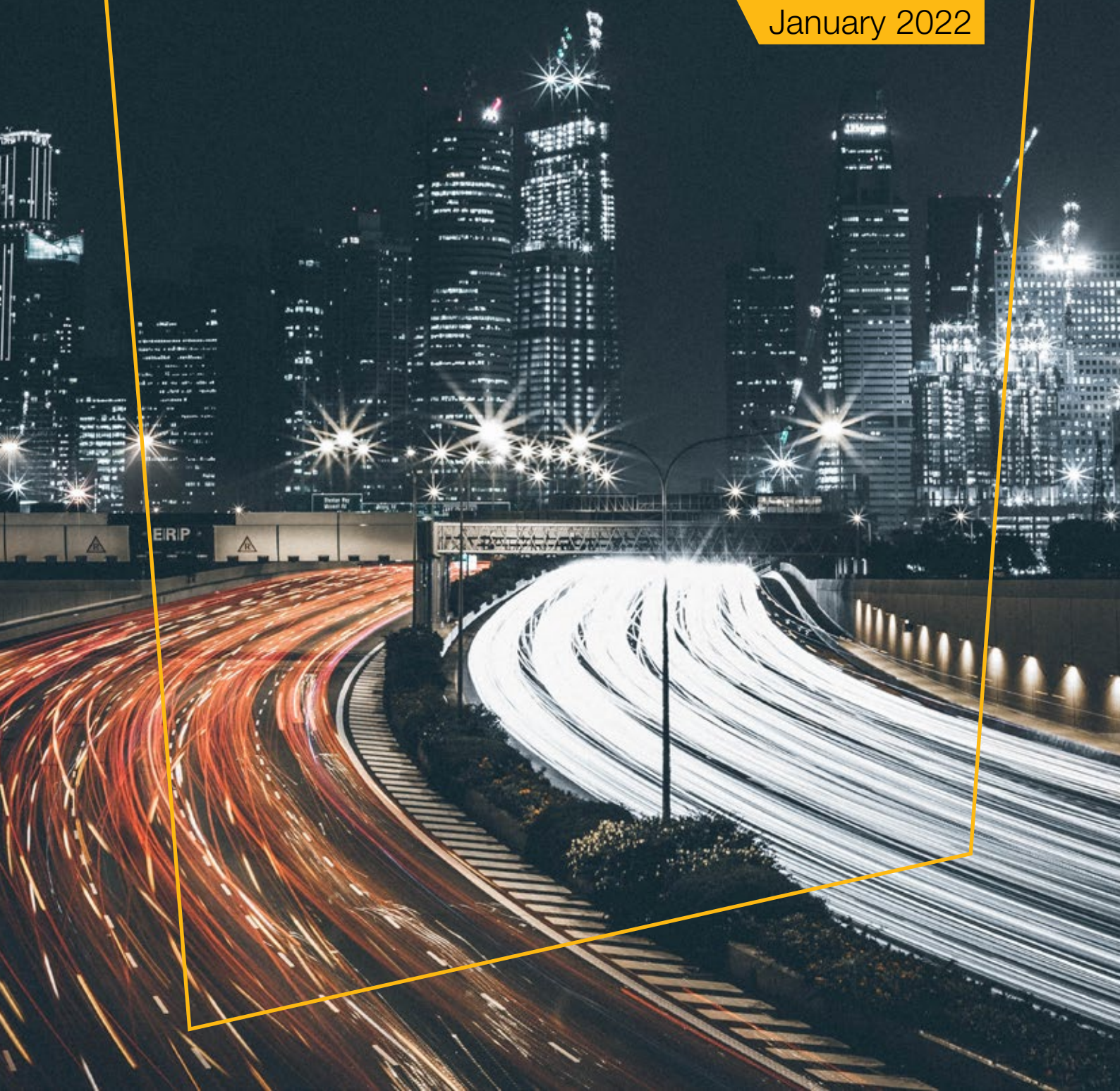


gleeds

# Indian Construction Costs A Biannual Review

January 2022



## Note from Executive Director

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The year 2021 was a year of recovery, despite the constant fight against the COVID-19 and its variants, threatening to halt many businesses. The discovery of the vaccine and the fervent drive to vaccinate all that followed brought the world out of an otherwise crashing economy. H2 2021, proved particularly uplifting with businesses commencing to moving in a pre-COVID-19 pace.

The construction industry in year 2021 was a great contributor to the country's economy showing a promising recovery. The rapid investment in infrastructure across the country, along with other government funded projects such as affordable housing and promise of more investment in the pharmaceutical area has allowed the construction industry to sustain some trying times.

Macroeconomic easing adopted by Governments across the world along with disruption in the supply chain has led to phenomenal inflation in material price. The dynamic material cost trends in the past year have been a matter of concern for all stakeholders, At the same time, industry has been resilient with strong supply chain. With the ongoing rise in demand, production units are now busier than ever, to fulfil the market demands. The industry now has understood to live with the Virus and it's variants by adapting agile methods in production, shipping and reaching to end consumers

With price increase, more focus is now being given to modern method of construction including precast, prefabrications through off site construction, 3D Printing amongst others. Adaptation of digital technologies through AI / ML which assists in optimizing workflow at site, managing delivery, reducing rework and wastage would only bring in more efficiency in the construction projects which may offset increased material price in some manner. Post COP 26 and declarations by various governments and private organizations has now put embodied carbon at the centre stage of project delivery. With pandemic reminding everyone about importance of sustainability principals, the coming decade will usher push towards Net Zero Construction and operational carbon. Calculation of Embodied carbon in both construction and operations, life cycle cost analytics is becoming vital in Client decision-making process.

Gleeds India Insights & Analytics brings to the industry the H2 2021 - Biannual on construction costs. The team has been closely monitoring the dynamics of the material, labour and construction costs and trends sector wise based on our extensive experience of being part of more than 348 million Sq. feet of historic and current projects in India. Through this report, the reader will have a comprehensive overview of the historical industry trends as well as the expectation for 2022. I am glad to know that our commitment has been duly recognised by our clients, industry partners and has been referenced to make informed decisions.

On behalf of Gleeds I&A India, I sincerely hope this report will be insightful and add value to the outlook of the industry. We look forward to connecting with you to understand how best Gleeds can assist in your upcoming developments.



Vishal Shah, MRICS  
Executive Director

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## Stepping into 2022

While 2021 was a roller coaster ride, with the year starting with the new variant attack, the impact of 2nd wave of COVID-19, aggressive vaccinations and then the opening of businesses as usual, the construction industry grew by 68.3 percent year on year (Y-o-Y) in Q2 2021.

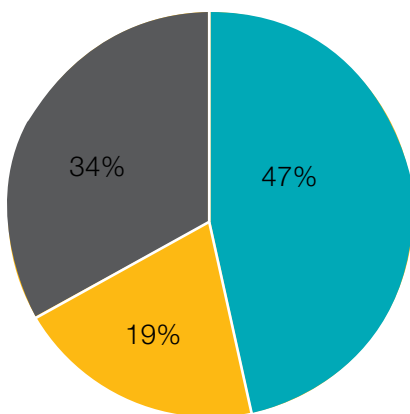
The Government's increased focus on infrastructure projects and the smart recovery of demand expected for residential and commercial segments, the construction sector is expected to grow in the double digits at 10.7 percent in FY22, rebounding from a contraction of 8.6 percent the previous year. Additionally, India entered a new quadrilateral economic forum to focus on infrastructure development projects in the region and strengthen bilateral co-operation.

The third pandemic wave and Omicron variant have increased caution around the world, but policy and business responses are expected to be nuanced this time, with no immediate threats anticipated like the first two pandemic waves.

As part of the Industry outreach, Gleeds India I&A carried out a survey within the construction industry to understand the 'at ground' reality. We had 160 respondents.

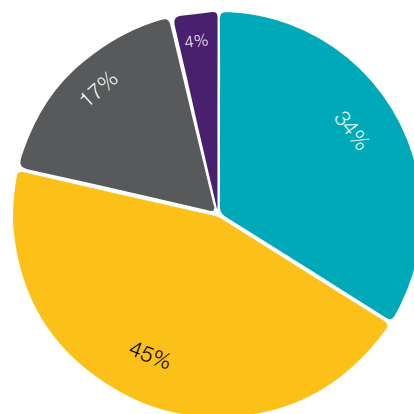
When asked if the Omicron variant is seen to affect the industry, 48% responded, yes. This is far lower compared to Gleeds' previous surveys during the 2nd wave of COVID-19

**Graph 1: Will the Omicron variant affect the Industry?**



- Yes
- No
- May be

**Graph 2: Construction market outlook**




- Resilient and will bounce back to pre covid
- Alert but stable
- Unstable, will need another year to recover
- Other

Based on vaccinations and booster doses and the supposedly less harmful variant working its way around, 78% of the respondents feel that the construction industry is resilient and will be stable for the first half of 2022 but at the same time being alert for what's coming.



