pandemic-induced lockdowns. On a low base, pan-India cement demand recovered by 8% in fiscal 2022 and accelerated further by ~12% in fiscal 2023, supported by strong demand for rural housing and infrastructure. A pre-election boost and healthy traction from infrastructure segment led to further 11% on-year growth in fiscal 2024. Although, general elections and slowdown in government spending moderated demand growth to ~5% in fiscal 2025.

Fiscal 2023: Demand rose ~12% on-year. In the first quarter, demand logged a robust growth of ~18% on-year on a low base, on a pick–up in infrastructure activities as well as strong recovery in individual housing – both rural and urban. The second quarter witnessed some moderation sequentially on the back of seasonal weakness but still grew ~9% on-year. Further, with the monsoon receding, inflationary pressures easing, real estate and affordable housing gaining traction, as well as pick-up in infrastructure project execution ahead of the general elections in 2024, demand grew a healthy ~10% on-year in the third quarter. The last quarter registered ~12% on-year growth, driven by continued traction from infra and housing projects ahead of the general elections. In fact, high construction costs, which impacted demand in the early months, cooled off somewhat in the second half of the fiscal. Volume was also 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.

Fiscal 2024: The infrastructure segment had been the major demand driver, led by central government's higher spending on key infra sectors ahead of elections. In fiscal 2024, central government's capital expenditure had been ~28% higher for road ministry and ~52% higher for railways compared to previous fiscal. Capacity expansion plans of large players in capital-intensive sectors (steel and cement), implementation of the production-linked incentive (PLI) scheme, rising warehousing spaces and return to office/hybrid model drove demand from the industrial and commercial segments. On a high base of last fiscal, rural housing witnessed moderate growth momentum in fiscal 2024 due to impact of El Nino condition on agri profitability, although the rise in demand was supported by a higher shortage of houses and the government's push to attain a central scheme (PMAY-G) targets before elections. Growth from urban housing was supported by traction from real estate although growth was at a slower pace due to elevated interest rates and capital values. Also, the construction pace under PMAY-U slowed down as the scheme nears closure and the sanctions have already surpassed targeted levels. At an overall level, the pre-election boost to infra and housing and growth from I&C segment led to an overall rise of 11% in fiscal 2024 despite high base of previous fiscal.

Fiscal 2025: Demand growth moderated in fiscal 2025 to ~5%, following three years of healthy growth. While infrastructure segment continued to remain the key demand driver, growth moderated owing to slowdown in state capex roll outs during first half of the fiscal. However, with revival in state spending in the second half, infra projects picked up pace. Demand from the housing sector moderated to 3.5-4.5% with higher growth from rural housing segment. However, urban housing growth slowed down owing to slower execution under PMAY-U along with muted traction from real estate. In the industrial and commercial (I&C) segment growth slowed down after three consecutive years of healthy growth; however, continued traction from the PLI scheme and commercial real estate demand supported the growth. At an overall level, demand growth moderated to 5% in fiscal 2025 after three consecutive years of healthy demand growth.

Fiscal 2026: Crisil Intelligence expects a revival in cement demand growth in fiscal 2026, with on-year growth of 6.5-7.5% after a moderation in previous fiscal. Within infrastructure, a 10% rise in the capex for core infrastructure ministries (Railways, Road Transport and Highways, Rural Development, Housing and Urban Affairs, Ports, Shipping and Waterways and Civil Aviation) in fiscal 2026BE over the fiscal 2025RE is expected to support steady segment growth at 6-7% in fiscal 2026. However, lower road awarding under NHAI in previous fiscal to lead to slowdown in road execution, limiting demand growth. Demand from the housing segment is expected to grow by 6.5-7.5%, driven by higher growth from rural housing. Expectation of healthy monsoon coupled with government's focus on the agricultural development via schemes such as PM Dhan Dhaanya Krishi Yojana, Enhanced credit limit under Kisan Credit Card, etc to aid the agricultural profitability which will support rural housing growth. For urban housing, implementation of interest rate cuts and traction from real estate segment to drive the demand, though high unsold inventory from the previous fiscal may limit the demand. Also, expected improvement in execution under PMAY-U and PMAY-G to aid demand growth during the fiscal. Further, government's focus on private investments, PLI scheme, traction from commercial real estate, and rising private capex capital inflows to support growth from industrial and commercial segment (I&C). As a result, at an overall level demand growth is expected to rebound by 6.5-7.5% in fiscal 2026.

In the long term, from fiscal 2026 to fiscal 2030, Crisil Intelligence expects cement demand to log a CAGR of 7.5-8.5%, marginally higher than ~7% CAGR in the previous five years (fiscals 2021 to 2025) fuelled by a raft of infrastructure investments and healthy support from the housing and I&C segments.

Player wise sales volume (Top 10 players)

MTPA	FY15	FY20	FY22	FY23	FY24	FY25	FY15-25 CAGR	FY20-25 CAGR	FY23-25 CAGR
UltraTech Cement (India - grey cement)	44.9	77.5	87.3	100.1	112.8	125.1	10.80%	10.05%	11.77%
Ambuja Cement	45.8	47.0	53.0	68.0	58.0	63.0	3.25%	6.03%	-3.75%

Shree Cement	16.2	24.9	27.7	31.8	35.5	35.9	8.30%	7.56%	6.19%
Dalmia Bharat	10.8	19.3	22.2	25.7	28.8	29.4	10.53%	8.79%	6.96%
Nuvoco Vistas	9.4	10.7	17.7	18.8	18.8	19.4	7.51%	12.74%	1.72%
The Ramco Cement	7.7	11.2	11.0	14.9	18.4	18.4	9.13%	10.38%	11.01%
JK Cement (India - grey & white cement)	6.8	9.57	14.0	16.2	19.1	20.2	11.55%	16.14%	11.61%
JSW Cement	2.7	7.4	9.7	10.5	12.5	12.6	16.73%	11.39%	9.72%
JSW Cement (excluding FZC)	2.7	7.4	8.7	9.6	12.5	12.6	16.73%	11.39%	15.05%
Birla Corporation	7.6	13.8	14.2	15.8	17.8	18.1	9.07%	5.54%	6.90%
JK Lakshmi	5.9	10.0	11.0	11.4	12.0	12.2	7.47%	3.95%	3.33%
Industry	257.1	326.5	355.8	399.4	445.0	466.9	6.15%	7.42%	8.12%

Source: Company annual reports and publications

Note: Only domestic operations have been considered for UltraTech Cement. Ambuja Cements had changed its financial year end from December 31 to March 31 in FY 2022-23. Therefore, the figure for FY 2022-23 is for 15 months and not comparable with the figures for the 12 months year ended March 31, 2024. Ambuja Cements sales volume includes sales volumes of ACC Ltd for FY15.

4.2 Product wise demand segmentation

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 cements globally, OPC is a hydraulic cement which becomes water-resistant once curing is done with water. Mostly used as construction material for building houses (structures like beam, slabs, columns, footing, etc), bridges, pavements, and so on, it is also used for varied purposes including the making of concrete, mortars, etc. OPC is manufactured by inter-grinding gypsum and clinker. The key characteristics of OPC are its quick setting properties and ability to reach optimal strength quickly, thereby increasing the speed of construction. OPC can also be blended with other mineral admixtures to form blended cement such as PSC.

2. **PPC:** It is a type of Portland cement characterised by the presence of Pozzolana particles such as fly ash and volcanic ash which is 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 uses less OPC but has greater durability and strength. Since it uses a lesser concentration of clinker, it is less expensive and more environmentally friendly than OPC. PPC is used in the construction of marine structures, masonry mortars, hydraulic structures, dykes, sewage pipes, dams, etc.

3. **PSC**: It is a blended cement created with a combination of 35-70% blast furnace 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 alumino-silicates of lime. Due to its low heat of hydration, it is considered as the best cement to be used for mass construction. It is used in the construction of all types of residential, commercial and industrial projects, dams and other mass concrete works, water-retaining structures, concrete roads and flyovers, etc.

4. **Composite**: Composite cement is a mixture of high-quality clinker, fly ash, granulated slag, and gypsum. The typical range of these components is clinker (35% to 65%), fly ash (15% to 35%), granulated slag (20% to 30%), and gypsum

(3% to 5%). For composite cement, the BIS allows slag and fly ash to comprise 40-65% of cement mass. It reduces the carbon footprint by utilizing industrial by-products, enhances resistance to chemical attacks and cracking, and provides better workability and long-term performance. The use of composite cement enhances the overall quality of concrete structures, making them more resilient and cost-effective. High strength cement, enhanced durability and sustainability, reduction of concrete bleeding and segregation, increased safety of structures, etc are few benefits of composite cement.

Table 6- Cement-to-clinker ratio for various types of cement

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

Table 7- Demand review and outlook by product type

	OPC	PPC	PSC	Composite	Blended (PPC+PSC+Composite)
FY26F	22.00-24.00%	62.00-64.00%	9.00-10.00%	4.00-5.00%	76.00-78.00%
FY25	24.00%	62.00%	10.00%	4.00%	76.00%
FY24	25.00%	62.00%	10.00%	3.00%	75.00%
FY23	24.00%	62.00%	10.00%	4.00%	76.00%
FY22	26.00%	60.00%	10.00%	4.00%	74.00%
FY21	28.00%	59.00%	9.00%	4.00%	73.00%
FY20	30.00%	60.00%	8.00%	2.00%	70.00%

Source: Industry, Crisil Intelligence

The proportion of blended cement has been rising, with the share of PPC being the highest. By blending low-cost additive fly ash or slag in the substitution of natural resources such as limestone with OPC, cement producers can lower power, fuel and raw material costs, thereby improving their overall profitability. These cements are also less carbon- and energy-intensive and thus help lowering cost components.

The production of slag cement (PBFSC/PSC) is concentrated in the eastern and southern regions. This is on account of a greater number of steel plants in the region, leading to higher availability of slag since proximity to steel plant is important for the supply of slag. The western and northern regions have a higher share of PPC compared to east and central regions.

The blending ratio for the cement industry is estimated to have risen to 1.47 in fiscal 2025 (based on a sample covering ~70% of industry's production) from ~1.42 in fiscal 2020, owing to rising usage of PPC, PSC and Composite cement, where proportion of blending material is higher. While the share of OPC declined in fiscal 2022 and 2023, that inched up marginally in fiscal 2024 majorly due to infrastructure boost received during the year which led to higher usage of OPC

cement, given it's nature of durability and strength. However, share of OPC further inched down to ~24% in fiscal 2025 as sluggish pace of infra segment limited usage of OPC cement.

The blending ratio is expected to improve even further with players shifting to more profitable composite cement. Since the proportion of blending material allowed in composite cement is 65% as per BIS norms, it allows a higher share of fly-ash and slag usage as against 35% fly ash currently used in PPC cement. While availability of slag will be limited by production of steel through the blast furnace route, fly ash is available in abundance.

The blending ratio has risen due to higher acceptance and applications of blended cement, such as PPC, PSC and composite cement. Besides faster growth in the east, permission to use PPC in works of state PWDs (earlier only OPC was permitted) have been driving the increase in the blending ratio.

Along with a rise in demand for PPC cement, demand for composite cement is gaining momentum, leading players converting to composite cement production. However, slag and composite cement will be confined to regions where steel plants are located. Being a low-cost commodity, it becomes unviable to transport it over longer distances. With efforts by cement companies to educate customers about the advantages of slag cement in the south, its share would gradually increase in the region.

We expect the share of blended cement to rise further in fiscal 2026 as realisations of players have been on a downhill, which is why players have been focusing on cost optimisation to safeguard profitability. Thus, players have also started using differential pricing for blended and OPC cement. Further with higher focus on environmental aspects, players will continue to push blended cement to meet emission norms targets and cut production costs. Thus, in the long run, Crisil Intelligence estimates blending ratio to improve, led by a shift towards PPC, PSC and composite cement.

4.3 Demand segmentation by end user Industry

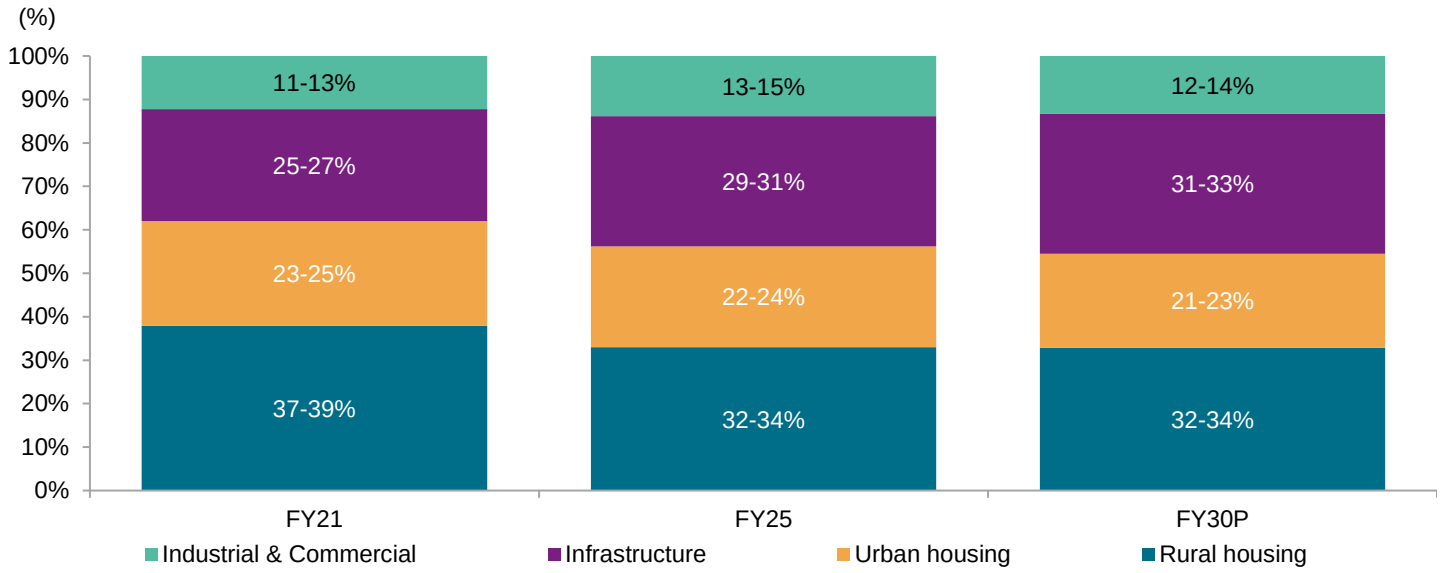
As of fiscal 2025, the end-user sector mix in cement demand share mainly comprised housing (55-57%), infrastructure (29-31%), and industrial/commercial (13-15%).

Over the past five years, while the share of housing and industrial/commercial segment in overall cement demand declined, the share of infrastructure segment increased. The decline in the share of the housing sector in the cement demand pie was because of the sector buffeted by slow economic growth, weak demand, buyer unaffordability and high inventory.

However, following the pandemic, demand for real estate, especially urban housing, rose sharply in fiscal 2021, as work-from-home mandate boosted demand for increased floor space, incomes stabilised, customer preference shifted to home ownership from rental, and the cost of buying declined. Lower concretisation, rising wages, and continued traction in rural housing demand through PMAY, especially during peak of Covid-19, led to higher share of cement demand from rural housing (32-34%) in total cement consumption as well. Hence, overall housing share in cement demand stood at 55-57%.

The share of the infrastructure segment in cement demand has been rising over the past decade as well, because of a surge in the Central government's capex towards the sector. In fact, the sector's share in overall cement demand has jumped from 19-21% in fiscal 2017 to 29-31% in fiscal 2025.

Figure 10- Sectoral mix of cement demand

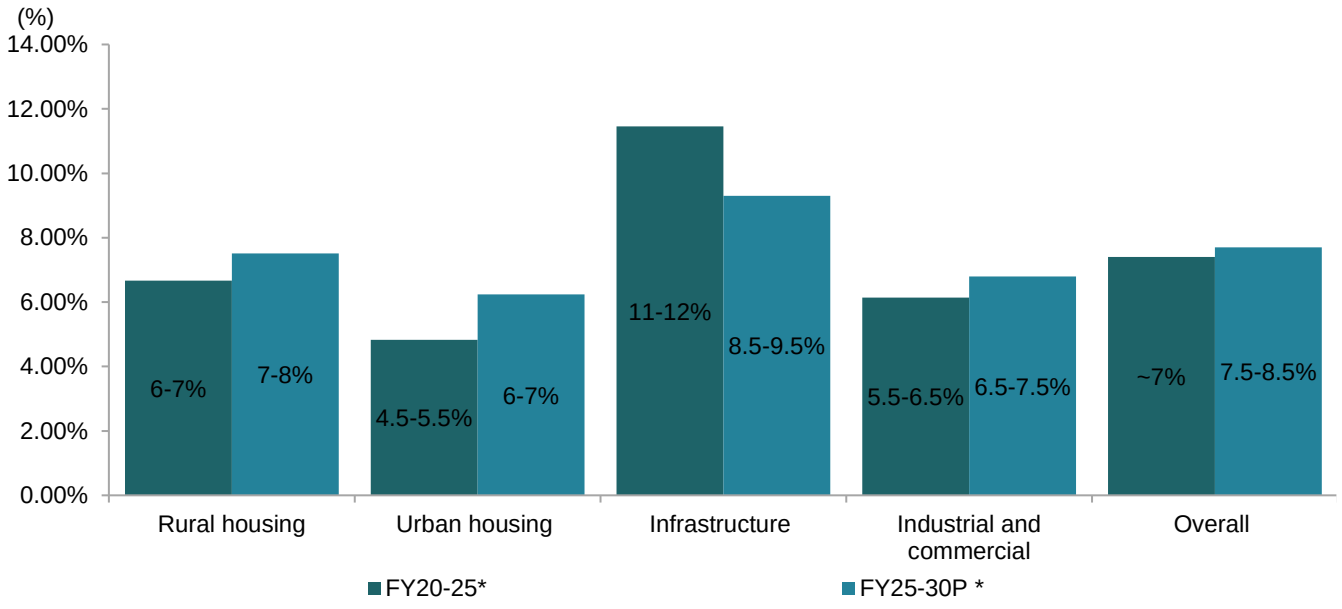


Source: Crisil Intelligence

While share of housing segment is expected to marginally contract over the next five years (fiscals 2026 to 2030), it will continue to remain a key contributor, backed by a lower concretisation rate in the country (which means high potential for cement demand growth). Even as housing will be the key volume contributor, infrastructure will expand its share, with the government focusing on infrastructure spending through its flagship schemes, such as PM Gati Shakti, and rising investments in roads, railways, metros, airports, and irrigation. The segment's share is expected to increase to 31-33% in fiscal 2030. The Central government's focus on roads, railways, urban infrastructure, and irrigation will boost infrastructure investments.

On the other hand, the share of the industrial and commercial segment is expected to remain almost at par with marginal decline to 12-14% in fiscal 2030. Recent government initiatives, such as the PLI scheme and Atmanirbhar Bharat, focus on multimodal logistics, warehousing, hybrid model of working and rising capex owing to a long-term positive demand outlook are expected to support demand from the industrial segment.

Figure 11- Segment wise cement demand growth outlook



*Note: *CAGR*
Source: Crisil Intelligence

Segmental growth	FY25	FY26F
Rural housing	4.5-5.5%	7-8%
Urban housing	2.5-3.5%	5.5-6.5%
Infrastructure	6-7%	6-7%
Industrial and commercial	5-6%	6.5-7.5%
Overall	**5%**	**6.5-7.5%**

Source: Crisil Intelligence

Thus, in the longer run, cement demand will be driven by the infrastructure segment, which has been key driver in the past as well. Growth in the industrial and commercial segment is expected to be supported by government initiatives, such as the PLI schemes and Atmanirbhar Bharat, focus on multimodal logistics, warehousing, hybrid model of working and rising capex.

The housing segment would continue its healthy growth trajectory, with rural housing outpacing the urban segment on the back of a lower development base and a continued rise in the concretisation of kuccha houses.

Hence, Crisil Intelligence expects cement demand to log a CAGR of 7.5-8.5% over the next five years, marginally higher than the ~7% CAGR during the past five years driven by a number of infrastructure investments and healthy momentum from industrial and commercial segment.

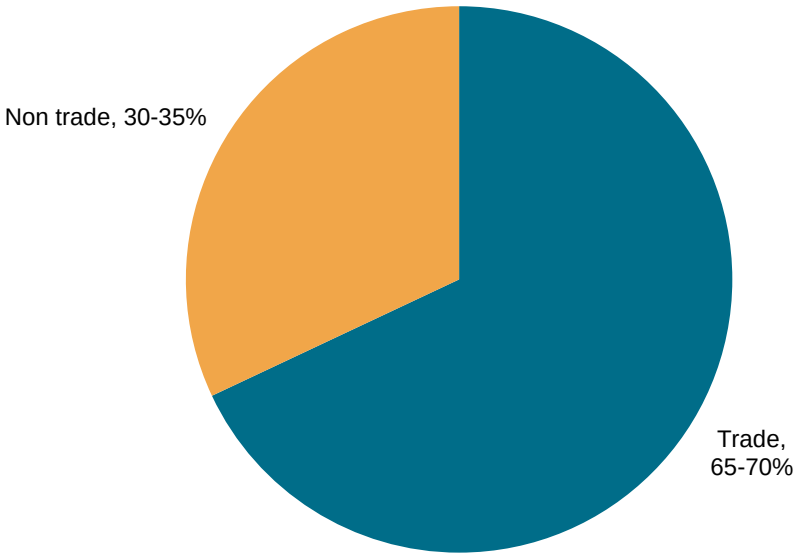
4.4 Segmentation by modes of sales

Cement is marketed under two mechanisms: trade and non-trade.

Trade: The manufacturer directly sells cement to dealers and retailers, who sell to the end consumers. It is a more common and stable method of vending cement since the manufacturer does not have to take the liability for making sales pitch to the consumer directly. Also, it increases the manufacturers' reach. The dealer gets incentives to sell the product. Segments that fall under this mode are individual housing, PMAY-G and parts of infrastructure, industrial-commercial as well as other housing segments.

Non-trade: Under this mechanism, the manufacturer directly sells to the consumer like a construction company for use in a project. Here, the dealer is not involved.

Figure 12- Break-up of cement sales by mode of sales (As per FY25 estimates)



Source: Industry, Crisil Intelligence

Higher profitability in trade segment makes it more attractive

Trade is preferred by manufacturers as it fetches higher realisations. While the manufacturer has to invest in a distribution channel, the returns are relatively higher. The difference between trade and non-trade price varies from Rs 30 to Rs 60 per bag for a manufacturer. The difference in prices is based on factors such as:

- Region: difference between trade and non-trade is highest in the southern region
- Volume: Higher the volume, higher the difference. For large-scale projects, buyers negotiate to get better prices
- Project type: For infra projects, prices are often fixed on an ex-FOR (freight on road) basis. Often there is a pricing differential between trade and non-trade FOR prices to the tune of Rs 50-100 per bag
- Relationship: The relationship between the construction company and the cement manufacturer plays a key role in determining the quantum of discount

In fiscal 2025, first half witnessed higher traction from housing segment which resulted in higher trade sales. A slow pace of fund release owing to fund diversion towards general elections led to sluggish construction pace of infrastructure projects. Also, a slow down in real estate market limited non-trade sales. However, with revival of state and central government spending in the second half of the fiscal, non-trade sales started picking up. While non-trade cement is sold at a discount, it comes with several cost advantages as well, the key being:

- A large part of the non-trade cement is transported in the form of bulk cement, which helps in cutting freight as well as packaging cost
- Since the dealer is not involved, the company does not have to pay dealer commissions.
- Further, the company has to spend less in setting up a dealer network

Despite the cost advantages, the trade segment is more attractive due to higher prices and consistency in the business. Additionally, the scale and distribution of trade segment well offsets the margins paid to dealers. Thus, it often leads to higher profitability. The difference in profitability in trade and non-trade segments varies from 100 bps to 300 bps. However, regional dynamics as well as difference in prices and volumes can lower the profitability gap and, in some regions, make non-trade segment more profitable than trade segment.

Realisations for cement players vary depending on a wide range of factors, including channel (share of trade/ non-trade), brand positioning and geographical market mix. Owing to high taxes on cement (the commodity is in the highest slab of GST) and high freight costs, there is a wide difference between the maximum retail price and ex-freight realisation for the industry.

Table 8- Trade and Non-trade prices

Price/cost	Rs per bag (trade)	Rs per bag (non-trade)
Average realisation	204-209	197-202
Packaging cost	6-9	0
Freight	55-60	40-45
Average realisation including freight	268-273	240-245
GST @ 28%	74-79	65-70
Wholesaler margin	6	0
Dealer margin	8	0
MRP	358-363	308-313

Note: The prices exhibit regional as well as seasonal variations. The prices mentioned above indicate pan-India average price for fiscal 2025 for category A players.

Source: Crisil intelligence, industry

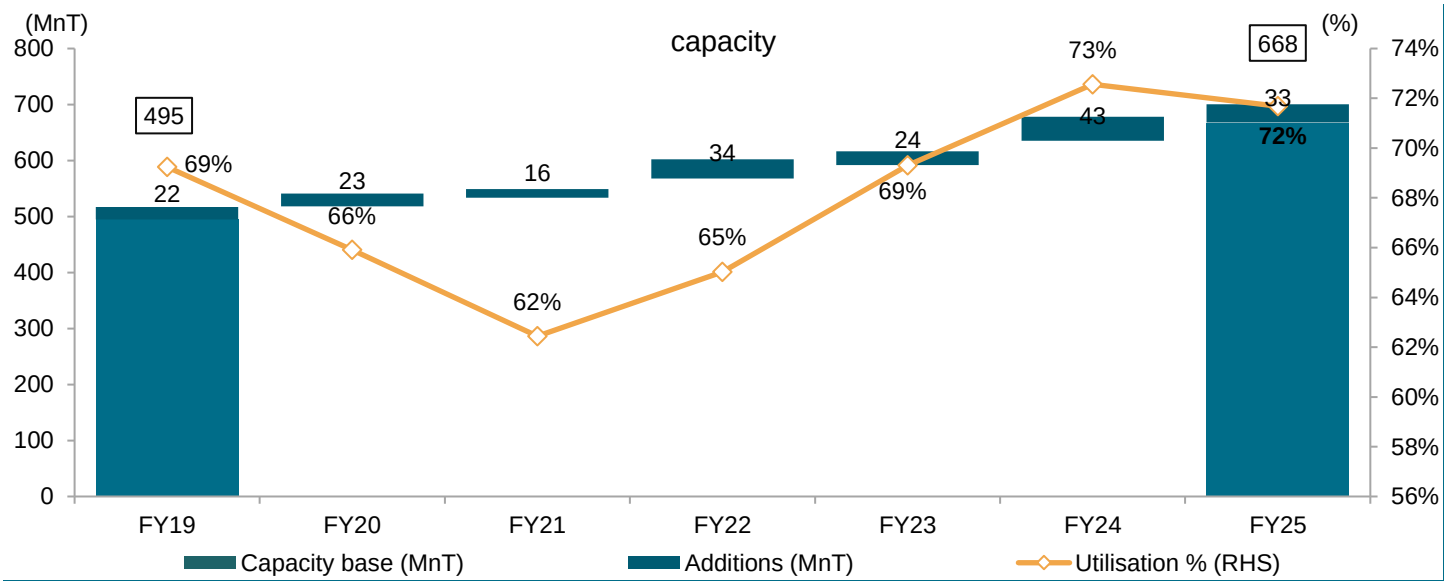
Cement bags are sold through either trade or non-trade channels (largely dependent on the customer segment — individual housing, infrastructure, commercial and industrial) and the prices vary accordingly. Owing to orders of higher quantity, non-trade customers are usually able to get discounts of Rs 30-60 per bag on trade prices. The realisations from government orders are typically even lower since procurement is undertaken via bidding. For large-scale government projects, the prices are usually calculated on a FOR basis and are often Rs 60-80 lower per bag than trade prices.

In trade channel, dealer and wholesaler margins are the highest — at Rs 8-10 per bag — in the eastern region due to heightened competition. In other regions, they are typically Rs 6-8 per bag. Moreover, when new players set up capacities or enter new markets, they increase dealer margins to Rs 10-15 per bag to penetrate the market quickly and gain market share. Dealer discounts, freight cost reduction and bidding values determine the difference between trade and non-trade prices. These vary significantly across players and regions.

5 Cement supply analysis – Pan India

5.1 Pan-India supply review

Figure 13- Historical capacity additions and capacity utilisation trend



Source: Crisil Intelligence

Player-wise capacity growth

The Indian cement industry is highly fragmented and competitive, with the presence of a few large players and several medium and small players.

Large and mid-sized players have used both organic and inorganic routes to grow. While UltraTech Cement has undertaken the maximum capacity additions in absolute terms, other large players such as Dalmia Bharat and Shree Cement have added capacity aggressively as well.

Among the mid-sized players, JK Cement, JK Lakshmi, JSW Cement and Ramco Cements have undertaken healthy capacity growth, led by organic expansion to newer regions. JSW cement has achieved highest CAGR growth amongst the top 10 players in terms of installed capacity in the past 10 years spanning from fiscal 2014 to fiscal 2024.

Table 9: Player-wise capacity growth (top 10 players)

MTPA	FY15	FY20	FY22	FY23	FY24	FY25	FY15-25 CAGR	FY20-25 CAGR	FY23-25 CAGR
UltraTech Cement	60.2	111.4	114.6	126.9	140.8	183.4	11.78%	10.49%	20.22%
Ambuja Cement	59.7	62.7	67.5	67.5	78.9	100.2	5.31%	9.83%	21.84%
Shree Cement	23.6	40.4	46.4	46.4	53.4	56.4	9.10%	6.90%	10.25%
Dalmia Bharat	24.0	26.5	35.9	38.6	44.6	49.5	7.51%	13.31%	13.24%
Nuvoco Vistas	13.3	22.1	23.6	23.6	25.0	25.0	6.51%	2.50%	2.92%

MTPA	FY15	FY20	FY22	FY23	FY24	FY25	FY15-25 CAGR	FY20-25 CAGR	FY23-25 CAGR
The Ramco Cement	16.5	18.8	19.4	22.0	22.8	22.8	3.29%	3.94%	1.80%
JK Cement (India - grey cement)	10.5	14.0	14.7	20.7	22.3	24.3	8.75%	11.66%	8.35%
JSW Cement	6.1	13.4	14.6	16.3	20.6	20.6	12.96%	9.00%	12.42%
Birla Corporation	9.8	15.4	20.0	20.0	20.0	20.0	7.39%	5.37%	0.00%
JK Lakshmi	8.3	13.3	14.0	14.0	16.5	16.5	7.11%	4.41%	8.56%
Industry	419.0	518.0	568.0	592.0	635.0	668.0	4.77%	5.22%	6.23%

Source: Company annual reports and publications

Note: Only domestic operations have been considered for UltraTech Cement and Shree Cement. The company-wise installed base is mentioned and includes capacity additions through expansion, de-bottlenecking and reclassification.

FY25: Capacity of Ultratech includes cement capacity of Kesoram Industries and India Cement. Ambuja Cements capacity includes cement capacity of ACC Ltd, Sanghi Industries, Penna Cement and Orient Cement.

Table 10: Trend in share of top 5 players

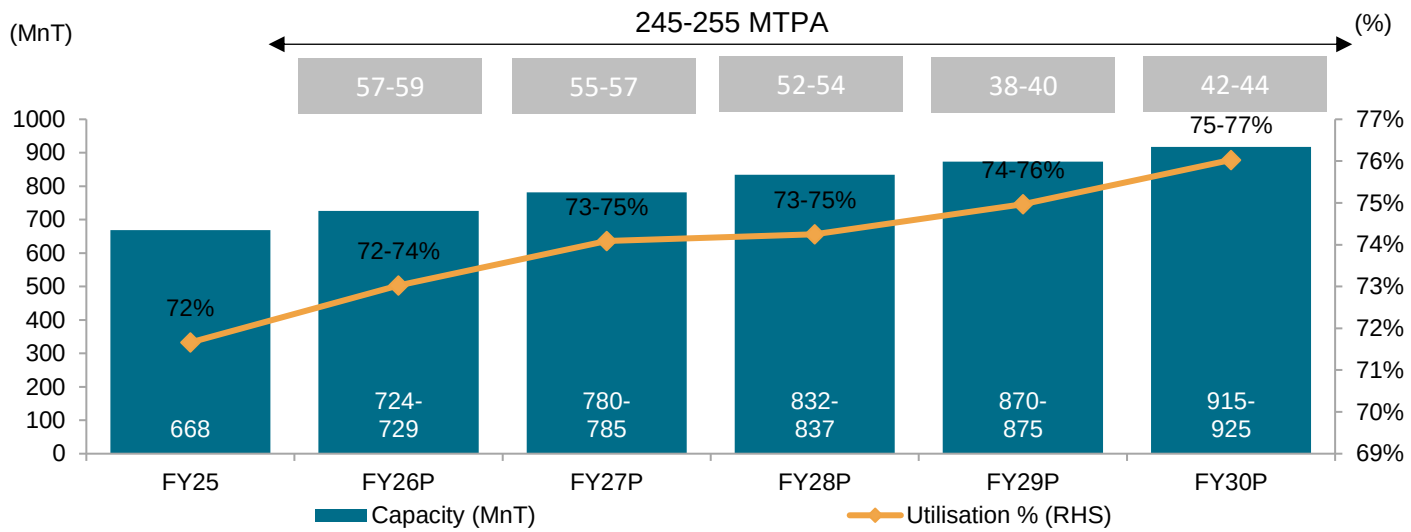
Capacity in MnT	FY15	FY20	FY22	FY23	FY24	FY25
Ultratech cement	60.2	111.4	114.6	126.9	140.8	183.4
Ambuja Cement	28.8	29.7	31.5	31.5	78.9	100.2
ACC Ltd	31	33.4	36.1	36.1		
Shree cement	23.6	40.4	46.4	46.4	53.4	56.4
Dalmia Bharat Ltd.	24.0	26.5	35.9	38.6	44.6	49.5
Share of Top 5 Players	**40%**	**47%**	**47%**	**47%**	**50%**	**58%**

Source: Company annual reports and publications

Note: Only Domestic operations have been considered for UltraTech Cement and Shree Cement

5.2 Pan-India supply outlook

Figure 14- Installed capacity and utilisation rates outlook



Note:

Source: Company reports, Crisil intelligence

Crisil Intelligence projects the cement industry to add 245-255 MTPA of grinding capacities between fiscals 2026 and 2030. The industry added ~34 MT of grinding capacity in fiscal 2022. However, higher input costs in the form of elevated power and fuel prices in early fiscal 2023 dented profitability, leading to lower cash flows and capex slowdown. Hence, relatively lower capacity of ~24 MT was added in fiscal 2023. With rebound in profitability and higher cash accruals in fiscal 2024, players further added ~43 MT during the year and ~33 MT in fiscal 2025.

In fiscal 2026, Crisil intelligence expects the operating rates of cement players to marginally improve to 72-74% after inching down in previous fiscal to ~72%. In fiscal 2025, in line with demand moderation, utilisation levels moderated as well after witnessing healthy uptick in fiscal 2024. Utilisation levels improved in fiscal 2024 from ~69% in fiscal 2023 and ~65% in fiscal 2022, amidst a healthy demand uptick. Utilisation levels breached 70% mark for the first time in past decade. Higher utilisation levels were supported by strong tailwind of higher demand from housing and infra segment despite capacity additions of ~43 MT during FY24.

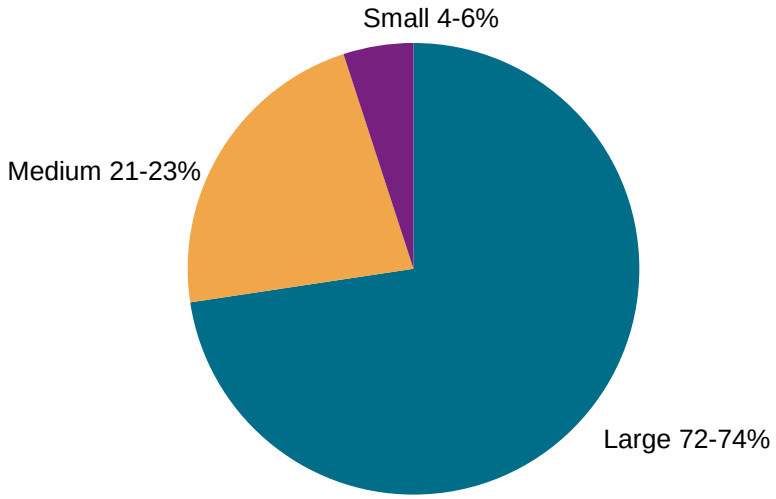
That said, improving demand expectations in the medium term and efforts to gain higher market share has triggered a wave of new-capacity announcements, especially by large players. Despite higher supply, rising demand to support operating rates and elevate to 75-77% in the coming five fiscals.

In fiscal 2025, the installed capacity totalled ~668 MTPA. Assuming 245-255 MT of capacity additions, the total installed capacity is projected at 915-925 MTPA by fiscal 2030.

Capacity addition breakup by size of players

Crisil intelligence expects bulk of the capacities (~95%) up to fiscal 2030 to be added by large and mid-size players. We believe large companies will be able to fund capex through internal accruals. Also, their comfortable gearing levels give them the financial flexibility to raise debt, if required.

Figure 15: Large players to account for around 72-74% of total capacity addition in the next five years



Note: Large (capacity ≥ 30 MTPA); medium (capacity: 10-29 MTPA); small (capacity: <10 MTPA)
Source: Crisil Intelligence

Consolidation trend in Industry

The sector has witnessed consolidation with large cement makers taking over regional heavyweights, and struggling companies being taken over through competitive bidding under the Insolvency and Bankruptcy Code (IBC).

Over the past five years (fiscal 2021-25), the sector witnessed an unparalleled surge in mergers and acquisitions, resulting in the transfer of 156-158 MTPA of capacity, of which 136-138 MTPA have been acquired by large players. On the other hand, large players have installed only 93-95 MTPA of capacities via organic route. Companies have been preferring inorganic way of expansion over organic route due to longer gestation period involved in setting up new plants, which can take three to four years. Additionally, it makes it simple to enter an established market, expanding their geographic reach. Inorganic approach to expansion eliminates the entire hassle of finding the site, purchasing land and delays in regulatory approvals. The top five players have been gaining market share over the last five years through various acquisitions.

5.3 Limestone mine auctions and bidding trend

The growth of the cement industry is contingent on the availability of limestone — the key raw material, accounting for almost 85% of the total raw material cost. It is also used in iron and steel, chemical, sugar, glass, fertiliser and paper industries. About 97% of the limestone produced in India is cement-grade, ~2% chemical, and ~1% iron, steel and other grades.

The Indian mining sector is governed by the Mines and Minerals (Development and Regulation) Act, 1957, (MMDR Act). It specifies the process and requirements for obtaining and granting mining leases for mining operations. After an amendment to the MMDR Act in 2015, limestone mining costs surged since auctions were made compulsory for allocation of new blocks. This made mining costs higher on the back of premiums and incremental royalty (royalty increased from Rs 72 per tonne to Rs 90 per tonne). Another amendment in 2016 stated transfer of the mining lease of captive mines from the transferor to transferee would require an additional transfer fee to be paid to the state government above the royalty

amount. Transfer charges payable by the transferee are to be an amount equal to 80% of the royalty paid. The additional transfer fees were considered one of the major hurdles in the merger and acquisition process. This amendment pushed up limestone prices ~7% in fiscal 2016 to above Rs 500 per ton.

Of the various amendments to the MMDR Act, removal of the fee in the transfer of mining leases was a key positive for the cement industry. MMDR Amendment Bill, 2021, revoked the additional transfer fee to make the transfer simpler. It aimed to enable the transfer of mining leases with bad assets to a new lessee. The existing acquisitions also benefitted from the amendment as they do not have to pay the incremental transfer charges for mining limestone from acquired mines. The amendment helped limit the rise in raw material cost to ~10% in fiscal 2022, after it declined ~3% in fiscal 2021, due to higher premiums, incremental royalties and higher mining costs.

Table 9- List of mine auctions in past three fiscals (FY23, FY24 and FY25)

	FY23		FY24		FY25	
Region	**Average winning bid premium (% of IBM Price)**	**Volume (million tonnes)**	**Average winning bid premium (% of IBM Price)**	**Volume (million tonnes)**	**Average winning bid premium (% of IBM Price)**	**Volume (million tonnes)**
North	51%	580.6	33%	565.3	55%	625.6
West	-	-	14%	202.9	22%	81.1
East	18%	368.6	156%	NA	98%	1003.8
South	62%	1866.4	-	-	44%	240.9
Central	60%	241.2	89%	197.1	72%	1147.1
Pan India	51%	3056.8	50%	965.3	63%	3098.5

Source: Ministry of mines, March 2025

5.4 Distribution of limestone reserves

India has huge reserves of cement grade limestone estimated at about 227 billion tonnes as per Indian Minerals Yearbook 2023. Of this, around 19 billion tonnes is of "proved" grade and 208 billion tonnes of "possible" grade. Cement grade limestone reserves are found in 24 states and 3 union territories (UT) but its distribution is not uniform. About ~93% of the total proven reserves are concentrated in 10 states - Andhra Pradesh and Telangana, Rajasthan, Karnataka, Himachal Pradesh, Gujarat, Meghalaya, Chhattisgarh, Madhya Pradesh and Maharashtra. Rajasthan is the leading producing State accounting for (23%) of the total production of limestone, followed by Andhra Pradesh (13%), Madhya Pradesh (12%), Chhattisgarh (11%), Karnataka (10%), Telangana (7%), Tamil Nadu (6%) , Gujarat (6%), and remaining 12% was contributed by Maharashtra, Himachal Pradesh, Meghalaya, Odisha, Uttar Pradesh, Assam, Jammu And Kashmir, Bihar, Kerala and Jharkhand. Environmental rules and regulations restrict the exploitation of resources.

The total reserves of cement grade limestone are not fully utilised to manufacture cement due to constraints such as inaccessibility of some deposits in hilly terrain, environmental regulations, etc.

Availability of limestone reserves for future requirements is a concern as 30% of reserves fall under forests and other regulated areas unavailable for cement manufacture. Another 7.5% of limestone bearing area falls in the Coastal Regulation Zone.

5.5 Capacity overview

Table 11- Region wise capacity

Region	Installed capacity FY25	Share (%)	Installed capacity FY30P	Share (%)
North	127	19%	172-177	18-20%
East	135	20%	190-195	20-22%
West	89	13%	120-125	12-14%
South	208	31%	262-267	28-30%

Central	91	14%	140-145	15-17%
North east	18	3%	20-25	1-3%
Total	668		915-925	

Source: Industry, Crisil Intelligence

In terms of total installed capacity in fiscal 2025, the southern region topped with a share of 31%, followed by the eastern and northern regions with a share of 19-20% each and the western and central regions with 13-14% each.

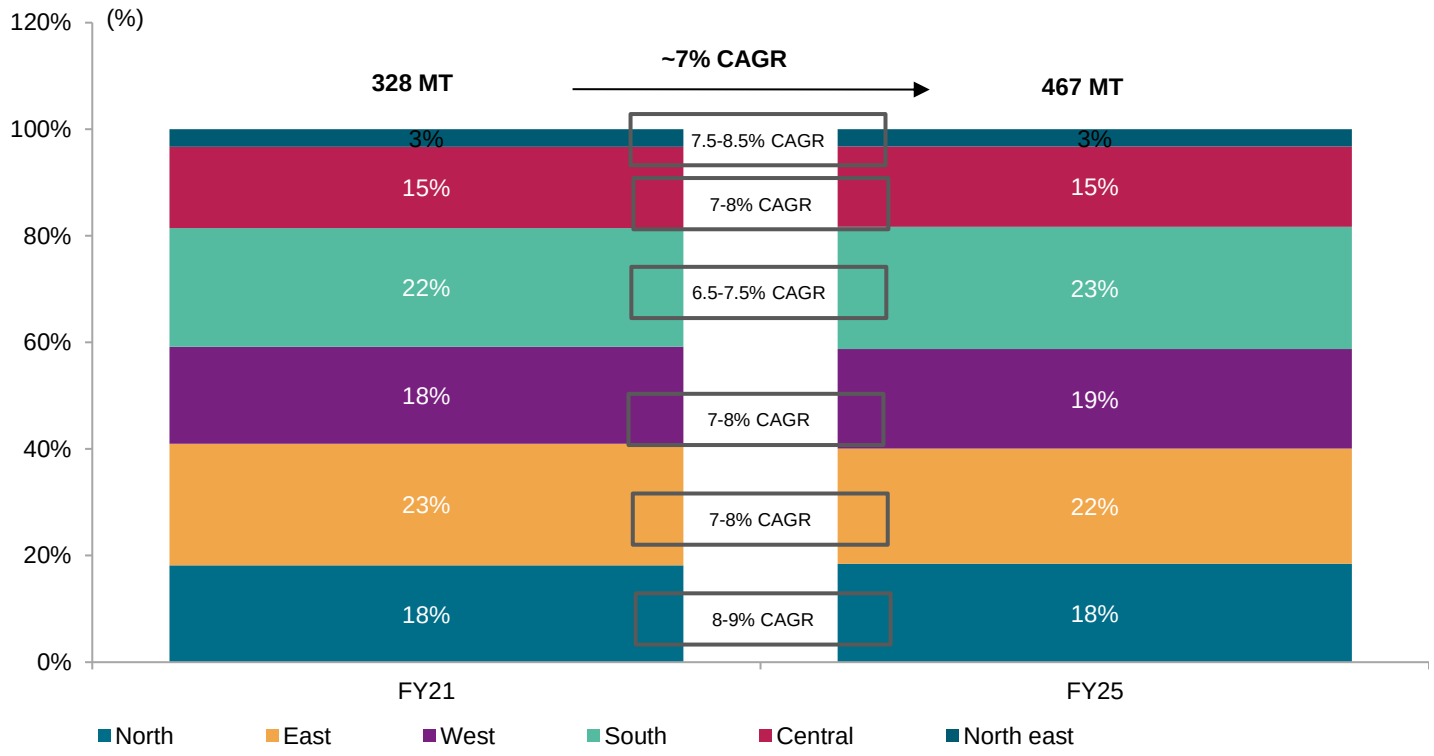
6 Regional demand, supply and utilisation

6.1 Region-wise cement demand review and outlook

Over the past five years (fiscals 2021-2025), the northern region (primarily Rajasthan, Delhi and Haryana) saw strong demand growth led by a surge in infrastructure construction coupled with urban housing. The region witnessed healthy uptick in demand post covid disruptions leading to higher CAGR compared to other regions. While other regions followed, South (Karnataka, Kerala, Tamil Nadu, AP-Telangana) witnessed lowest growth amongst other regions owing to higher covid related disruptions coupled with political instability and adverse weather conditions in the latest fiscal of 2025.

Overall, cement demand logged a healthy CAGR of ~7% over the five-year period, supported by healthy growth year of post-covid recovery during fiscal 2022 followed by pre-election boost during fiscal 2023 and fiscal 2024.

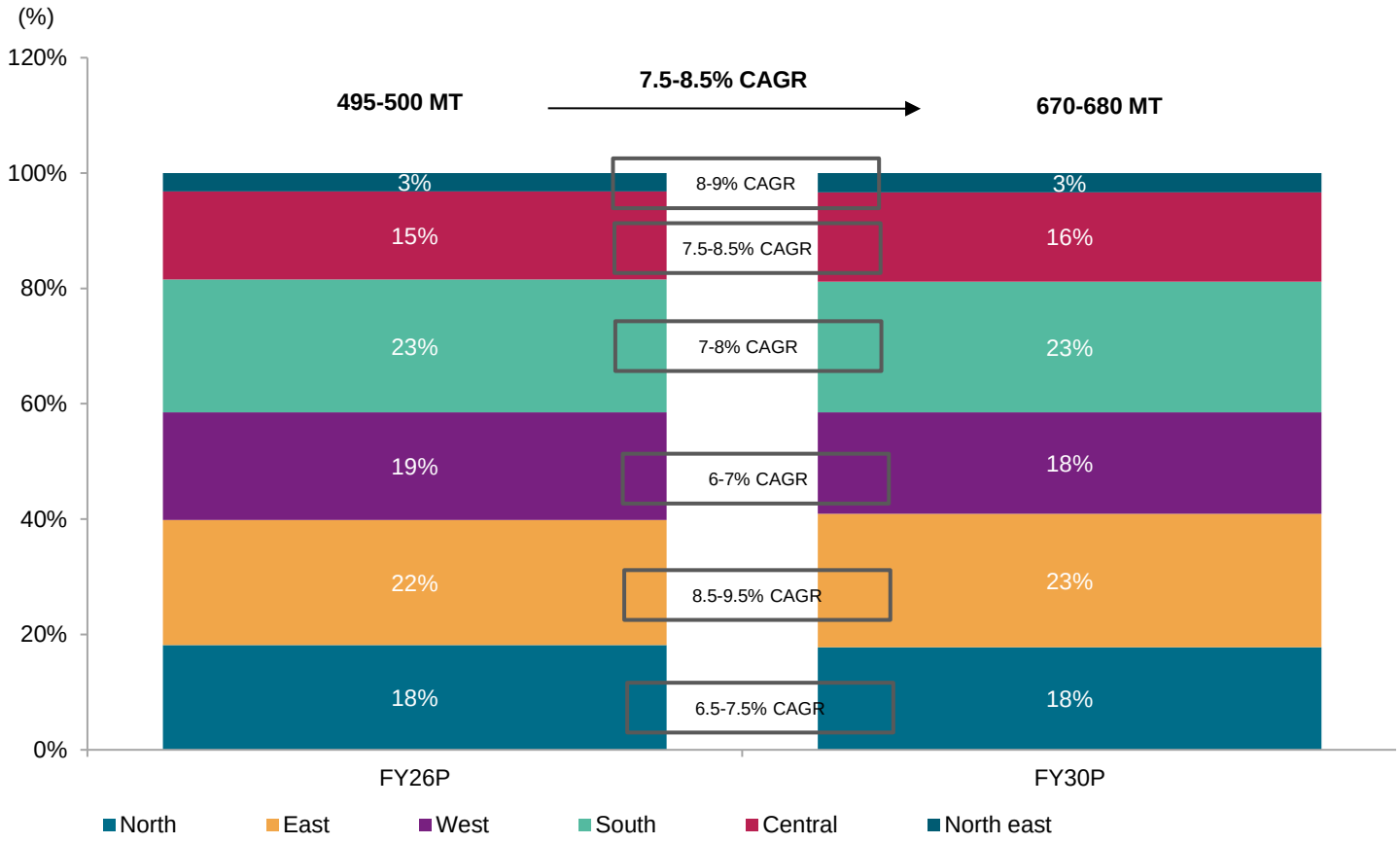
Figure 14- Regional cement demand trend



Source: Crisil Intelligence

Crisil Intelligence expects cement demand to log a slightly higher 7.5-8.5% CAGR between fiscals 2026 and 2030. During this period, the eastern (including north-east) and central regions, which have a higher housing shortage and a lower base in terms of per capita cement consumption, are expected to exhibit robust growth, followed by the south and north. Demand in the southern region will be supported by real estate and urban housing projects, and road and irrigation infrastructure projects. Central vistas project, metro projects in Delhi and Gurgaon will continue to support demand in the north. The western region is expected to witness moderate growth on a high base. This region has high-budget infrastructure projects under execution (Mumbai-Ahmedabad bullet train, multiple expressways and metro projects in Mumbai) but already has the highest per capita cement consumption, which will limit the demand growth potential.

Figure 15 - Regional cement demand outlook



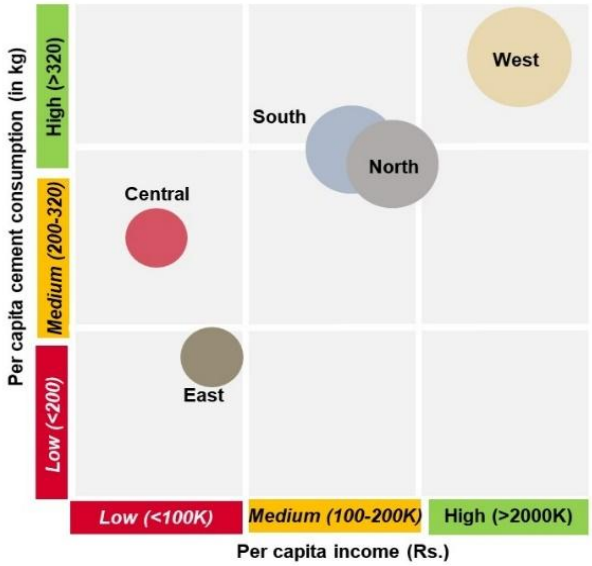
Source: Crisil intelligence

Eastern and central regions to outperform others in the medium term

The eastern (including north-east) and central regions will continue to drive cement demand in India in the medium term, led by the government's thrust on infrastructure and housing, coupled with a low base of development. Per capita income and per capita cemqent consumption in these two regions are well-below pan-India numbers, thereby providing significant potential upside. Though the northern, western and southern regions comprise the more industrialised states, demand growth is expected to be lower compared to eastern and central region.

Further, the eastern and central regions account for over a third of the rural housing shortage, according to the 2011 census. Although the shortage has lessened over the years on the back of central and state government schemes such as PMAY-G and Biju Pucca Ghar Yojana in Odisha, it remains high.

Figure 29- Region-wise per capita income vs per capita cement consumption



Source: Crisil Intelligence, Ministry of Statistics and Programme Implementation (MoSPI), 2011 Census

North: Demand outlook to moderate in longer term on a high base

Review (fiscal 2020-2025): Infrastructure projects and affordable housing helped cement demand log healthy 8-9% CAGR in the northern region over fiscals 2021-2025. Demand from metro projects in and around the National Capital Region (NCR) and construction by the NHAI and border roads in Rajasthan continued to support demand during the period. The projects included the DFC in Haryana; metro projects in Delhi and Gurgaon; smart-city-related development in Delhi, Rajasthan and Haryana; and several road and highway projects. In addition, affordable housing continued to support demand growth.

Outlook (fiscal 2025-2030): Crisil Intelligence estimates growth to moderate in fiscal 26 to 4-5% after moderating in previous fiscal as well. India-Pakistan border tensions in beginning of the year along with extreme heat in some regions and unseasonal shower to limit demand growth. Over the medium term, Crisil Intelligence expects cement demand in the region to log a 6.5-7.5% CAGR growth. Key infrastructure projects in the region such as metro projects in Delhi, Gurugram (Gurugram-Alwar metro); smart-city-related development in Delhi, Rajasthan (Jaipur and Udaipur) and Faridabad (Haryana); several road and highway projects, etc., will drive cement demand in the region. Real estate development in key existing and emerging pockets will gradually support demand as well. However, demand for housing in the region is expected to remain moderate on account of low levels of housing shortage and higher levels of pucca/ concrete houses.

Table 10- Cement demand review and outlook for the northern region

Region	Housing	Infrastructure	Commercial/industrial	FY20-25	FY25	FY26P	FY25-30P
North	↑	↑	↑	8-9%	6.5%	4-5%	6.5-7.5%

↑ *Moderate growth less than 6%* ↑ *Healthy growth above 6%*

Source: Crisil intelligence

West: Infrastructure and real estate to support demand growth

Review: Cement demand growth witnessed a CAGR of 7-8% over the past five years, owing to faster recovery post pandemic disruption. In fiscal 2021, demand declined by 1-3% since the region was the hardest hit by the first wave of Covid-19. Although, in fiscal 22 and 23, the region witnessed recovery on a low base of two consecutive years and due to a pickup in real estate after a reduction in stamp duty, low interest rates, customer preference for individual homes, and pickup in infrastructure projects. In fiscal 24, demand grew further by ~12% even after rebounding sharply in the two previous fiscal years largely led by urban housing and real estate pickup. State assembly elections in Maharashtra later half of fiscal 2025 and continued traction in Gujarat further resulted in healthy growth during the fiscal.

Outlook: Demand growth to moderate in fiscal 2026 to 6-7% on three consecutive healthy bases. However, the increase in budgeted state capex for Gujarat for FY26BE by 36% over FY25RE which will focus on urban development and road construction will support consumption. In the longer run, Crisil Intelligence expects cement demand in the west to log a 6-7% CAGR over the forecast period. Development of infrastructure, such as urban infrastructure projects (metros, expressways, national highways), state roads in Gujarat, the Mumbai-Ahmedabad bullet train, multiple expressways like Konkan expressway, Pune and Mumbai ring road projects and healthy traction in demand for real estate and urban housing to support demand in the region.

Table 13- Cement demand review and outlook for the western region

Region	Housing	Infrastructure	Commercial/industrial	FY20-25	FY25	FY26P	FY25-30P
West	↑	↑	↑	7-8%	8%	6-7%	6-7%

↑ *Moderate growth less than 6%* ↑ *Healthy growth above 6%*

Source: Crisil intelligence

East: Social infrastructure and housing development to boost demand

Review: With 7-8% CAGR during fiscals 2021-2025, cement demand in the eastern region witnessed healthy growth. Governments' focus on development in the region and the low-base effect (east is one of the lowest cement-consuming regions in the country) drove the growth. The demand picked up during the period, driven by healthy growth in affordable housing under the PMAY-G, strong rural demand, smart city-related construction, and IHB. Although after a slowdown during fiscal 21 and 22, demand rebounded sharply in fiscal 23 largely propelled by traction under rural housing, specially under PMAY-G. Rural housing remains the key demand driver in the region amid a higher housing shortage. Although, fiscal 24 witnessed relatively lower demand growth owing to sand and aggregate availability issue as well as funding issue in West Bengal and Bihar. In fiscal 25 growth further moderated to ~5%, in line with pan-India demand. While state elections in Jharkhand boosted demand, that in Odisha led to a slowdown due to change in government where in execution of existing infra projects were put on hold for reviewing purpose.

Outlook: In fiscal 2026, demand is expected to rebound by 6.5-7.5% after a slowdown in previous fiscal. In the longer run, rural housing (IHB and PMAY-G) and infrastructure (roads and railways) development should propel healthy cement demand during fiscals 2026-2030. Demand in this region is expected to log 8.5-9.5% 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 intelligence 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, 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. Also, the Purvodaya scheme, announced in the 2025-26 budget, is expected to drive growth in eastern regions through key projects such as the Patna-Purnea Expressway, Buxar-Bhagalpur Expressway, a 2-lane bridge over the Ganga River at Buxar and many more

Table 14- Cement demand review and outlook for the eastern region

Region	Housing	Infrastructure	Commercial/industrial	FY20-25	FY25	FY26P	FY25-30P
East	↑	↑	↑	7-8%	5%	6.5-7.5%	8.5-9.5%

↑ *Moderate growth less than 6%* ↑ *Healthy growth above 6%*

Source: Crisil intelligence

North-east: Weak infrastructural base to pave way for healthy demand growth

Review: In previous five years, cement demand in the region grew at a healthy 7.5-8.5% CAGR, marginally higher than eastern region. Demand growth growth moderated in fiscal 2021, impacted by the pandemic as well as weak government spending. However, on a low base, demand picked up in fiscal 2022, driven by traction from infrastructure projects and rural housing. Further, a pre-election boost spurred healthy growth in fiscal 2023, with higher demand from the infrastructure segment followed by housing. Completion of several road and rail connectivity projects (Bogibeel with linking lines between Dibrugarh, North and South Bank line, Agartala – Sabroom, New Maynaguri – Jogighopa line) in the past years have supported demand growth in the region. Demand further grew by ~10.5% in fiscal 2024, driven by a healthy pace in first half of the fiscal ahead of state elections in Mizoram, AP and Sikkim. However, in line with Pan-India demand moderation, demand growth slowed down in fiscal 2025.

Outlook: In the long run, Crisil intelligence expects demand growth to remain healthy with slightly higher momentum at 8-9% CAGR despite a high base with various infrastructure projects under construction (new greenfield airport projects in Arunachal Pradesh, Dibrugarh, Guwahati, road projects of Dimapur-Kohima Road in Nagaland, four-laning of Nagaon bypass to Holongi in Arunachal Pradesh, two-lane highway from Bagrakote to Pakyong in Sikkim, etc). Also, rising need of concretisation will support growth from the rural housing segment in the medium to long term.

Table 14- Cement demand review and outlook for the north eastern region

Region	Housing	Infrastructure	Commercial/industrial	FY20-25	FY25	FY26P	FY25-30P
North-East	↑	↑	↑	7.5-8.5%	4%	5.5-.5%	8-9%

↑ *Moderate growth less than 6%* ↑ *Healthy growth above 6%*

Source: Crisil intelligence

Central: Housing and infrastructure development to drive healthy growth

Review: Over the five-year period, cement demand logged a strong 7.0-8.0% CAGR in the region. The region witnessed a slowdown during 21 on account of previous two healthy base along with water scarcity in Bundelkhand and flooding in MP. Although, in fiscal 22 and 23, pre-election spending in Uttar Pradesh with a slew of infrastructure projects under execution, majorly roads, airports, and metro, supported the demand revival in the region and grew at a healthy rate. In

fiscal 24 demand witnessed another year of healthy growth owing to infrastructure construction, a pick-up in urban housing development in Uttar Pradesh and healthy rural housing demand in Madhya Pradesh. Further in fiscal 25 the demand is moderated owing to temporary disruptions, including fund diversion during general elections, excess rainfall in Uttar Pradesh and Madhya Pradesh, and logistics issues caused by the Kumbh Mela.

Outlook: During fiscals 2026-2030, cement demand in the region is expected to log healthy 7.5-8.5% CAGR, moderately higher than growth seen in the previous five years. Key infrastructure projects in the region, such as metro projects in Bhopal, Meerut, Agra and Indore; road and highway projects; irrigation projects and the waterway project across Varanasi-Haldia 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. With higher housing shortage and lower developmental base of infrastructure, region to witness healthy growth from housing and infra segment, while growth from commercial and industrial segment is expected to be moderate.

Table 15- Cement demand review and outlook for the central region

Region	Housing	Infrastructure	Commercial/industrial	FY20-25	FY25	FY26P	FY25-30P
Central	↑	↑	→	7-8%	4%	7.5-8.5%	7.5-8.5%

→ *Moderate growth less than 6%* ↑ *Healthy growth above 6%*

Source: Crisil intelligence

South: Demand growth over medium term to be supported by infrastructure projects

Review: The southern region clocked a CAGR of 6.5-7.5% during the past 5 years. The region was most severely impacted during 21 amidst disruptions in demand due to general and assembly elections, the cancellation of several awarded projects, the stalling of construction work in Amaravati and stricter lockdowns and related labour and supply-chain disruptions due to Covid-19 leading to a sharp decline. In fiscal 22 and 23, the demand rose sharply on a low base, driven by a pickup in infrastructure execution and housing projects across southern states. In fiscal 24, growth momentum continued its healthy pace led by traction from infrastructure project executions, primarily roads, expressways, metros, etc. However, in fiscal 25 the demand witnessed only marginal growth of ~2% majorly owing to the low state spending coupled with challenges such as floods in Kerala, sand shortages and political instability in AP-Telangana.

Outlook: In fiscal 2026, demand growth of 6.5-7.5% is expected to be supported by a significant increase in capital outlay, with Andhra Pradesh's allocation rising by 69%, primarily focused on rural and roads and bridges development. Over the long term over fiscals 2026-2030, the demand in the region is expected to log a healthy 7-8% 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 majorly from infrastructure segment. Expressways, such as Chennai-Tiruchirapalli expressway, Namma Metro construction in Bengaluru, Kochi metro, irrigation projects, etc, would drive incremental cement demand during the next five years. Allocation of ~Rs. 15,000 crore for developmental projects in Amravati under the Purvodaya scheme to also aid demand growth over medium term.

Table 16- Cement demand review and outlook for the southern region

Region	Housing	Infrastructure	Commercial/industrial	FY20-25	FY25	FY26P	FY25-30P
South	→	↑	→	6.5-7.5%	2%	6.5-7.5%	7-8%

→ *Moderate growth less than 6%* ↑ *Healthy growth above 6%*

Source: Crisil intelligence

6.2 Growth drivers of high potential states

Cement demand: Review and outlook

States	Demand, FY25	Demand, FY30P	CAGR FY25-30P	Growth potential
Andhra Pradesh & Telangana	43-45	59-65	6-8%	Medium
Tamil Nadu	31-33	44-48	6.5-8.5%	Medium-High
Karnataka	25-27	34-37	5.5-7.5%	Medium
Kerala	11-13	14-15	3-5%	Low
West Bengal	29-31	42-46	7-9%	High
Odisha	20-22	29-32	7-9%	High
Goa	0.5-2.5	2-3	4.5-6.5%	Medium
Maharashtra	54-56	74-81	6-8%	Medium

Note: Growth classification – high >7%, medium 5-7%, and low <5%; P: projected
Source: CRISIL MI&A Research

In fiscal 2025, the demand was the highest from Maharashtra, followed by Andra Pradesh and Telangana. In Maharashtra, the Mumbai Metropolitan Region (MMR) accounted for 10-12 million tonne of demand. By fiscal 2030, the key states, as mentioned in the above table, are likely to contribute to major domestic cement demand include West Bengal and Odisha; demand from the key states is expected to clock a CAGR of 7-9%.

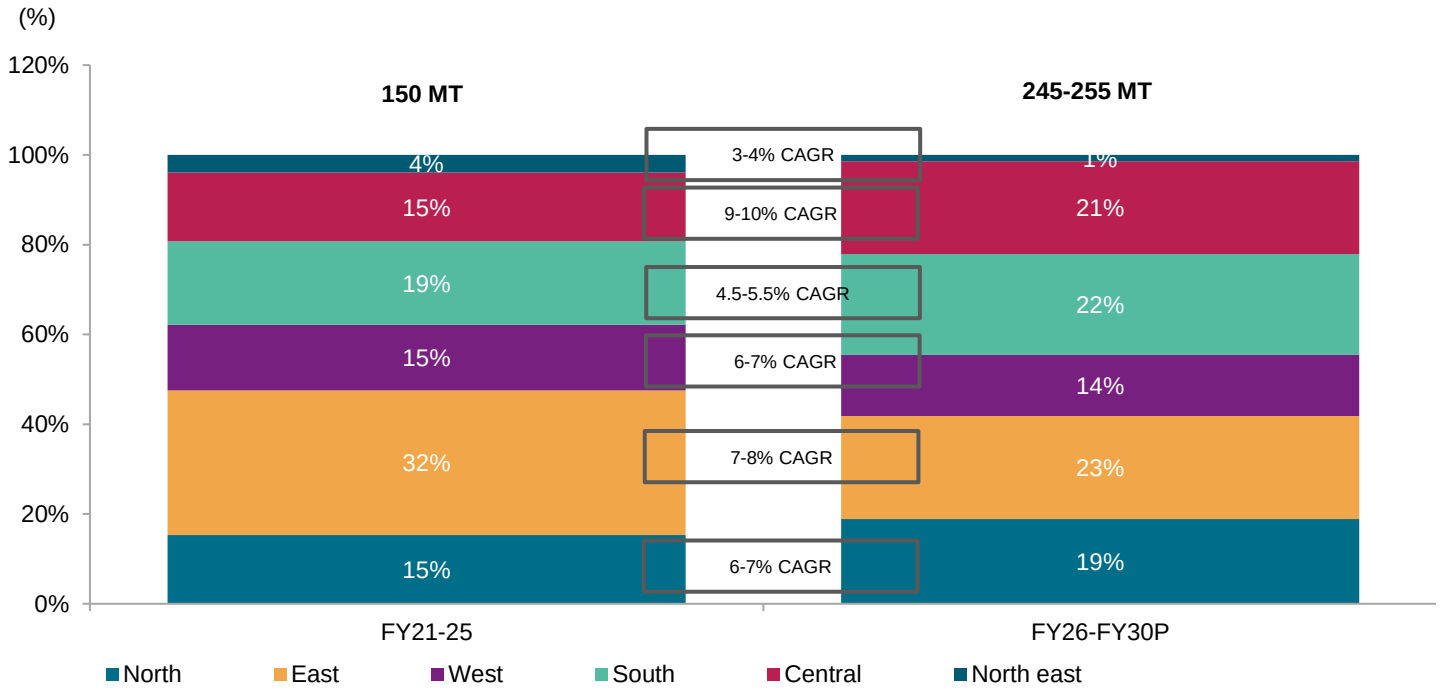
6.3 Region-wise cement supply and utilisation review and outlook

Over fiscals 2021-2025, the eastern and southern regions collectively comprised ~51% of overall capacity additions. The eastern region has seen the largest share of capacity additions in recent years, led by the rapid expansion by Nu Vista Ltd (formerly Emami Cement, now a wholly owned subsidiary of Nuvoco), Dalmia Cement, JSW Cements, Ramco Cements and Shree Cement, which helped these companies gain share in a fast-growing market.

Over fiscals 2026-2030 too, the east and south are expected to drive capacity additions, followed by the central region, and the north, west and north-east.

Improving demand outlook over the medium term and the push to gain market share have triggered a wave of capacity addition announcements from cement manufactures, especially large players. Over fiscals 2026-2030, Crisil intelligence expects the industry to add 245-255 MTPA of grinding capacities, taking the country's total installed capacity to 915-925 MTPA.

Figure 30- Regional break up of capacity additions

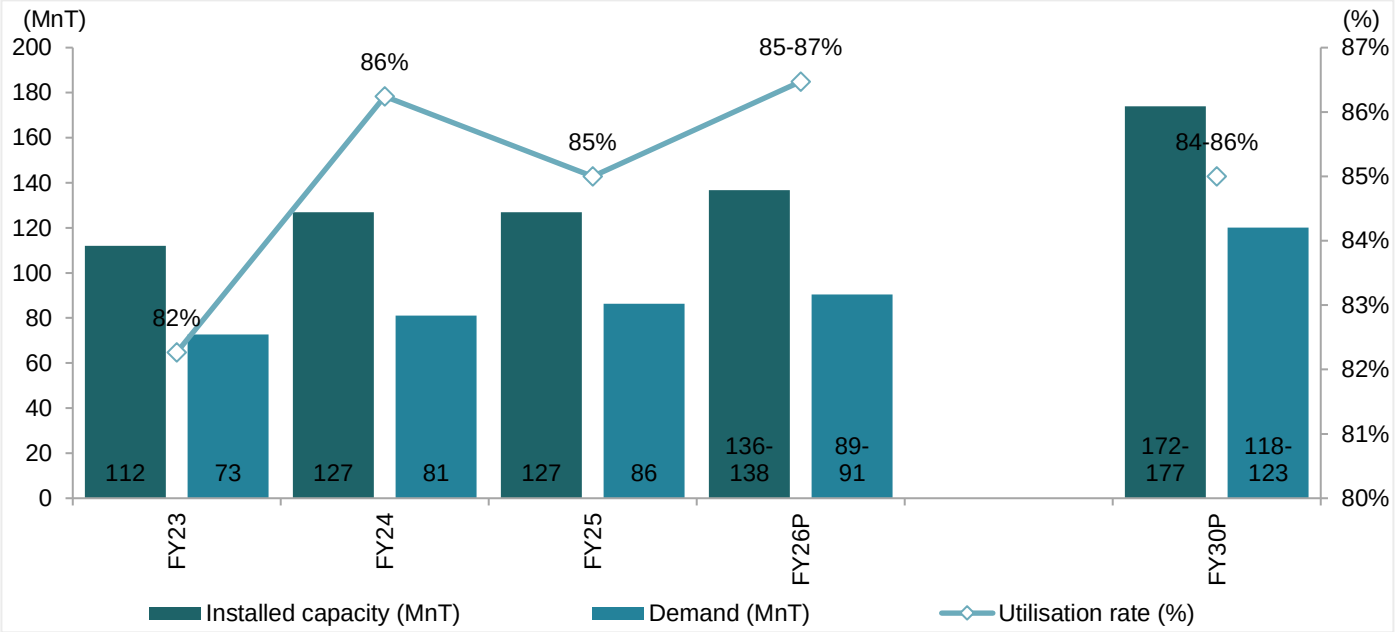


Source: Crisil intelligence, Industry
Note: CAGR % in the boxes represent supply growth from period FY25-30P

Capacity, demand-supply balance 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 up pace and reached ~82% amid lower capacity addition. In fiscal 2024, utilisation further improved, despite the rise in capacity additions, majorly due to healthy demand growth. In fiscal 2025, operating rates inched down with moderation in demand growth. These levels are expected to remain elevated compared to other regions in the coming 5 years amid a positive demand outlook and lower capacity additions.