# Managing project delivery in an unpredictable market



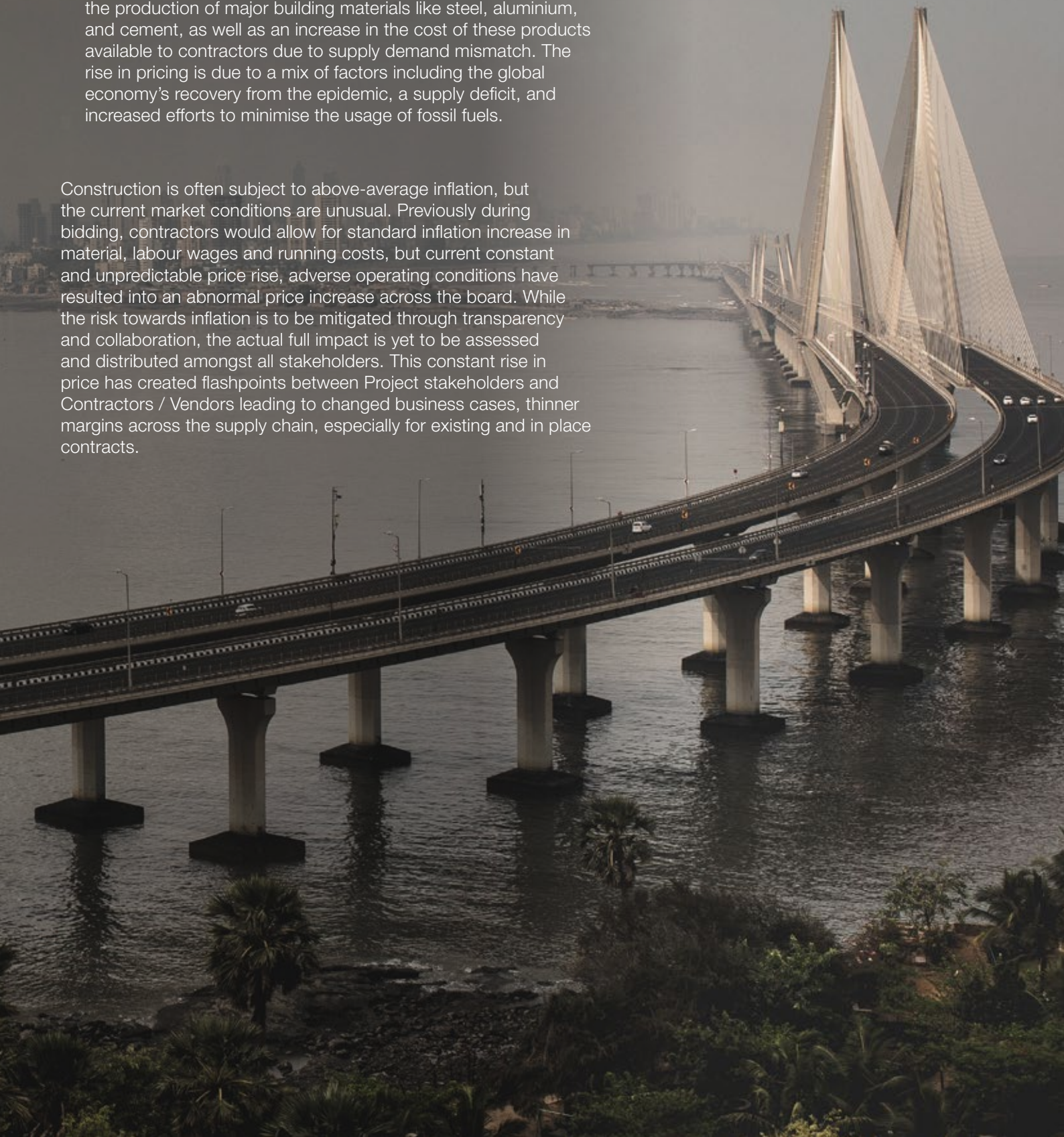
Inflation is regarded as a key determinant of future economic conditions, with each country's principle goal being to achieve long-term economic growth. The construction industry is accustomed to operating in an inflationary environment. Most of this inflation has been caused by rising demand. Domestic versus international sourcing is an important consideration. Some of the main causes of inflation are mentioned below

- 1. Demand:** Inflation results when demand exceeds supply in an economy. Prices rise when the economy grows faster than the economy's ability to offer products and services demanded by consumers. The result is a combination of a simultaneous global increase in demand for materials like Steel, Aluminium, Copper, PVC, Shipping to name a few. Due to the pandemic, there was a huge widening of the output gap. Demand patterns are still unclear and adding a large infrastructure investment to the mix is likely to exacerbate inflationary pressures.
- 2. Supply Disruption:** Supply is pressured in a rising market. With the pandemic outbreak, the forced reduction in production impacted the supply chain worldwide. With the 'on and off' demand, some production units were shut down while others work at a reduced capacity, pushing the rise button on inflation. This can be addressed if the manufacturing output increases to bring down costs or productivity rises.
- 3. Unforeseen events:** The Suez Canal blockage, was a large supply-chain incident with adverse consequences. In the present, where the movement of goods is vital, any delays result in exorbitant cost impacts. Weather changes, constant revisions of border control, quarantine periods at each stop all add onto delays and costs. Such events have certainly propelled inflation and will continue to do so until stabilised by robust policies.
- 4. Raw Materials:** Rising costs in raw materials and the ready availability has significantly altered the inflation trend. Prices are influenced by supply and demand and the global economy. The surge in prices of key construction raw materials like steel and cement, copper, PVC, for example, have all seen a record price increase this year. The supercycle rise in material prices has contributed to a more than 15% to 20% increase in hard construction costs for developers.
- 5. Freight cost:** Freight movement and costs were predictable until hit by the pandemic. The conservative production of fuel and the inconsistent demand over the last two years has inflated travel cost. With the lack of availability of local products and the constant demand for overseas goods, the stock is forced to stay at the site in warehouses, which seem to constantly push the cost of goods up.

**6. Rising labour wage:** The overall increase in the cost of products and services has a cyclic effect on pay increases; as the total cost of goods and services rises, higher wages will be required to compensate for rising consumer goods prices. The reduced productivity rate has squeezed profit margins and the increase in labour wages is forcing change in existing project models.

**7. Fuel Costs:** Increased fuel prices have resulted in a decrease in the production of major building materials like steel, aluminium, and cement, as well as an increase in the cost of these products available to contractors due to supply demand mismatch. The rise in pricing is due to a mix of factors including the global economy's recovery from the epidemic, a supply deficit, and increased efforts to minimise the usage of fossil fuels.

Construction is often subject to above-average inflation, but the current market conditions are unusual. Previously during bidding, contractors would allow for standard inflation increase in material, labour wages and running costs, but current constant and unpredictable price rise, adverse operating conditions have resulted into an abnormal price increase across the board. While the risk towards inflation is to be mitigated through transparency and collaboration, the actual full impact is yet to be assessed and distributed amongst all stakeholders. This constant rise in price has created flashpoints between Project stakeholders and Contractors / Vendors leading to changed business cases, thinner margins across the supply chain, especially for existing and in place contracts.



# Economic Outlook

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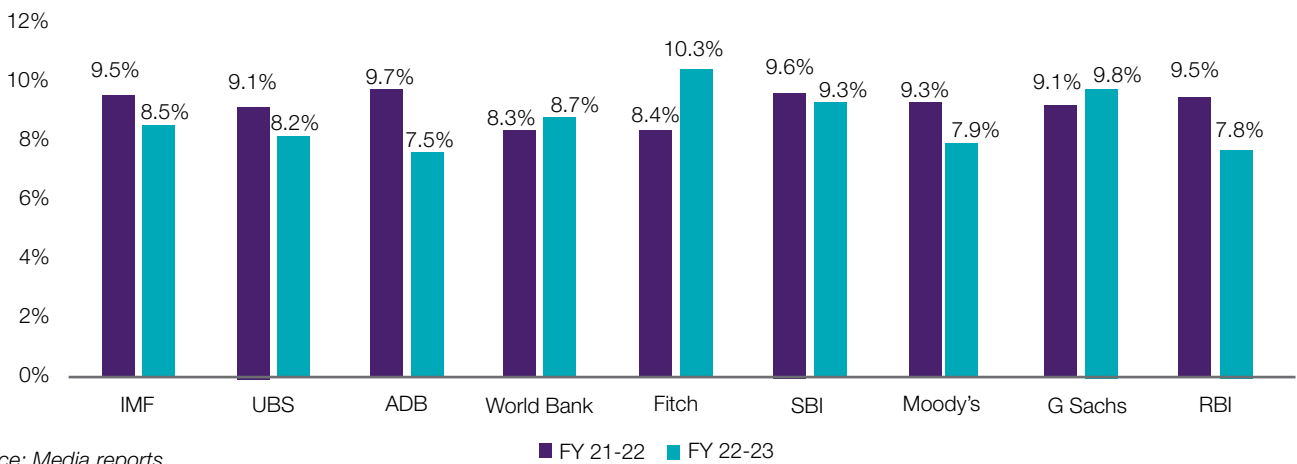




## Gross Domestic Product (GDP):

In H2 2021, the recovery has gained traction, with GDP expected to grow at 9.2 percent in fiscal year (FY) 2021-22. The overall demand scenario seems to be improving which is implied by various high-frequency economic indicators. India's GDP plunged by a record -7.3% in FY21 but is expected to grow at a strong 8-8.5% in FY22 on the back of latent and delayed demand. The new Omicron COVID variant has raised some doubts about a possible third wave. However, increased vaccination coverage in India and around the world may help to mitigate the impact if another wave occurs.

Graph 3: Gross Domestic Product (GDP).



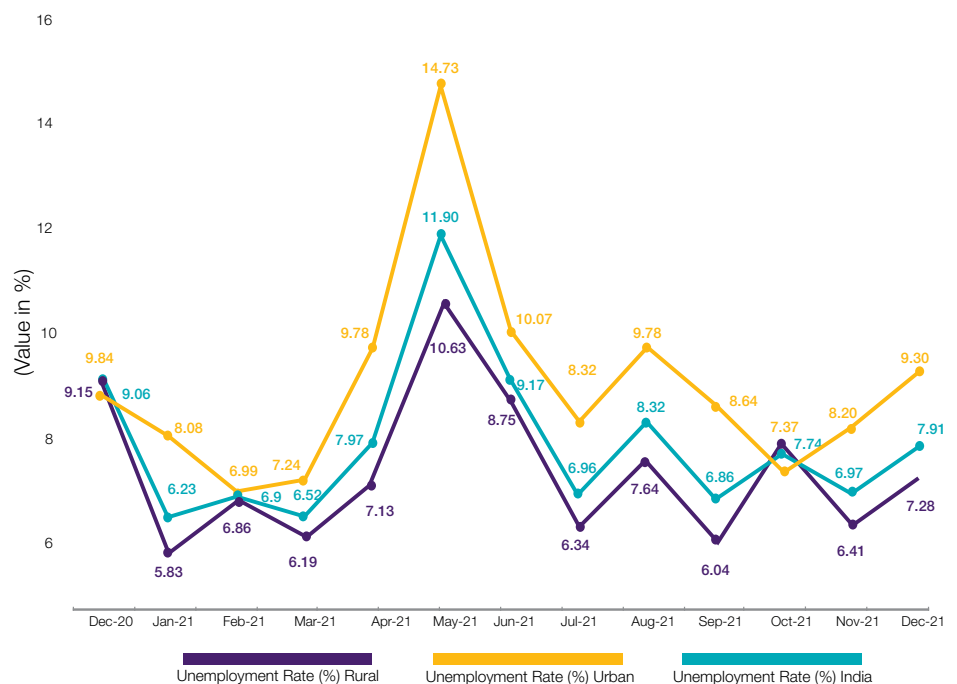
Source: Media reports

## Employment

India's unemployment rate is at an all-time high if one discounts the drastic change that happened during COVID 19 1st and 2nd wave. It increased to 7.91 per cent in December 2021, up from 6.3 per cent in 2018-2019 and 4.7 per cent in 2017-18, when the trend began to shift, indicating that this is not just attributable to COVID. It has risen to 7.28 per cent in rural regions, up from 5.81 percent previously. India's Labour Force Participation (LPR) is low in comparison to other rising countries. It was 46% in 2020, according to the World Bank, and has not improved since then. The large-scale deployment of the public sector infrastructure along with private investment push will only assist in the improvement of an employment situation.