Figure 31- Demand–supply and utilisation rates



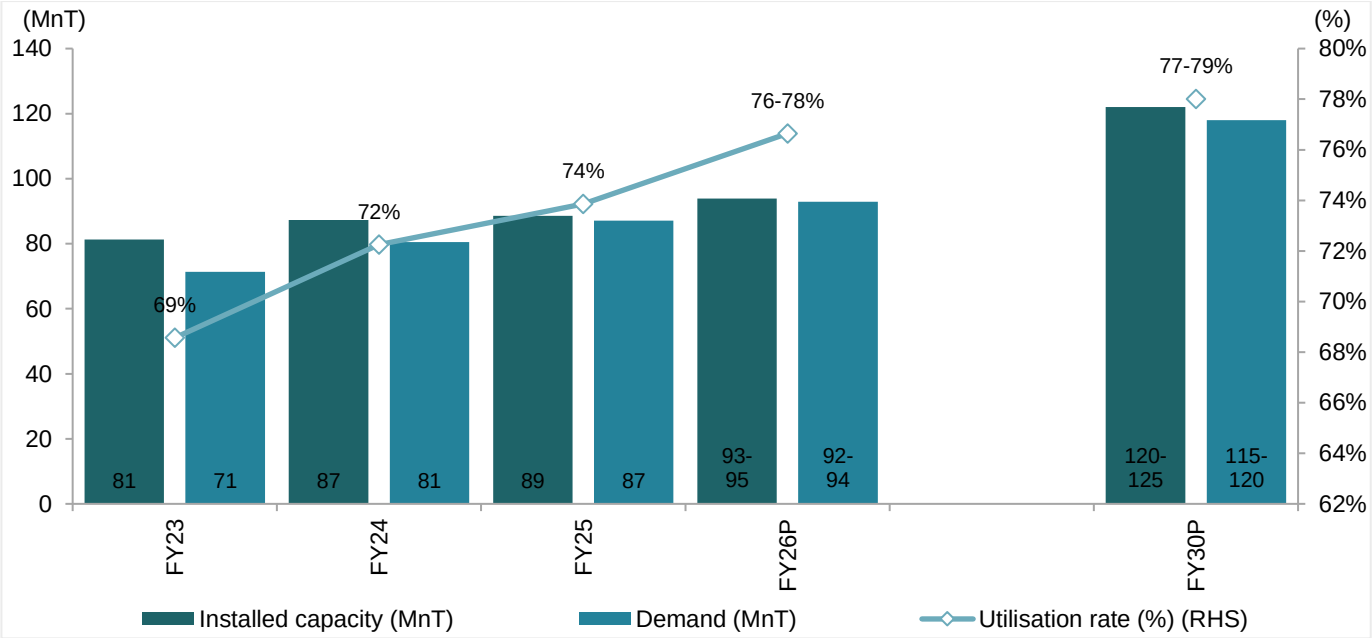
Source: Crisil intelligence, Industry

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 divided by effective capacity and does not take into consideration inter-regional movement

Capacity, demand-supply balance and utilisation in the west

The west was the most impacted region in fiscal 2021, due to stringent lockdowns leading to production shutdowns. As a result, utilisation rate declined 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 remained almost stable in fiscal 2023 and improved in fiscal 2024 due to healthy demand growth. Further, in fiscal 2025, utilisation levels improved with moderate capacity additions and healthy demand growth in the region. Also, going forward, these levels are expected to hover at 77-79% on account of the slower pace of capacity additions over the next five years and healthy growth in demand.

Figure 32- Demand–supply and utilisation rates



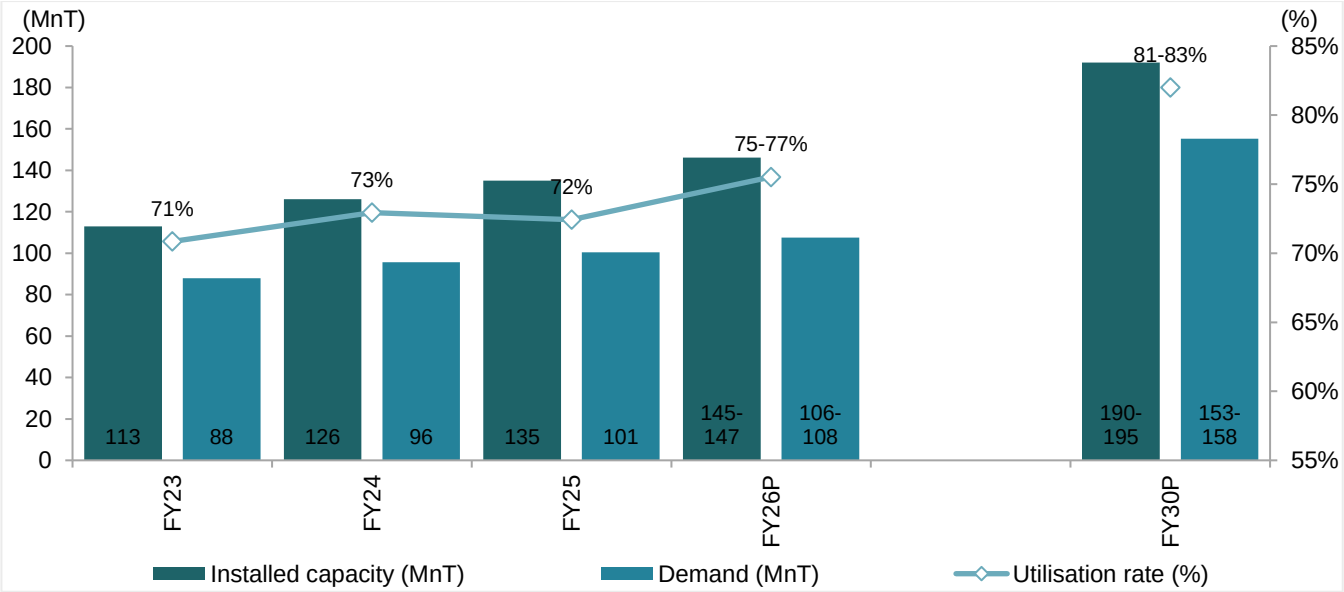
Source: Crisil intelligence, Industry

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 divided by effective capacity and does not take into consideration inter-regional movement

Capacity, demand-supply balance and utilisation in the east

The eastern region was able to better tackle the pandemic owing to a large share of rural areas and lesser congested urban settlements. Demand support from rural housing and government-led infrastructure projects led to healthy production. Hence, utilisation rate declined to ~71% in fiscal 2021. However, with positive demand outlook amid low per capita cement consumption and healthy government spending, many players announced capacity addition plans in fiscal 2021. This put pressure on utilisation levels, which dropped to ~64% in fiscal 2022 amid higher capacity additions and weak demand due to sand issues and untimely rainfall. However, in fiscal 2023, utilisation rebounded to 71% on the back of robust demand growth on a low base, supported by the traction in rural housing, infra push, lower per capita consumption and higher housing shortage. In fiscal 2024, the operating rate improved to 73%, although limited by slow demand momentum during the second half of the fiscal. In fiscal 2025, it inched down to 72% amidst weak demand. However, in fiscal 2026, utilization levels are expected to improve owing to robust demand growth. The region's low per-capita consumption and significant housing shortage are expected to continue driving demand, supporting the growth momentum. Looking ahead to fiscal 2030, the eastern region is expected to witness the highest demand growth, which is expected to drive utilization levels to 81-83%, despite high-capacity addition.

Figure 33- Demand–supply and utilisation rates



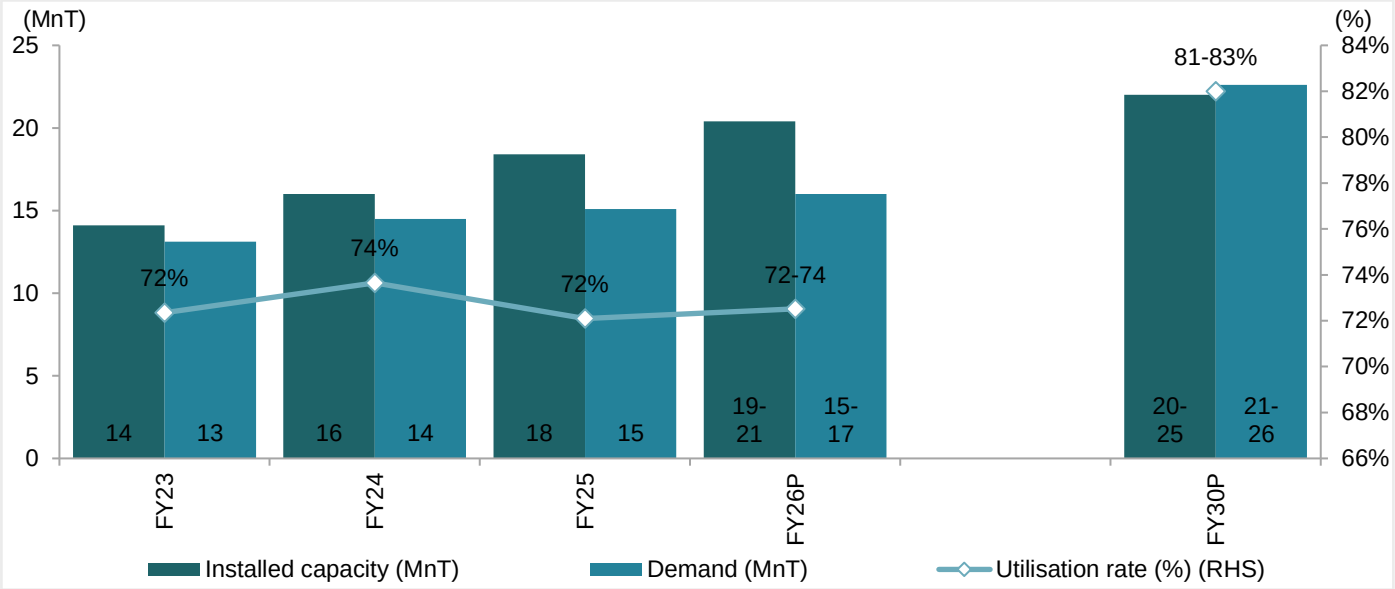
Source: Crisil intelligence, Industry

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 divided by effective capacity and does not take into consideration inter-regional movement

Capacity, demand-supply balance and utilisation in the north-east

In the north-eastern region, utilisation rate was almost steady at ~63% in fiscal 2021, limited on account of restrictions on production amid the pandemic. Although, with recovery in demand in fiscal 2022, operating rate improved to ~64%. Fiscal 2023 witnessed healthy demand growth spurred by the pre-election boost and higher traction from infra and housing. This resulted in a sharp rise in utilisation rates to ~72%. With a steady demand momentum and increase in capacity base, operating rates have just moderately improved in fiscal 2024 to ~74%. Utilisation declined in fiscal 25 in lieu of higher supply against demand in the region. In the longer run, utilisation level to improve to 81-83% amidst healthy demand prospects.

Figure 34- Demand–supply and utilisation rates



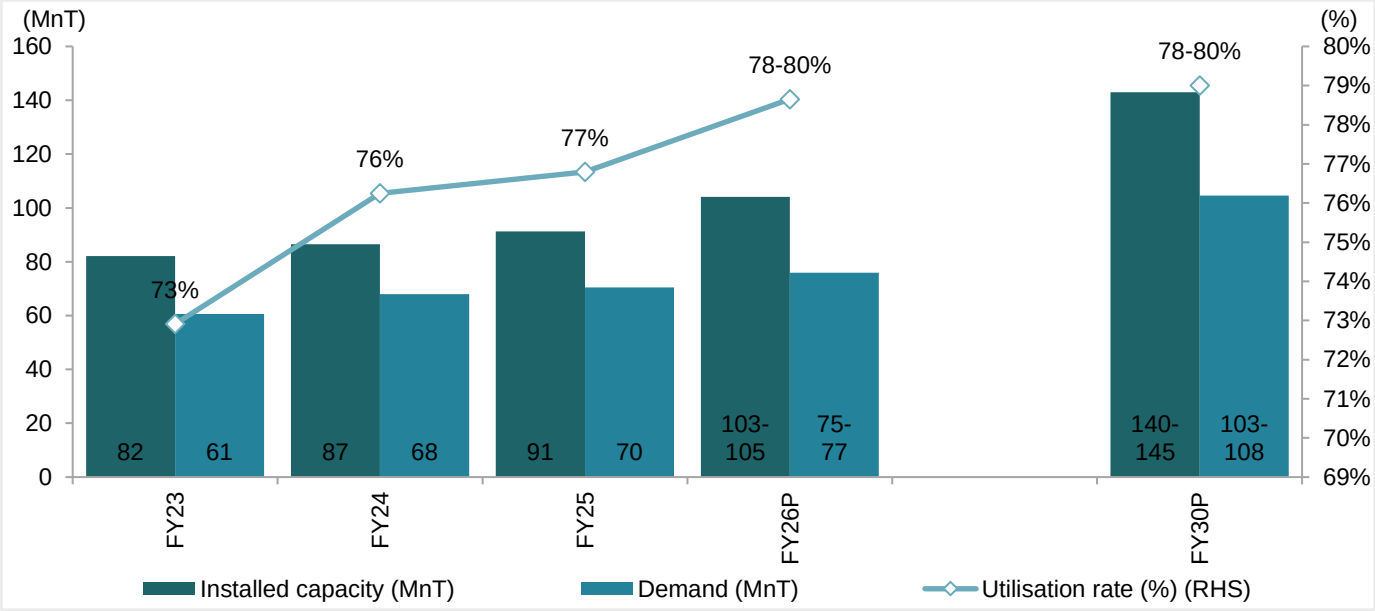
Source: Crisil intelligence, Industry

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 divided by effective capacity and does not take into consideration inter-regional movement

Capacity, demand-supply balance and utilisation in the central region

In the central region, capacity utilisation reached lows of ~68% in fiscal 2021 due to production shutdowns in the first quarter. However, it recovered in fiscal 2022 to reach ~71%, as demand rebounded on the back of pre-election spending in Uttar Pradesh and pick-up in housing and construction activity. Thereafter, in fiscal 2024, it improved to 76% on account of healthy traction from rural housing and infra segment coupled with lower capacity addition during the year (~4.5 MT added). In fiscal 2025, utilisation levels further improved marginally due to lower capacity addition in the fiscal. In the longer run it is expected to improve and operate at 78-80% level till fiscal 2030 owing to strong demand prospects in the region.

Figure 35- Demand–supply and utilisation rates



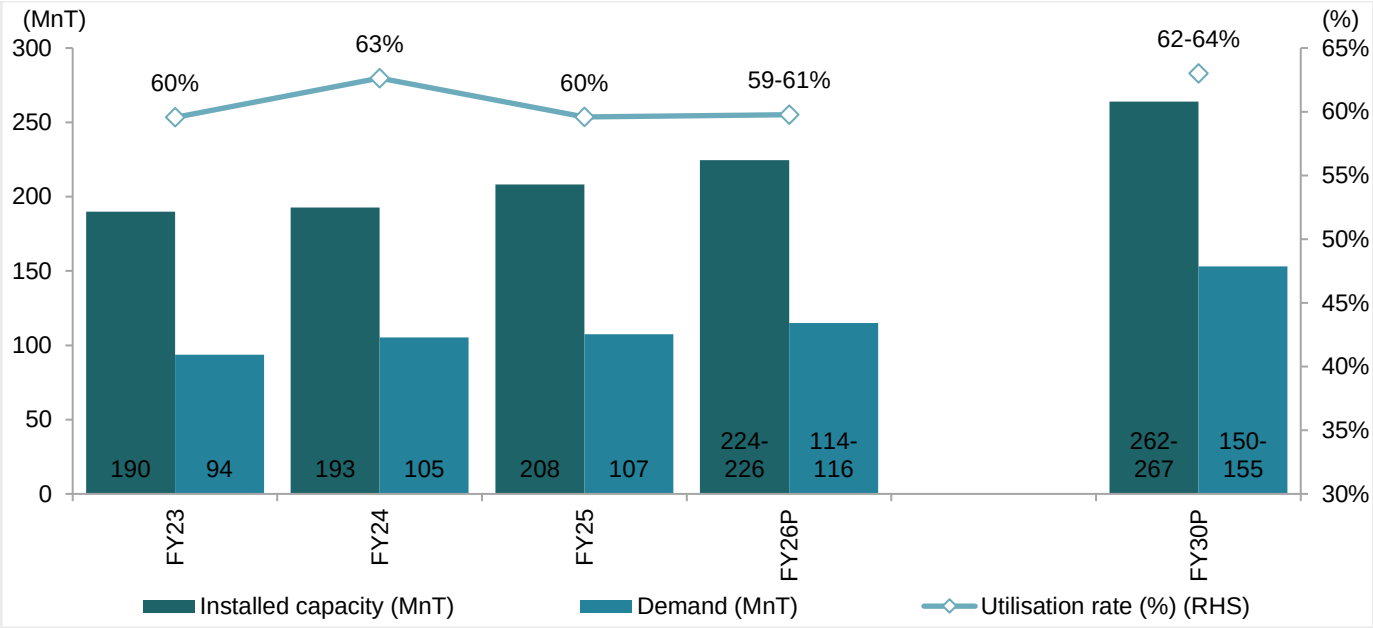
Source: Crisil intelligence, Industry

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 divided by effective capacity and does not take into consideration inter-regional movement

Capacity, demand-supply balance and utilisation in South

Capacity utilisation in the south is the lowest, owing to a wide gap between capacity and production over the years, further aggravated by a slump in demand. In fiscal 2021, utilisation was 50% amid extended local lockdowns because of the severity of Covid-19. 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. Enhanced demand from the infrastructure and housing sectors and moderate capacity additions propelled utilisation to improve to ~60% in fiscal 2023. In fiscal 2024, the region breached the 60% mark for the first time in a decade as demand growth accelerated. However, with almost muted demand growth during fiscal 2025, utilisation levels remained flat at ~60%. The region is expected to continue to witness low-capacity utilisation compared with other regions. Utilisation rates are projected to remain at almost similar levels in fiscal 2026 and rise to 62-64% level over fiscal 2030 from now owing to healthy demand but limited by higher capacity additions in the region.

Figure 36- Demand–supply and utilisation rates



Source: Crisil intelligence, 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 divided by effective capacity and does not take into consideration inter-regional movement

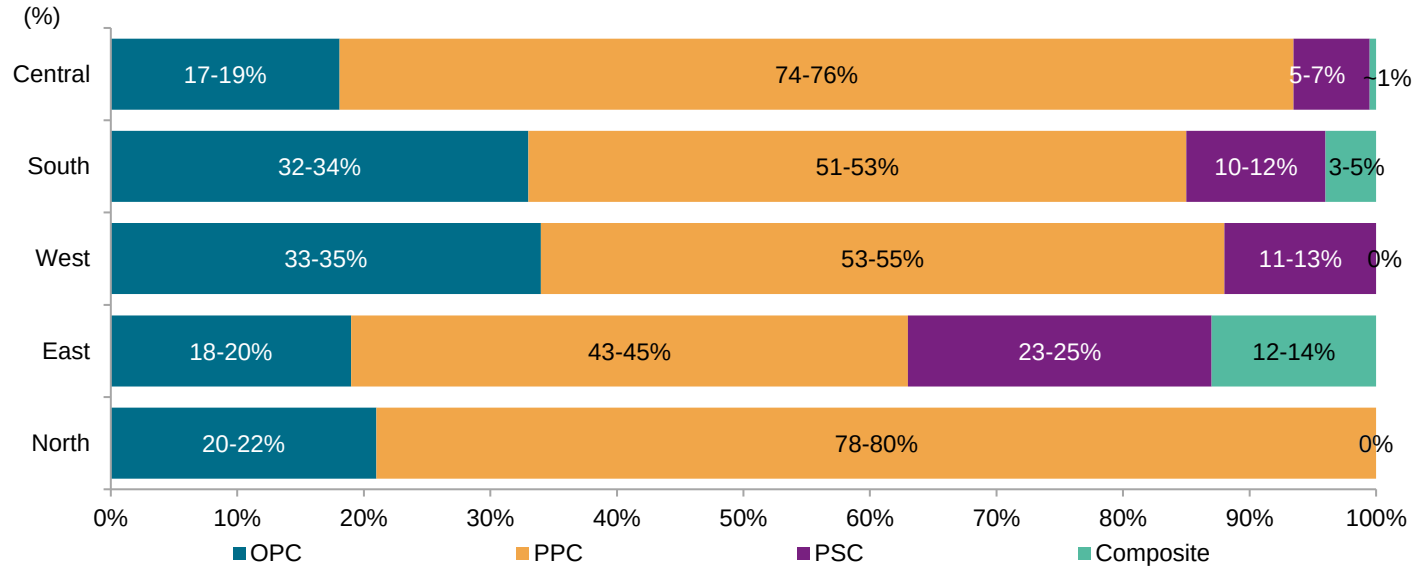
Summary of demand growth amid regional divergence

	FY 2023	FY 2024	FY 2025	FY 2026 P	FY26-FY30P
PAN-INDIA	12%	11%	5%	6.5-7.5%	7.5-8.5%
NORTH	9%	12%	6.5%	4-5%	6.5-7.5%
SOUTH	13%	12.5%	2%	6.5-7.5%	7-8%
EAST	16%	9%	5%	6.5-7.5%	8.5-9.5%
WEST	10%	13%	8%	6-7%	6-7%
CENTRAL	12%	12%	4%	7.5-8.5%	7.5-8.5%

Source: Crisil intelligence, Industry

6.4 Regional product split

Figure 37- Region-wise share of different types of cement (FY25)



Source: Crisil intelligence, Industry

Usage of OPC cement is the highest in the west and south followed by north. Being dominated by the infrastructure segment, share of OPC cement in the west is estimated to be 33-35%. However, due to the lack of availability of slag cement, share of PSC cement is lower, while that of composite cement is negligible. A similar trend is observed in the south. Only a minimal amount of composite cement is used in the housing segment. OPC and PPC cement are predominantly used in the north, owing to the dominant infrastructure segment, coupled with limited availability of slag cement in the region. On the other hand, the share of OPC is relatively lower in the eastern and central regions as the housing segment holds a significant proportion in the overall demand segments. Additionally, with the presence of steel plants in the eastern belt, slag cement is available in abundance, leading to the highest share of PSC and composite cement. The strong demand for OPC in South and West regions is also positive factor for GGBS demand as it is mixed with OPC while making concrete.

6.5 Region-wise market share split of top players in terms of capacity

India – Player-wise capacity split, fiscal 2025

Company	Capacity (MTPA)	Share
Ultratech Cement	184	28%
Adani	100	15%
Shree Cement	56	8%

Dalmia Bharat	50	7%
Nuvoco Vistas	25	4%
JK Cement	25	4%
The Ramco Cement	23	3%
JSW Cement	21	3%
Others	184	28%
Total	668	100%

Note: Other at all India level includes more than 50 players
Ultratech Cement includes Kesoram and India Cement, Adani includes Ambuja Cement and ACC
Source: CRISIL Intelligence

North – Player-wise capacity split, fiscal 2025

North Players	Capacity (MTPA)	Share
Ultratech Cement	35	28%
Shree Cement	28	22%
Adani	21	16%
JK Lakhsmi	11	8%
JK Cement	11	8%
Nuvoco Vistas	6	5%
Birla Corporation	4	3%
Others	12	9%
Total	127	100%

Note: North region includes 7 players; North includes Rajasthan, Uttarakhand, Delhi, Haryana, Himachal Pradesh, Jammu & Kashmir and Punjab
Ultratech Cement includes Kesoram and India Cement, Adani includes Ambuja Cement and ACC
Source: CRISIL Intelligence

East – Player-wise capacity split, fiscal 2025

East Players	Capacity (MTPA)	Share
Ultratech Cement	**36**	**23%**
Dalmia Bharat	**30**	**19%**
Adani	**20**	**13%**
Nuvoco Vistas	**19**	**12%**
Shree Cement	**18**	**12%**
Star cement	**8**	**5%**
JSW Cement	**5**	**3%**
Others	**19**	**12%**
Total	**153**	**100%**

Note: East region includes 15 players; East- Chhattisgarh, West Bengal, Bihar, Jharkhand, Odisha, Meghalaya, Assam, Arunachal Pradesh, Sikkim, Mizoram, Nagaland, Tripura and Manipur
Ultratech Cement includes Kesoram and India Cement, Adani includes Ambuja Cement and ACC
Source: CRISIL Intelligence

West – Player-wise capacity split, fiscal 2025

West Players	Capacity (MTPA)	Share
Ultratech Cement	32	36%
Adani	24	27%
JSW Cement	5	5%
Birla Corporation	4	5%
Shree Cement	3	3%

Dalmia Bharat	3	3%
JK Lakhsmi	2	3%
Others	16	18%
Total	89	100%

Note: West Region Includes 10 players; West- Maharashtra, Gujarat and Goa
Ultratech Cement includes Kesoram and India Cement, Adani includes Ambuja Cement and ACC
Source: CRISIL Intelligence

South – Player-wise capacity split, fiscal 2025

South Players	Capacity	Share
Ultratech Cement	50	24%
Adani	27	13%
The Ramco Cement	19	9%
Chettinad Cement	18	8%
Dalmia Bharat	17	8%
JSW Cement	11	5%
Sagar Cement	8	4%
Others	57	28%
Total	208	100%

Note: South region includes more than 25 players; South- Andhra Pradesh, Karnataka, Kerala, Tamil Nadu, Andaman and Nicobar Islands, and Pondicherry
Ultratech Cement includes Kesoram and India Cement, Adani includes Ambuja Cement and ACC
Source: CRISIL Intelligence

Central – Player-wise capacity split, fiscal 2025

Central Players	Capacity	Share
Ultratech Cement	31	34%

JK Cement	10	10%
Birla Corporation	9	10%
Adani	8	9%
Heidelberg Cement	6	6%
Prism Cement	6	6%
Shree Cement	2	2%
Others	20	22%
Total	91	100%

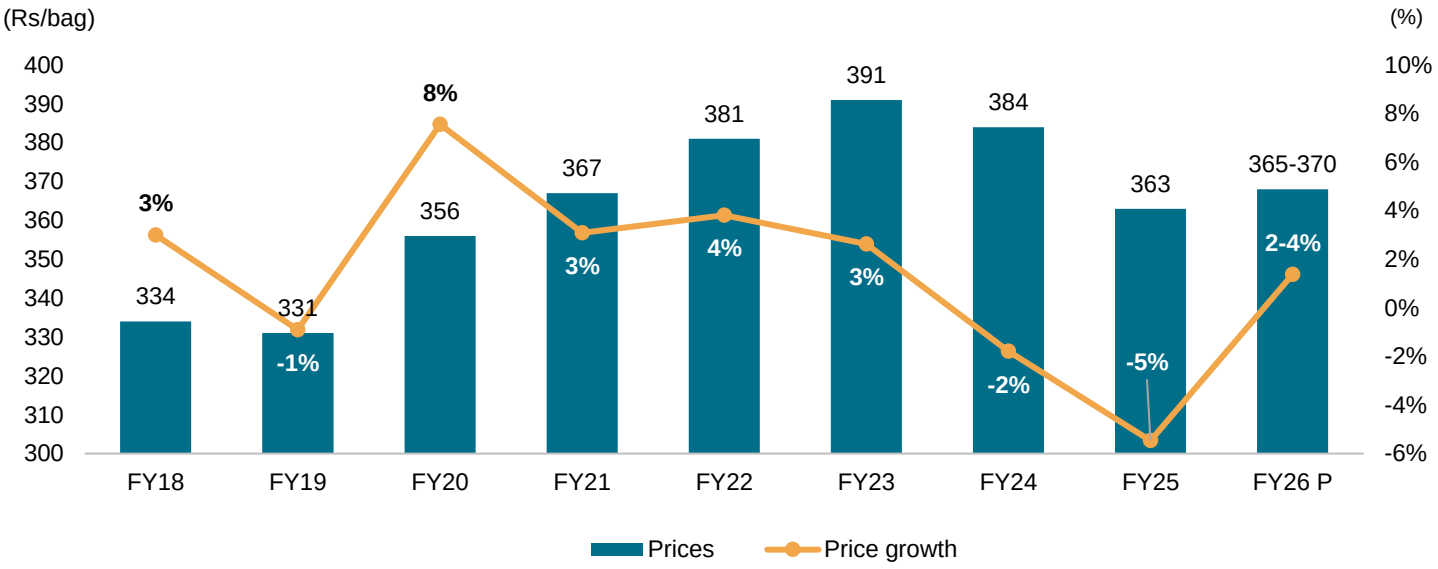
Note: Central region includes 8 players; Central- Uttar Pradesh and Madhya Pradesh
Ultratech Cement includes Kesoram and India Cement, Adani includes Ambuja Cement and ACC
Source: CRISIL Intelligence

7 Pricing, cost and profitability trend

7.1 All-India and regional pricing trend (historical and outlook)

After reaching a peak of Rs 391 per 50 kg bag in fiscal 2023, with a 3% year-over-year increase, cement prices experienced a decline in fiscal 2024 and 2025. This decline was driven by a correction in crude and coal prices, which led to a reduction in cost pressures for industry players. As crude and coal prices fell, power and fuel costs, which had previously surged, began to decrease in fiscal 2024, and this downward trend continued, with costs easing further. Despite strong demand, the competitive market prevented companies from raising prices, and instead, they focused on gaining market share. As a result, cement prices decreased by 2% to Rs 384 per 50 kg bag in fiscal 2024, and by a further 5% to Rs 363 per 50 kg bag in fiscal 2025, building on the previous year's solid foundation.

Pan-India trend in cement prices



Note: P- Projected; Cement prices are average of retail selling price (RSP) for category A players
Source: Industry, Crisil Intelligence

Going forward, in fiscal 2026, prices are expected to inch to ~Rs 365-370, an year on growth of 2-4%, owing to the increase in demand but the softening cost pressures to limit the growth.

7.1.1 Regional price trends

In the northern region, cement prices increased by 2% year-on-year (YoY) in FY23 to counter rising cost pressures, and remained stable in FY24 at ₹381/bag despite growing demand and a high base, supported by easing input costs. In FY25, prices declined by approximately 5% to ₹361/bag. However, in FY26, prices are projected to recover marginally to ₹363–368/bag, indicating a 2–4% growth.

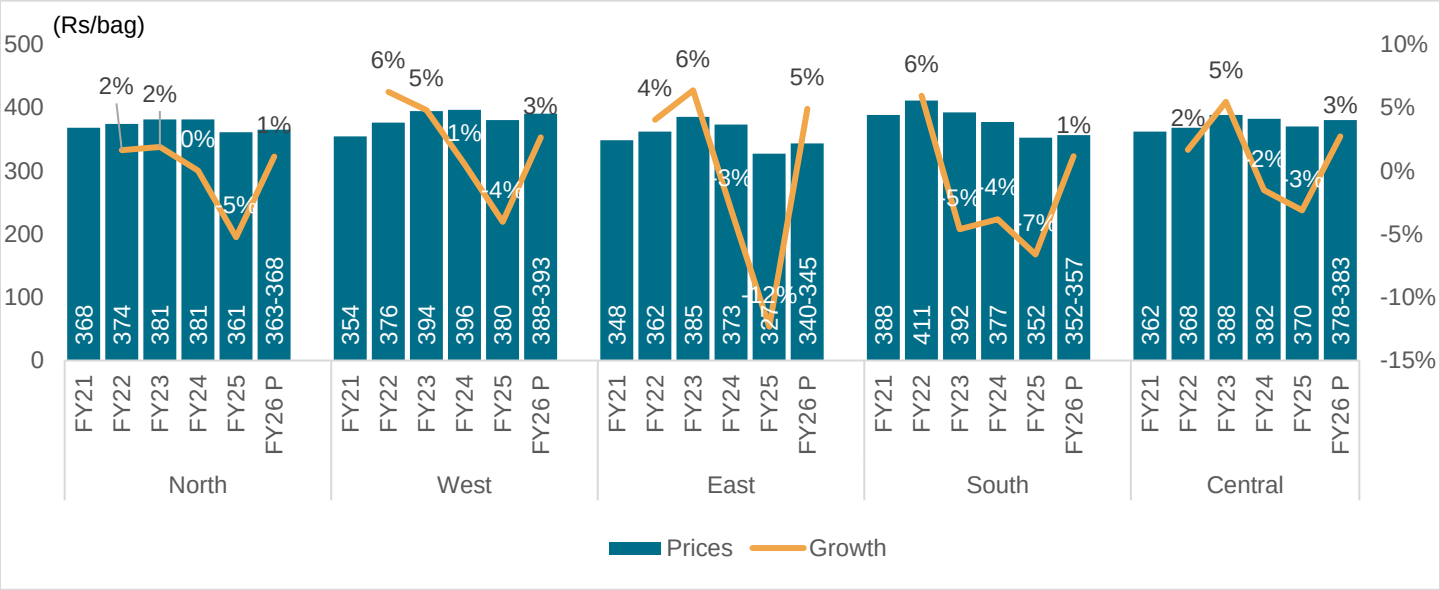
In the western region, prices grew by 5% YoY in FY23 due to robust infrastructure-led demand, reaching ₹394/bag. This was followed by a marginal increase of 1% in FY24 to ₹396/bag. Despite healthy demand, FY25 witnessed a price correction of 4%, bringing prices down to ₹380/bag. Prices are projected to improve modestly in FY26 to ₹388–393/bag, reflecting a 2–4% increase.

The eastern region saw the highest price growth in FY23, rising by 6% YoY to ₹385/bag amid strong demand from rural housing and government infrastructure initiatives. However, heightened competition and continued capacity additions contributed to a 3% decline in FY24 to ₹373/bag, followed by a steep 12% drop in FY25 to ₹327/bag. Prices in FY26 are expected to rebound to ₹340–345/bag, registering a 5–7% increase.

In the southern region, prices declined by 4% YoY in FY23 to ₹392/bag, driven by oversupply and limited outbound movement due to capacity expansions in other regions. The downward trend continued in FY24 with another 4% fall to ₹377/bag, and further dropped by 7% in FY25 to ₹352/bag — the sharpest FY25 decline across all regions. Prices are projected to stabilise in FY26 at ₹352–359/bag, with a mild 0–2% recovery.

The central region recorded a 5% price growth in FY23 to ₹388/bag, driven by robust infrastructure spending and rising input costs. However, prices dipped by 2% in FY24 to ₹382/bag due to added supply and constrained outbound movement to the East. The trend continued in FY25, with a 3% decline to ₹370/bag. In FY26, a moderate recovery is expected with prices estimated at ₹378–383/bag, translating to a 2–4% growth.

Region-wise trend in cement prices



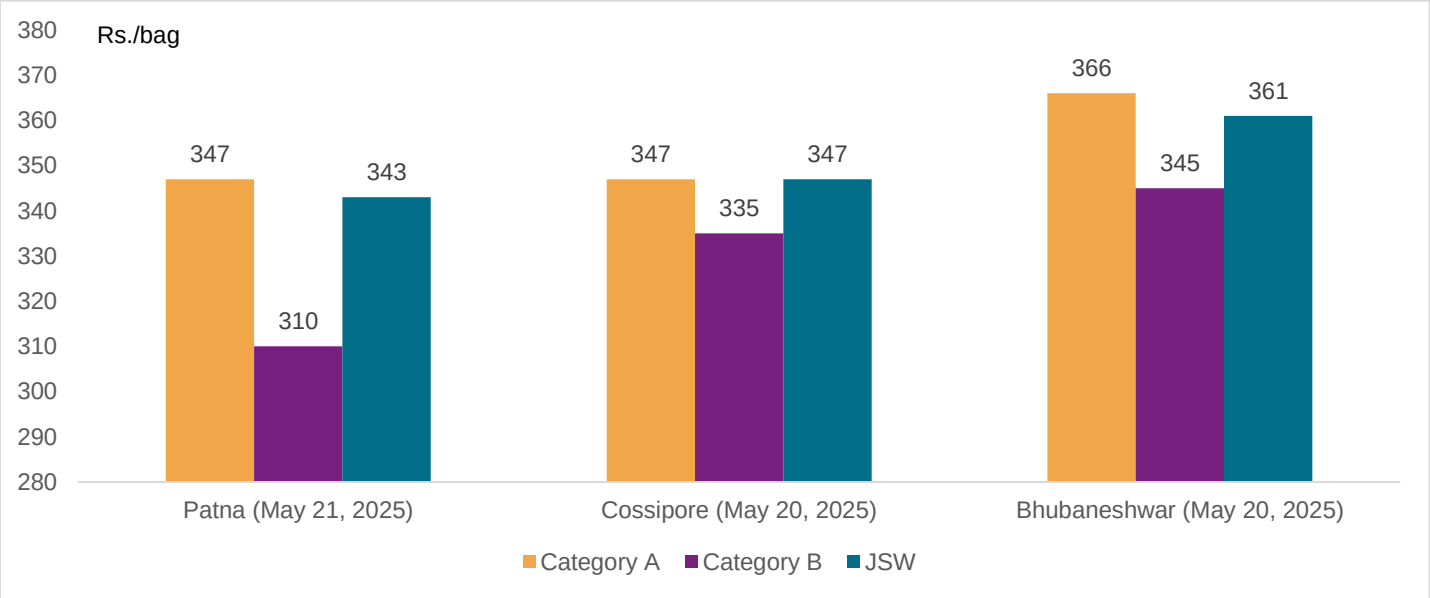
Note: P- Projected; cement prices are average of retail selling price (RSP) for category A players
Source: Industry, Crisil

7.2 Comparison of JSW Cement prices with benchmark prices for Cat A and Cat B across four major cities in each region

The charts below show a comparison of the RSP (retail selling prices) of A category brands, B category brands and JSW Cement in the east, west and south markets. The categories are based on the prices of the brands in the respective regions. A category brands are 2-4 brands with the highest prices in a particular city. B category brands fall under next range of prices which is lower than A category brands' prices. The brands across the categories may vary per city. The categorisation is not based on the sales volume of the brands but only on the selling prices in the respective cities. RSP are sales prices for sales of 10-25 bags from the retail counter and are ex-counter prices. The prices are date-stamped in nature.

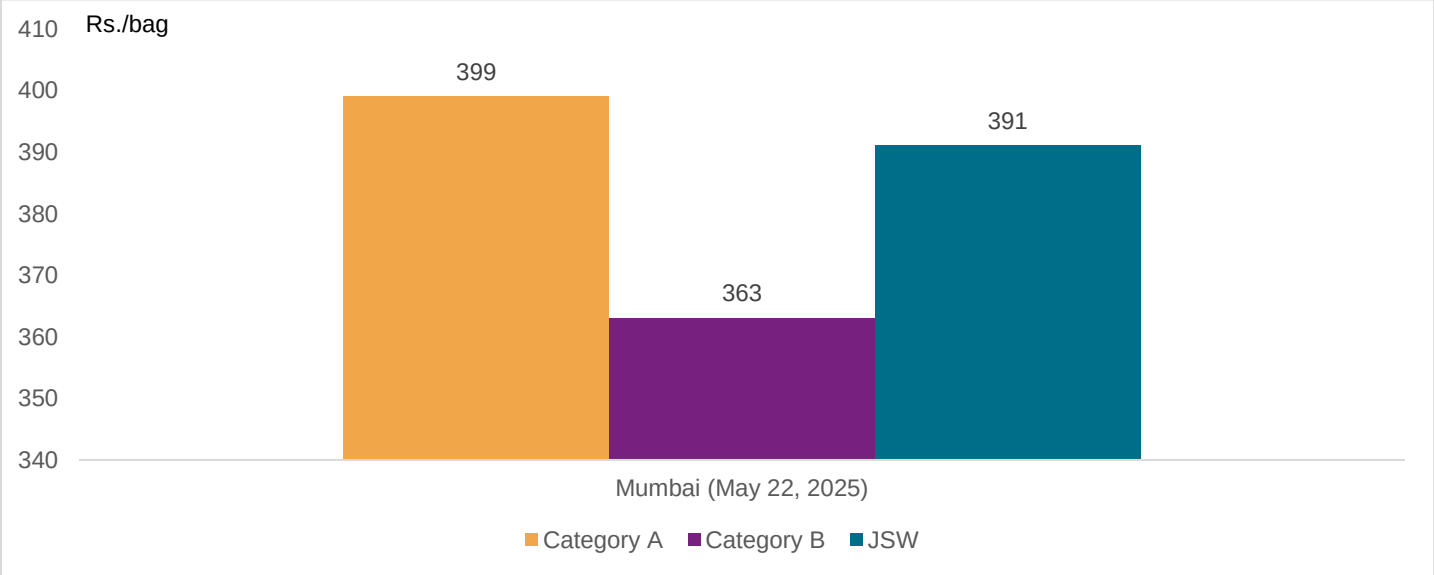
As on the dates mentioned in the following graphs, in the trade channel, JSW Cement is priced at par with other A category brands in all of the below mentioned regions.

RSP prices: East region



Source: Industry, JSW Cement, Crisil

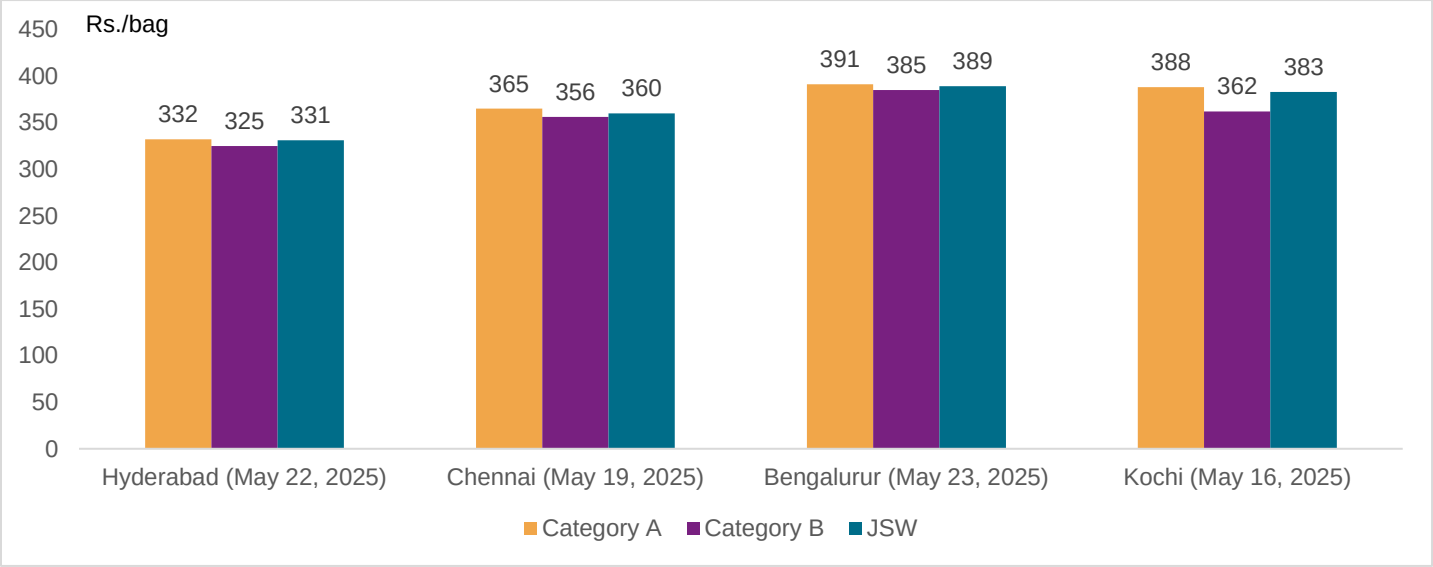
RSP prices: West region



Note: JSW market is in Central Mumbai region however competition price reading is from South Mumbai. Typically South Mumbai prices are higher by Rs. 8-10 than Central Mumbai region.

Source: Industry, JSW Cement, Crisil Intelligence

RSP prices: South region

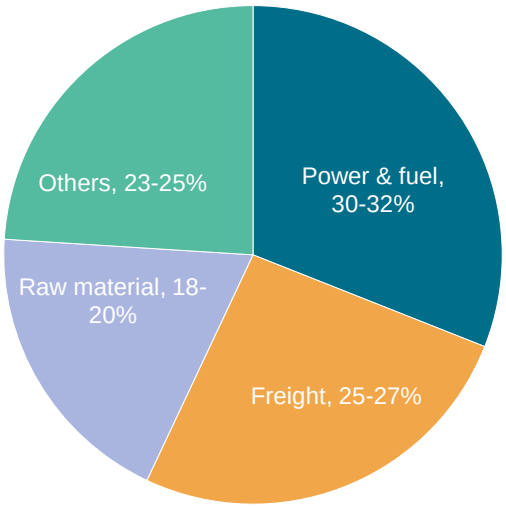


Note: For Hyderabad, category A brands do not include category A-premium brands which are amongst the fastest selling brands in the city
Source: Industry, JSW Cement, Crisil Intelligence

7.3 Cost break-up of cement industry

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 the cement production cost), is incurred in procuring limestone. As cement is a low-value, high-volume commodity, transporting it also involves significant cost.

Major costs associated with cement production



Source: Crisil, industry

7.3.1 Power and fuel

The cement industry is highly power-intensive, with power and fuel expenses accounting for approximately 30–32% of the total cost of sales for cement manufacturers. Coal serves a dual purpose — it is used both to fire the kiln and to generate electricity for clinker grinding operations. The overall power requirement of cement plants depends on the heat-treatment process adopted, i.e., the dry process or the wet process.

The wet process typically consumes 1,300–1,600 kcal/MT of clinker and 110–115 kWh of electricity to produce one tonne of Ordinary Portland Cement (OPC). In contrast, the dry process is more energy-efficient, requiring 720–800 kcal/MT of clinker and 95–110 kWh of electricity per tonne of OPC. Notably, both specific fuel consumption and power consumption are relatively lower for blended cement types, such as OPC and Portland Pozzolana Cement (PPC).

To reduce production costs and dependence on grid-supplied electricity, an increasing number of cement players are establishing captive power plants (CPPs).

The Indian cement industry primarily relies on coal, pet coke, and lignite to meet its fuel requirements. The government allocates coal to different sectors on a quota basis. However, these allocations are often insufficient to meet the total fuel demand of the cement sector. As a result, players are compelled to procure additional quantities from the open market. In India, coal allocations are prioritised for the power and steel sectors, with the cement industry receiving only 3–4% of the country's total coal production. Consequently, cement companies have been importing a substantial portion of their coal requirements in recent years.

In response to fluctuating coal availability and to benefit from the cost advantage of pet coke, several leading cement manufacturers have made technical modifications to their kilns and CPPs to accommodate pet coke, thereby enhancing their fuel flexibility.

7.3.2 Raw material

Raw material costs accounted for approximately 18–20% of the total cost of sales for cement manufacturers during the first three quarters of fiscal 2025. Limestone represents the largest component of this cost. Given its bulky nature and the economics of transportation, cement plants are typically situated in close proximity to limestone quarries. The availability of limestone is geographically constrained and largely limited to cluster regions, making long-distance transportation economically unviable.

Apart from limestone, key raw materials used in cement production include fly ash, slag, and gypsum.

Gypsum is sourced both naturally and as a by-product from sea water and chemical plants. The majority of gypsum reserves are located in Rajasthan, which accounts for more than 80% of the total availability, followed by Jammu & Kashmir (around 15%). The remaining 5% is spread across other states such as Tamil Nadu, Gujarat, Himachal Pradesh, Karnataka, Uttarakhand, Andhra Pradesh, and Madhya Pradesh. Gypsum sourced from Rajasthan is dispatched to cement plants across the country, including those in Gujarat, Madhya Pradesh, West Bengal, Uttar Pradesh, Bihar, Jharkhand, Chhattisgarh, and Himachal Pradesh. Gypsum typically constitutes 4–5% of the total weight of one tonne of cement.

Fly ash is a fine, glassy by-product generated from coal-fired thermal power plants, composed primarily of silica, alumina, and iron. According to the Bureau of Indian Standards (BIS), fly ash content in Portland Pozzolana Cement (PPC) may range between 15–35% of the cement mass. For Portland Slag Cement (PSC), the BIS standard permits 25–70% slag content.

Slag is a by-product of the steel-making process, formed during the separation of molten steel from impurities in the furnace. Similar to fly ash, it is used as an additive in cement manufacturing. However, slag availability in India is relatively limited and concentrated predominantly in the eastern region, due to the clustering of steel plants in that area.

The availability and pricing of raw materials such as fly ash, slag, and gypsum are susceptible to supply chain disruptions and price volatility. These risks stem from a variety of factors including fluctuations in commodity markets, changes in freight rates, and revisions to government policies.

7.3.3 Freight

As cement is a low-value, high-volume commodity, freight costs constitute a significant proportion at 25-27% of the total cost of sales.

There are three major modes of transport used by the cement industry: road, rail and sea. Among these, Rail is the preferred option for long-distance transportation, owing to its comparatively lower freight costs. However, the availability of railway wagons and last-mile connectivity are critical constraints that need to be factored in when opting for rail logistics.

Road transport is more suitable for short distances and bulk movement, as it helps reduce secondary handling and secondary freight costs. Despite its relatively higher freight expense, road continues to be the dominant mode of transportation, accounting for approximately 60% of the total cement movement in India. This preference is largely driven by its pan-India availability and lower handling complexities.

Sea transport remains the cheapest mode of transportation in terms of per-unit freight cost. However, only coastal cement producers are positioned to leverage this mode effectively. These players can transport clinker and cement both domestically across coastal regions and for export purposes at reduced costs. As a result, the share of cement transported by sea remains limited.

To optimise freight expenses, cement manufacturers aim to strategically locate production facilities near raw material sources and end-user markets. This is often achieved through the use of split-location manufacturing units, which help in controlling transportation costs and improving supply chain efficiency.

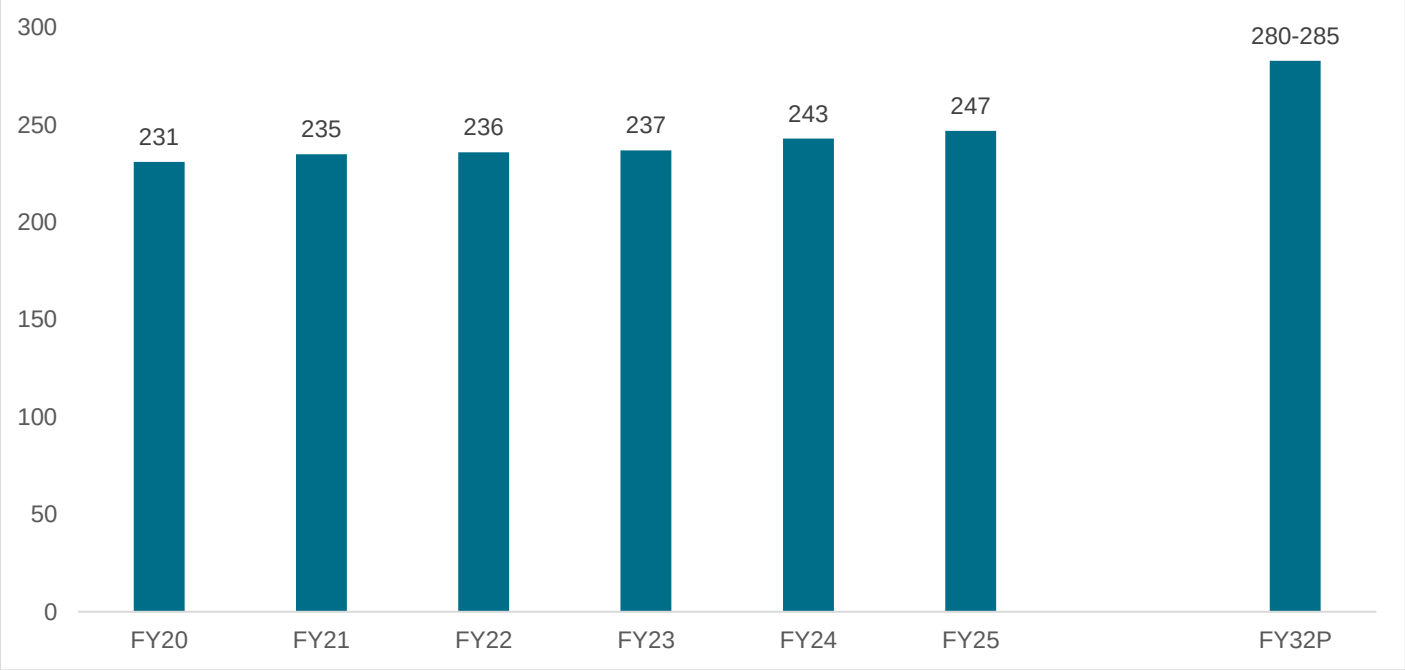
7.3.4 Other costs

Other costs include employee cost, packaging cost, administration expenses, and repair and maintenance charges. These account for 23-25% of the cost of sales. Other expenses have increased over the past 3-4 years, led by rising marketing expenses amid stiff competition.

7.3.5 Thermal power capacities

In fiscal 2020, the thermal power capacity of India was 231 gigawatts. The country added about 12 gigawatts over the period of next four years to reach thermal power capacity of 243 gigawatts in fiscal 2024. It is expected that about 4 gigawatts of capacity will be added in fiscal 2025. Addition of another 40 gigawatts will take the capacity to 280-285 gigawatts by fiscal 2032.

Thermal power capacities: Review and future additions (gigawatts)



Note: P- Projected
Source: Industry, Crisil Intelligence

7.4 Trend in coal and pet coke pricing

7.4.1 Domestic coal

In India, the Coal India Ltd (CIL) accounts for more than ~74% (As of fiscal 2025) of domestic coal production and is the primary supplier of fuel. CIL sells coal through long-term fuel-supply agreements (FSAs) and e-auctions. The FSAs in the non-regulated sectors (sponge iron, steel, cement and captive power plants), which account for ~90% of the total sales volume are signed/renewed based on an auction (under the Shakti policy). On the other hand, under e-auctions, which account for the remaining 10% of the total sales volume, fuel is sold on the spot at global market-aligned prices. E-auction sales are typically at a premium to the coal sold under the FSA mechanism.

The notified coal price is primarily based on a cost-plus model and undergoes revision on an ad-hoc basis by CIL. The price revision depends on factors such as employee cost and that of consumables, such as fuel and explosives. Among various costs, the employee expense accounts for more than half of CIL's total operating cost, becoming a key determinant for the revision in coal prices. The government-owned miner also considers the demand-supply scenario, imported coal prices and cost of production from new projects for price revision. Subsequently, the price hikes are undertaken to maintain CIL’s profitability.

Crisil intelligence estimates the following changes in domestic coal prices:

1) **Linkage prices**: The fiscal 2024 hike in notified prices by CIL is within CRISIL Intelligence expectation of an 8% increase for the same. With this revision, notified price for the lowest and the highest grade under the purview of the revision i.e. G10 and G2 will be Rs. 1,232 and Rs. 3,562 respectively. Additionally, with inclusion of various costs such as royalty, DMF, NMET, sand filling reclamation, clean environment duty, excise, GST etc. the final landed costs would arrive at Rs.3,401 for G10 and Rs.6,297 for G2. The impact of the price hike will be limited for the power sector and consequently on power tariffs despite 80% of domestically produced non-coking coal being

sold to thermal power plants. This is because the price revision has been done for the grades G2 to G10 which is majorly used in the cement, fertilizer and sponge iron industries. In India, thermal power plants mostly rely on grades G11, G12 and G13 with calorific values between 3,400 kcal to 4,300 kcal. Thus, the impact would be limited to the plants which use higher grade of domestic coal for blending purposes as according to the CERC tariff regulations, energy charge rate is directly linked to the landed price of the primary fuel (coal). The cement sector which uses non-coking coal with calorific values between 4,000-4,500 will see a minimal impact as domestic coal accounts for only 15-20% of the fuel mix in terms of quantity with the rest being pet coke and imported coal. While power and fuel costs accounts for 34-36% of the total cost of the industry, high competitive intensity and declining input material costs of pet coke and imported coal is going to limit any sharp rise in cement prices. Additionally, with effect from April 16, 2025, Coal India increased its notified by Rs 10 per tonne for regulated and non regulated sectors across all grades. This hike is towards the contribution to the Coal Mines Pension Scheme (CMPS)-1998.

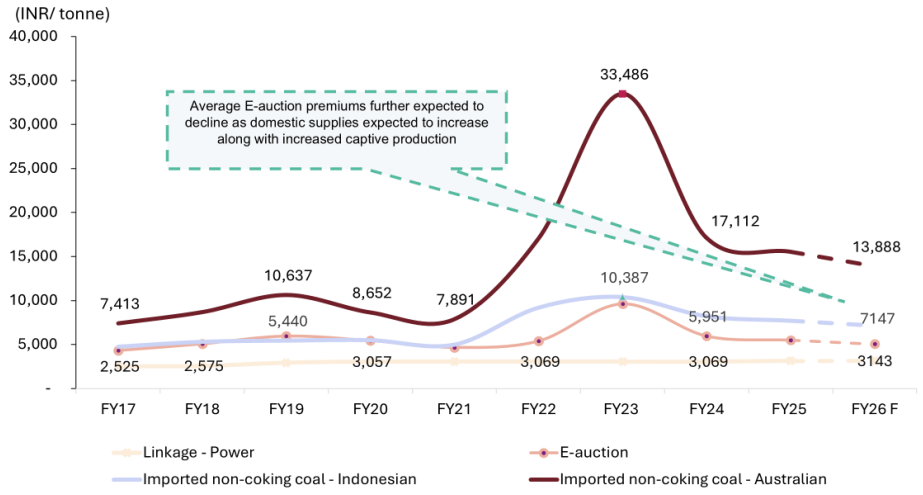
2) **Auction of linkages:** As per the provisions of the SHAKTI policy, power plants will be able to get assured supply from domestic coal producers based on an auction process for linkages. However, the plants owned by the Central government and states are exempted from such auctions. Private independent power producers (IPPs), however, will have to participate in the auctions to secure coal supply. CIL sold ~86 million tonnes of coal to the non-power sectors under long-term linkages in fiscal 2019. The price of coal sold under this mechanism (~30% higher than the price applicable for the power sector) is typically at a discount to imported coal. This gives a competitive advantage to companies with CIL's linkages. To move towards a market-determined pricing, the Ministry of Coal has introduced a new mechanism in the linkage policy for the non-power sectors in December 2019. This system stipulates that the existing linkages of non-power companies will not be renewed and new linkages will only be awarded through auctions, wherein players bid at a premium over the notified price. As of January 2025, Coal India has conducted seven tranches of linkage auctions for non-power sectors with average premiums over notified price seeing a rising trend in consecutive tranches. A total of 173.35 million tonnes per annum (MTPA) was booked under seven tranches of linkage auctions. As per latest available data, weighted-average premium for auctions of tranches I-V was of 19.7% above the notified price applicable over the tenure of the linkage contract. As of May 2025, linkage auction for tranche VIII is currently underway.

3) **Spot auctions:** Coal companies also sell coal through spot auctions for power and non-power sectors, periodically. Power plants which do not have power-purchase agreements with distribution companies (discoms), usually procure coal through spot auctions. Also, demand for spot-auctioned coal from non-power sectors has increased in the past, owing to diversion of linkage coal to the power sector following coal shortage amid rising power demand. In fiscal 2025, CIL sold 89.3 million tonnes of coal through spot e-auction at a premium of 48% against 84.4 million tonnes at a premium of 72% in fiscal 2024.

In fiscal 2025, CIL sold 89.3 million tonnes of coal through spot e-auction at a premium of 48% with SECL accounting for 29.2% of the quantity offered. Premium offered in fiscal 2025 has been 48% compared to 72% in fiscal 2024 and 253% in fiscal 2023. Declining premiums offered by companies in E-auction is reflective of the current thermal coal supply conditions. In fiscal 2025, premiums received by NCL has been the highest at 71% followed by ECL of 53% and CCL of 52%.

Figure 38: Landed prices of both e-auction and imported varieties to see a drop in fiscal 2026

Over supply situation in market pushes E-auction premiums further down at 25-35% in fiscal 2026



Impact of high prices on coal purchase

Power	% share	FY25 (Rs.)	FY26 F (Rs.)
Domestic Supply	90%	3,130	3,143
Indonesian coal	10%	7,710	7,147
Price increase y-o-y		*0.2%*	*(1.3%)*

Cement	% share	FY25 (Rs.)	FY26 F (Rs.)
Domestic Supply	25%	5,490	5,032
Imported	75%	15,528	13,888
Price increase y-o-y		*(9%)*	*(10%)*

Sponge Iron	% share	FY25 (Rs.)	FY26 F (Rs.)
Domestic Supply	40%	5,490	5,032
Imported	60%	15,528	13,888
Price increase y-o-y		*(9%)*	*(10%)*

Note: Linkage – power and e-auction prices are average landed prices (excluding freight) for 4,200 kcal/kg non-coking coal supplied by Coal India Ltd; imported coal prices are landed prices (excluding inland freight) Indonesian coal of 4,200 kcal/kg and 6000 kcal/kg for Australian . The Royalty rates for the calculation of Linkage-Power and E-auction prices does not include rates for West Bengal
Source: Industry publications, Coal India, Crisil Intelligence

Crisil
Intelligence

7.4.2 International coal

International coal prices have been retreating from their highs in 2022, but remain well above the 2017-2021 average. Global coal consumption reached an all-time high in 2022, led by India and China. A broad-based pick-up in economic activity across major economies led to an increase in non-coking coal prices accompanied with supply disruptions over the short term. Further, the tense geopolitical situation increased uncertainty, impacting coal demand.

However, since past two fiscals (fiscal 2024 and 2025), international coal prices have been on a declining trend post repercussions of geo political tensions.

In the first quarter of fiscal 2025, coal prices declined further moderately by ~13% on YoY basis although witnessed ~6% rise on sequential basis on a low base of previous quarter. Higher demand from south Asian countries due to impact of heatwave led to moderate rise in prices during April and May. However, with onset of monsoon and heavy downpour in China, demand for Australian coal softened leading to sequential price decline in the month of June.

In Q2FY25, coal prices declined further moderately by ~5% on YoY basis although has remained steady on sequential basis on a moderate base of previous quarter. After moderate rise in July and August (on sequential basis), Australian coal prices decreased in September due to decline in European gas prices and onset of autumn in South Korea leading to lower demand. Heavy rainfall in China aided with typhoon Yagi in the southern region also resulted in lower industrial activities, thus leading to subdued demand from China which further supported decline in coal prices.

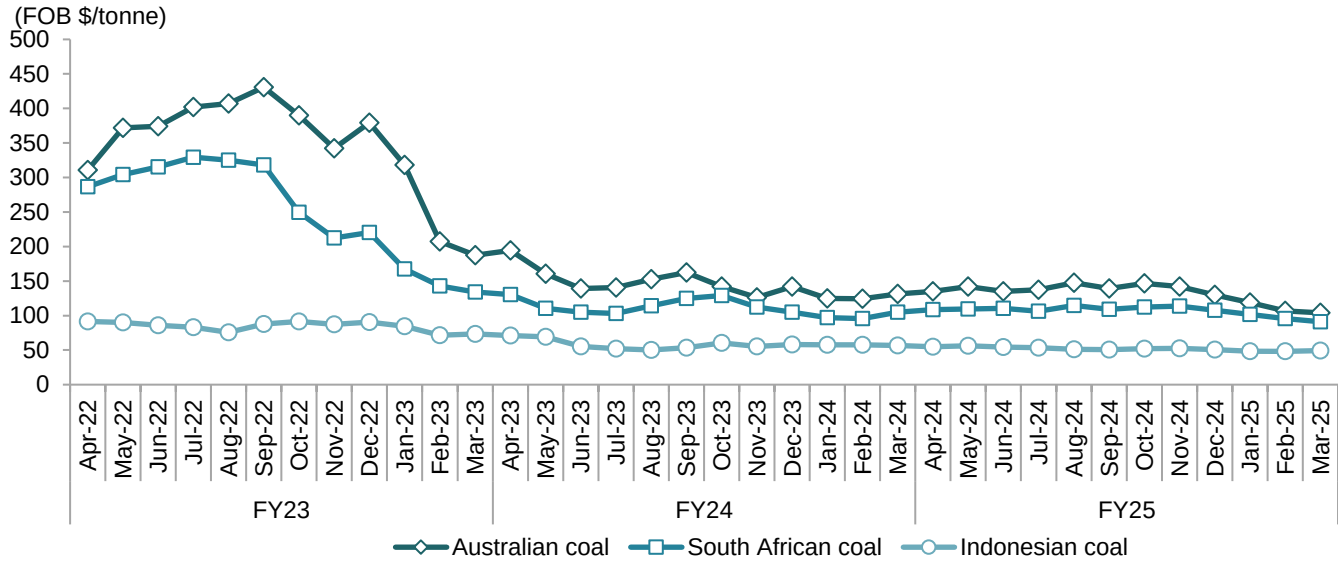
Coal prices dwindled by ~2% in Q3FY25 on-year basis on an already soft base of previous fiscal, although remained steady on sequential basis. Prices had been on lower side majorly due to a warm winter and adequate supply of coal. Also, oversupply driven by increased production from key exporters, including Australia, China, and Russia, put pressure on prices leading to the decline in the prices.

Continuing the downtrend, coal prices dwindled sharply by ~10% and 16% on a YoY and sequential basis respectively in Q4FY25. Australian coal prices declined sharply due to muted demand from the power sector, an increase in the

consumption of petcoke over coal, and ample supply. Indonesian coal prices experienced a decline owing to mining and logistical disruptions caused by rainfall, as well as muted demand.

Overall, international coal prices (average of Australia, South Africa and Indonesia non-coking coal) cooled down further by 8% during fiscal 2025 after tumbling by ~54% on-year during fiscal 2024, indicating easing of energy costs.

Figure 39: Monthly coal price trend



Source: Crisil intelligence

As global coal trade patterns settle in a new normal and nations are on the path of economic recovery, Crisil Intelligence expects prices to remain above pre-pandemic level in CY 2025 driven by demand side fundamentals despite easing of supply side factors. Detailed drivers for CY 2025 price expectations are mentioned below:

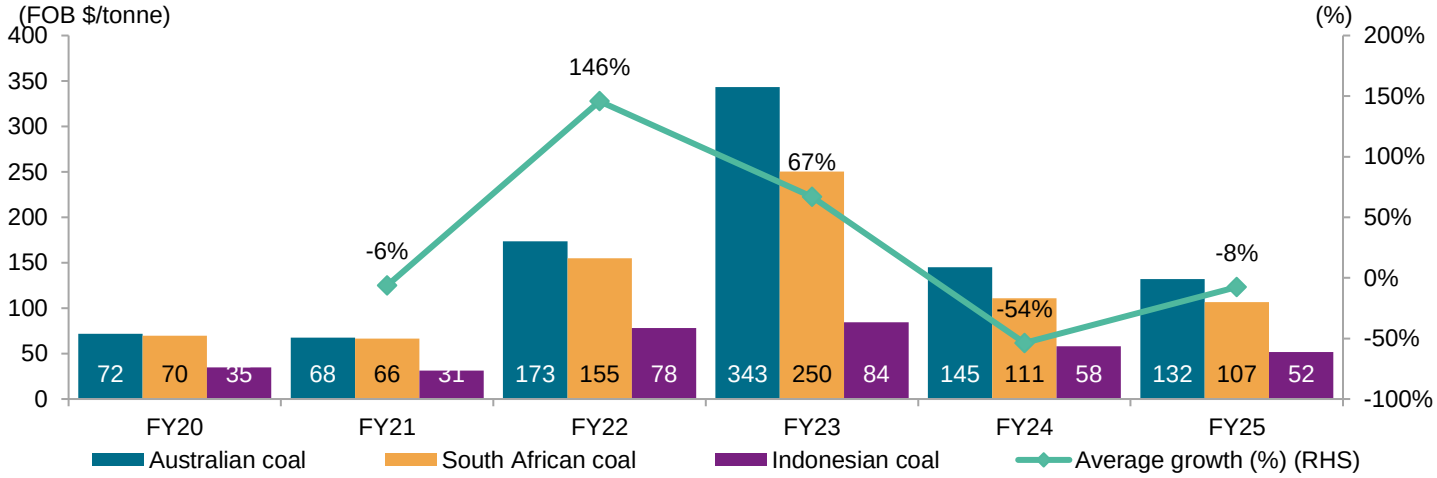
Indonesia: Indonesian prices declined by 13% on year in Q1 CY 2025 to $49 per tonne. Holiday season in China on account of Lunar New Year along with warmer winter temperatures in India led to subdued demand from Indonesia's key export nations. In Q2 CY 2025, unseasonal rainfall across India has lowered power demand curtailing demand for non-coking coal. Additionally, lower domestic prices in China have led to end customers opting for domestic coal vis a vis imported varieties. Crisil Intelligence estimates prices in Q2 CY 2025 to be $42-47 per tonne declining by an estimated 15-20% on year. For the full year, apart from La-Nina, there is no expected weather phenomenon to provide support to prices. In the case of La-Nina, according to weather reports, this has been weak and is expected to continue the same thus no weather related supply chain issues are expected during the year. However, heavy rainfall during monsoon season in Indonesia in its key mining regions remains a monitorable and can lead to production curbs leading to higher prices. Additionally, robust domestic production in China and India have been able to support domestic demand resulting in ebbing of imported coal variety in the respective countries. This is expected to continue going forward thus keeping any upside to Indonesian prices in check. Additionally, above normal south west monsoon as estimated by the Indian Meteorological Dept. (IMD) is expected to curb power demand in India during Q3 CY 2025 resulting in lower thermal coal demand.

Australia: Prices in Australia declined to $110 per tonne in Q1 CY 2025, a drop of 13% compared to Q1 CY 2024. Mild winters in its key exporting nations of Japan, Taiwan and South Korea along with no price shocks seen in the natural gas market lowered Australian thermal coal prices. Additionally, with Norwegian gas supplies replacing Russia in Europe,

supply side shocks affecting natural gas and thermal coal are estimated to be fewer. Weather patterns in its key exporting nations along with any geopolitical situation affecting gas prices remain key monitorable to Australian thermal coal prices. For the full year, Crisil Intelligence estimated moderation in Australian thermal coal prices due to subdued demand along with no expected supply side shocks

With the Trump administration in office, fluctuating policies on trade tariffs on Chinese imports could affect its industrial power demand resulting in lower thermal coal demand. Rising emission concerns in countries such as the US and Canada, lack of adequate transport infrastructure in South Africa, and weather related issues such as the rainy season in Indonesia and Australia are some risk factors, which remain key monitorable to the forecast.

Figure 40: Annual coal price trend



Source: Crisil intelligence

7.4.3 Pet coke pricing

The cement industry is the key consumer of petcoke in India. While historically cement players have used more coal than petcoke due to better availability of domestic coal, players have shifted towards pet coke since fiscal 2016, as prices crashed globally. However, the cycle turned again in fiscal 2019, due to several regulatory changes aimed at cutting down industrial pollution.

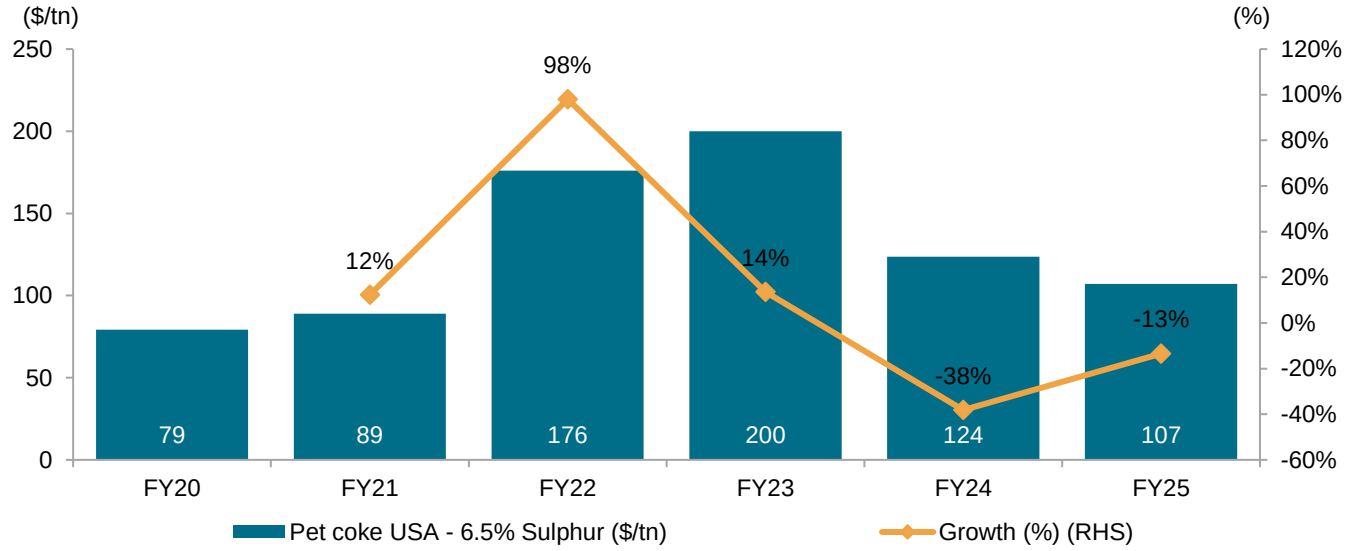
Petcoke competes with coal as a feedstock in cement manufacturing. Cement plants generally use imported coal of 6,000 kilo calories (kcal) per tonne of calorific value, whereas petcoke has ~8,000 kcal per tonne value. While domestic coal is the first preference for cement manufacturers, its low availability leads to dependence on imports – coal or petcoke.

Usually the low-grade domestic coal (GCV between 4,000-4,600 kcal/kg) is used in captive power plants (CPP) and higher grades (above 5,500 kcal/kg) are used in clinker kilns. However, smaller captive power plants (<30MW) cannot use low-grade coal, due to poor ash-handling capabilities, further increasing the dependence on imported coal or petcoke. As cement players can use both petcoke and coal in modern kilns, without incurring much capex, switchover between the fuels is easy and depends on cost competitiveness. However, cement players in the eastern region with higher coal availability are expected to continue using coal, which is cost-competitive in comparison with domestic and imported petcoke. Further, several players have started blending biofuels, industrial waste and tar in their clinker to reduce costs and help in disposing waste material.