Source: CMIE

Graph 4: Unemployment Rate in India



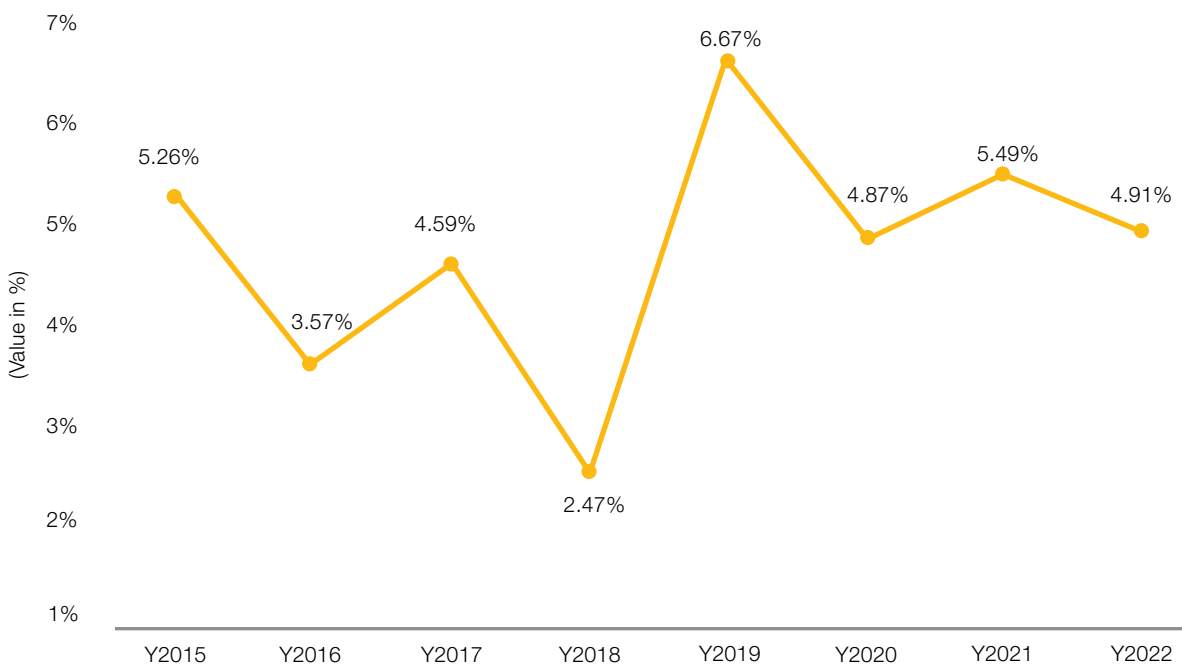




## Inflation

Annual inflation in India increased to 4.91 per cent in November 2021 from 4.48 per cent in October 2021. The inflation is gradually rising in the country, though it remains within the Reserve Bank of India's (RBI) target range of 2 per cent -6 per cent. India could face a period of persistently high inflation due to the rising input costs. Rising inflation will continue to be a major source of concern for India's economy as the country deals with a third wave of COVID-19 infections.

**Graph 5: Inflation rate in India**



Source: Inflation.eu

After the financial crisis of 2008, central banks used unconventional monetary policies to avoid a major financial catastrophe, but we are now witnessing the biggest financial disaster in history due to pandemic COVID 19 in the year 2020.

Central banks responded with a series of significant rate cuts and massive monetary and fiscal stimulus because of the prolonged lockdown and strong reduction in growth for 2-3 quarters around the world. This level of aggressive balance sheet expansion by developed economies has never occurred before in the history of the financial markets. In the year 2020, "helicopter money" has alleviated fears about deflation, and the world is fighting inflation in the year 2022.

The emergence of new COVID-19 variants, supply chain disruptions, further upside in energy prices, wage pressures, inflation uncertainty, and developed economies raising policy rates are all key risks to financial stability that have the potential to disrupt capital flows, currencies, and fiscal positions in emerging market and developing economies. As geopolitical tensions continue high, other global threats may emerge.

*Note: \*Helicopter Money - Helicopter money is the term used for a large sum of new money that is printed and distributed among the public, to stimulate the economy during a recession or when interest rates fall to zero.*

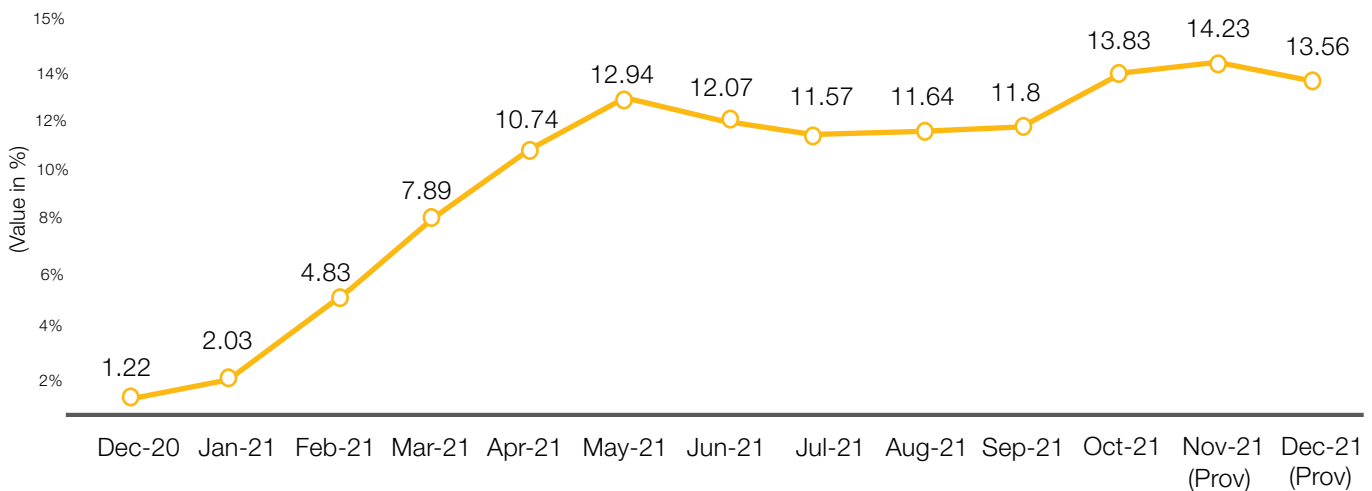


## WPI and CPI

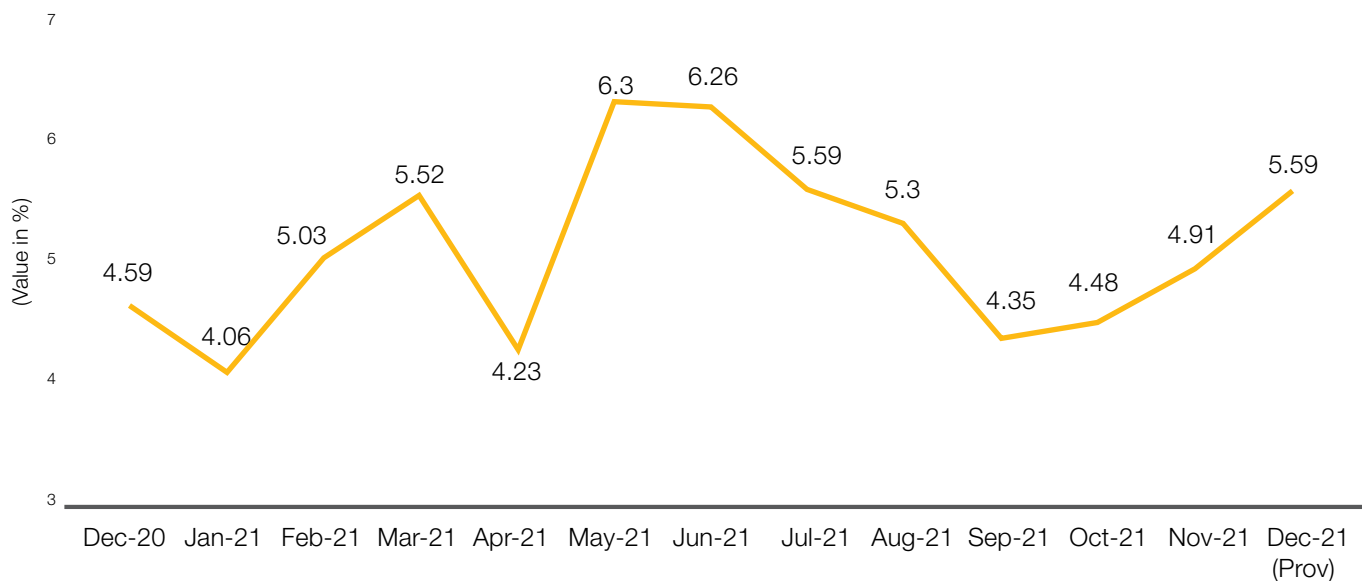
Wholesale inflation increased to 14.23 per cent in November 21, up from 13.83 per cent in October 21, owing primarily to increases in food prices, particularly vegetables, as well as mineral and petroleum products. Retail inflation based on the Consumer Price Index (Combined) rose to a three-month high of 5.59 per cent in December, with food prices rising as well, indicating that the Centre’s excise duty cuts and subsequent state levies cuts have not provided much relief in taming headline inflation.

The wide disparity between WPI and CPI inflation reflects price pressures on the input side, which are expected to spill over into retail in the coming months. Input price pressures and supply-side shortages are pushing up consumer prices, and this may have an impact on demand in the future. The risks posed by the new Omicron variant are also expected to have an upward impact on global commodity prices. so for the short term, the commodities prices are expected to remain at elevated levels and stabilized in 2nd half of the year.

Graph 6: WPI Indices



Graph 7: CPI Indices



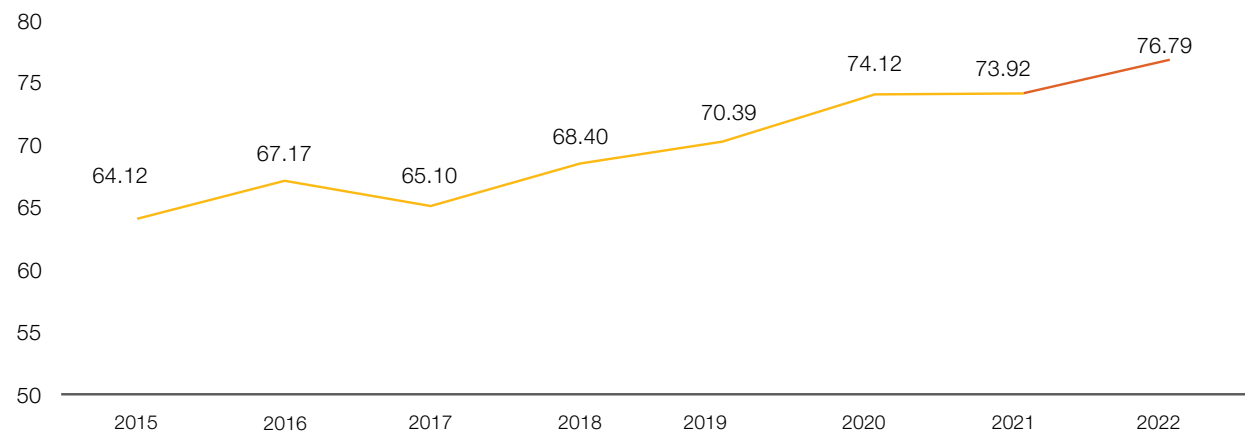
Source: India Budget Economic survey Report, The Government of India, Ministry of Finance



## USD to INR

The USD has steadily risen against the Indian rupee over the last few decades. Indeed, there has been a lot of volatility in the USD versus INR recently. This affects prices of Indian imports such as mineral fuels, electrical machinery and equipment, organic chemicals, plastics and plastic articles, iron steel and fertilizers. Besides, consistently widening trade deficit, current account deficit and oil prices supported by the OPEC decision will likely keep the rupee under pressure.

**Graph 8: USD to INR**



Source: XE Currency

Note: Forecast for 2022 is based on historical and predicted values by using Exponential Smoothing System (ETS)

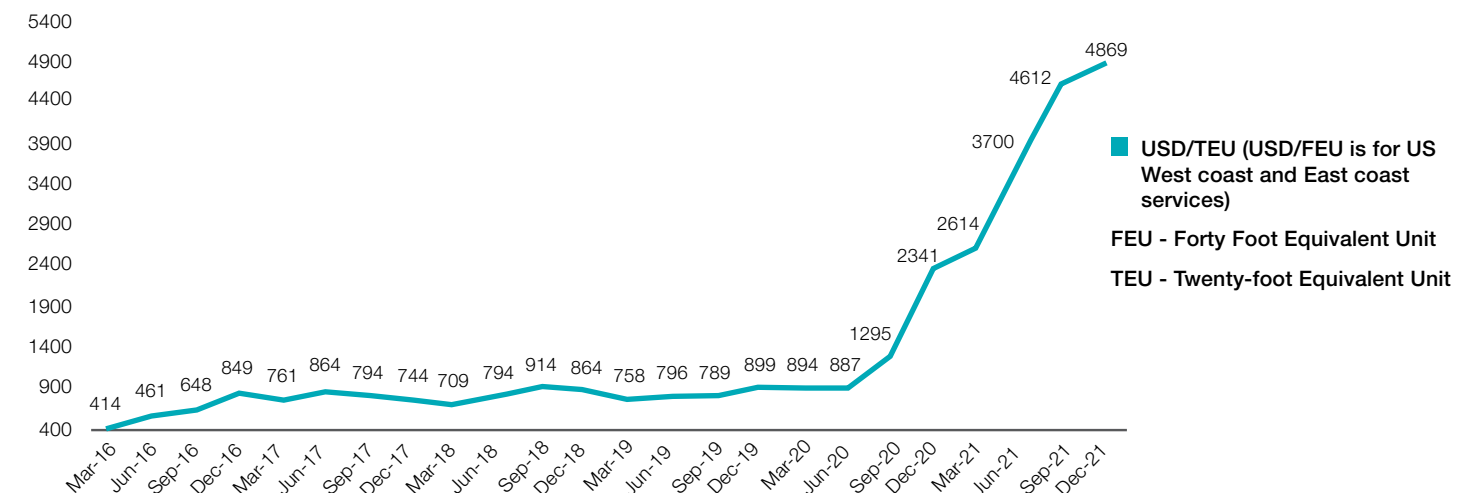
## Freight charges

With pandemic caused delays and closure of the port, ever increasing demand for ocean freight across the world and lack of capacity in certain routes, the world is facing an increased and volatile trajectory of time for shipping. With increase in fuel costs, event such as Suez Canal, geopolitical issues and port congestion has put pressure.

It is noted that world freight rates for major routes which are stable now, has seen more than 7 to 8 times higher costs compared to pre-pandemic rates.

It is expected that in 2022, post-Chinese New Year celebration, reduced threat of Omicron will help in stabilizing the rates in 2nd half of the year.