Pet coke prices increased sharply in fiscal 2022, because of a rise in crude prices led by geopolitical uncertainty. After staying elevated for the past two years, international pet coke prices started dwindling on-year since the second half of

fiscal 2023 and declined a further ~38% in fiscal 2024. Continuing the downward trend, international pet coke prices dwindled further in Q1FY25 on YoY basis by ~14%. Prices also moderated by ~5% on sequential basis despite marginal rise in crude prices. In Q2FY25, prices dwindled further on YoY basis by ~14%. Prices also moderated by ~4% on sequential basis along with moderate decline in crude prices. Prices also moderated in Q3FY25 by 25% on YoY basis and ~7% on QoQ basis. Although, after a sharp decline in the previous few quarters, international pet coke prices declined marginally by ~2% on a YoY basis but on a sequential basis rose by sharp ~16% during the quarter majorly due to temporary global supply constraints. However, at an overall level, fiscal 2025 witnessed a ~13% price dip on an already low base of fiscal 2024.

Figure 41: Annual pet coke prices



Source: Crisil intelligence

7.5 Trends in alternative fuel consumption

With India being the second largest cement producer in the world currently, the domestic cement industry is responsible for 7-9% of the country's carbon dioxide (CO2) emissions. The substitution of expensive and CO2-critical fossil fuels by alternative fuels (AF) is measured by the thermal substitution rate (TSR). Cement plants are constantly looking for suitable and low-cost alternative fuels to bring down their fuel costs and reduce their CO2 emissions. As of calendar year 2021, the share of alternative fuel in the domestic cement industry's fuel mix was estimated at 5-6%, according to the Cement Manufacturers' Association (CMA). The global benchmark was ~15% in 2020, as per the International Energy Agency (IEA).

The Indian government has set a target to increase the share of alternative fuel use by the cement industry to 25% by 2030 as part of its commitment to reducing carbon emissions and promoting sustainable development. The domestic cement industry is preparing its infrastructure, capacity and competence to enhance the TSR, including the installation of pre-processing platforms and adoption of newer technologies. The players are increasingly adopting alternative fuels, such as biomass, municipal solid waste and refuse-derived fuels, to reduce their dependence on fossil fuels and reduce their carbon footprint. Given below are some of the alternative fuels that can be used and usually available in gas, liquid and solid forms:

Category	Fuels
Gaseous fuels	Refinery waste gas, landfill gas, pyrolysis gas, natural gas

Liquid fuels	Tar, chemical wastes, distillation residues, waste solvents, used oils, wax suspensions, petrochemical waste, asphalt slurry, paint waste, oil sludge
Solid fuels	Paper waste, rubber residues, pulp sludge, sewage sludge, used tyres, battery cases, plastics residues, wood waste, domestic refuse, rice husks, refuse-derived fuel, nut shells, oil-bearing soils, diapers, etc

Use of alternative fuels in cement production offers the following benefits:

Lower greenhouse gas emissions: The combustion of alternative fuels in cement kilns can significantly reduce greenhouse gas emissions. Fossil fuels, such as coal and petroleum coke have higher carbon content, leading to substantial CO_2 emissions. In contrast, alternative fuels often have lower carbon footprints, contributing to the overall reduction in CO_2 emission. By replacing a portion of fossil fuels with alternative fuels, cement kilns can help mitigate climate change and support global efforts towards carbon neutrality.

Cost savings: Alternative fuels are often less expensive than conventional fossil fuels, which can help reduce operating costs for cement producers. In some cases, cement plants may even generate revenue by accepting and processing waste materials as fuel.

Increase in energy efficiency: Many alternative fuels used in cement kilns possess high energy content. The kilns can harness this and reduce dependence on non-renewable energy sources. The efficient utilisation of alternative fuels not only contributes to energy conservation but also enhances the sustainability and competitiveness of the cement industry.

Waste management and resource conservation: One of the primary benefits of using alternative fuels is the ability to utilise waste materials. Materials such as biomass, municipal solid waste and industrial by-products can be effectively repurposed as alternative fuels, reducing reliance on fossil fuels and facilitating a circular economy. By diverting waste from landfills and incineration, cement kilns offer a sustainable solution for waste management even as they help conserve valuable resources.

Air pollution reduction: Alternative fuels emit lesser air pollutants than traditional fossil fuels. Combustion of alternative fuels in cement kilns reduces emissions of sulphur dioxide (SO_2), nitrogen oxides (NOx) and particulate matter. This will result in better air quality, providing a healthier environment for surrounding communities.

However, there are the following challenges, too:

Variable fuel quality: Alternative fuels vary significantly in terms of composition and quality, which makes it difficult to maintain the operating conditions in the cement production process.

Refractory damage: Some alternative fuels, such as waste plastics and biomass, can release alkalis, sulphur and chlorides when burned, which can damage the refractory linings in the kiln and pre-heater.

Permitting and regulatory requirements: Cement plants must comply with permitting and regulatory requirements when using alternative fuels. This can be a complex and time-consuming process.

Local resistance: In India, there is often local resistance to cement plants burning plastics, cloth and rubber in their alternative fuel mixes.

Despite these challenges, the use of alternative fuels in cement production is expected to continue to grow in the coming years. As cement producers seek to improve the sustainability of their operations, alternative fuels will play an increasingly important role in meeting these goals. The Reserve Bank of India has recommended the cement industry should be provided incentives to procure stubble from farmers of the northern states of Punjab, Haryana, Uttar Pradesh and

Rajasthan, which can be used as biomass fuel. This will help reduce the industry's carbon emissions and lower its fuel costs.

Table 20: Trend in TSR (%) of key players:

	FY19	FY20	FY21	FY22	FY23	FY24	FY25
ACC*	5.50%	6.90%	7.30%	NA	9.20%	9.15%	10.50%
Ambuja*	5.40%	4.20%	5.10%	NA	6.30%	7.76%	9.00%
UltraTech	3.90%	3.70%	3.10%	4.60%	5.20%	5.12%	NA
Dalmia	4.30%	7.70%	7.60%	13.00%	17.00%	NA	NA
Shree	NA	NA	0.98%	2.40%	3.50%	2.37%	NA
Nuvoco	4.60%	6.40%	4.70%	4.50%	9.00%	NA	NA
JSW Cement (India)	-	8.26%	4.23%	7.10%	8.14%	6.89%	16.39%

Note: ACC and Ambuja followed calendar year reporting until 2021; fiscal 2023 data is from January 2022 to March 2023
Source: Company reports and publications

7.6 Trends in waste heat recovery system (WHRS)

Hot gasses produced during cement manufacturing can be considered a potential option to improve energy efficiency of the cement manufacturing units. Large quantities of hot flue gases are generated from boilers, kilns, ovens and furnaces. If some of this waste heat could be recovered, a considerable amount of primary fuel could be saved. Waste heat recovery means allowing the waste heat to leave the process but converting it into electricity before it is discharged at a lower temperature into the environment.

In the waste heat recovery system (WHRS), waste heat available in the exhaust gases could be recovered and used for drying the moisture in the raw material and coal, or to generate power. To generate power, the hot gases from the preheater and cooler are passed through the waste heat recovery boiler (WHRB). Water is circulated through the WHRB. Latent heat from the hot gas is transferred to the water and converted to steam. The steam is expanded in the turbine and then condensed, and the condensed water is passed through the WHRB and the process repeats. The electricity generated would offset a portion of the purchased electricity, thereby reducing the electricity demand.

Cement players have been serious investors in WHRSs with the objective of channelising released energy into the system and saving on power costs. Large-scale players have considerable amount of installed WHRS capacity to meet their energy demands.

Table 21: WHRS capacity of large-scale players:

Company	WHRS Capacity (MW) – FY24	WHRS Capacity (MW) – FY25
Ultratech Cement	278	342.0
Shree Cement	480*	-
Nuvoco Vistas Corporation	44.7	49.0
ACC Ltd	46.3	85.7
Ambuja Cements	75.9	218.0
JK Lakshmi	33.4	-

JK Cement	82.3	82.3
Birla Corporation	43.4	-
Dalmia Bharat	72.0	72.0
JSW Cement (India)	21.2	21.2

**Note: Capacity for Shree cement includes renewable and WHRS both*
Source: Company annual reports and publications

7.7 Trends in renewable power usage

Coal-fired power plants have dominated the Indian power generation landscape, with large manufacturing industries also relying on coal-based captive power plants. However, of late, manufacturers have been shifting to clean energy sources, especially wind and solar, on the back of falling capital cost for setting up renewable capacities and sharpening focus on lowering carbon emissions.

Also, coal-based capacity additions, which stood at ~89 GW over fiscals 2013 to 2017, resulted in significant capacity build-up, particularly in the private sector. Consequently, falling plant load factors owing to unutilised capacities and rising debt because of under construction and stuck projects impacted capacity additions of power generation companies (gencos). Therefore, incremental coal-based additions plunged over the past few years.

Over fiscals 2023 to 2027, conventional power capacity additions are expected to continue to fall to 32-33 GW from ~34 GW between fiscals 2018 and 2022. Lower power demand and the government's focus on increasing the share of renewables in the country's energy mix are likely to prod gencos to go slow on new conventional capacity addition plans over the subsequent years as well. Also, fresh project announcements are limited, as players are opting for the inorganic route for expansion given the availability of assets at reasonable valuations — ~24 GW of stressed power assets are awaiting debt resolution.

Still, the inherent flexibility of coal-based capacities to quickly scale up or down generation to meet variations in demand will support capacity additions in the medium term; renewable generation does not have this flexibility. Coal capacity additions, though, are expected to be driven entirely by central and state companies, as major private gencos, such as Tata Power Company and JSW Energy, have announced ambitious targets to add renewable energy capacities, signalling a decisive shift.

In fact, renewable energy capacity addition has grown rapidly over a low base, with the total installed base reaching ~1500 MW in fiscal 2024 from ~290 MW in 2017. Most of the additions were, however, in the solar space, with wind providing support as well.

Cement players have been employing the same strategy. Most large and mid-sized players have been investing heavily in renewable capacities not only to limit carbon emissions but also to lower the cost of energy. The top 15 cement players in India, accounting for close to 80% of total grinding capacity, have added close to 600 MW of renewable capacities over the past decade, along with considerable investment in WHRS. And several players, such as UltraTech Cement, have set a target to completely shift to renewable energy by 2050.

7.8 Trends in Profitability

Fiscal 2022-23: The cement industry's margins further contracted in fiscals 2023, deteriorating by ~623 bps, majorly on the back of elevated power and fuel costs, which rose by 31-33% after rising by 36-37% in fiscal 2022. In early 2022, prices of petcoke and coal, both shot up due to supply constraints caused by Russia Ukraine conflict and remained

elevated on-year basis despite some corrections. Coal prices also remained sticky on back of various reasons: 1) Supply constraints 2) Weather disruptions in key mining areas 3) strong demand from Japan, Taiwan, European countries. Hence, power and fuel rose by 31-33% in fiscal 23, driving costs upwards. Raw material cost, accounting for ~18% of total cost, saw 10-12% escalation on back of higher slag prices, higher limestone costs due to rising share of newer mines as well as mining cost and higher inward freight costs led by higher diesel prices. Consequently, total cost rose by 13-14% leading to margin contraction of ~623 bps, thus reaching to ~14% margin levels in fiscal 2023 from a high of ~25% in fiscal 2021. Pick-up in realisations and healthy uptick in volume cushioned a sharper shrinkage in margins in the fiscal.

Fiscal 2023-24: Margins expanded by ~344 bps to ~17.6% in fiscal 2024. A large part of this was because of decline in energy prices in line with softening of crude oil prices. As a result, power & fuel cost fell by 17-1% after skyrocketing in previous fiscal. Steady diesel price coupled with higher volume growth led to decline in freight cost by 1-3%. Other costs also moderated in line with lower packaging costs (led by declining crude oil prices). However, raw material cost jumped by 17-19% during the year as fly ash and slag prices continued to climb northward on account of blended cement demand acceleration and inflation. Overall, the cost of sales reduced by 1-3% in the fiscal, largely on account of lower power and fuel costs and freight costs.

Fiscal 2024-25: After rebounding in fiscal 2024, the operating margin of cement players dwindled by ~122 bps in fiscal 2025. Despite benign costs, a sharp downfall of prices led to realisation drop resulting in margin contraction. However, softened cost pressure limited further contraction. Higher cost savings achieved from power and fuel cost with 14-16% decline amidst lower petcoke and coal prices. Freight expense moderately inch down by 2-4% on account of the reduction in lead distances of players due to aggressive expansions coupled with steady diesel prices and route optimisation strategies. On the other hand, despite rising continuously for the past three years, raw material cost further inched up in fiscal 2025 by 4-6% due to higher limestone costs (owing to higher bid premiums) and elevated flyash and slag prices. At an overall level, despite rise in raw material cost, the total cost of sales dwindled by 3-5%.

Fiscal 2025-26: Further, with anticipated price revival and demand uptick, realisation is expected to improve in fiscal 2026 aiding margin expansion by 175-220 bps at 18-20% operating margin. Cost pressures are expected to continue to provide relief from declining power and fuel costs, which are projected to decrease by 2-4% due to lower crude and coal prices, as well as the increasing adoption of green energy in the industry. Additionally, freight expenses are anticipated to marginally decline by 0-2% because of lower diesel prices and a shift towards rail transportation. However, raw material costs are likely to continue their upward trend, with a further expected increase of 2-4%, driven by higher limestone bidding. Hence, with realization uptick and rangebound cost pressures, operating margins are expected to expand in fiscal 2026.

Table 21: Annual cost & margin as % of revenue

	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26F
Raw material cost	12.77%	13.62%	13.67%	14.46%	16.72%	19.16%	19-21%
Power & Fuel cost	19.89%	18.23%	23.54%	29.66%	23.69%	22.02%	20-22%
Freight cost	22.42%	22.20%	22.61%	22.23%	21.30%	22.63%	21-23%
Other Cost	23.35%	20.99%	19.79%	19.50%	21.13%	19.81%	18-20%
Margins	21.58%	24.96%	20.39%	14.16%	17.60%	16.38%	18-20%

Source: Crisil intelligence, Industry

Table 22: Annual profitability trend – Industry

	FY23	FY24	FY25	FY26P
Net realisations	4-6%	0(-2)%	(5-7)%	1-3%
	Rs 281/bag	Rs 278/bag	Rs 263/bag	Rs 265-270/bag
Power & fuel costs	31-33%	(17-19)%	(14-16)%	(2-4)%
Raw material	10-12%	17-19%	4-6%	2-4%
Freight expenses	2-4%	(1-3)%	(2-4)%	0-(2)%
Cost of sales	12-14%	(4-6)%	(3-5)%	0-(2)%
Operating margin	~(623)bps	~344 bps	~(122) bps	175-220 bps
	14.16%	17.60%	16.38%	18-20%

Source: Crisil intelligence, Industry

Table: Annual profitability trend – Peer group (Refer to notes of benchmarking section for definition for Peer group)

	FY23	FY24	FY25
Net realisations	4-5%	0-(1)%	(4-5)%
	Rs 293/bag	Rs 291/bag	Rs 279/bag
Power & fuel costs	34-36%	(14-16)%	(10-12)%
Raw material	13-15%	12-14%	2-4%
Freight expenses	2.5-4.5%	0-(2)%	(11-13)%
Cost of sales	12-14%	(4-6)%	(1-3)%
Operating margin	~(653)bps	~343 bps	~188 bps
	14.89%	18.32%	16.44%

Source: Crisil intelligence, Industry

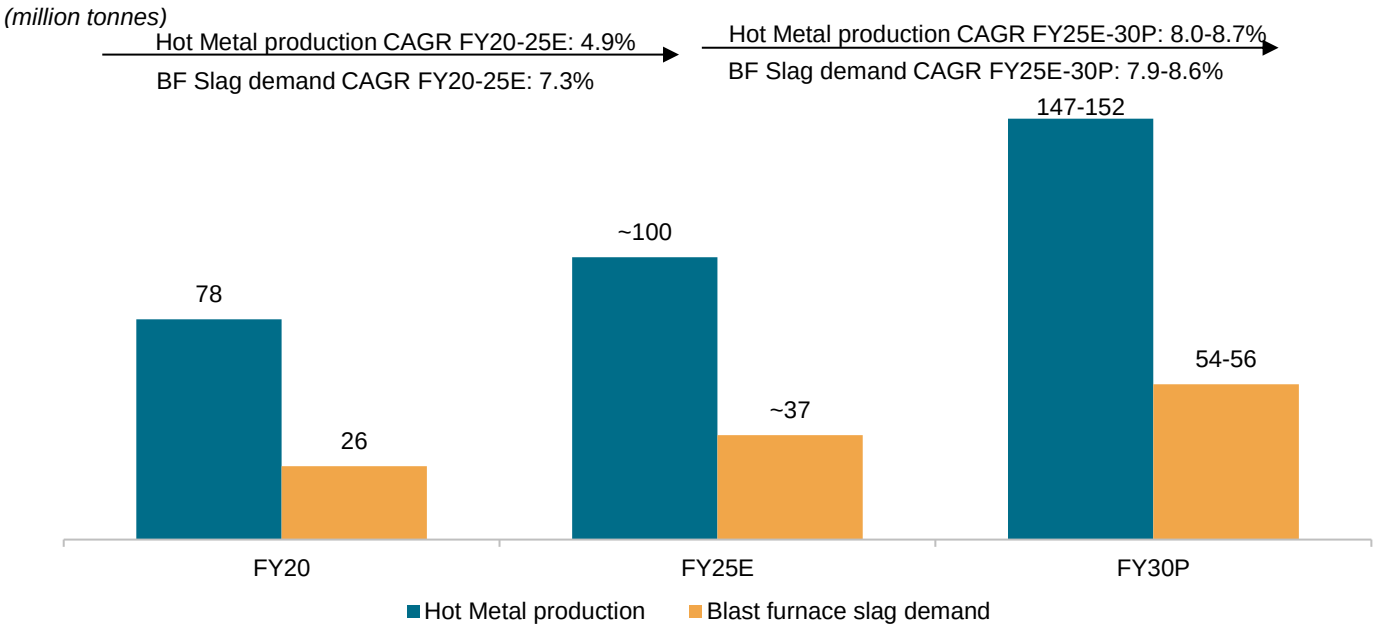
8 Overview of availability of blast furnace slag in India

8.1 Overview of hot metal and blast furnace slag

Production of hot metal in India is estimated to have reached ~100 million tonne in fiscal 2025 from 78 million tonne in fiscal 2020, clocking a CAGR of 4.9%. The growth was driven by domestic availability of raw materials such as iron ore and cost-effective labour. The steel industry and its associated mining and metallurgy sectors have seen major investments and developments in the recent past and the industry has also been boosted by government initiatives.

Slag is a non-metallic by-product of steel plants obtained from blast furnaces. It is formed when iron oxide is converted into pig iron in the blast furnace using coking coal and fluxes. Iron ore, coke and limestone are fed in the furnace and the resulting molten slag floats above the molten iron at a temperature of 1,500-1,600^{o}C. Production of blast furnace slag is proportional to the hot metal production in the country. Limited availability for blast furnace slag in the neighbouring countries given rise to exports as well, though in small quantity. Import of this slag has been negligible over the years. In fiscal 2020, demand for blast furnace slag in India was estimated at 26 million tonnes. This is estimated to have reached ~37 million tonne in fiscal 2025, at a CAGR of 7.3%.

Hot metal production and blast furnace slag demand: Review and outlook



E – estimated; P – projected
Source: Crisil Intelligence, Industry

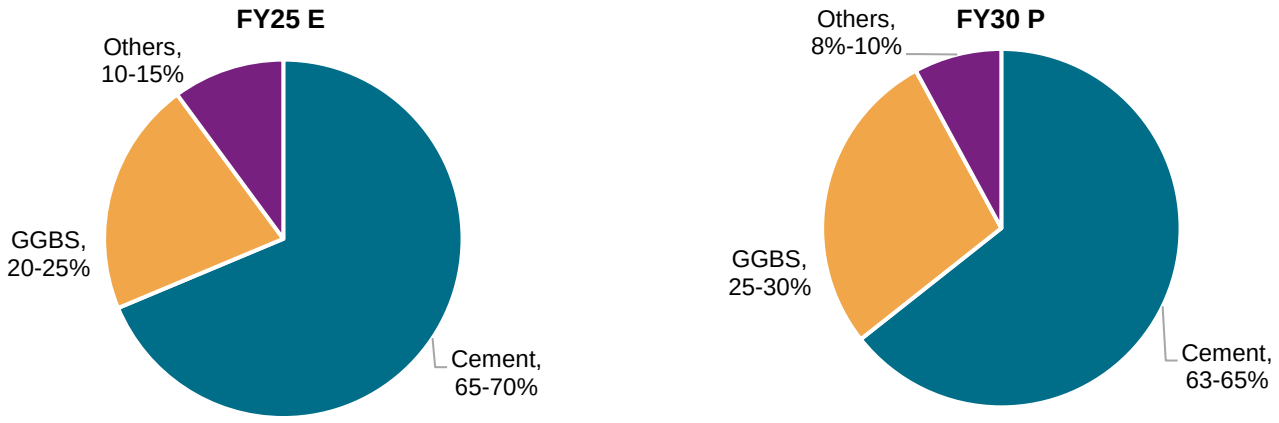
Going forward, planned capacity expansions by key players, such as Tata Steel, SAIL, JSW Steel, Jindal Steel & Power (JSPL) and ArcelorMittal Nippon Steel India (AMNS), through the blast furnace route is expected to result in 8.0-8.7% CAGR in hot metal production between fiscals 2025 and 2030 taking the production to 147-152 million tonne. Demand for blast furnace slag, meanwhile, is expected to reach 54-56 million tonne, clocking a CAGR of 7.9-8.6%.

8.2 Application of blast furnace slag

The blast furnace slag is amorphous and reactive, due to the presence of very high glass content. One of the key applications of this slag is in cement manufacturing. Cement manufacturers use blast furnace slag as key raw material to produce Portland slag cement (PSC) and Portland composite cement (PCC). The silicates in glass composition act as supplementary cementitious material and mineral admixture for concrete making. It is also used as performance booster of Ordinary Portland cement (OPC). India is estimated to have produced 467 million tonne cement in fiscal 2025. Of this, PSC was 10%, PCC 4-5% and OPC 22-23%. Hence, share of the cement industry in blast furnace slag consumption was estimated to have been 65-70% during fiscal 2025. Demand for cement in the country is expected to log a CAGR of 7.5-8.5% between fiscals 2026 and 2030 to reach at 670-680 million tonnes, driving the demand for furnace slag as well.

The molten slag obtained from blast furnace is quenched to produce granular particles called granulated blast furnace slag (GBFS). GBFS is dried and ground into a very fine powder to make Ground granulated blast furnace slag (GGBS), another key application of blast furnace slag. Currently, the share of this application is estimated at 20-25% of the total blast furnace slag consumed in the country. Given the advantages of GGBS and increasing awareness about it (as discussed in section 9 of the report), its adoption is set to increase going forward. To decarbonise the cement industry the role of GGBS is very important, since it can substantially reduce carbon dioxide eliminations into the atmosphere from the clinker making process in cement manufacturing. This is expected to improve the share of GGBS in total BF slag demand to reach 25-30% by fiscal 2030. Other applications of blast furnace slag include coarse and fine aggregates among others.

Applications of blast furnace slag (fiscals 2025E vs 2030P)



E: Estimated; P: Projected
Note: Others include coarse and fine aggregate amongst other applications
Source: Crisil Intelligence, Industry

Also, screened slag is manufactured by screening blast furnace slag. Screened slag can be used as an alternative to river sand and crushed rock fines to fill in the pores of concrete structures to increase density thereby improving concrete strength and durability.

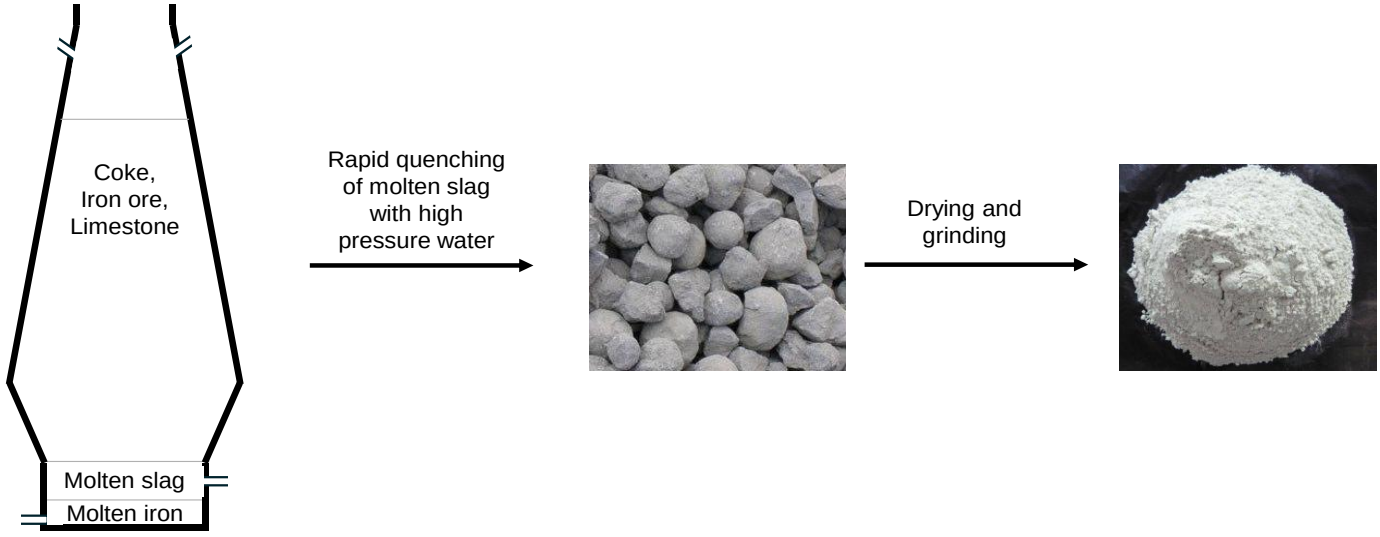
9 Ground granulated blast-furnace slag

9.1 Overview

Slag is a byproduct formed when iron oxide is converted into pig iron in the blast furnace, using coking coal and fluxes. It is rich in oxides of calcium, alumina and magnesia etc. Iron ore, coke and limestone are fed in the furnace and the resulting molten slag floats above the molten iron at the temperature of about 1,500 to 1,600°C. The slag is poured into a granulator and is rapidly quenched through high-pressure water jets, to produce granular particles. This granulated slag is called GBFS. Water-quenching happens in a controlled environment to avoid crystalline formation. GBFS is then dried and ground into GGBS. A typical GGBS processing unit comprises of yard and silos, high pressure grinding roll press, dynamic separator, bucket elevator, air slides, bag filters etc.

GGBS is a highly eco-friendly product as it is produced entirely from blast furnace slag, which is a by-product of the steel manufacturing process. It is a cementitious material mainly used in cement and concrete. It is rich in calcium silicate hydrates (CSH), which enhances its strength and durability.

Production process of GGBS



Source: Crisil Intelligence, Industry

9.2 Application and advantages of mixing GGBS in concrete

GGBS is a strength-enhancing compound that improves the durability of a concrete structure. In fact, studies show that concrete made with GGBS continues to gain strength over the time. Studies by institutes such as Indian Institute of Technology (IIT) and Central Road Research Institute (CRRI) also prove that using GGBS in combination with Ordinary Portland cement (OPC) makes concrete structures durable. This is brought out by primary interactions with industry players as well, which suggest that concrete with GGBS and cement has higher strength than concrete made with OPC.

Some of the key studies were:

1. A research project, 'Potential use of ground granulated blast furnace slag as supplementary cementitious materials in concrete,' by the Department of Civil Engineering at IIT Bombay, under the project code 15JSWC001, used GGBS as supplementary cementitious material in various percentages to assess the performance of concrete and its durability.

Mix proportions of the concrete

ID	Cement (kg/m3)	GGBS (kg/m3)	Cementitious material content (kg/m3)	Water (kg/m3)	w/b	Fine aggregate (kg/m3)	Coarse aggregates (kg/m3)	
							12.5 mm	20 mm
100	400	0	400	180	0.45	918	460	457
60:40:00	300	200	500	170	0.34	880	441	439
50:50:00	250	250	500	170	0.34	878	441	438
40:60	200	300	500	170	0.34	877	440	437
30:70	150	350	500	170	0.34	875	439	436

Source: Research conducted by IIT Bombay (Project code: 15JSWC001)

Compressive strength tests of the concrete specimens were undertaken as per IS 516.

Compressive strength (MPa) of concrete

ID	3 days	7 days	28 days	56 days	365 days
100	20.71	29.49	56.06	59.14	67.71
60:40:00	23.96	38.81	64.21	69.99	95
50:50:00	21.25	34.69	58.7	61.19	83
40:60	17.13	30.24	58.03	65.56	80
30:70	16.61	29.35	52.4	57.04	77

Source: Research conducted by IIT Bombay (Project code: 15JSWC001)

Except for 30:70 combination, GGBS based concretes resulted in better compressive strengths when compared with OPC base concrete, at all the ages. At the age of 56 days, the compressive strength of even 30:70 combination is close to that of OPC based concrete. Among all the combinations, 60:40 achieved higher compressive strength and higher rate of gain of strength than other combinations. From the results, it is evident that the GGBS based concretes achieved high early strengths and higher strength gain at later ages as well.

Results of flexural strength tests (as per IS 516) of the concrete specimens were:

Flexural strength (MPa) of concreteID	28 days	56 days
100	5.76	6.12
60:40	5.27	5.55
50:50	5.63	6.62
40:60	4.82	5.91
30:70	4.58	5.48

Source: Research conducted by IIT Bombay (Project code: 15JSWC001)

The flexural strength of GGBS based concretes is more than 4.5 MPa which is the minimum flexural strength requirement for rigid pavement. At age of 56 days, mixture with 50% OPC and 50% GGBS achieved relatively higher flexural strength and other combinations yielded comparable strength with OPC based concrete.

2. CRRI, Delhi also undertook a research project, 'Design and evaluation of pavement quality concrete mixes using ground granulated blast furnace slag as partial replacement of cement.' CRRI evaluated various properties of concrete containing GGBS. A control mix was prepared without GGBS and with different proportions of GGBS as a partial replacement to OPC.

The studies have shown that an increase in GGBS proportions (upto a certain extend) leads to reduced RMC costs for customers, increased flexural strength and durability, reduced life cycle repair and maintenance costs and greener RMC mixes.

Mix proportions of the concrete

Mix designation	GGBS replacement level (%)	Cement (kg/m3)	Slag (kg/m^3)	Sand (kg/m^3)	10 mm (kg/m3)	20 mm (kg/m3)	Water (kg/m3)
S0	0	400	0	724.626	344.711	805.454	166.000
S10	10	360	40	723.801	344.292	804.744	166.000
S20	20	320	80	722.936	343.873	803.495	165.994
S30	30	280	120	722.000	341.460	802.540	165.987
S40	40	240	160	721.197	343.051	801.575	165.997
S50	50	200	200	720.320	342.636	800.600	165.970
S60	60	160	240	719.448	342.221	799.636	165.965

Source: Research conducted by CRRI, New Delhi

The results of the compressive and flexural strengths tests performed by CRRI were:

Compressive and flexural strengths of concrete

Mix designation	Compressive strength, (N/mm^2)			Flexural strength, (N/mm^2)		
	7 days	28 days	90 days	7 days	28 days	90 days
S0	31.15	45.2	55.88	3.5	5.4	5.8
S10	32.85	48.43	57.93	3.7	5.3	6.2
S20	45.39	53.8	58.59	4.3	5.7	6.6
S30	33.02	49.78	59.47	4.1	5.6	6.7
S40	32.85	45.78	61.00	3.9	5.5	6.9
S50	31.20	45.00	56.23	3.6	5.3	5.8
S60	30.48	37.59	46.65	3.0	4.0	4.9

Source: Research conducted by CRRI, New Delhi

The results show that both short term (7 and 28 days) and long term (90 days) compressive as well as flexural strength of concrete increased when cement is partially replaced by GGBS up to a level of 40%. When 50% cement is replaced with GGBS, the strength of the concrete remains almost same.

Multiple studies showed multi-fold advantages of GGBS concrete vs. pure OPC concrete or fly-ash-based concrete, such as:

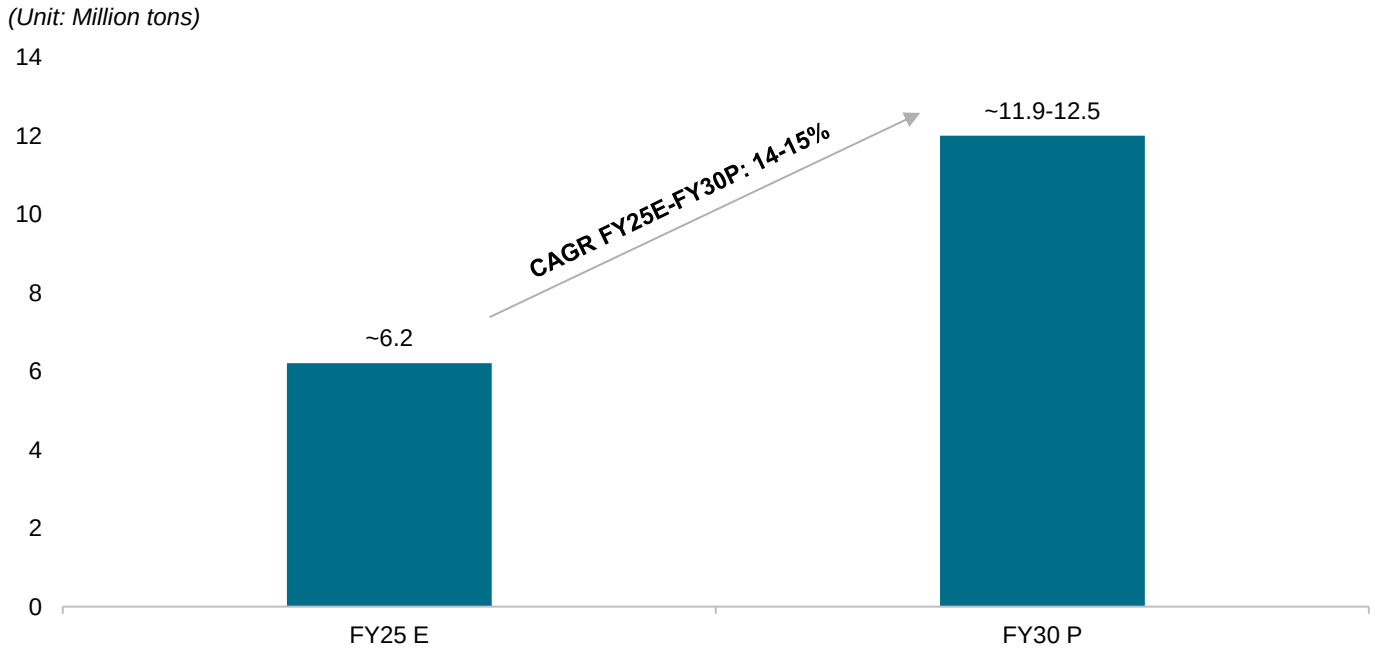
- Reduced thermal cracks because of lower heat of hydration
- Reduced shrinkage cracks
- Improved workability and smooth finish
- Improved cohesion
- Better resistance against chemicals such as chlorides, sulphates and carbon dioxide
- Higher compressive strength (initial as well as long term)
- Higher flexural strength
- Improved durability

In fact, GGBS was found to be one of the most effective replacement materials in concrete manufacturing. Our market interactions suggest that GGBS has a replacement potential of 25-70%, based on the required application. For example, in case of foundations of high-rise buildings, the replacement can be as high as 60-65%, whereas for surfaces above the ground, the replacement can be at 40-50%. Also, the industry uses GGBS across concrete grades, as per the mix design requirements.

9.3 Demand and outlook of GGBS in India

GGBS is a strength-enhancing compound that improves durability of concrete structure. Thus, the demand for GGBS in the country, which was estimated at ~6.2 million tonne in fiscal 2025, is expected to grow at 14-15% CAGR over next five years, to 11.9-12.5 million tonne in fiscal 2030.

GGBS demand review and outlook



E – estimated P – projected
Source: Crisil Intelligence, Industry

The sustained rise in demand will be because of GGBS being one of the most effective materials that can be used as replacement (for OPC and fly ash) in concrete manufacturing and growing awareness about the product's benefits among decision makers and certifying authorities.

In fiscal 2025, the penetration of GGBS (GGBS-to-RMC ratio) was estimated at ~6%. With improving penetration of RMC and rising adoption of GGBS, the penetration of GGBS is expected to improve to 7% by fiscal 2030.