**Graph 9: Shanghai containerized freight index**



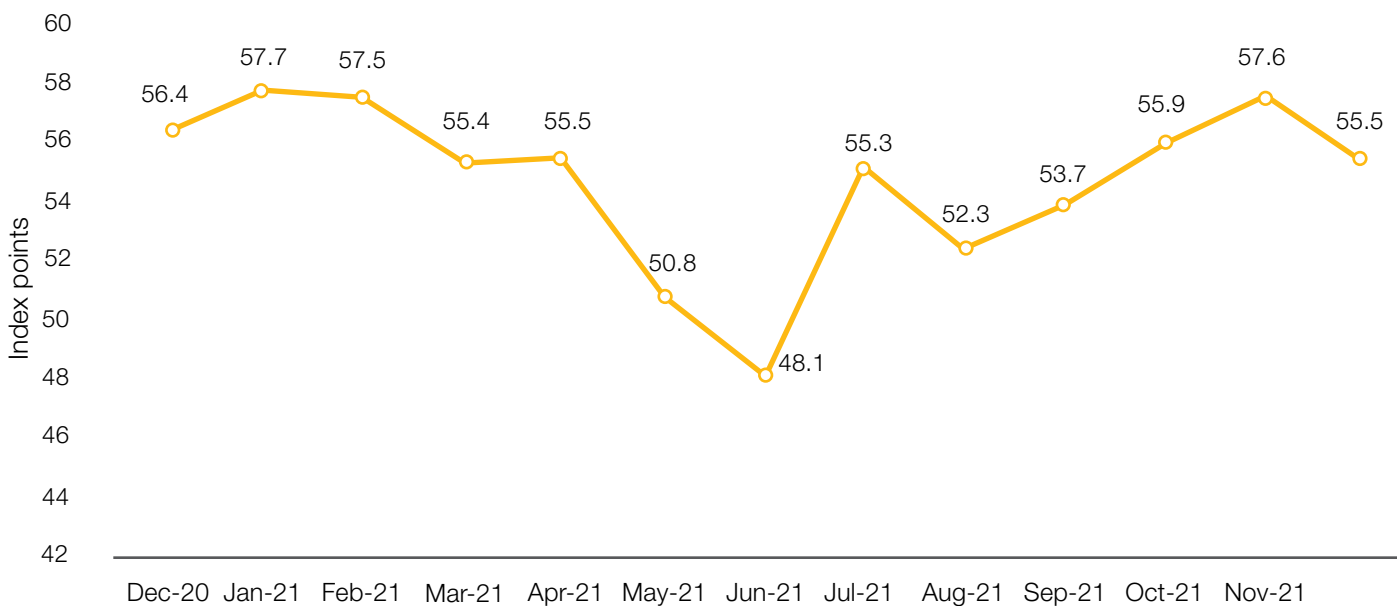
Source: Container News



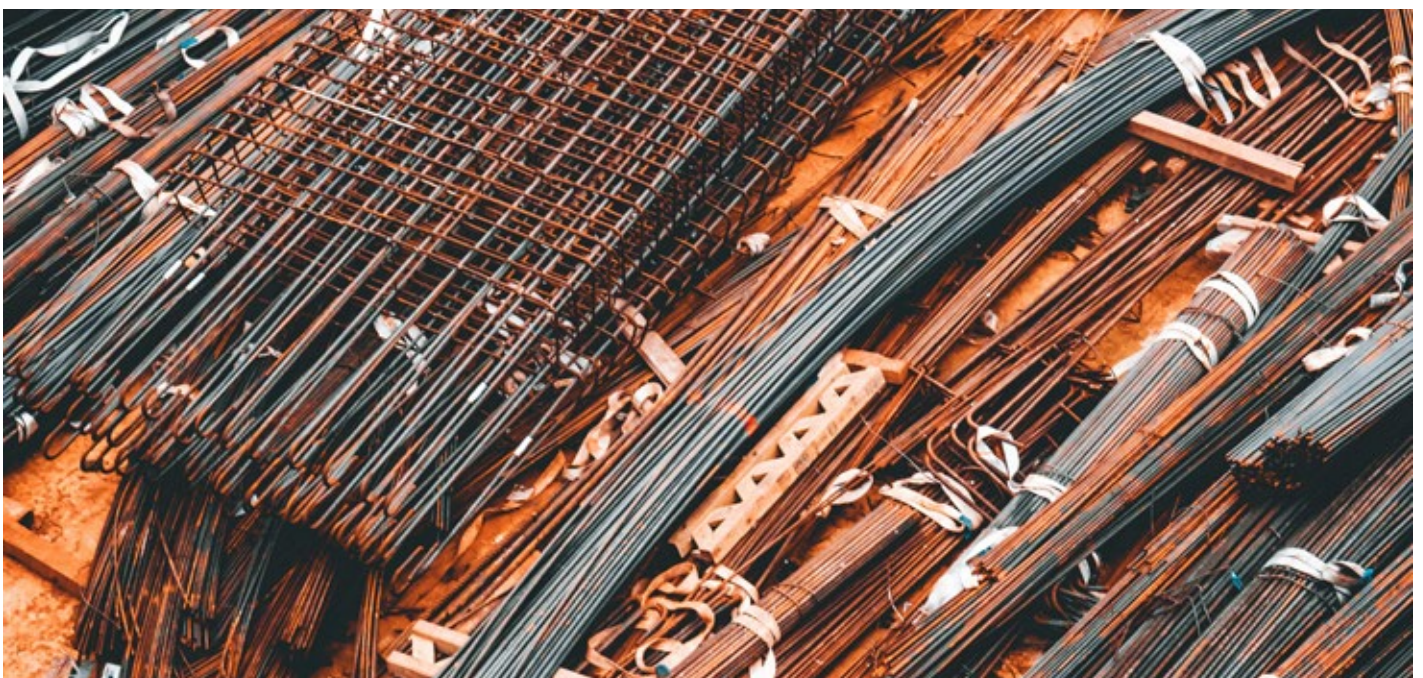
## Purchasing Manager Index - Manufacturing (PMI):

Manufacturing activity in India continued to gain traction, remaining in the expansion zone. The Purchasing Managers' Index rose to 57.6 in November from 53.7 in September and again fell to 55.5 in December 2021. A PMI value greater than 50 indicates that business activity is expanding. The most recent PMI results for the Indian manufacturing sector for 2021 were encouraging, with the economic recovery continuing as firms were successful in securing new work from both domestic and international sources. Manufacturers were optimistic that output would rise further in 2022, but business sentiment was dampened by concerns about the pandemic's path, inflationary pressures, and lingering supply chain disruptions.

Graph 10: PMI trendline



Source: The Global Economy





# Key price trends

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# Key price trends

The price of construction materials have been quite dynamic in the past year with metals skyrocketing and the supply chain working hard to keep up to the differential demand.

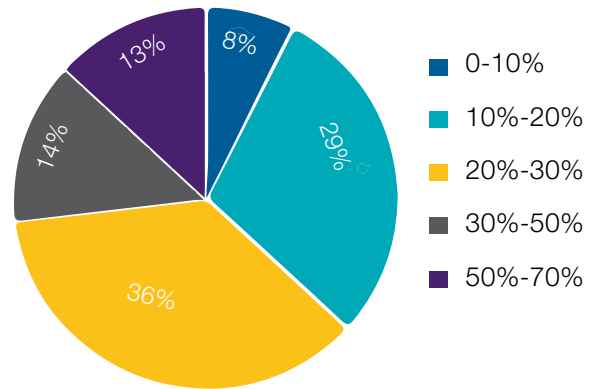
This increase in commodity prices is a key cost driver in projects.

When asked by what percentage commodity prices have increased from pre-COVID-19, more than 50% respondents believe that commodity prices have increased 20% which is a substantial number. As Gleeds had advised during previous research reports, unless a separate fund was kept while reassessing the project budget for COVID Impact, the stakeholders would be struggling to bring the project back to original budget projections.

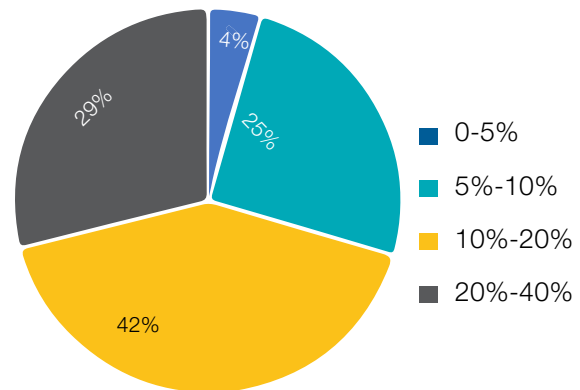
Construction costs have boosted with commodity price increase, in comparison to pre-COVID-19 times

More than 70% of the respondents believe that the overall construction cost from pre-COVID-19 to now more than 10% which has created reduced IRR for the project stakeholders.

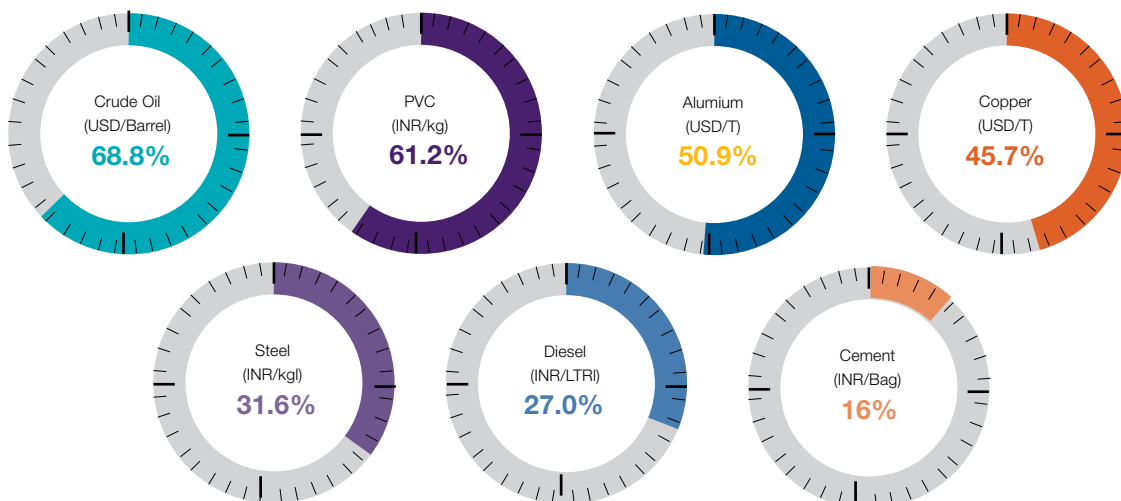
**Graph 11: Key material price increase from precovid to now**



**Graph 12: Overall construction cost increase from precovid to now**



**Graph 13: Key material price movement from 2020 to 2021**





The price trends for the most used material in the industry are set to change because of the COVID-19 pandemic. Commonly used material price trends are demonstrated below:

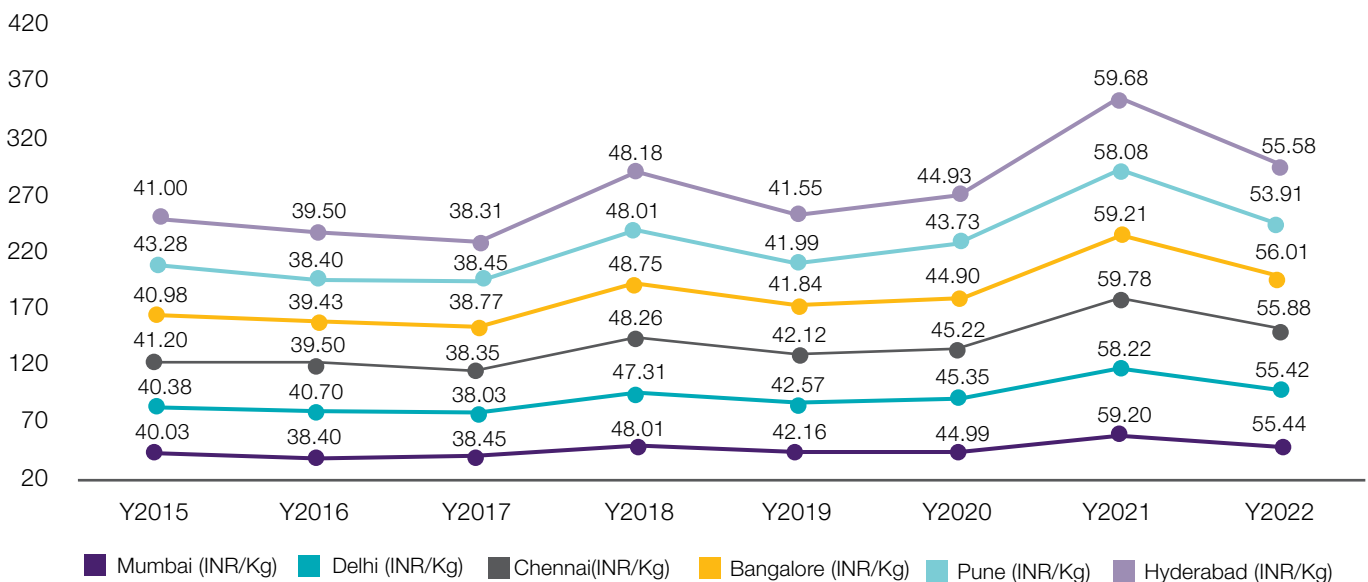
## Steel

The brand-new year unfolded to the onset of the third wave of Covid-19, leaving a sense of uncertainty for the short term. That apart, chip shortage, lower import demand from China, subdued domestic demand are issues that followed the steel industry into the New Year. Steel demand and supply are expected to improve with increased economic activity, as well as the Government of India's infrastructure push. On a cumulative basis, India's crude steel and finished steel production in the first six months of FY22 (April to September) remained higher than in the previous years' corresponding period. Steel prices have remained firm due to higher coal prices and because of the robust demand for long steel products from the construction sector. China, the world's largest consumer and producer of steel, on the other hand, has tapered exports due to continued production curbs to reduce carbon emissions, keeping global export prices elevated. Aside from the steel production and consumption equation, supply chain performance and logistical arrangements are expected to be critical in 2022, given the ongoing pandemic. The infrastructure growth and demand from the construction, engineering, and other sectors, in India, is expected to push up domestic steel consumption in 2022. Iron ore prices are going up recovering the steel production demand in China.

The record rise in gas prices in Europe had held out hope of industrial output curbs which would have fuelled India's export demand to the Continent. There is potential flat steel demand, but the semiconductor issue troubles automakers, leading automakers in India are expecting to solve in coming quarters. If high gas prices sustain then Indian exports may pick up.

Higher energy and input costs will lead to a further potential gain in steel costs, when the whole world is at the cusp of raising its loan fee, China has cut its Reserve proportion necessity by 0.25% in the last quarter and cut its loan fee by 0.10% and expected to release its financial arrangement going ahead so the first quarter of 2022 is relied upon to stay solid yet when western national banks aggressively fix their money related approach to control expansion then we will witness correction in steel costs during the final part of the year.

**Graph 14: Steel**



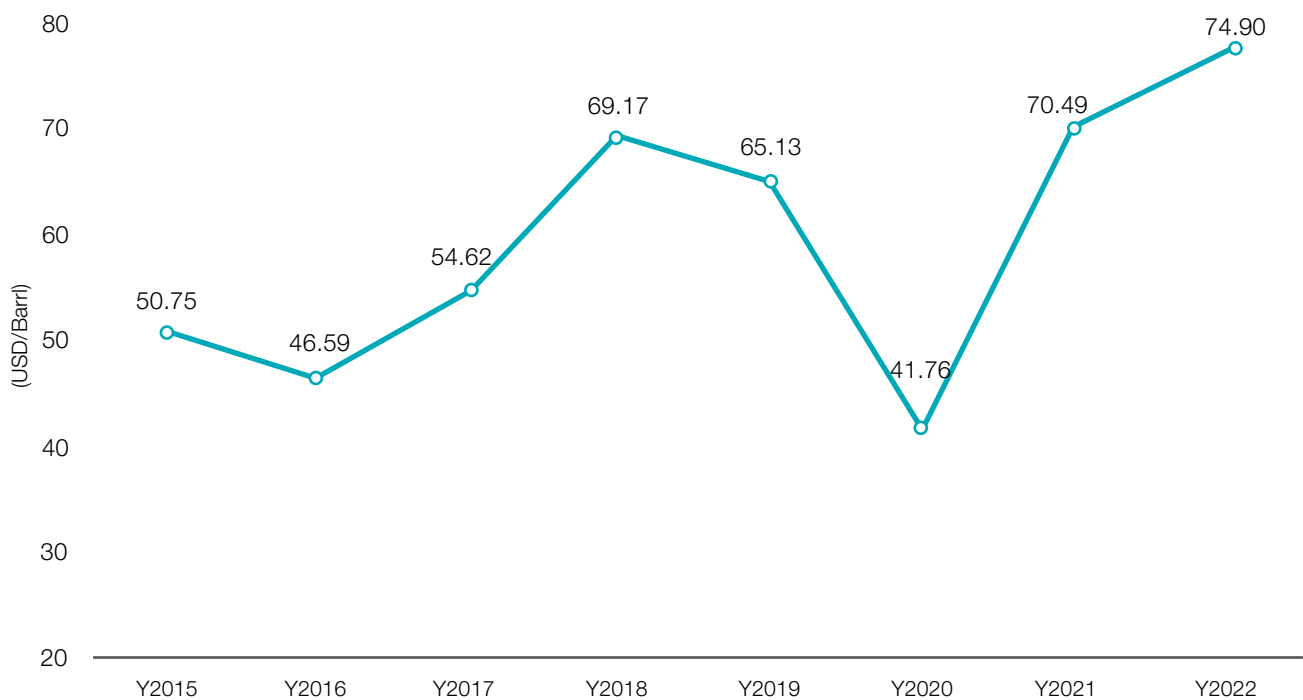
Source: SAIL.

Note: All year prices are averaged and in INR till 2021, excluding taxes. Forecast for 2022 is based on historical and predicted values by using Exponential Smoothing System (ETS)

## Crude oil

The December 2021 Brent crude oil price was \$74.17 per barrel, while the January 2021 price was \$54.77 per barrel. The price has risen by 26% per cent over the last twelve months. Goldman Sachs Group has predicted that crude oil prices will touch the \$100 mark in the third quarter of 2022. Crude oil prices rose in 2021 as rising COVID-19 vaccination rates, easing pandemic-related restrictions, and a growing economy resulted in global petroleum demand exceeding petroleum supply. Increasing crude oil demand and lower crude oil supply resulted in consistent global petroleum and liquid fuels inventory withdrawals from February to December, contributing to rising crude oil prices. The slower increase in production was mostly attributable to OPEC+ crude oil production cuts that started in late 2020. Oil prices are continuing to rise. Tensions in the Middle East have risen after Yemen's Houthi rebels assaulted oil shipments in the United Arab Emirates. This bold effort by Iran-backed forces jeopardises the oil-producing region's stability and could put a stop to discussions to restore Tehran's 2015 nuclear deal. Growing tensions between Russia and Ukraine have cast a shadow over energy markets, and the uncertainty could mean a prolonged period of high gas prices for Europe.

**Graph 15: Crude oil**



Source: Country Economy.

Note: All year prices are averaged and in USD. Forecast for 2022 is based on Trading Economics



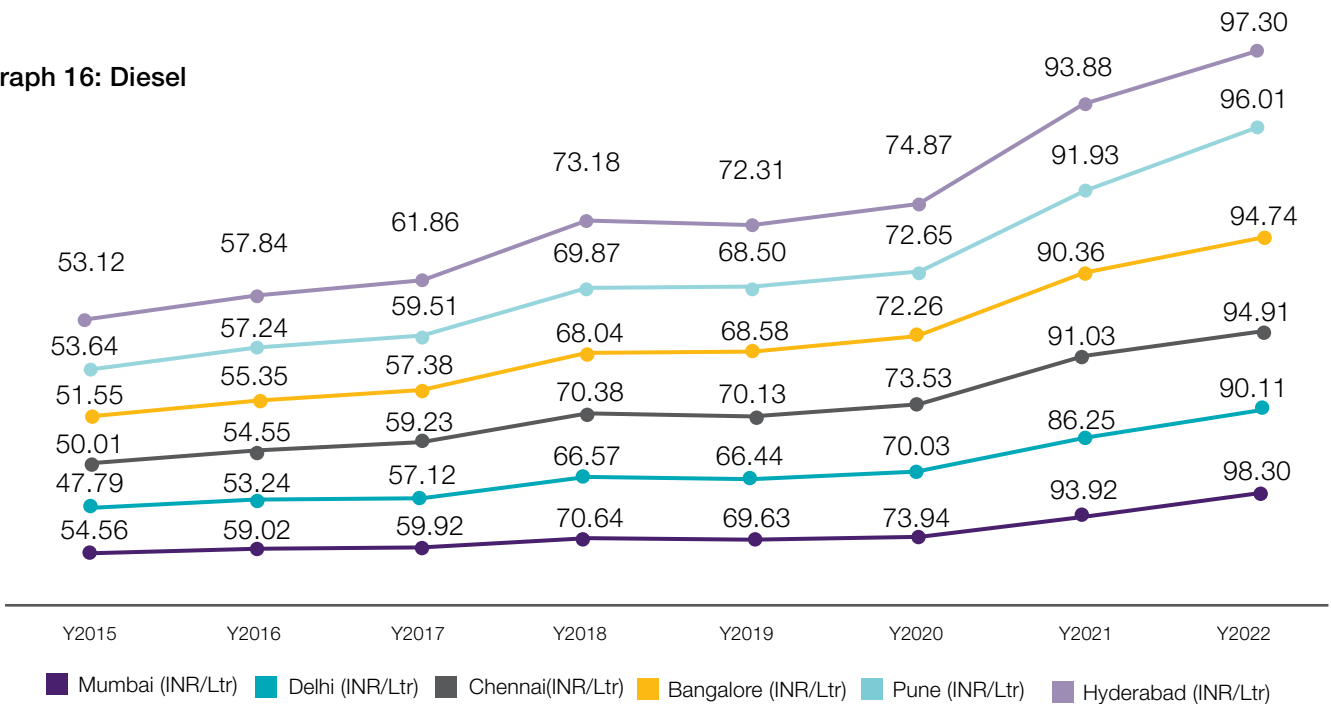




## Diesel

High crude oil prices have contributed to the regular setting of new record highs in petrol and diesel prices across India in 2021. Elevated tax levels also played a major role in the record high prices in India. Retail prices of petrol and diesel have remained unchanged since November 5, 2021, after a decrease in excise duty by Rs 10 a litre respectively. The excise cut and VAT reduction in an election season helped bring down fuel prices from a record high. The impact of OPEC+’s announcement on international oil prices, geopolitical issues concerning Russia as well as developments on the new COVID variant, will determine the country’s fuel prices in the short term.

**Graph 16: Diesel**



Source: My Petrol Price.

Note: All year prices are averaged and in INR. Forecast for 2022 is based on historical and predicted values by using Exponential Smoothing System (ETS).