Increasing adoption of GGBS is expected to be led by efforts of industry participants, including JSW Cement, which are making efforts to educate key influencers about the product's benefits, conducting successful design-mix trials at project sites, presenting the results to certifying authorities, and getting necessary approvals from project management consultants, who are key decision makers as well, and concerned government departments, if any.

Also, the various studies being conducted proving the benefits for using GGBS in concrete structures is gradually improving the awareness among the stakeholders, and, thus, willingness to pay for the products.

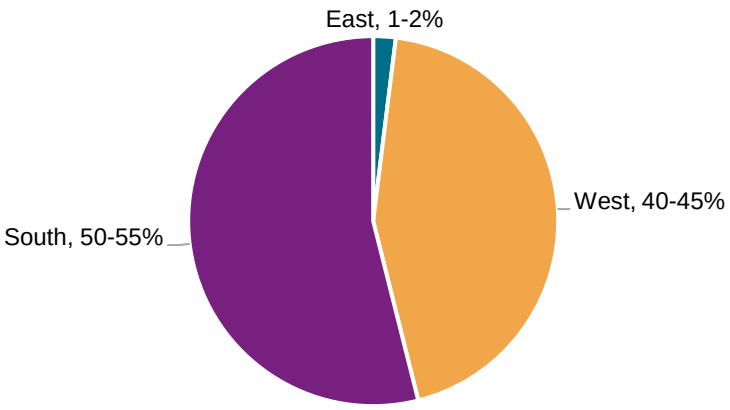
The key concern, though, is timely delivery and availability of the product near the project site, as transporting GGBS to distant sites can add to the overall cost of the project.

9.3.1 Segregation of demand across regions

The key raw material required to manufacture GGBS is blast furnace slag. Hence, GGBS manufacturers are concentrated around sources of blast furnace slag. Also, transporting GGBS to construction sites situated at a distance is not economically viable. Therefore, GGBS produced in a region is largely consumed in that region.

Availability of blast furnace slag is majorly concentrated in southern and eastern India. Hence, southern India consumes more than half of the total GGBS consumed in the country. Western India is the second largest GGBS consumer. The eastern region is at a nascent stage of adopting GGBS, with the cost of alternatives a key monitorable. There is no production and consumption of GGBS in northern India owing to the absence of availability of blast furnace slag.

Region-wise GGBS consumption (fiscal 2025)



Source: Crisil Intelligence, Industry

Among the states in southern and western India, Karnataka, Telangana and Maharashtra are leaders in terms of adoption of GGBS. Andhra Pradesh and Gujarat have also shown fair adoption. In fact, Hyderabad, Mumbai, Pune and Bengaluru are using GGBS in key infrastructure projects (i.e., metro, airport, highway, sea-links, etc), high-rise buildings, marine applications (dams and shore protection structures), and effluent and sewage treatment plants.

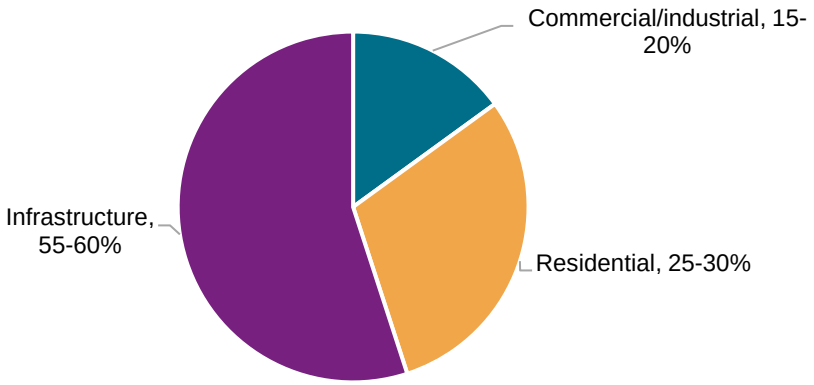
(The list of some certifications available where GGBS usage is permitted and the list of some of the projects where usage of GGBS has been approved are provided in the annexure.)

9.3.2 Demand across end-use segments

More than half of GGBS demand in the country is from infrastructure projects. Residential and industrial/commercial projects are the other two end-use segments. Indeed, infrastructure projects such as metros, roads and bridges, etc have shown the highest adoption of GGBS.

In the residential segment, GGBS adoption can be observed in large real estate projects. High-rise buildings and township projects are using GGBS. GGBS finds application in foundation works owing to low heat of hydration.

End-use segment-wise GGBS demand (fiscal 2025)

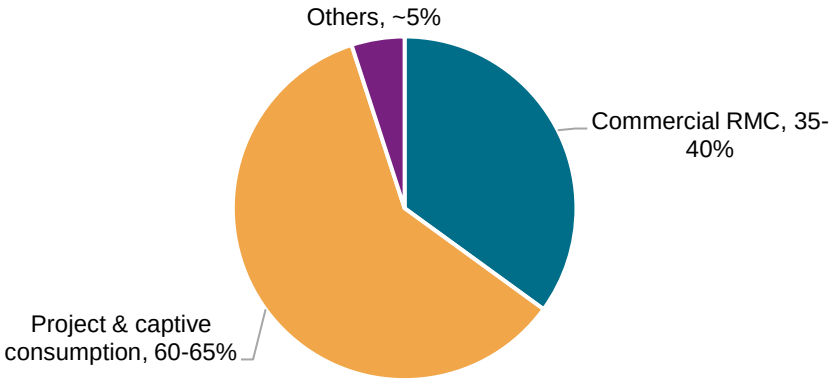


Source: Crisil Intelligence, Industry

9.3.3 Segregation of demand by application

GGBS is commonly used as a cementitious material in blended cement as a replacement for Portland cement in concrete production. Commercial RMC, and project and captive consumption are major applications of GGBS, accounting ~90-95% share in fiscal 2025.

Application-wise GGBS consumption (fiscal 2025)



Note: Others include cement product industries, dry mix mortar, AAC blocks, grouts, soil stabilisation, etc.

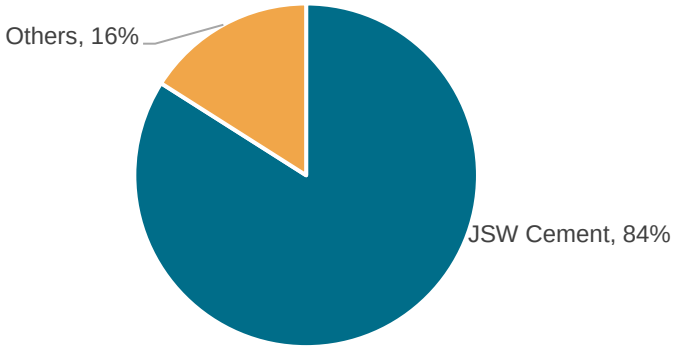
Source: Crisil Intelligence, Industry

Soil stabilisation, AAC (autoclaved aerated concrete), grout, dry mix products, microfine GGBS and geopolymers are some of the upcoming applications of GGBS.

9.3.4 Supply of GGBS

The demand for GGBS in India was estimated at ~6.2 million tonne in fiscal 2025. JSW Cement was the largest supplier of GGBS in India during the year, with ~84% share. Company's sales stood at ~5.18 million tonne in fiscal 2025.

Share of GGBS suppliers in India (fiscal 2025)



Source: Crisil Intelligence, JSW Cement, Industry

The company has six GGBS manufacturing units – in Vijaynagar (Karnataka), Dolvi (Maharashtra), Nandayal (Andhra Pradesh), Salem (Tamil Nadu), Jajpur (Odisha), and Salboni (Odisha), with Vijaynagar and Dolvi plants contributing over 84% to the total GGBS sold by the company in fiscal 2025.

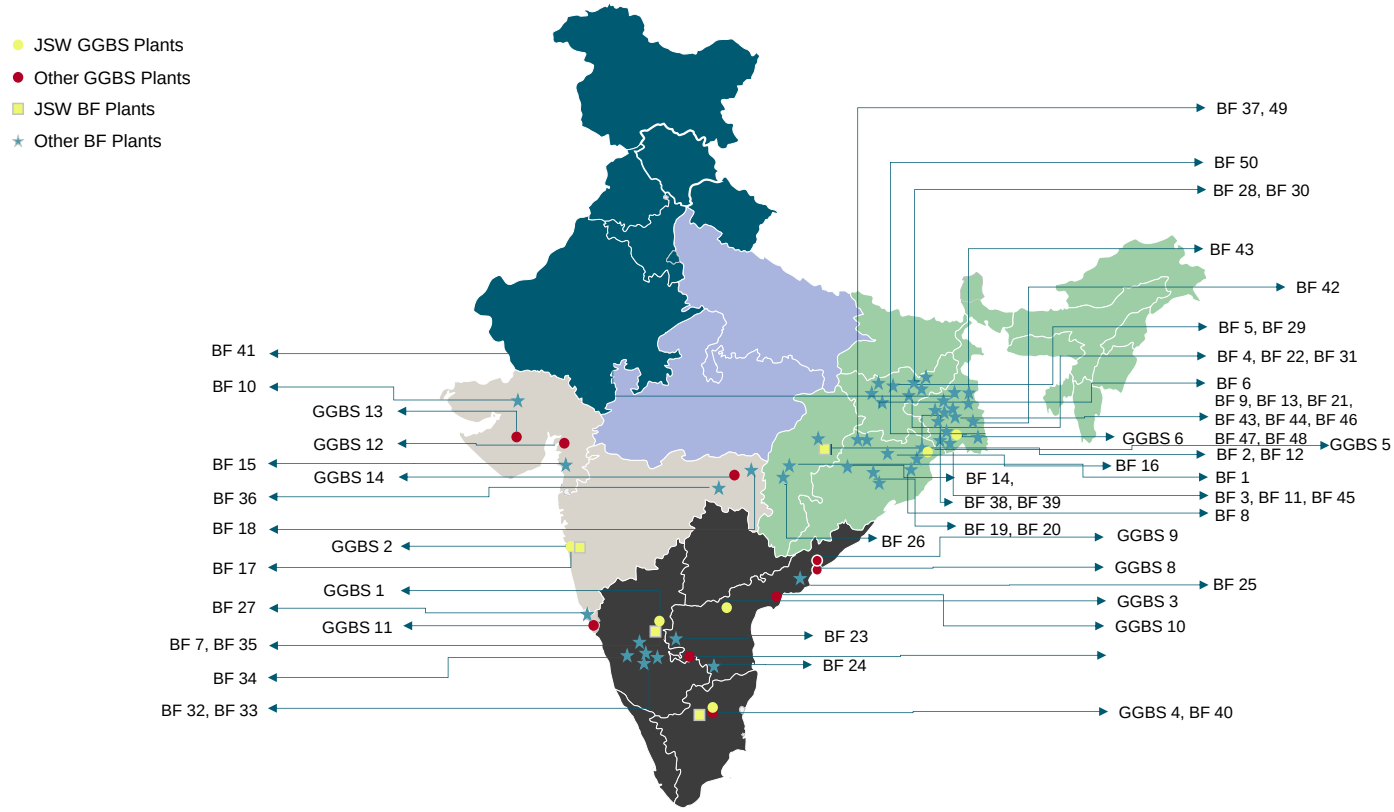
GGBS sold by JSW Cement in the past three fiscals

	FY22	FY23	FY24	FY25
GGBS sold (million tonne)	3.13	3.85	5.08	5.18

Source: JSW Cement, Crisil Intelligence

Other notable Indian suppliers of GGBS are Sri Balaha Chemicals Pvt Ltd (Andhra Pradesh), Sagar Cements Ltd (Andhra Pradesh), My Home Industries Pvt Ltd (Andhra Pradesh), Chettinad Cement Corporation Pvt Ltd (Andhra Pradesh), Ultrafine Minerals & Admixtures Pvt Ltd (Maharashtra), Suyog Elements India Pvt Ltd (Gujrat), Pyramid industries (Gujrat) and STP & Sons (Maharashtra).

GGBS manufacturers and blast furnaces in India



Note: The map is not accurate to scale
The names of GGBS manufacturers and blast furnaces are provided in the annexure
Source: JSW Cement, Crisil Intelligence

GGBS is ground to less than 45 microns. It consists of silicates and alumina silicates of calcium, which gives it a glassy structure. The physical and chemical properties of GGBS depend on the quality of slag used to produce it. The following two key factors affect the quality of slag:

- Glass content: The molten slag from the blast furnace is poured into a granulator and is rapidly quenched through high pressure water jets to produce granular particles. The process of water-quenching should be undertaken in a controlled environment to avoid crystalline formation. A good quenching process leads to achieving a glass content of 92-96%. The reactivity index of GGBS is affected by the chemical composition and glass content. This index plays a vital role in determining the cementitious performance of GGBS.
- Consistency in chemical composition: The blast furnace slag is rich in oxides of calcium, alumina and magnesia, etc. In order the control the quality of GGBS, it becomes imperative that consistency is maintained in the chemical composition of the raw material, i.e. slag being used.

Thus, a GGBS producer such as JSW Cement, which has control over the quality of raw materials, is able to provide better quality GGBS to its consumers.

9.3.5 Pricing of GGBS

GGBS is a niche product. Its price is driven by the availability of slag because of utility of slag in other applications, prices of other alternative products available in the region and logistic costs.

Currently, GGBS is, on average, priced at ₹ 3,800-4,500/tonne. The price of GGBS is slightly higher in the western region as compared to southern region, due to differences in demand / supply scenario of fly ash and cement between the regions.

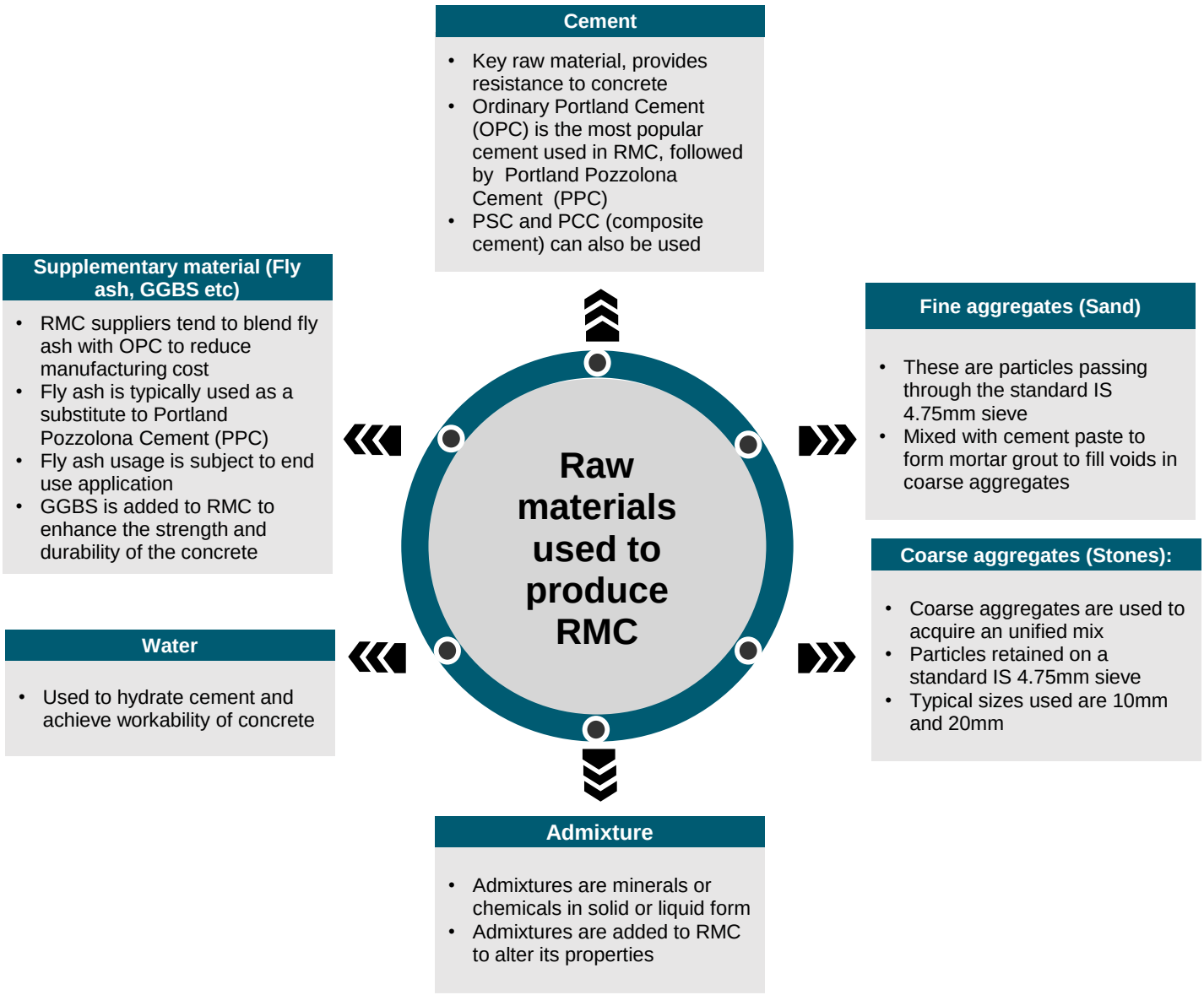
Adoption of GGBS in the eastern region is at a nascent stage as the region is still experimenting with the product. Also, prices of other available alternatives are much lower in the eastern region. Thus, price of GGBS is very low in the region. Certain flagship projects in northern India have used GGBS. Prices in northern India are determined more by incurred logistics cost.

10 Ready mix concrete

10.1 Raw materials used for RMC

Ready mix concrete (RMC) is a concrete product that is delivered in a ready-to-use mode. It simplifies the construction process by eliminating the need for on-site mixing. The Indian standards specification IS 4926:2003 defines RMC as concrete mixed in a stationary mixer in a central batching and mixing plant or in a truck mixer and supplied in fresh condition to the purchaser, either at the site or into the purchaser's vehicles. Raw materials for RMC constitute cement, aggregates, water and admixtures, which are weigh batched in the plant using a pan mixer.

Raw materials used to produce RMC



Source: Industry, Crisil Intelligence

Raw material composition of RMC

Raw material	Volume share (%)
Cementitious products* (cement, fly ash, GGBS)	12-15%
Coarse aggregate	42-45%
Fine aggregate	35-37%
Additives/admixtures	<0.5%
Water	6-8%

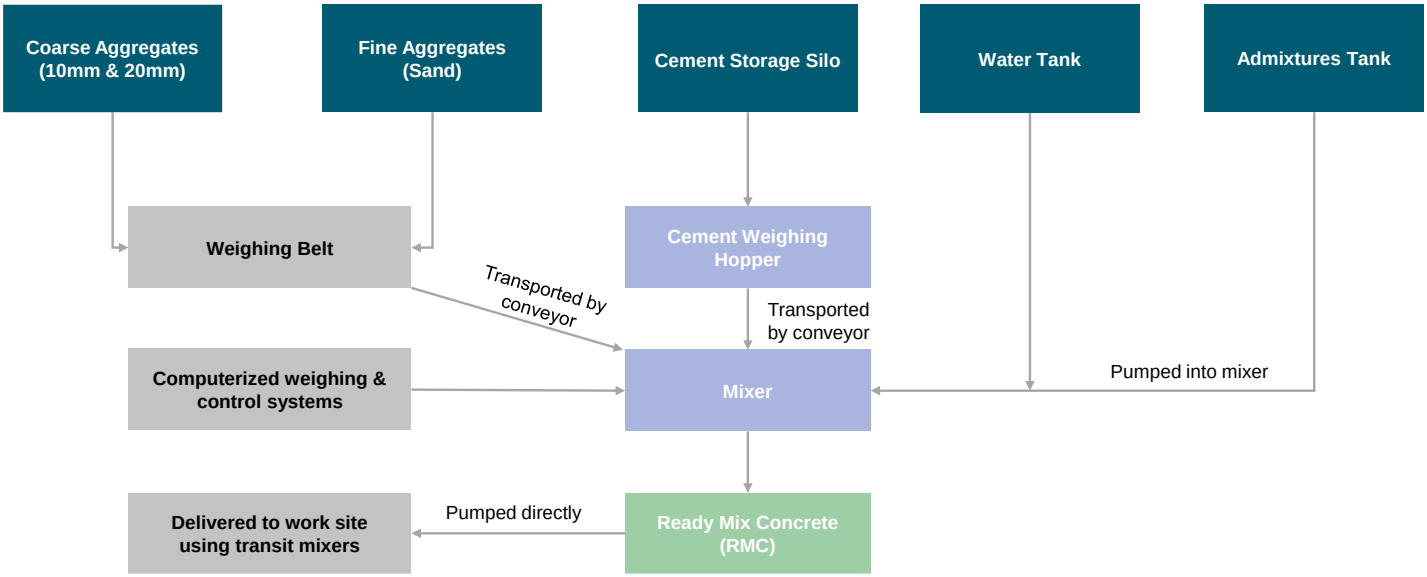
*Note: * The quantity and type of cementitious products varies depending on grade required to obtain influential mix designs*
Source: Industry, Crisil Intelligence

10.2 Manufacturing process

RMC is manufactured in centrally batched plants and is then transported to the construction sites in transit mixer trucks. A typical RMC batching plant consists of the following components:

- Storage units: Airtight silos for cement, bins for aggregates and tanks for water/admixtures
- Front end loader for transporting aggregates
- Conveyor belts
- Dust collection system
- Computerised laboratory for controlling the batching and mixing of ingredients
- Transit mixers
- Placement equipment such as concrete pumps

Production process



Source: Industry, Crisil Intelligence

Precise batching of cementitious products, fine and coarse aggregates, water and additives/admixture is caried out at the central plant. Raw materials are carefully measured and mixed as per required specifications. Raw materials are mixed in a batching mixer at a regulated speed for a suitable duration as required by the quality mix. The entire mixing process is carried out by computer-aided scientific controls and methods. Stationary plant mounted mixing is preferred due to fast production capability and improved concrete quality control.

After completion of mixing/batching at the plant, concrete is released into the transit mixer truck. Concrete is required to be discharged from the truck mixer within two hours from the time of loading. Thus, the job site is preferred to be in the vicinity of the batching plant, at a distance of 30-40 km. Discharging of RMC is done directly from the truck mixer through chute or is pumped by static or mobile pumps at the pouring point with horizontal and vertical pipelines. Pumps discharge RMC quicker than other available options. Hence, they are preferred at critical job locations. Finally, RMC is typically discharged within 30 minutes after reaching the construction site through pumps or conveyor belts.

RMC product types and applications

Grade	Classification in terms of strength	Applications
M10	Ordinary	Levelling course, footing, concrete roads, etc
M15		Levelling course, footing, concrete roads, etc
M20		Real estate: slab, beam, columns, footings, etc
M25		Real estate: slab, beam, columns, footings, etc
M30		Roads and real estate: slab, beam, columns, footings, etc
M35		Roads and real estate: slab, beam, columns, footings, etc
M40	Standard	Roads and bridges: slab, beam, columns, footings, etc
M45		Path/runways, roads, bridges: beam, columns, concrete girders, etc
M50		Path/runways, roads, bridges: beam, columns, concrete girders, etc
M55		Roads and bridges: beam, columns, concrete girders, concrete piers, etc
M60-M100	High-very high	Long bridges, dams, coastal construction, high rise buildings, etc

Source: Industry, Crisil Intelligence

Our interactions with RMC industry stakeholders indicated that M20, M25 and M30 are the most widely used grades in real estate and concrete road construction in India. The composition of RMC changes with grade types. Further, the pricing of each grade varies on the basis of the quantity of raw material used for its production.

Cement quantity increases for higher RMC grades. Higher the quantum of cement used, greater is the strength of concrete produced. Hence, higher grades are stronger and are largely used in high rise formations and strength-intensive structures.

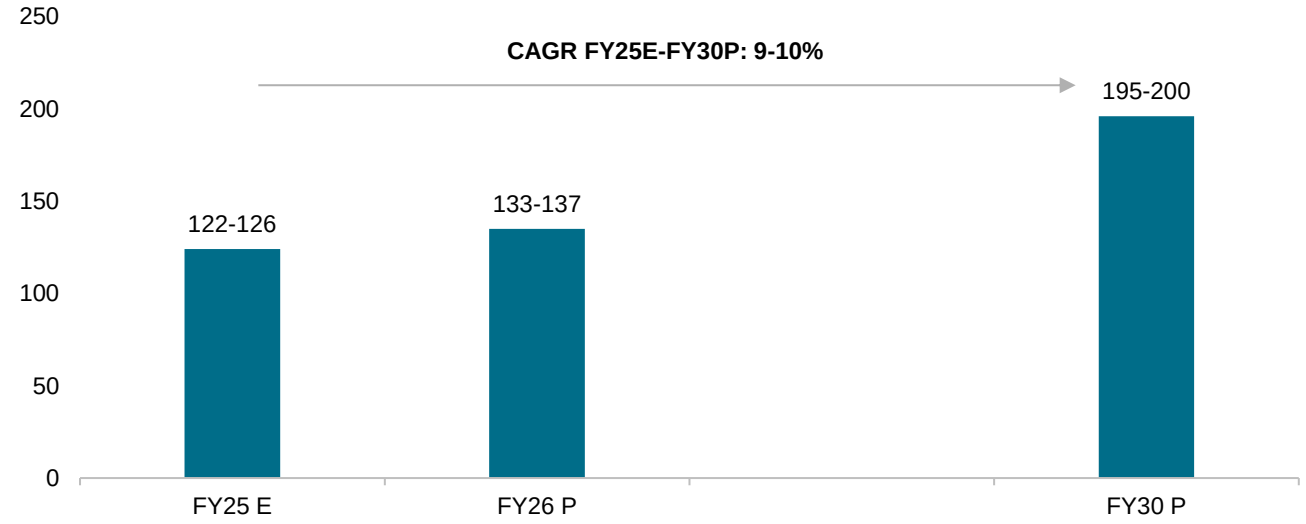
10.3 Demand assessment and outlook

Domestic demand for RMC was ~110-115 million cubic metre in fiscal 2024. It is estimated to have increased ~10% on-year to 122-126 million cubic metre in fiscal 2025.

Future looks promising as well. Crisil projects domestic demand for RMC to increase at CAGR of 9-10% to 195-200 million cubic metres by fiscal 2030, by the government's infrastructure push. Healthy investments in commercial real estate are expected to provide further momentum to RMC demand from industries such as IT, BFSI, tourism, hospitality, education, capital goods, etc. Increasing adoption of RMC and industrial construction comprising small and medium-scale enterprises, power plants, sewage treatment plants, few ports, airports, etc will continue to support RMC consumption.

RMC demand and outlook

(Unit: Million cubic meters)



E: Estimate; P: Projected
Source: Crisil Intelligence, Industry

11 Sustainability in cement industry

11.1 Impact of cement industry on climate

The cement industry is one of the highest emitting industrial sectors, releasing CO2 majorly through direct and indirect emissions. Under direct emissions, there are two main activities: calcination and fuel combustion.

Fuel combustion is an energy-related emission, which occurs when fossil fuels are used to heat a pre-calciner or rotary kiln. It accounts for 30-35% of total CO2 emissions generated in the cement production process. The other primary source of direct emissions is 'process emission', which involves chemical reactions in the pre-calciner to decompose limestone (calcium carbonate), representing about 50-55% of the total CO2 emissions generated in the process.

Indirect emissions account for the remaining 10-15% CO2 emissions, with power/electricity and logistics accounting for 8-10% and 2-5% of CO2 emissions, respectively. Tqhe share of CO2 emissions in Greenhouse Gas (GHG) emissions is the highest, accounting for close to 98-99% of the total emissions, while those of NOx and Methane remain negligible.

The cement sector accounts for almost 8% of the global CO2 emissions. China is the largest cement producer, accounting for about 55% of global production. India is the second-largest cement producer and consumer, accounting for ~8% of the global installed capacity – and this expected to grow further. As of 2021, overall emissions are led by China at ~853 million metric tonne (MnMT) of emissions, followed by India (~149 MnMT), Vietnam (~54 MnMT), Turkey (~44 MnMT), US (~41 MnMT) and Indonesia and Saudi Arabia (~29 MnMT each).

India's emission and energy intensity related benchmarks for the cement industry are better than those of the global benchmarks. The domestic cement plants have an energy intensity of 3.1GJ/tonne of clinker and 80kwh/tonne of cement versus the global average of 3.5GJ/ tonne of clinker and 90kwh/tonne of cement. Also, India's carbon-emissions intensity at 550 kgCO2 /tonne of cement produced is much lower than that of the global intensity of 600-650 kgCO2/tonne.

Table 23: India v/s global benchmark

Particular	Unit	India average	Global average
Power intensity per tonne of clinker	GJ/tonne	3.1	3.5
Power intensity per tonne of cement	Kwh/tonne	80	90
Carbon emission intensity	$kgCO_2$/tonne	550	630

Source: Crisil intelligence, Industry

After power generation, which accounts for ~46% of total carbon emissions in India, the next highest emitting sector is the cement industry, accounting for ~30% of carbon emissions. Cement sector, accounting for 28% of carbon emissions of total industrial emissions, is the second largest emitting-industry after steel and iron sector out of all industrial sectors in India. Of the total CO2 emission in India, the cement sector contributes around 7-9% versus 45-47% from the power sector, 11-13% from the iron and steel sector, and 12-14% from transportation, according to the IEA, 2021.

11.2 Regulations and government policies: Carbon reduction opportunities

In India, both the Central Pollution Control Board (CPCB) and the respective State Pollution Control Boards (SPCBs) deal with environmental issues. Cement plants must also comply with the charter on Corporate Responsibility for Environment Protection (CREP) and various environmental acts and regulations notified by the Ministry of Environment, Forests and

Climate change (MoEFC). Key regulatory authorities are CPCB, SPCB, MoEFC and National Council for Cement and Building Materials (NCB). Even the Supreme Court of India has stepped in from time to time asking the industry to reduce emissions, indirectly impacting the cement industry.

To curb the ill-effects of emitting pollutants in the industry, the MoEFC has issued emission standards for rotary kilns (with co-processing of waste) under Section 6 and Section 25 of the Environment Protection Act,1986.

Table 24: Permissible emission under Section 6 and Section 25 of the Environment Protection Act,1986

Particulate matter	**30 mg/Nm3**
SO2	100 mg/Nm3 (pyritic sulphur in limestone is less than 0.25%)
	700 mg/Nm3 (pyritic sulphur in limestone is between 0.25 to 0.5%)
	1,000 mg/Nm3 (pyritic sulphur in limestone is more than 0.5%)
NOx	600 mg/Nm3 (800 for rotary kiln with in-line calcinatory)

Source: CPCB (Central Pollution Control Board)

These pollution limits were notified on May 9 and May 10, 2016, with the condition the cement plants must comply with them by March 31, 2017

Cement plants in India are clustered in a few limestone rich regions. Rajasthan has the maximum installed capacity in India for both cement and clinker followed by Southern states of Andhra Pradesh, Karnataka, and Tamil Nadu (~29% of total capacity). While Rajasthan have been often impacted by the regulatory changes to limit pollution in Delhi, there are no major state related policies for emission control in southern states apart from the ones laid out by CPCB/SPCB and MoEFC. However, in the longer run, stricter measures are expected across states in line with India's Nationally Determined Contribution (NDC). Players are also subject to certain fines/penalties in lieu of any environmental breach depending upon the impact of the breach.

Perform, Achieve and Trade (PAT) is a regulatory instrument to reduce Specific Energy Consumption in energy-intensive industries, with an associated market-based mechanism to enhance cost effectiveness through Energy Savings Certificates, which can be traded. The Bureau of Energy Efficiency (BEE) has rolled out six PAT cycles until March 31, 2020, with 1073 Designated Consumers (DCs) covering 13 sectors. A total savings of about 26 million tonnes of oil equivalent (MToE) are projected, translating into avoiding of about 70 MnT of CO2, will be achieved by March 2023. The cement sector has surpassed the targets of the PAT scheme by 80%.

Global standards: Countries such as South Africa, Australia, Germany and many other European countries have stipulated the emission limits for sulphur dioxide at as low as 50 mg/Nm3. Similarly, countries such as Colombia, Germany and other European countries have nitrogen oxide emission limit at as low as 200 mg/Nm3. The Cement Sustainability Initiative (CSI) is a global effort by 25 major cement producers with operations in more than 100 countries, which believe there is a strong business case for the pursuit of sustainable development.

11.3 Technology shift – Roadmap to net zero future

Substitution of clinker with blended cement

Blended cement uses waste products such as fly ash, slag, etc instead of clinker – the main contributor to CO2 emissions – in the cement manufacturing process. Thus, blended cement, such as Portland pozzolana cement (PPC), Portland slag cement (PSC) and composite, reduces embodied greenhouse gas emissions. In fact, higher the cement-to-clinker ratio, lower is the emissions.

That said, different blended cement types have different clinker requirements, leading to varied emission intensity.

Table 25: Clinker benchmarks for different types of cement

Type of cement	Minimum clinker requirement	Slag requirement	Fly ash requirement	Cement-to-clinker ratio
OPC	95%	-	-	~1.05
PPC	65%	-	0-35%	~1.54
PSC	25%	25-70%	-	~4.00
Composite	35%	20-50%	15-35%	~2.86

Source: Crisil intelligence, Industry

A. Alternative fuels and energy efficiency to reduce Co2 emissions

Technologies such as waste heat recovery systems, reducing the use of fossil fuels, as well as converting current fossil fuel-based facilities into renewable biomass fuel-based units are various steps taken by companies to reduce emissions.

Coal and petcoke – two of the most carbon-intensive fuels – are typically used to heat cement kilns. Hence, one of the ways to lower emissions is through the use alternative fuels, owing to their lower carbon intensity vis-à-vis coal and petcoke.

To be sure, cement plants are actively looking for suitable and low-cost alternative fuels to lower fuel cost and reduce CO2 emission. As of 2021, the % of alternative fuel use in the Indian cement industry was estimated at 5-6%, according to Cement Manufacturers Association of India. This was considerably lower than the global average of ~15% in 2020, as per the International Energy Agency (IEA).

The substitution of expensive and high CO2 intensity fossil fuels with biomass, municipal solid waste and refuse-derived fuels is measured by thermal substitution rate . According to the IEA, mixed fuels are 20-25% less carbon-intensive than traditional fossil fuels.

In India, the government has set a target of 25% alternative fuel use in the cement industry by 2030 as part of its commitment to reducing carbon emissions and promoting sustainable development.

B. Green cement and LC3

Green cement is cement produced by companies through manufacturing techniques that reduce carbon emissions. Compared with OPC, green cement consumes ~60% less thermal energy and the carbon emission intensity is also 60% lower.

Another product is limestone calcined clay cement (LC3). This new type of cement is based on a blend of limestone and calcined clay. LC3 can reduce CO2 emissions by up to 40%, is made using limestone and low-grade clays, which are

available in abundant quantities, is cost effective, and does not require capital intensive modifications to existing cement plants. JK Lakshmi Cement has partnered with Society for Technology and Action for Rural Advancement to integrate calcined clay technology into its operations to produce LC3.

11.4 Government initiatives supporting green cement

Governments globally are recognising the urgency of promoting green cement production. Some key initiatives are:

- Public procurement of green cement: A growing trend involves governments leveraging their purchasing power to incentivise the use of green cement in public infrastructure projects. For instance, the UK aims to achieve net-zero embodied carbon in all new government buildings by 2029, with green cement a critical material to achieve this goal. Estimates suggest that if just 20% of global cement demand were met by green cement, CO2 emissions could be reduced by 15%, highlighting the potential impact of such policies
- Financial incentives: Some governments are also offering tax breaks or subsidies to producers manufacturing green cement. India provides tax benefits on electricity used for production of blended cements containing fly ash and slag, encouraging their use as clinker replacements
- Research and development support: Governments are investing in research and development focused on advancing green cement technologies. The EU, through its Horizon 2020 programme, has funded research projects exploring innovative low-carbon cement formulations and alternative clinker production methods

  By supporting these advancements, governments can help accelerate the development and commercialisation of green cement. These initiatives also highlight a growing commitment from governments to promote green cement, which will not only accelerate its wider adoption but also contribute to a more sustainable construction industry.

11.5 Avenues and challenges in achieving manufacturing sustainability

A considerable 8% of global CO2 emissions are from the cement industry, with clinker production, a key stage in the manufacturing process, responsible for about half of those emissions.

There are two main avenues for achieving sustainability. The first involves operational improvements. By replacing fossil fuels with alternative fuels such as biomass or industrial waste in kilns, manufacturers can lessen their reliance on carbon-heavy sources of energy. Additionally, incorporating industrial byproducts such as fly ash and slag into cement blends reduces the need for clinker, lowering the overall CO2 footprint.

Industry estimates suggest that these two methods alone can contribute considerable in reducing a large proportion of the emissions by 2050.