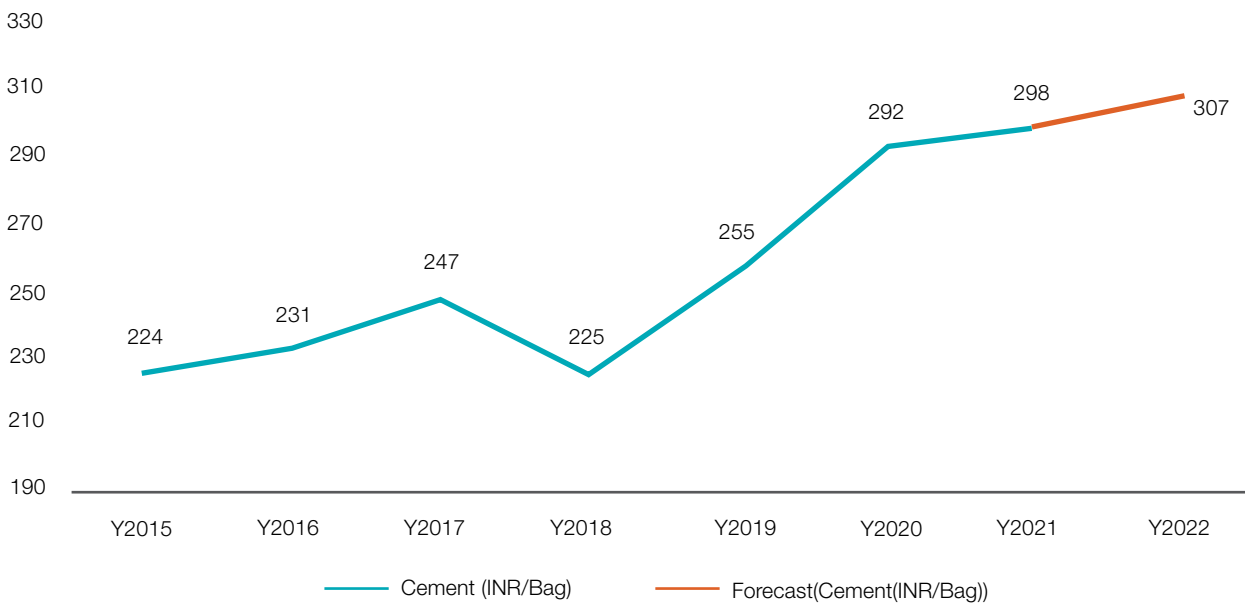




## Cement

Cement retail prices in India increased by Rs 10 – 15 per bag in 2021. Demand for cement increased by more than 20% in 2021. The price increase has been attributed to rising input commodity costs such as coal and diesel, as well as rising demand. As one of the largest contributors to the global greenhouse gas emissions at around 8%, the cement sector sees decarbonisation as an immediate priority. The cement sector will play an important role in the Indian economy’s recovery in 2022, as the government launches stimulus packages focusing on infrastructure and climate.

Graph 17: Cement



Source: Gleeds Internal Research.

Note: Prices are in INR and exclude GST. Forecast for 2022 is based on historical and predicted values by using Exponential Smoothing System (ETS).



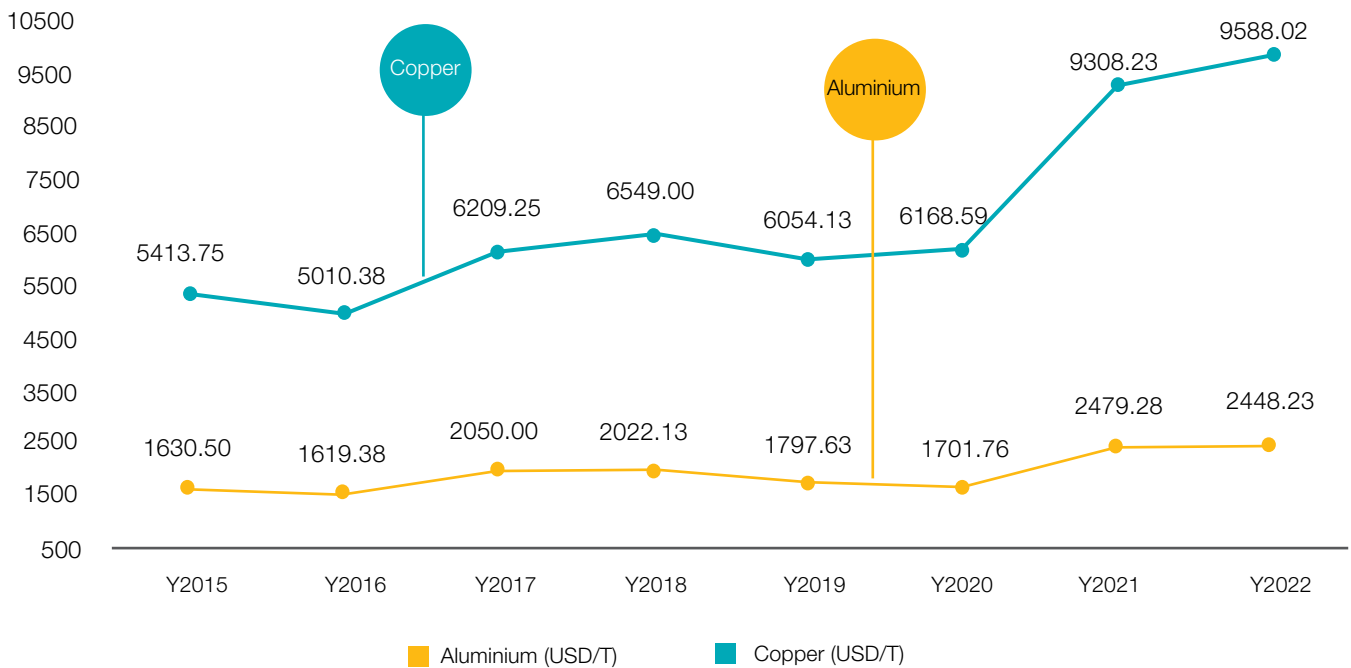


## Aluminium and copper

Improved market demand, particularly in China, resulted in base metals aluminium and copper prices rising to a record high. Aluminum prices reached a 13-year high in October 2021 at US\$3,229/ton led by supply disruptions in China due to power shortage. Many producers have had to reduce output due to China’s power crisis and the resulting rise in energy costs. Aluminium prices are expected to rise by 6% in 2022, following a 50% increase in 2021, but will fall in the future as energy constraints ease. Yet in 2022, prices will remain supported by strong demand fundamentals and remaining supply concerns. Aluminum market to remain in a multi-year deficit despite the coal situation improving, we expect the supply constraints in China to continue in the medium term led by its policy of ‘Dual Control’ of energy consumption and fast approaching capacity cap.

Copper, the “new oil,” is set to rule in the short term as inventories have hit a record low because of production cuts in Europe and China because of the power crisis, despite a drop-in manufacturing activity. The new year has begun against a backdrop of record dislocations in energy and metals. . Production over the first ten months of 2021 was still 6.2% below that of the same period in 2019. Mine production grew by around 2.6% in Jan-Oct 2021, but this compares to a low 2020 basis when the copper mining industry was severely impacted by the global lockdown.

**Graph 18: Aluminium and copper**



Source: LME

Note: All year prices are averaged and in USD. Forecast for 2022 is based on historical and predicted values by using Exponential Smoothing System (ETS).

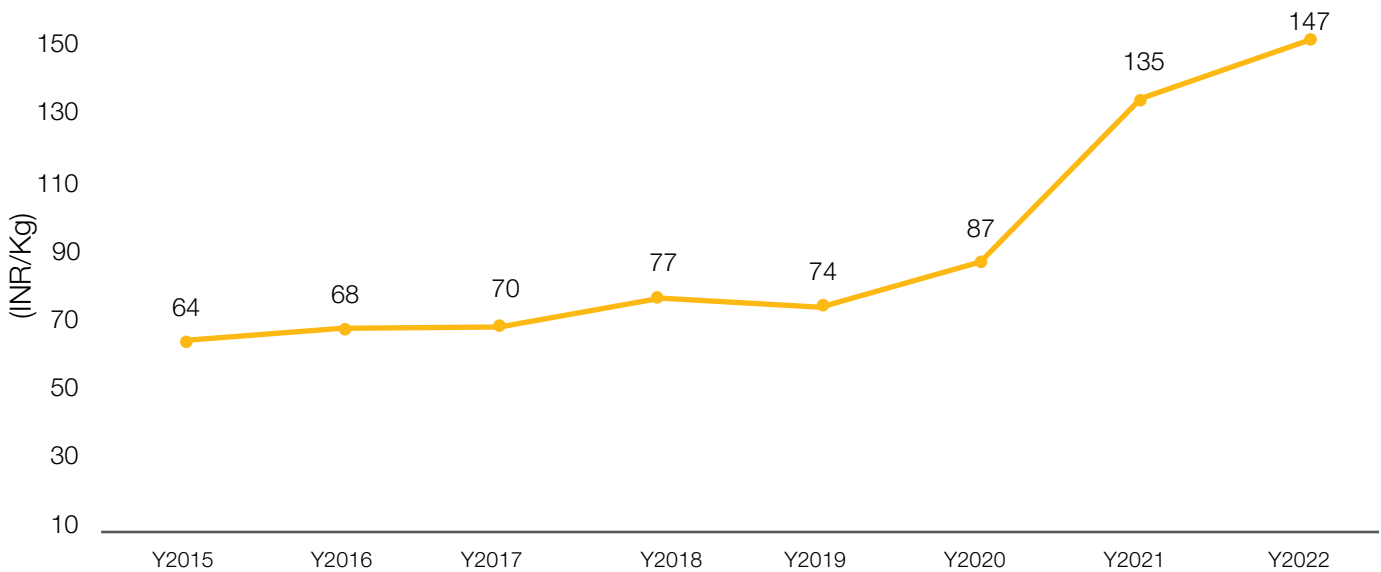




## PVC

PVC prices around the world are at or near record highs. PVC prices are influenced by several factors, the most important of which are supply-demand fundamentals and production costs. Upstream energy values are considered because energy is fundamentally responsible for all petrochemical prices, including PVC. Crude oil, natural gas, and coal all have an impact on the direction of PVC prices. During the forecast period, 2022 to 2029, the Polyvinyl Chloride (PVC) Resin market is expected to grow at a rapid pace.

Graph 19: PVC



Source: Reliance industry

Note: All year prices are averaged and in USD. Forecast for 2022 is based on historical and predicted values by using Exponential Smoothing System (ETS).



An aerial, top-down view of a large, modern residential development. The complex features several high-rise apartment buildings with varied architectural styles, including some with curved facades and others with more traditional rectangular forms. The buildings are interspersed with landscaped areas, including swimming pools, green spaces, and walkways. The surrounding area includes roads with traffic and other urban structures. The overall scene is captured in a high-angle, slightly tilted perspective, giving a sense of scale and complexity to the urban environment.