However, challenges remain. Modifying existing kilns might be necessary for the alternative fuels, and large-scale implementation of some promising technologies, such as carbon capture and storage, are still under development.

Still, the environmental benefits are considerable. By embracing these advancements and optimising the processes, the cement industry can significantly reduce its carbon footprint and contribute to a greener environment.

12 Competitive landscape

12.1 Competition overview

The Indian cement industry is highly fragmented, with the presence of a few large players and several medium-sized and small players. Top five players – Ultratech Cement, Adani, Shree Cement, Dalmia Cement and Nuvoco Vistas holding a ~62% share by grinding capacity during fiscal 2025. The industry has various entry barriers, such as high capital costs, long gestation period, and inadequate availability of raw material, as well as transportation barriers, as railways and roadways are expensive modes compared with the sea transport. However, sea transport has difficulties associated with the procurement of land near coastal areas for setting up of the grinding units and other associated costs for infrastructural facilities at port regions. Over the past decade, the Indian cement industry has seen many large mergers and acquisitions. Some have been in the form of global companies acquiring domestic players, while others have been domestic companies looking to consolidate their market position. Since demand growth is likely to pick up only gradually from the current levels, due to the pandemic-led disruption, further industry consolidation is likely in the near term.

Domestic manufacturers can broadly be bucketed into pan-India, regional and standalone players. Pan-India players are large players, such as ACC and Ambuja (under Adani), UltraTech Cement, Shree Cement and Dalmia Cement. Players whose presence is restricted to one or two regions are categorised as regional players. Key players in this segment include Nuvoco Vistas (concentrated in the east, central and north), India Cement (south and west), JK Cement (north and south), JK Lakshmi Cement (east, west and north), Kesoram Industries (south), Chettinad Cement (south) and Ramco Cements (south and east). Players such as Panyam Cement, Penna Cement, Star Cement and Sanghi Cement are operational in a few states within a region.

Pan India and regional players

Pan-India (multiregional) players	Regional players
Pan India: UltraTech Cement, Adani (Ambuja Cement and ACC Ltd)	Nuvoco Visatas, India Cement, JK Cement, JK Lakshmi Cement, Kesoram Industries, Chettinad Cement, Ramco Cements, Panyam Cement, Penna Cement, Star Cement, Sanghi Cement
Multiregional: Shree Cement, Dalmia Cement, JSW Cement	

Source: Crisil Intelligence

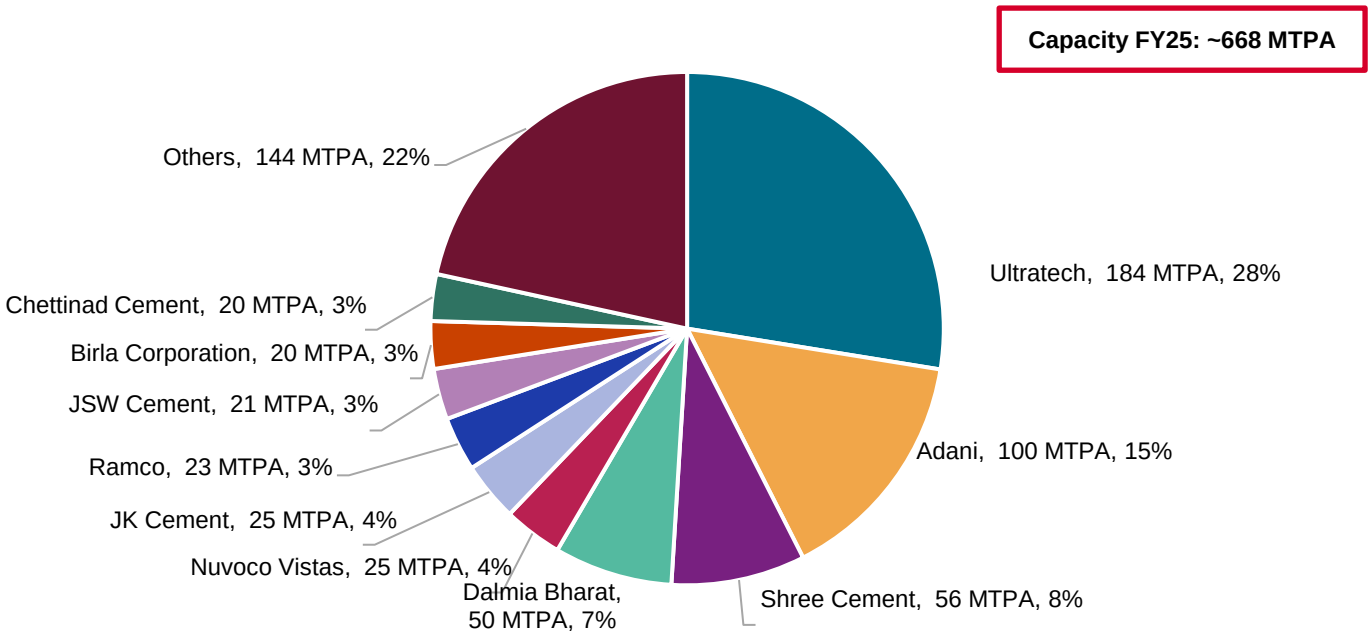
Characteristics of pan-India and regional players

UltraTech Cement Ltd is the largest manufacturer of grey cement, ready-mix concrete (RMC) and white cement in India. It is one of the leading cement producers globally too. It has a consolidated capacity of 190.46 million tonnes. It has 34 integrated plants and 34 grinding units, one clinkerisation unit and 9 bulk-packaging terminals. Apart from this, it has one white cement unit and three wall-care putty units. Its operations span across India, the UAE, Bahrain, Bangladesh and Sri Lanka. UltraTech is also India's largest exporter of cement, with a presence in countries around the Indian Ocean and in the Middle East.

Ambuja Cement and ACC, two of India’s leading cement manufacturers, are now consolidated under the Adani Group. This strategic move has positioned Adani as the second-largest cement player in the country. Together, Ambuja and ACC currently operate 22 integrated cement plants, 21 grinding units, and over 86 RMC plants, with a combined cement production capacity of approximately 100 million tonnes per annum (MTPA). This base has been further strengthened through the acquisition of Sanghi Industries and Penna Cement. The operational synergy between the two companies has led to significant improvements in margins and profitability, with Adani targeting a total cement capacity of 140 MTPA by 2028. With a strong focus on infrastructure integration, cost efficiencies, and supply chain optimization, Adani’s cement business is rapidly emerging as a formidable competitor to industry leader UltraTech.

Regional players such as Ramco Cement and JK Cement have a strong hold in the local markets where they operate, due to cost leadership, market advantage and proximity to raw material sources.

Market share of large (top 10) cement manufacturers, Fiscal 2025



Note: Adani includes both Ambuja Cement and ACC Ltd

Source: Crisil Intelligence, Industry, Company websites & annual reports

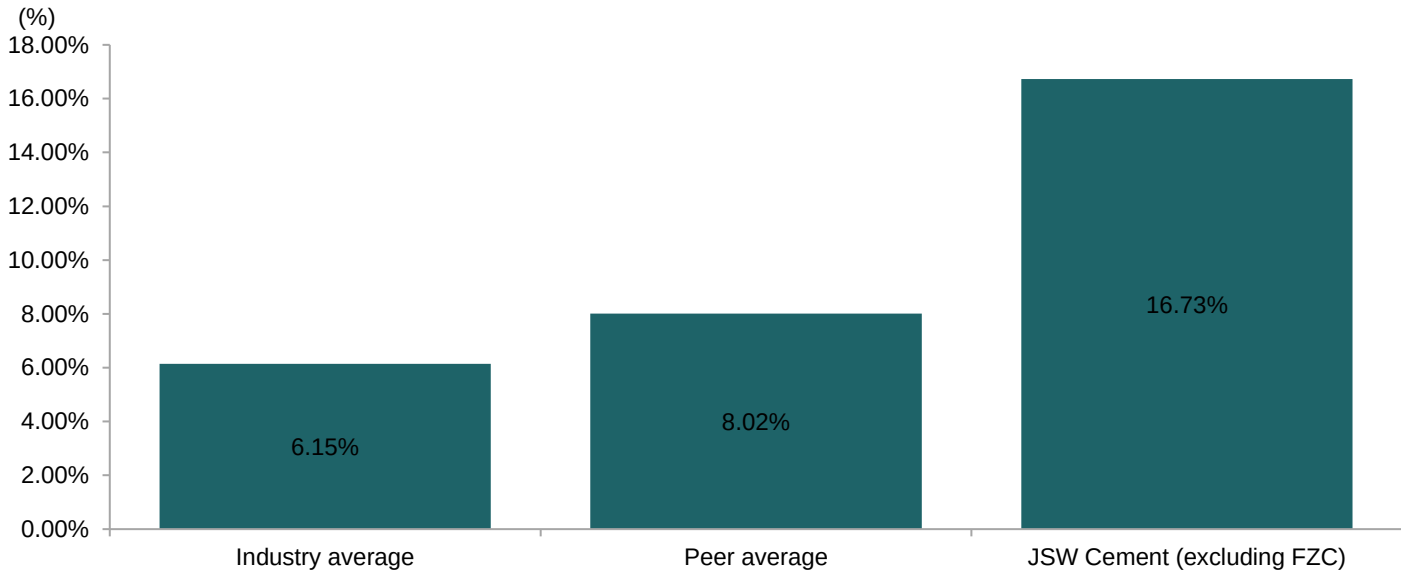
In fiscal 2025, UltraTech held a 28% market share in terms of total domestic cement capacity, followed by Adani (Ambuja and ACC Ltd.), Shree Cement, Dalmia etc.

12.2 Financial and Operational benchmarking

Sales volume 10-year growth (FY15-25 CAGR)

JSW Cement is among the top three fastest growing cement manufacturing companies in India in terms of increase in sales volume from Fiscal 2015 to Fiscal 2025 among the peers.

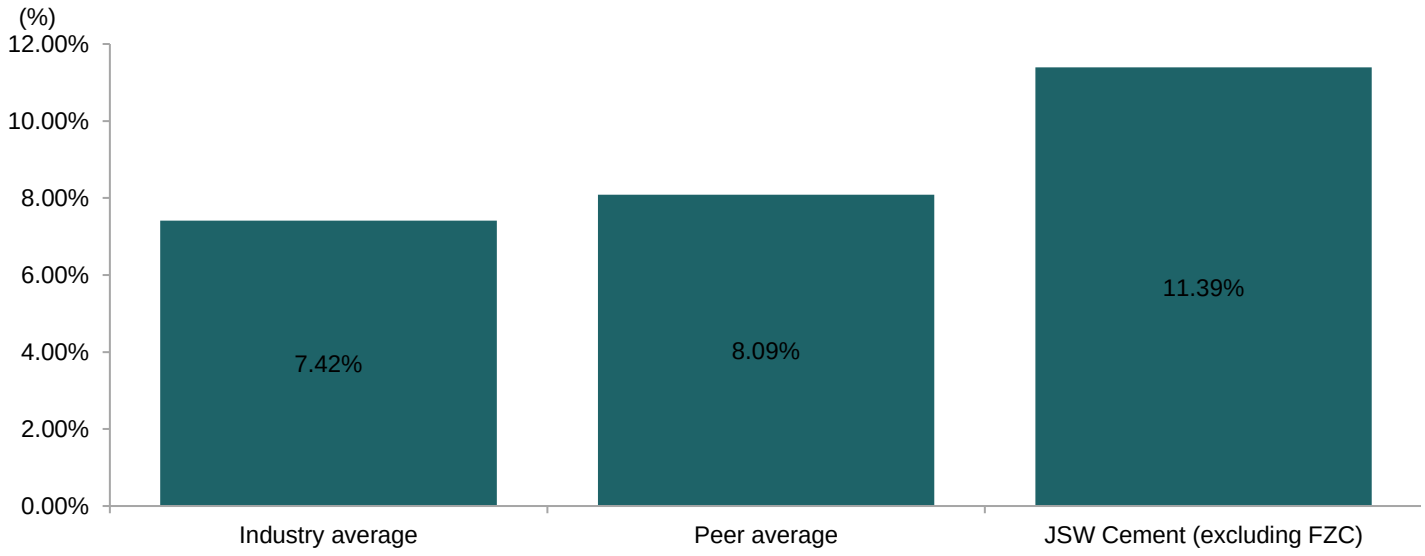
JSW Cement's sale volume increased from 2.69 million tonnes (MnT) in FY15 to 12.64 MnT in FY25, which equates to CAGR of 16.73% as shown in chart below.



Source: Company annual reports and publications, Crisil intelligence
Note: Sales volume for JSW Cement is excluding FZC

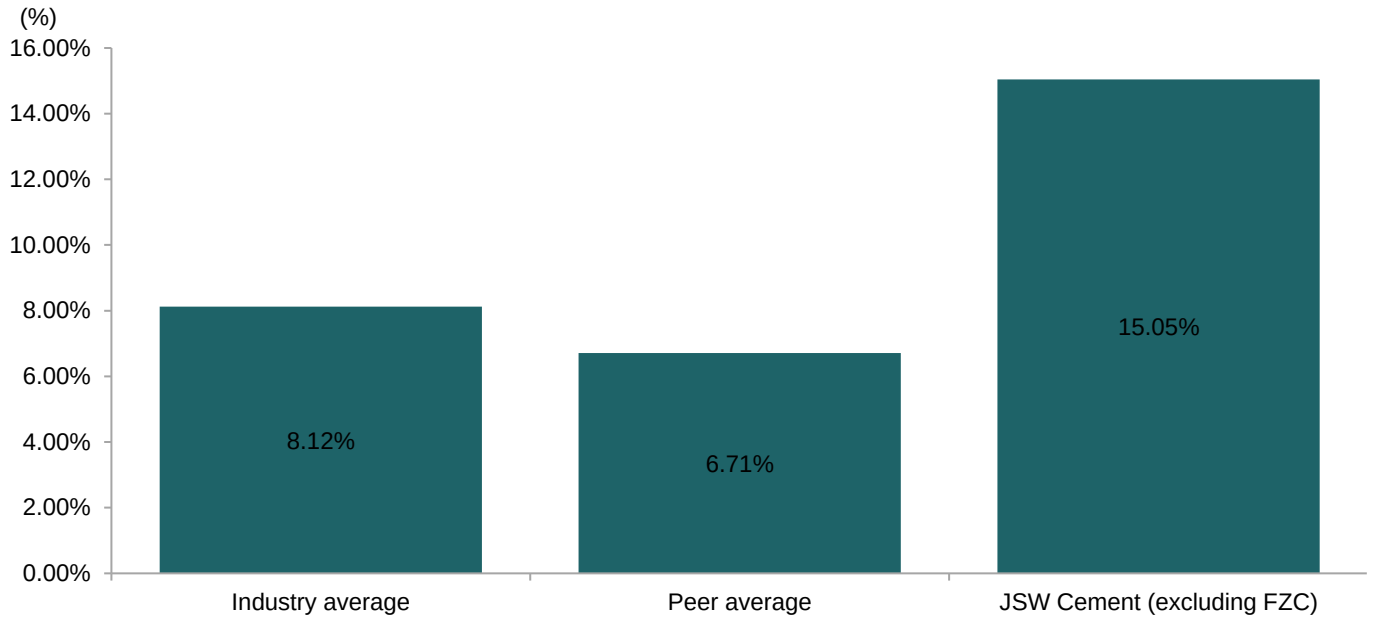
Sales volume 5-year growth (FY20-25 CAGR)

JSW Cement's sale volume increased from 7.37 MnT in FY20 to 12.64 MnT in FY25, which equates to CAGR of 11.39% as shown in chart below.



Source: Company annual reports and publications, Crisil intelligence
Note: Sales volume for JSW Cement is excluding FZC

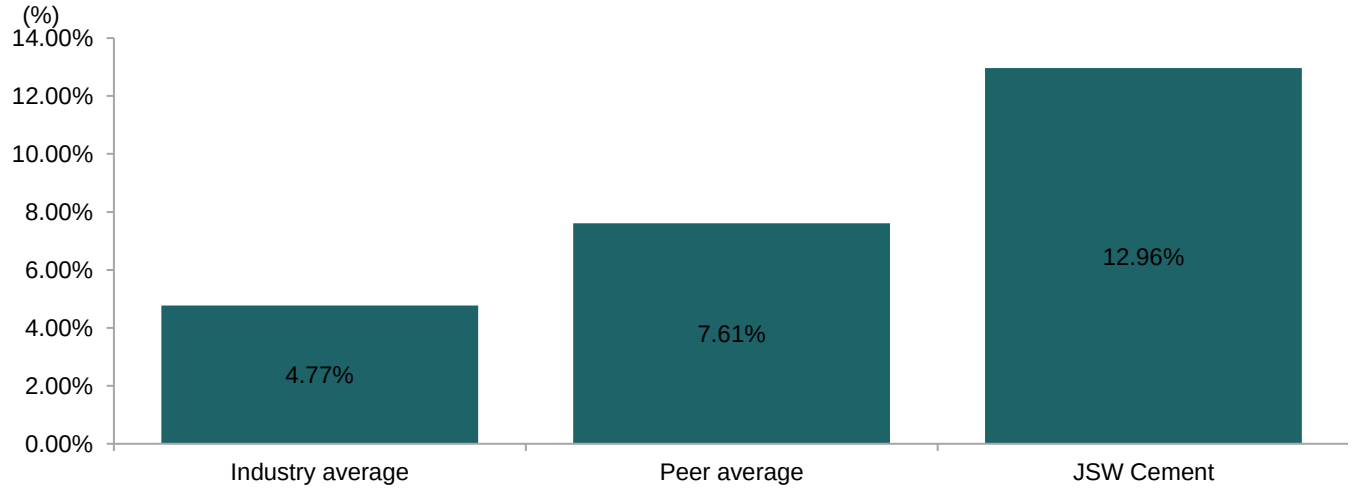
Sales volume 2-year growth (FY23-25 CAGR)



Source: Company annual reports and publications, Crisil intelligence
Note: Sales volume for JSW Cement is excluding FZC

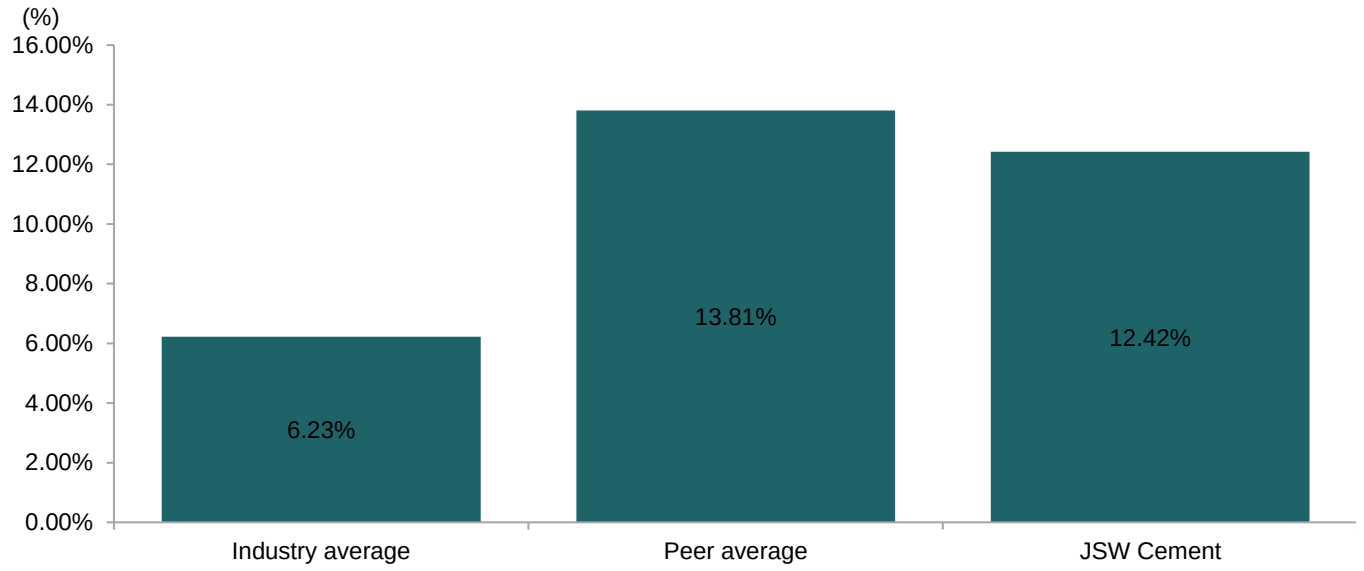
Installed capacity 10-year growth (FY15-25 CAGR)

JSW Cement is among the top three fastest growing cement manufacturing company in India in terms of increase in installed grinding capacity from FY15 to FY25 amongst the peers. Its capacity grew from 6.09 MTPA in FY15 to 20.60 MTPA in FY25 indicating a CAGR of 12.96% as shown in the chart below.



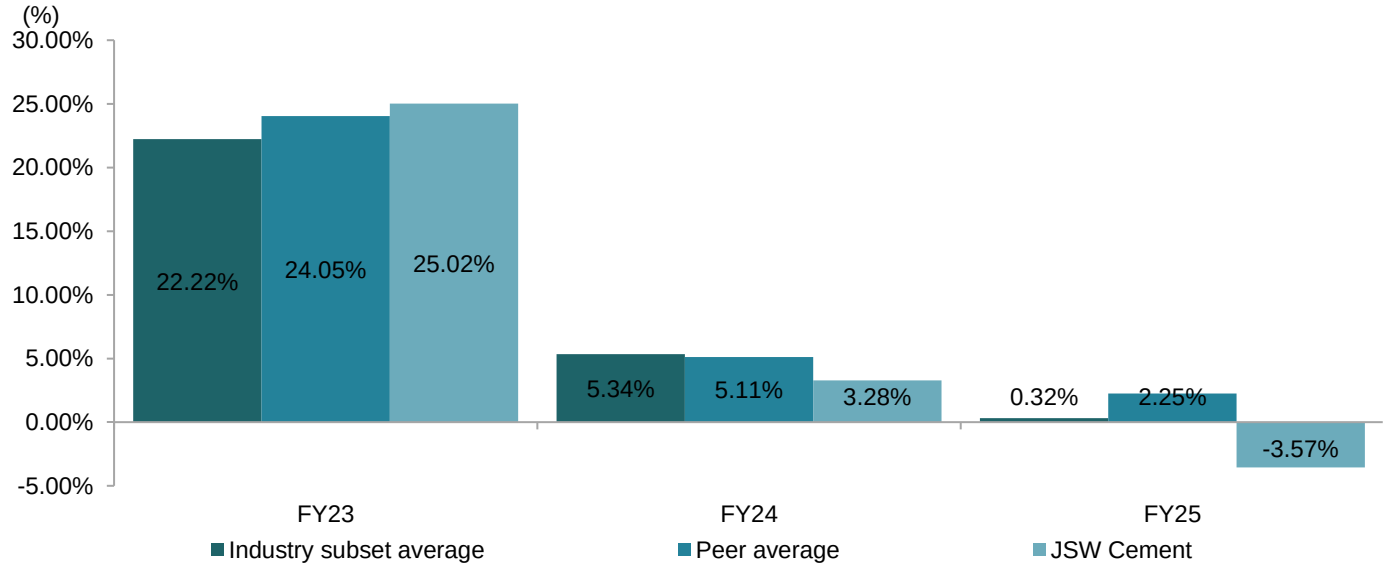
Source: Company annual reports and publications, Crisil intelligence

Installed capacity 2-year growth (FY23-25 CAGR)



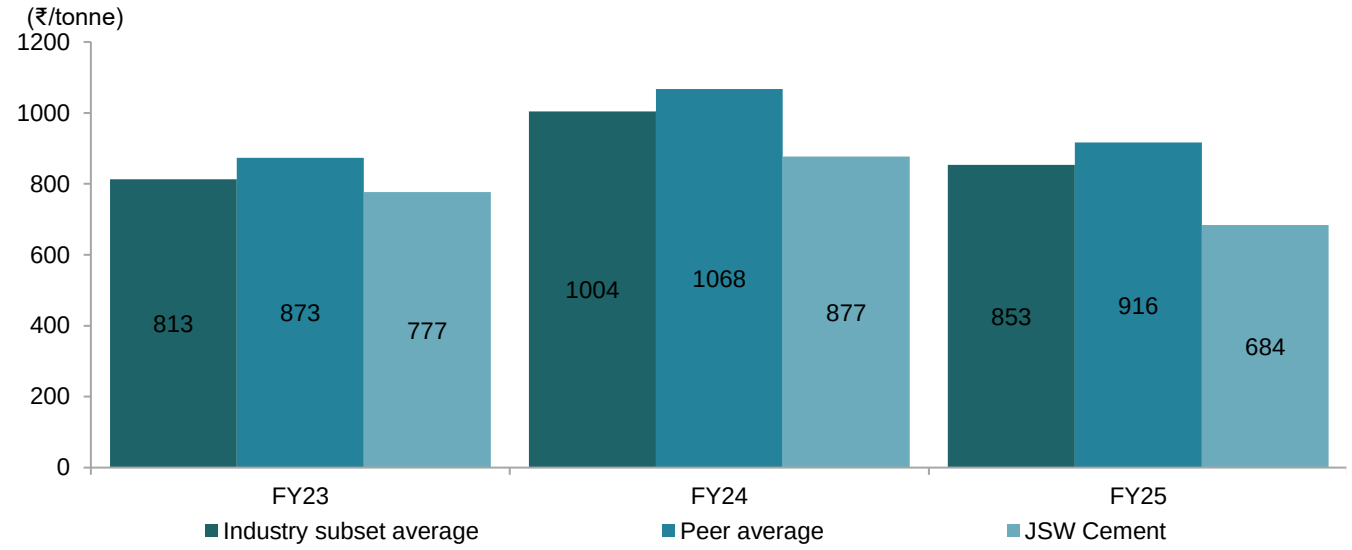
Source: Company annual reports and publications, Crisil intelligence

Revenue growth (%)



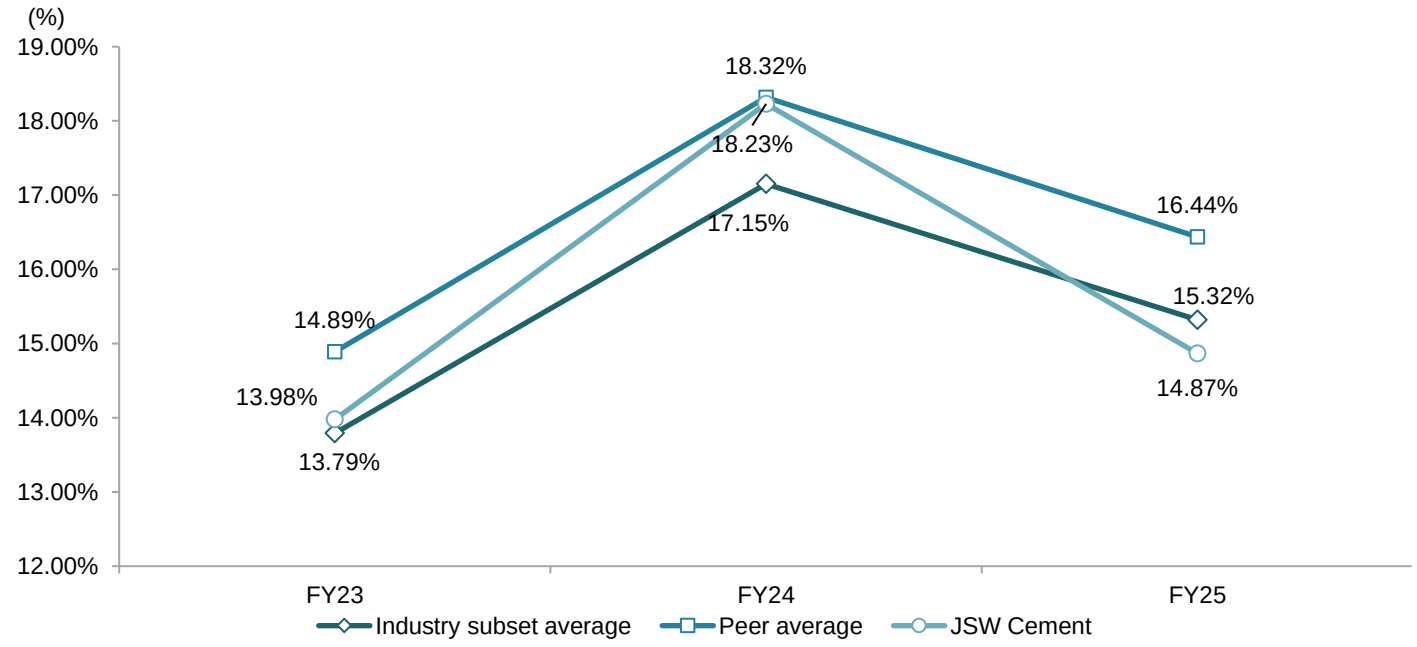
Source: Company annual reports and publications, Crisil intelligence

Operating EBITDA per tonne (Rs/tonne)



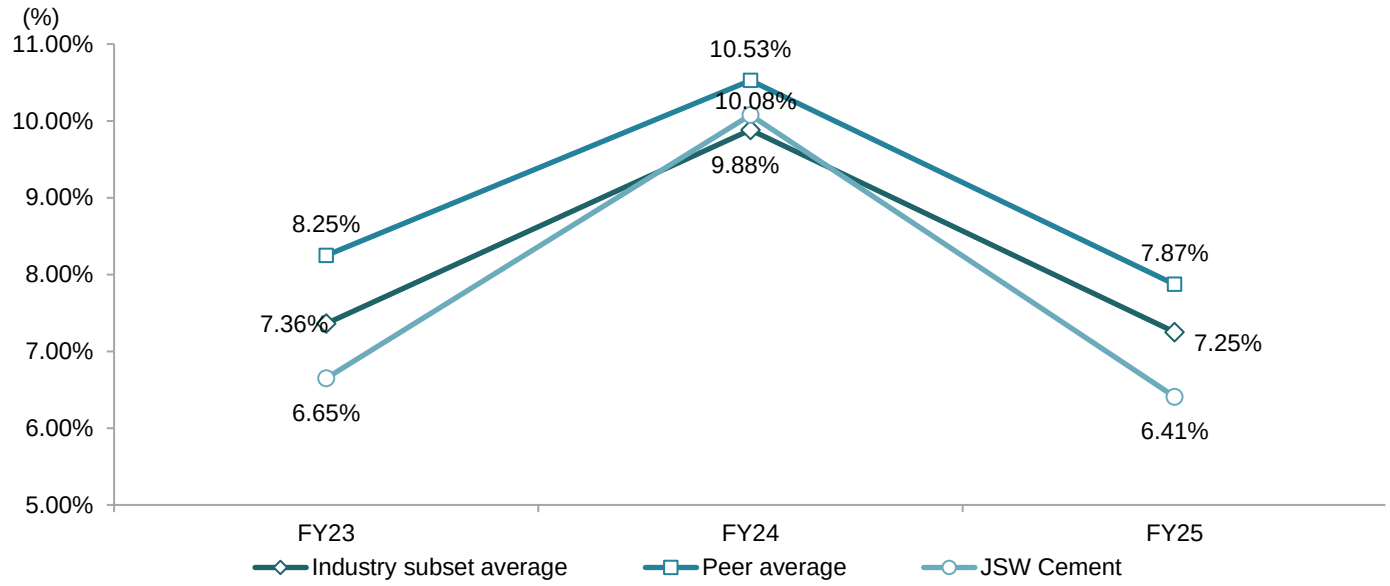
Source: Company annual reports and publications, Crisil intelligence

Operating EBITDA margin (%)



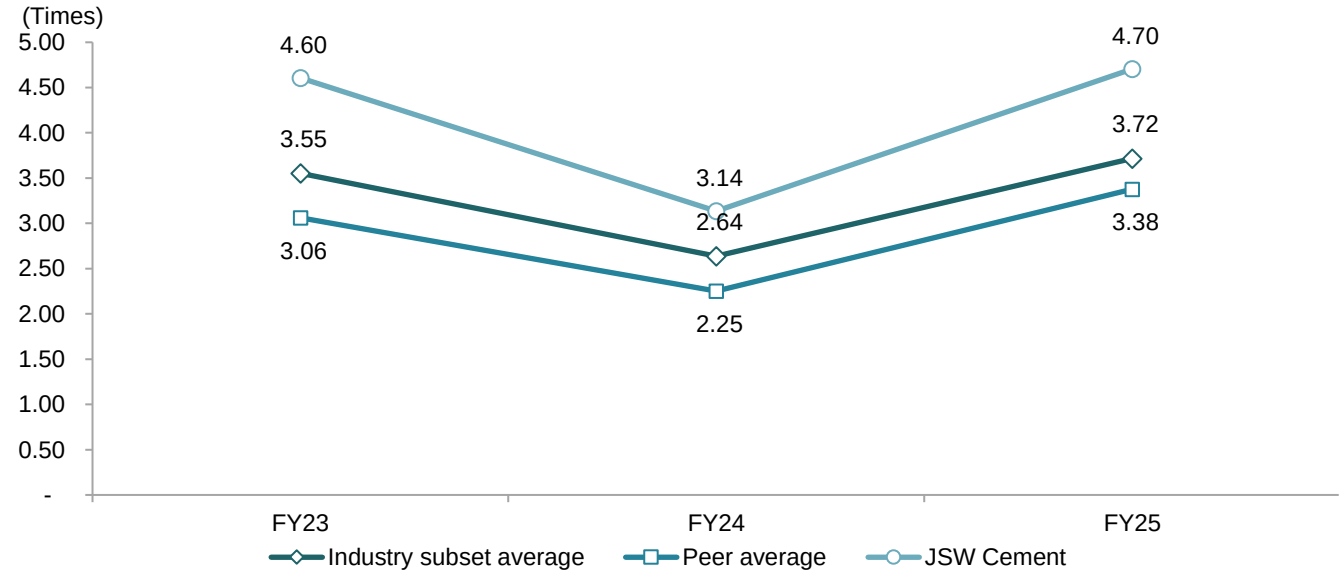
Source: Company annual reports and publications, Crisil intelligence

Return on Capital Employed (RoCE %)



Source: Company annual reports and publications, Crisil intelligence

Net debt/ Operating Ebitda (Times)



Source: Company annual reports and publications, Crisil intelligence

Waste usage as percentage of Raw material

JSW Cement has the highest waste usage as a % of raw material among the peers mentioned in the table below:

Company	FY22	FY23	FY24	FY25
Ambuja Cements Limited	13.89%	13.80%	29.03%	24.40%
Dalmia Bharat Ltd	39.00%	42.00%	41.00%	40.00%
JK Cement Limited	22.40%	22.70%	21.00%	20.50%
Shree Cement Limited	27.23%	27.96%	24.41%	NA
The India Cements Limited	NA	NA	NA	NA
The Ramco Cements Limited	16.00%	14.00%	16.00%	NA
UltraTech Cement Ltd	19.12%	20.60%	20.84%	NA
Peer-Average	**22.94%**	**23.51%**	**25.38%**	**NA***
JSW Cement	**66.00%**	**75.00%**	**64.08%**	**64.36%**

Source: Company annual reports and publications

**Note: Average of peer set for fiscal 2025 is not meaningful in absence data owing to unavailability of annual report of FY25 on/before 7th July,2025*

Emission intensity of major players

CO2 emissions in kg per tonne of cementitious material:

	FY22			FY23			FY24			FY25		
Company	**Scope 1**	**Scope 2**	**Total**	**Scope 1**	**Scope 2**	**Total**	**Scope 1**	**Scope 2**	**Total**	**Scope 1**	**Scope 2**	**Total**
Ultratech Cement Ltd	582	11	593	557	16	573	556	16	572	545*	-	545 -
Ambuja Cements**	529	22	551	513	21	534	559	22	581	526	17	543
Shree Cement	530	-	-	521	14	535	542	11	553	-	-	-
Dalmia Bharat Ltd	489	20	509	463	23	486	459	15	474	456	14	470
Ramco Cements	-	-	-	-	-	591	-	-	590	-	-	578
JK Cement	535	18	553	520	28	548	518	19	537	517	21	538
The India Cements Limited	-	-	-	-	-		-	-	-	-	-	-
Peer Average			**552**			**545**	**527**	**17**	**551**	**511**	**17**	**535**
JSW Cement	**220**	**46**	**266**	**173**	**33**	**206**	**241**	**29**	**270**	**230**	**28**	**258**
Top global cement companies				**CY 2022**			**CY 2023**			**CY 2024**		
-				**Scope 1**	**Scope 2**	**Total**	**Scope 1**	**Scope 2**	**Total**	**Scope 1**	**Scope 2**	**Total**
Holcim				562	37	599	545	36	581	538	32	570
Heidelberg#				551	-	-	534	41	575	527	44	571
Cemex				562	53	615	541	51	592	526	45	571
CRH				-	-	566	-	-	562	-	-	537

Global Peer Average						**593**			**578**			**562**

Source: Company annual reports
Note: Total emission is addition of Scope 1 and 2
Peer group average of scope 1, scope 2 and Total emissions is average of the reported numbers of the above-mentioned companies
Top global cement companies mentioned above have installed cement capacity of more than 40MTPA
**For Ultratech, FY25 emission is unaudited as reported in Q4FY25's investor presentation*
***For Ambuja, FY22 is January-December 2022 and FY23 is January 2023-March 2024*
#Heidelberg distinguished its market- and location-based Scope 2 emissions for the first time in 2023. Data for prior years is not available.

In fiscals 2022, 2023, 2024 and 2025 JSW's carbon dioxide emission intensity was 266 kg per tonne, 206 kg per tonne, 270 kg per tonne and 258 kg per tonne respectively, which was approximately 52%, 62%, 51% and 52% lower than the average of emissions reported by Indian peer group. JSW Cement's Co2 emission intensity in FY25 was 54% lower compared to average Co2 emission intensity of global cement companies (mentioned in the above table) in 2024.

Clinker ratio of peer companies

Clinker ratio as of FY24 and FY25:

Clinker ratio	FY24	FY25
Ambuja Cements Limited	64.30%	67.00%
Dalmia Bharat Ltd	59.30%	59.70%
JK Cement Limited	63.70%	65.00%
Shree Cement Limited	64.66%	NA
The India Cements Limited	NA	NA
The Ramco Cements Limited	77.00%	NA
UltraTech Cement Ltd	69.60%	NA
JSW Cement Ltd	**46.60%**	**50.13%**
Peer-Average	**66.43%**	**NA***

Source: Company annual reports
**Note: Average of peer set for fiscal 2025 is not meaningful in absence data owing to unavailability of annual report of FY25 on/before 7th July,2025*

JSW's clinker ratio of 46.60% is lower than the average clinker ratio of 66.43% among the peer cement manufacturing companies mentioned in the above table as of fiscal 2024.

Notes

1. **Company set for Peer average: 7 companies accounting for 67-69% of Pan-India capacity as of fiscal 2025**

   Ambuja Cements Limited-(Consolidated), Dalmia Bharat Ltd -(Consolidated), Shree Cement Limited-(Consolidated), UltraTech Cement Ltd -(Consolidated), India Cements Ltd -(Consolidated), J.K.Cement Ltd-(Consolidated), The Ramco Cements Limited-(Consolidated)

2. **Company set for Industry subset average: 18 companies accounting for 78-83% of Pan-India capacity as of fiscal 2025**

Ambuja Cements Limited-(Consolidated), Birla Corporation Ltd -(Consolidated), Dalmia Bharat Ltd -(Consolidated), Deccan Cements Ltd, Heidelberg Cement India Limited, India Cements Ltd -(Consolidated), J.K. Cement Ltd -(Consolidated) , JK Lakshmi Cement Ltd-(Consolidated) , Orient Cement Limited, Prism Johnson Limited-(Consolidated), Sagar Cements Ltd -(Consolidated), Saurashtra Cement Ltd. -(Consolidated), Shree Cement Limited-(Consolidated), Shree Digvijay Cement Co. Ltd. -(Consolidated), Star Cement Limited-(Consolidated), The Ramco Cements Limited-(Consolidated), UltraTech Cement Ltd -(Consolidated), Nuvoco Vistas Corporation Ltd –(Consolidated)

3. **Industry average used for operational benchmarking parameters (Sales volume growth and Capacity growth) includes Pan-India level data. For financial benchmarking parameters (Revenue growth, operating EBITDA per tonne, operating EBITDA margin, RoCE, and Net debt/Operating EBITDA) Industry subset average has been used as defined above.**

4. **All financials have been adjusted based on CRISIL Ratings standards.**

5. **Basic formula used for calculation of various ratios:**

Financials	
Raw material cost	Increase/ Decrease in stock + Consumption of Raw materials: Packing + Traded goods purchased
Operating EBITDA margin	EBITDA / Revenue from operations
PAT margin	PAT / Revenue from operations
Adjusted Net Worth	Shareholders equity - Intangible assets
Total Debt	Noncurrent Liabilities + Short term Liability
Net Debt	Noncurrent Liabilities + Short term Liability - Cash & Bank - Current investments
Ratios	
ROE	PAT/ Shareholder's equity (Average of 2 years)
RoCE	PBIT / (Total debt + Adjusted Networth + Deferred tax liability) (Average of 2 years) PBIT= Profit before tax + Interest expense
Net debt by Operating EBITDA	Net debt / Operating EBITDA
Net debt by Net worth	Net debt/ Adjusted Net worth

13 Regulations and manufacturing process

13.1 Government policies and regulations impacting cement sector

Environmental regulations

In India, environmental issues are handled by the Central Pollution Control Board (CPCB) and the state pollution control boards (SPCBs). To ensure compliance with emission standards, SPCBs undertake routine inspection of cement plants and limestone quarries. In accordance with the actions of the environmental surveillance squad, the CPCB also inspects cement facilities to ensure compliance with emission requirements. The Corporate Responsibility for Environmental Protection (CREP) charter, which promotes corporate responsibility for environmental protection, must be followed by cement companies.

The Indian cement industry needs to comply with the environmental acts and regulations implemented by the Ministry of Environment, Forest and Climate Change. These regulations cover a variety of environmental aspects, including noise pollution, use of forest land and wildlife, generation and discharge of trade effluents, and generation and discharge of air pollutants under the Water (Prevention & Control of Pollution) Act, 1974. The following acts are applicable to the cement industry:

Water (Prevention and Control of Pollution) Cess Act, 1977

Air (Prevention and Control of Pollution) Act, 1981

Environment (Protection) Act, 1986

Hazardous Waste (Management Handling and Transboundary Movement), 2008

Forest (Conservation) Act, 1980

Factories Act, 1948

Wildlife (Protection) Act, 1972

Mines Act, 1952

13.2 Evolution of Cement Industry

With a total capacity of about 668 million tonnes as of 2024-25, India is the world's second largest cement producer in the world after China with ~8% share in global cement production. However, the growth rate of cement was slow around the period after independence due to various factors like low prices, slow growth in additional capacity and rising cost. In 1956, the price and distribution control system was set up to ensure fair prices for both the manufacturers and consumers across the country and to reduce regional imbalances and reach self sufficiency.
With the easing of licensing, price & distribution controls aided rapid capacity expansions, which led to a surplus position. The evolution can be split into three distinct periods:

- Total government control (up to 1982)
- Partial decontrol (1982 to 1989)
- Total decontrol (after 1989)

Total government control (1942-1982)

In this phase, the government exercised strict control by fixing production limits, prices and distribution channels to ensure fair prices for consumers and commensurate remuneration for producers across the country. The price set was based on the cost of production of cement throughout the country plus a marginal profit. The price also considered freight cost component that was averaged for the whole of India. However, producers lacked incentives to minimise costs, which drove up the average cost of production.

Partial government decontrol (1982-1989)

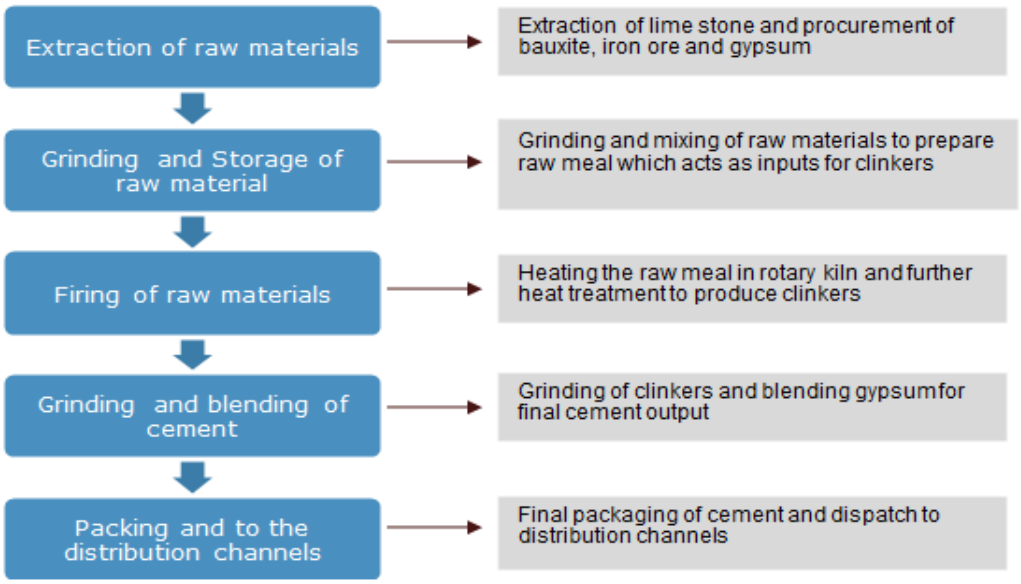
Recognising the uniform price system's inefficiencies, the government introduced a system of partial decontrol in 1982. While existing producers had to sell 66.4 per cent of their produce to the government at a ceiling price, new and sick units had to sell half of the output. The balance could be sold in the open market. While producers earned a stable profit on the levy sale to the government, gains from open market sales decreased, as market supply increased, which heightened competition. Thus, the government gradually reduced the levy quota and hiked retention prices to boost profitability from open-market sales.

Total decontrol

In 1989, the government completely removed price and distribution controls. A subsidy scheme replaced the freight pooling system to ensure availability of cement at reasonable prices in remote regions. In 1991, Economic liberalization policies opened the Indian economy, leading to increased foreign investment in various sectors, including cement. In 1997, The Indian government allowed 100% foreign direct investment (FDI) in the cement sector, which opened up opportunities for the industry and was marked by huge investments.

13.3 Cement production process

Stages of cement manufacturing



Source: Crisil intelligence, Industry

Key inputs

Limestone is a key input in clinker production. Additives such as bauxite, iron ore and gypsum are added to it 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 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

In limestone benching, the quality of the input is assessed and compared with benchmarks before the additives are mixed. The benched limestone is then drilled and blasted into small pieces. Blasting takes place in two stages - primary and secondary - wherein if the limestone pieces are not small enough in the first stage, they are further broken down in the second stage. After blasting, the limestone is extracted and transported for crushing.

Step 2: Crushing

Here the limestone is crushed to make particles suitable for blending and storage. After this, all raw materials including additives are ground. The fineness depends on the process requirement and the grinding mill used. Generally, crushing is done in two stages, in a primary crusher and a secondary crusher. The primary crusher is either a mobile and self-propelled unit operating near the quarry face, or a semi-mobile unit moved at infrequent intervals, or a static unit. The secondary crusher is static unit and is used if required.

Step 3: Pre-homogeneous stage

In this stage, crushed limestone is packed and transported for stacking in piles. The stacked limestone is then reclaimed by a reclaimer which transports the limestone to a hopper, where additives like silica, alumina, and iron ore are added to make the mixture uniform, so as to reduce chemical variations in limestone.

Step 4: Raw mill grinding

Here, the raw meal (comprising limestone, clay and additives) is finely ground (so that it reacts fully) before being burnt in the kiln. There are two types of mills: while vertical roller mills are used for huge capacities, ball roller mills are used for smaller plants. Choice of the mill is also influenced by the type of raw material, power consumed and project outlay. Modern mills use separators/classifiers, which separate the fine product and return the coarser particles to the grinder.

Step 5: Blending and storage

The raw meal/feed is stored in the first silo while continuously blended in the second silo. The feed could also be simultaneously blended and stored in one large silo, wherein blending is done through a series of orifices in the base, with limited fluidisation.

Step 6: Pre-heating stage and kiln

After being blended, the raw meal is heated in a preheater followed by a rotary kiln, ensure better product quality. Preheater consists of vertical cyclone chambers where the raw material passes through and comes in contact with hot gases from kiln.

The shape and size of the kiln is also central to cement-making. The kiln is lined with refractory bricks for insulation throughout high-heat zones. The kiln is cylindrical and slightly inclined horizontally (by 3-4 degrees), and completes 2-4 revolutions per minute. While earlier, alumina refractory bricks were used, mostly in the pre-heating stage, light-weight, high-strength variants are being used now. Analog instrumentation panels are being replaced by digital ones. The introduction of microprocessors has helped cement makers adapt to a slew of automatic control processes in the plant.

The solid material passes down the opposite to the flame. Gas, oil, or pulverised coal is used to ignite the flame at the lower or front-end of the kiln. The formation of clinker involves multiple processes, beginning with the evaporation of water, thermal decomposition of clay minerals (at 300-650 degree Celsius), calcite formation (at 800-950 degree Celsius), liquid formation (at about 1,250 degree Celsius), and finally, formation of clinker (at 1,400-1,450 degree Celsius).

The clinker then passes into a cooler, before being ground further. The heat is reclaimed and recycled to the kiln as secondary combustion air. Introduction of precalcination has increased clinker output by 2-2.5 times and aided the use of low-calorific value coal, as well as various agricultural and industrial combustible wastes. Systems have been developed to use fuels like lignite and petcoke and other alternatives. Single kilns capable of producing more than 6000 tonnes per day capacity have already been installed.

Stage 2: Clinker to cement

Step 1: Grinding and blending

Cement is produced in a separate grinding mill by grinding cooled clinker with gypsum. Depending upon the grade and type of cement being manufactured ,blast-furnace slag, fly ash, natural pozzolanas, etc, or limestone are also added to the clinker. The Mixture of clinker, gypsum and Fly Ash/ Slag is then ground into a fine and homogenous powder in a ball mill/vertical roller mill/roller press. The cement is stored in silos before being dispatched either in bulk or as bags.

Grinding

Moving over from ball mills (open/closed circuit systems), there are various upgraded technologies that have been developed. Closed-circuit systems: Cement plants use a closed-circuit system, where material from the grinding mill is taken to an air separator or a classifier. Here, based on the particle's size, the mass is separated into 'fine product' stream and a 'coarse reject' stream. The 'coarse reject' stream is then reground. The diameter of the mill is up to 4.5 metres, with a length to diameter (L/D) ratio of around 3. The 'coarse reject' stream is recirculated at a rate like that of the clinker feed.

The closed-circuit grinding system is more efficient than the open circuit system, as the rejected particles can be re-circulated, and power consumption is also lower (especially for higher compression cement). However, for making ordinary portland cement (OPC), energy savings are lesser as the clinker percentage is higher.

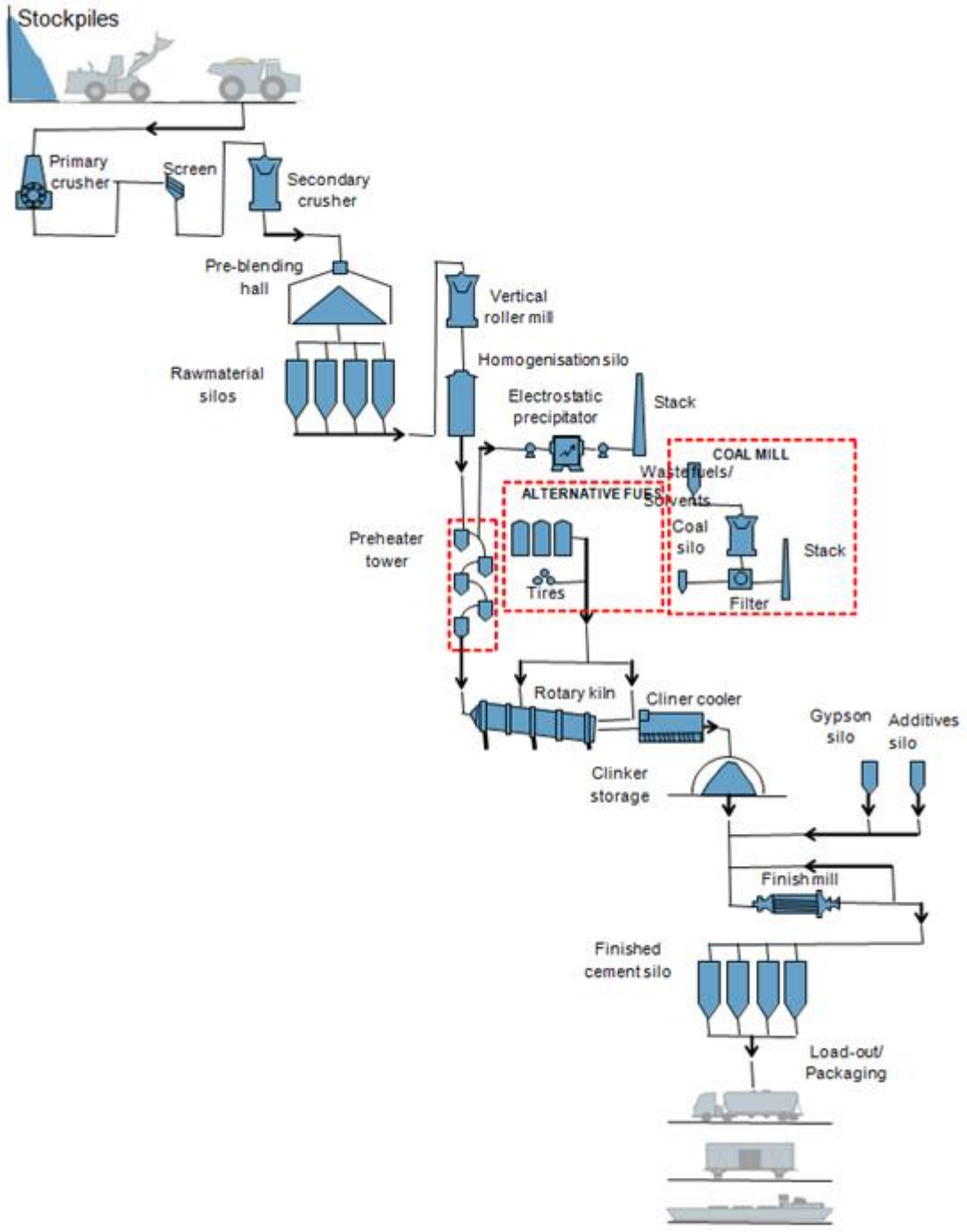
Thus, closed-circuit grinding systems consume 35-40 kWh/tonne. In case higher compression cement variants which harden rapidly such as the OPC-43 and OPC-53 grades, 3-5 per cent of energy is saved, as compared to the open circuit grinding system, where the energy consumption is 55 kWh/tonne.

Vertical Roller Mill (VRM): This is another breakthrough in the grinding process. Besides a higher drying capacity, the VRM consumes 20-30 per cent lesser power as compared to ball mills.

High Pressure Grinding Rolls (HPGRs): HPGRs operate in different modes: open circuit, pre-treatment with circulation, pre-treatment with de-agglomeration & recirculation and closed circuit. Such installations could increase capacity by up to 200 per cent and consume 30-40 per cent less power, compared with ball mills.

Horizontal roller mill: This can produce uniform raw meal and has advantages in processing raw materials containing higher percentage of quartz. However, this technology system is yet to be adopted in India.

Cement manufacturing process



Source: Crisil intelligence, Industry

Heat treatment processes

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

Dry process: This 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 this process, the kiln feed has a moisture content of 30-40% and deflocculates (for reducing viscosity) to enable pumping.

Semi-wet process: In this process, the slurry is dehydrated in a filter press to form a cake with moisture content of ~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%.

From cement storage silos, cement is extracted and conveyed to packaging machines. Through a process of microprocessor-based filling and weighing, the cement is packed in polypropylene or laminated bags, maintaining a uniform bag weight of 50 kgs.

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 waste, waste oils, animal meal and rice husk. These are being tested and used based on the manufacturing method, cost-effectiveness and availability.

13.4 Threats and Challenges in Cement Industry

India's cement industry stands as a formidable force, holding the position of the world's second-largest cement producer. However, the industry in India faces several challenges, including environmental concerns, land acquisition, logistics issues, etc. Major risks faced by the industry are:

Environmental concerns

The cement industry is identified as one of the 17 categories of highly polluting industries as per Central Pollution Control Board (CPCB). Process of calcination is the largest CO_2 contributor in cement manufacturing which accounts for ~60% followed by fuel combustion (30%) and power and other logistics (10%). In cement production, large amounts of CO_2 are emitted, about 900kg-1 tonne of CO_2 per tonne of clinker. Share of CO_2 in greenhouse gas emissions is the highest, accounting for close to 98-99% of the total emission while that of NOx and Methane remains negligible. However, with higher focus towards sustainability and net-zero emissions, the government can play a pivotal role in facilitating the industry's transition towards greener practices by implementing green public procurement policies. To maintain pace with sustainability goals, players are focusing on alternative energy/fuel consumption, usage of renewable sources and increasing share of blended cement to limit clinker usage.

Volatility of input costs

Power and fuel costs account for a large chunk of cost of sales (~26% as of fiscal 2025). Imported coal and pet coke are the key fuels used in captive power plant and clinkerisation kiln, respectively. Prices of these commodities are governed by global demand and supply and are volatile in nature. After soaring high in fiscal 2023, energy prices have dwindled by

17-19% in fiscal 2024 and further by 14-16% in fiscal 2025 on-year basis in line with correction in crude oil prices post Rusia-Ukraine conflict. However, any further geo-political tension impacting crude/coal prices, to remain key monitorable.

Increased competition

The Indian cement industry is fragmented, with the presence of few large players and many medium and small players. Players can be broadly classified as pan-India, regional and standalone. During last decade, a rush of expansions, mergers, acquisitions and consolidations has reshaped the industry. Large acquisitions in the industry had been in the form of foreign players acquiring domestic companies followed by M&A between domestic players. Taking into account the capex plans of the large players, the cement industry is on the road to becoming more competitive, with more consolidations expected. Indeed, while most of the stressed assets have been acquired over the past five years, Crisil intelligence anticipates an acceleration in consolidation where other relatively weak mid-size and small assets will be the focus.

Alternatives to cement

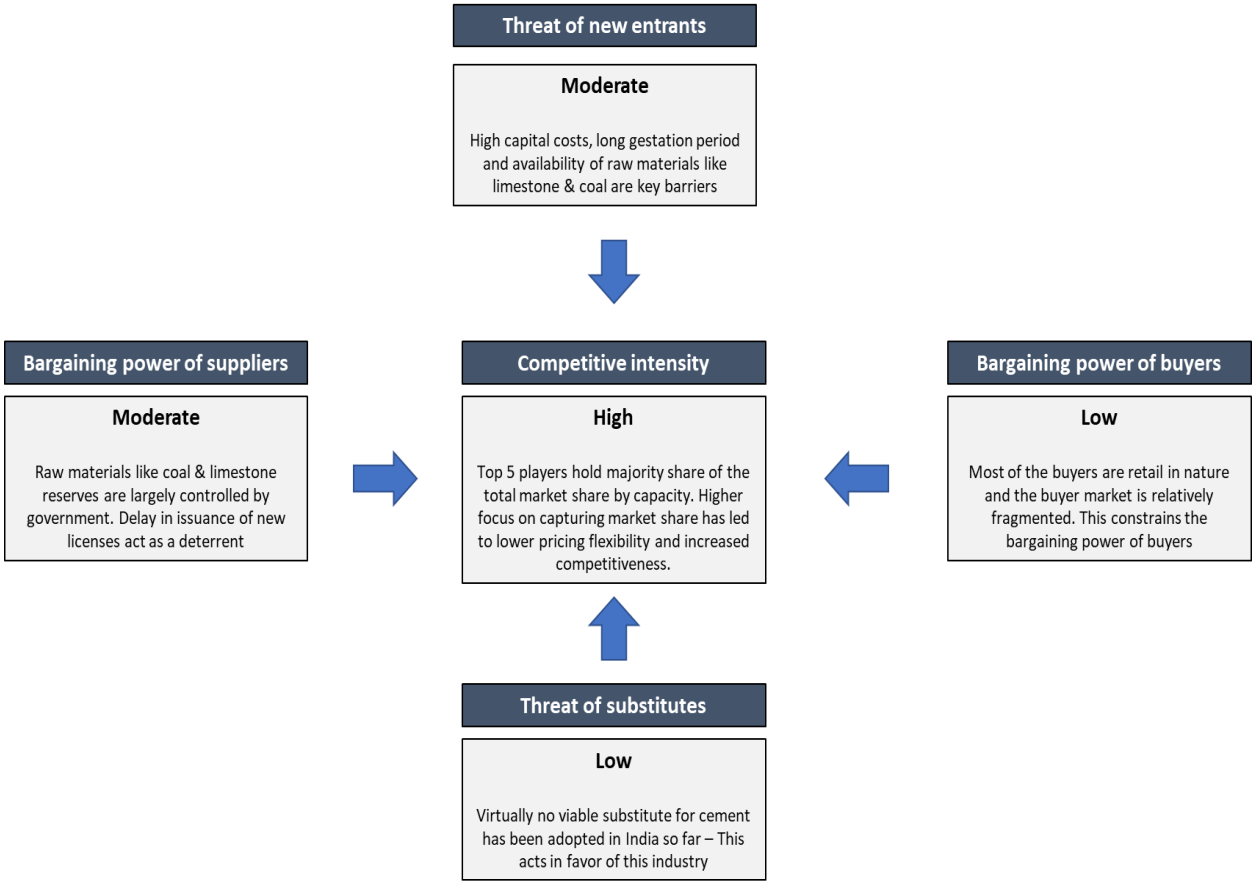
There are several alternatives to traditional Portland cement that can help reduce the environmental impact of the cement industry. While such technologies/products are at nascent stage in India, adoption of the same has started globally. It includes:

Geopolymers - Geopolymers are made from fly ash, waste product from coal-fired power plants, and alkaline activators such as sodium hydroxide or potassium hydroxide. Geopolymers have been shown to have similar strength and durability to Portland cement, but they have a much lower carbon footprint.

Limestone Calcined Clay Cement (LC3) – it is a new type of cement that is based on a blend of limestone and calcined clay. LC3 can reduce CO2 emissions by up to 40%, is made using limestone and low-grade clays, which are available in abundant quantities, is cost effective and does not require capital intensive modifications to existing cement plants.

Calcium sulfoaluminate (CSA) cement: CSA cement is made from calcium sulfate and aluminum silicate. It has a lower clinker content than Portland cement, which means that it produces less CO2 emissions. CSA cement is also more resistant to sulfate attack, making it a good choice for use in applications where concrete is exposed to seawater or other aggressive chemicals.

Porter's five force analysis



Source: Crisil intelligence, Industry

14 Annexure

14.1 List of some of the certifications that allow the use of GGBS

Sr. no	Relevant certification
1	IS 456-2000 for Plain and Reinforced Concrete Code of Practice
2	Ministry of Railways - Guidelines for the Use of High Performance Concrete in Bridges (RDSO)
3	Municipal Corporation of Greater Mumbai (Various road tenders)
4	CPWD specifications (Volume 1) – 2009
5	Maha Metro – UFC-01: Design of Construction of Underground Stations at Shivaji Nagar and Civil Court and Associated Tunnels
6	Department of Atomic Energy -Specification for Civil Works (2015)
7	Indian Roads Congress (IRC :15-2017)
8	Indian Road Congress – Guidelines for Use of High Performance Concrete in Bridges (IRC: SP: 70-2005)

Source: Industry, Crisil Intelligence

14.2 List of some of the projects where use of GGBS has been approved in India

Sr. no	GGBS approvals in various projects
1	Ahmedabad Metro Rail Corporation Limited
2	Bangalore Metro Rail Corporation Limited
3	Delhi Metro Rail Corporation Limited
4	Pune Metro Rail Maha Metro
5	Mumbai Metro Rail Corporation Line #3
6	National Highway Authority Of India
7	Proposed NH66 – Indapur, Maharashtra to Zarap, Maharashtra (Mumbai Goa highway)
8	Proposed NH17 – Panjim, Goa to Mangalore, Karnataka
9	NH75 - Addahole to Bantawal
10	NH4b - JNPT phase #2 to Kalamboli - Ashoka Buildcon limited
11	NH4b - gavan phata interchange - Kumar JM Mhatre JV
12	NH65/NH50/NH52/NH52k — Latur, Nilanga
13	NH211 – Solapur, Mahrashtra to Yedshi, Maharashtra
14	NH266 – Tasgaon, Maharashtra to Shirdhon, Maharashtra
15	NH75 – Hassan, Karnataka to Maranahally, Karnataka
16	NH166 6 NH166e - Nagaj to Path to Mulchandi
17	Maharashtra State Road Development Corporation Limited
18	Nagpur Mumbai Samruddhi Expressway
19	Mangaon, Maharashtra to Dighi port, Maharashtra

Sr. no	GGBS approvals in various projects
20	Tala, Maharashtra to Agardanda, Maharashtra
21	NH548C Satara, Maharashtra to Mhaswad, Maharashtra
22	APTIDCO & APRCDA Andhra Pradesh
23	Bengaluru International Airport
24	PWD Goa-Zuari river bridge project Goa
25	GSIDC Goa - Mandovi river cable stayed bridge project Goa
26	Dedicated Freight Corridor Corporation Of India Limited
27	Konkan Railway Corporation Limited
28	Mumbai Coastal Road South
29	Vizhinjam International Seaport
30	Mumbai Pune corridor - project for capacity augmentation
31	Bharat Ratna Babasaheb Ambedkar Memorial, Mumbai
32	Director General of Naval Ports (Naval Dockyard)
33	Shriram Janm Bhoomi Teertha Kshetra, Ayodhya
34	3rd Vashi creek bridge- Thane creek bridge TCB3
35	Mumbai Elevated Metro Line 2B
36	Cisco Mass Housing, Navi Mumbai
37	NH361- four lining of choker aloha section of Latur Nanded road
38	NH6 four lining work of package 4, section Amravati Chikghli section
39	Surat Metro Rail Corporation

Source: JSW Cement, Crisil Intelligence

14.3 List of blast furnace units in India

BF Sr. no.	Plant name	Location	BF capacity (tonnes)
BF 1	Jayaswals Neco Industries Ltd.	Raipur, Chhattisgarh	650000
BF 2	JSW Ispat Special Products Limited	Raigarh, Chhatisgarh	612500
BF 3	Orissa Metaliks Private Limited	Kharagpur, West Bengal	390000
BF 4	Atibir Industries Co. Ltd (Unit II)	Giridh, Jharkhand	600000
BF 5	Tata Steel Long Products Limited	Jamshedpur, Jharkhand	650000
BF 6	Tata Steel Ltd	Jamshedpur, Jharkhand	9600000
BF 7	JSW Steel Ltd	Vijaynagar, Karnataka	12000000
BF 8	Bhushan Power And Steel Ltd	Sambalpur, Odisha	2500000
BF 9	Shyam Metalics	Bardhaman, West Bengal	60000
BF 10	Electrotherm (India) Limited	Kutch, Gujarat	277200
BF 11	Rashmi Metaliks Ltd	West Medinipur, West Bengal	170333
BF 12	Jindal Steel And Power Ltd	Raigarh, Chhattisgarh	3050000

BF Sr. no.	Plant name	Location	BF capacity (tonnes)
BF 13	Jai Balaji Industries Limited (Unit-IV)	Bardhaman, West Bengal	80500
BF 14	SMC Power Generation Limited (Unit II)	Jharsuguda, Odisha	120000
BF 15	Arcelor Mittal Nippon Steel India Ltd	Surat, Gujarat	3490000
BF 16	Sree Metaliks Limited	Kendujhar, Odisha	36000
BF 17	JSW Steel Ltd	Dolvi, Maharashtra	8000000
BF 18	Sunflag Iron And Steel Co Ltd.	Bhandara, Maharashtra	600000
BF 19	Jindal Steel And Power Ltd	Angul, Odisha	3200000
BF 20	Tata Steel	Meramandali, Odisha	3919000
BF 21	Jai Balaji Industries Ltd. – I	Bardhaman, West Bengal	30118
BF 22	Balmukund Sponge And Iron Pvt.Ltd	Giridh, Jharkhand	39600
BF 23	Arjas Steel Pvt Ltd (Gerdau Steel)	Anantapur, Andhra Pradesh	300000
BF 24	Sri Kalahasthi Pipes Limited (Lanco)	Chittoor, Andhra Pradesh	300000
BF 25	Vizag Steel Plant	Visakhapatnam, Andhra Pradesh	7300000
BF 26	SAIL - Bhilai Steel Plant	Bhilai, Chhattisgarh	7500000
BF 27	Vedanta Limited	Ponda, Goa	625000
BF 28	Electro Steels Ltd	Bokaro, Jharkhand	1450000
BF 29	Narsingh Ispat Ltd	Seraikela, Jharkhand	163875
BF 30	SAIL - Bokaro Steel Plant	Bokaro, Jharkhand	4360000
BF 31	Swati Concast And Power Pvt Ltd	Giridh, Jharkhand	72000
BF 32	Kalyani Steels Ltd	Koppal, Karnataka	480000
BF 33	Kirloskar Ferrous Inds Ltd	Koppal, Karnataka	385000
BF 34	SAIL - Visveswaraya Iron And Steel Ltd	Shimoga, Karnataka	118000
BF 35	SLR Metaliks Ltd	Bellary, Karnataka	240000
BF 36	Evonith Metallics Ltd	Wardha, Maharashtra	600000
BF 37	SAIL - Rourkela Steel Plant	Rourkela, Odisha	4400000
BF 38	Tata Steel Ltd	Kalinganagar, Odisha	3000000
BF 39	VISA Steel Ltd	Jajpur, Odisha	225000
BF 40	JSW Steel Ltd	Salem, Tamil Nadu	1000000
BF 41	Ankit Metal And Power Ltd.	Bankura, West Bengal	12325
BF 42	Electrosteel Castings Limited	Khardah, West Bengal	425000
BF 43	Jai Balaji Industries Ltd (Unit III)	Bardhaman, West Bengal	428750
BF 44	KIC Metaliks Ltd.	Bardhaman, West Bengal	265000
BF 45	Tata Metaliks Ltd	Kharagpur, West Bengal	600000
BF 46	Neo Metaliks Ltd	Durgapur, West Bengal	188000

BF Sr. no.	Plant name	Location	BF capacity (tonnes)
BF 47	SAIL - Durgapur Steel Plant	Durgapur, West Bengal	1802000
BF 48	SAIL - IISCO Steel Plant	Burnpur, West Bengal	2500000
BF 49	Suraj Products Ltd	Sundergarh, Odisha	60000
BF 50	Ispat Damodar Ltd	Purulia, West Bengal	60000

Source: JPC, Crisil Intelligence

14.4 List of GGBS manufacturers in India

GGBS Sr. no.	Player name	Location
GGBS 1	JSW Cement Ltd	Vijaynagar, Karnataka
GGBS 2	JSW Cement Ltd	Dolvi, Maharashtra
GGBS 3	JSW Cement Ltd	Nandyal, Andhra Pradesh
GGBS 4	JSW Cement Ltd	Salem, Tamilnadu
GGBS 5	JSW Cement Ltd	Jajpur, Odisha
GGBS 6	JSW Cement Ltd	Salboni, West Bengal
GGBS 7	Sri Balaha Chemicals Pvt Ltd	Hindupur, Andhra Pradesh
GGBS 8	Sagar Cements Limited	Vishakhapatnam, Andhra Pradesh
GGBS 9	My Home Industries Pvt Ltd	Vishakhapatnam, Andhra Pradesh
GGBS 10	Chettinad Cement Corporation Pvt Ltd	Vijaywada, Andhra Pradesh
GGBS 11	Ultrafine Minerals & Admixtures	Nagpur, Maharashtra
GGBS 12	Suyog Elements India Pvt Ltd	Bharuch, Gujrat
GGBS 13	Pyramid Industries	Rajkot, Gujrat
GGBS 14	STP & Sons	Nagpur, Maharashtra

Source: Industry, Crisil Intelligence

14.5 Use of GGBS in overseas projects

Name of the project	Country	GGBS used
Spinnaker Tower	UK	50%
Wales Millennium Center	UK	55%
Persistence Works	UK	-
Clyde Wind Farm	UK	16,000 Tonnes
Blackpool Sea Defense	UK	50%
Second Severn Crossing road bridge	UK	70%
Liquefied natural gas (LNG) storage tanks at Milford Haven	UK	65%
The Welcome Trust Millennium Building	UK	70%
Queen Elizabeth II Bridge	UK	70%
Twenty Two Building	UK	68%
ORTUS Centre	UK	50%

Name of the project	Country	GGBS used
20 Fenchurch St - Walkie Talkie	UK	50%
Clackmannanshire Bridge	UK	70%

Source: Industry, Crisil Intelligence

14.6 GGBS manufacturers: Overseas

Name	Location
Heidelberg Materials UK (earlier known as Hanson UK)	UK
Boral Limited	Australia
Lafarge Emirates Cement LLC	UAE
Readymix Gulf LLC	UAE
Aggregate Industries	UK
JFE Mineral & Alloy Company Ltd	Japan
LKAB Minerals	Sweden

Source: Industry, Crisil Intelligence

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