# Material prices

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# Material prices

**Table 1: Material prices (noted in INR) in various cities - December 2021**

Description	UoM	Mumbai	Delhi	Bengaluru	Hyderabad	Chennai	Pune
<b>Cement</b>							
Grade 53	INR/Bag	305	305	328	300	305	290
<b>Steel</b>							
Reinforcement Grade A	INR/MT	61,500	59,800	59,150	59,500	59,500	59,300
Structural Steel	INR/MT	63,000	63,500	64,000	64,000	63,000	62,500
<b>Clear Glass</b>							
6mm	INR /Sqft	80 - 85	80 - 85	95 - 105	80 - 90	80 - 85	80 - 90
8mm	INR /Sqft	100 - 115	100 - 115	100 - 110	100 - 110	100 - 110	100 - 115
<b>Stone</b>							
Granite	INR/ Sqft	150-250	150-250	150-250	150-250	150-250	150-250
Marble	INR/ Sqft	220-500	200-500	180-500	175-500	150-500	180-500
Makrana	INR/ Sqft	250-1000	250-1000	250-1000	250-1000	250-1000	250-1000
Kota	INR/ Sqft	40-50	30-40	40-50	40-50	40 to 50	30-40
Cuddappa	INR/ Sqft	20-25	20-25	15-25	15-25	20-25	15-25
<b>Wood</b>							
Salwood	INR/ cuft	1,750	1,650	1,500	1,500	1,500	1,500
Plywood 12mm thick	INR/ sqft	65 - 80	65 - 80	65 - 70	65 - 70	60 - 65	60 - 70
<b>Paints</b>							
Emulsion	INR /20 ltr	3,200 - 3,500	3,000 - 3,300	3,100 - 3,500	3,200 - 3,400	3,300 - 3,500	3,200 - 3,400
<b>Metals</b>							
Aluminium	INR/Kg	220	220	220	220	220	220
Stainless Steel	INR/Kg	220	220	200	210	210	200
<b>Plumbing</b>							
GI Pipes - 50mm to 100mm C class heavy	INR/mtr	500 - 1165	530 - 1195	520 - 1185	520 - 1185	520 - 1185	500 - 1165
upvc - 32 - 100mm	INR/mtr	276 - 1419	306 - 1449	296 - 1439	296 - 1439	296 - 1439	276 - 1419
CPVC - 50 to 100mm SDR 11	INR/mtr	506 - 2458	790 - 2532	780 - 2522	780 - 2522	780 - 2522	760 - 2502
CI - 100 to 150 mm single socket	INR/mtr	1185 - 2165	1215 - 2195	1205 - 2185	1205 - 2185	1205 - 2185	1185 - 2165

Source: As per Gleeds' database.

Note: All prices exclude GST. All prices are supply prices only averaged for H2 2021 and a guidance only. Transportation, and any other abnormal are not included.

# Labour rate trends

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## Labour Rate Trends in Various Cities:

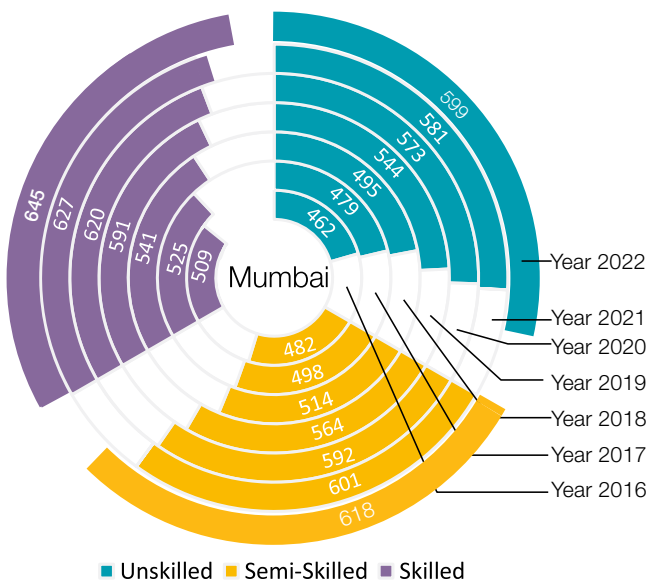
Construction, which was one of the worst-affected industries during the pandemic, is also one of the most important sectors in which India's migrant workforce finds work. The ministry of labour and employment has increased the rate of variable dearness allowance. The VDA is revised based on the average consumer price index for the labours. The second wave's impact on the health crisis has been undeniably severe. However, the lockdown restrictions were not strictly enforced during the second wave of COVID-19, so the impact on construction workers was also limited. Furthermore, there was no interstate mobility restriction if the traveller's RT-PCR (real-time reverse transcription-polymerase chain reaction) report was negative. Despite this, it was reported that thousands of migrant workers had returned home. To deal with the crisis, as well as to meet the workers' union's demand, subsistence allowances will be provided to workers during the closure of construction activities.

Actual costs likely on the ground at present are reported as follows; in case of unskilled workers engaged in construction or building operations, the area wise daily wages range from INR 505 to INR 714, while they range from INR 505 to INR 714 in case of semi-skilled or unskilled supervisors, INR 609 to INR 784 in case of the skilled and clerical category workers and INR 714 to INR 853 in case of the highly skilled workers.

Note: All rates as on December of each corresponding year.

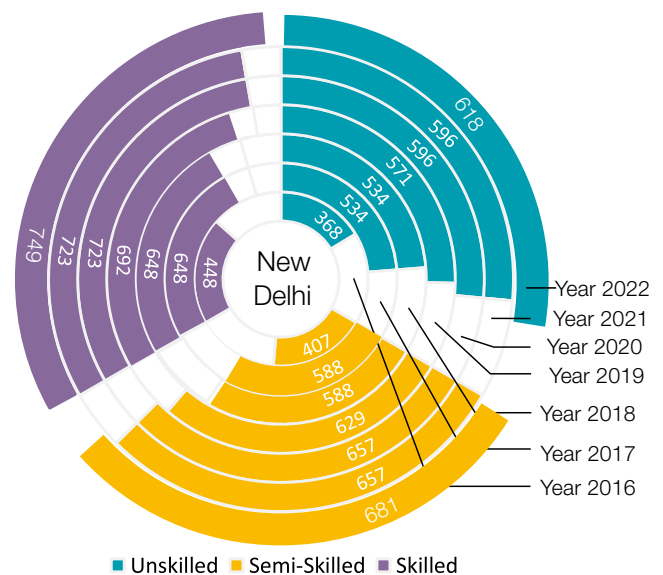
### Graph 20: Labour rate trends

#### 1. Mumbai:



Source: Minimum Wage-India

#### 2. New Delhi:

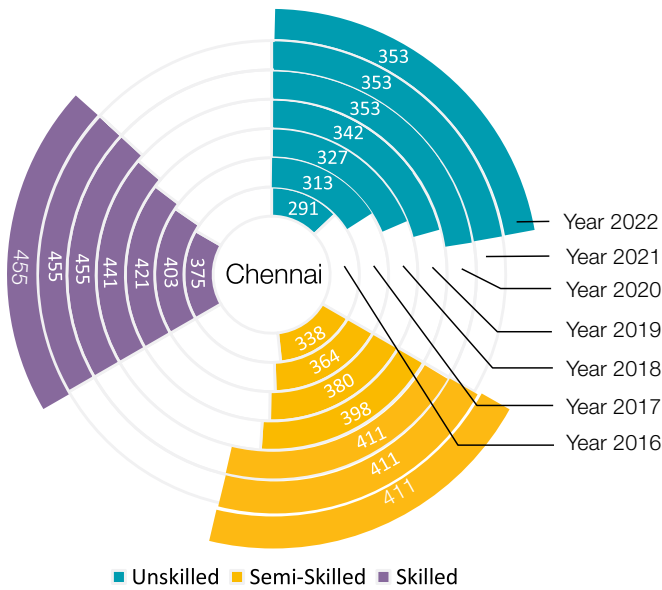


Source: Minimum Wage-India



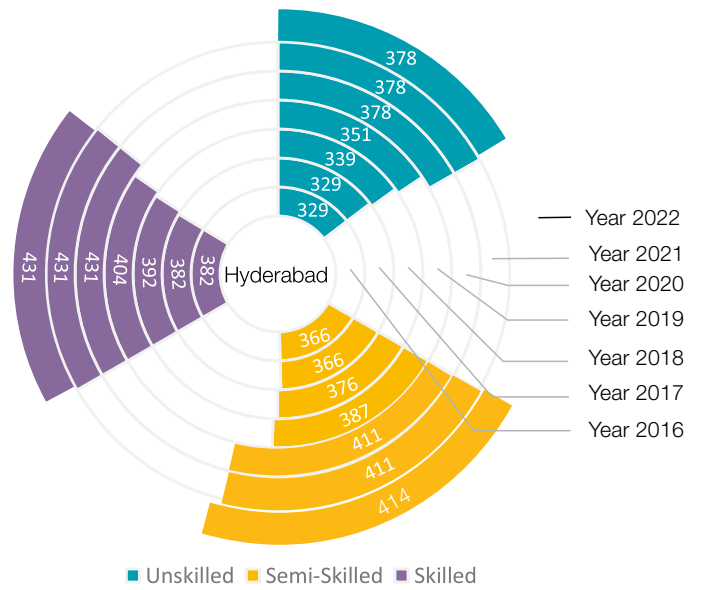


### 3. Chennai:



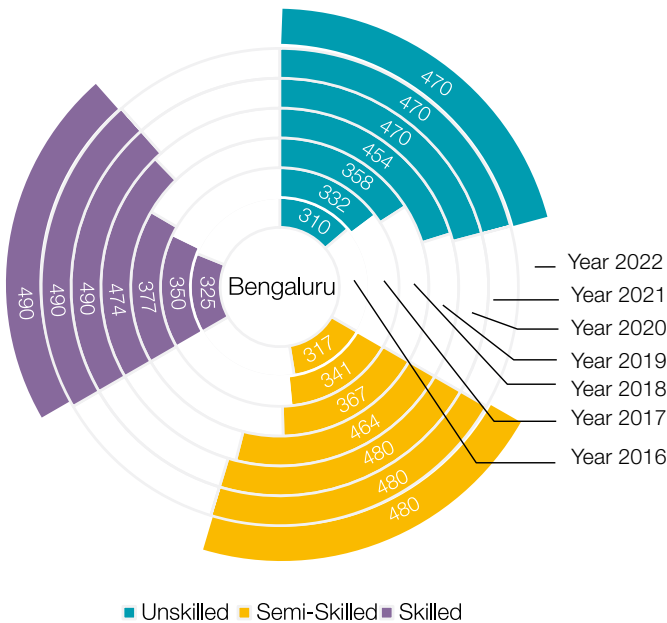
Source: Chennai.nic.in

### 4. Hyderabad:



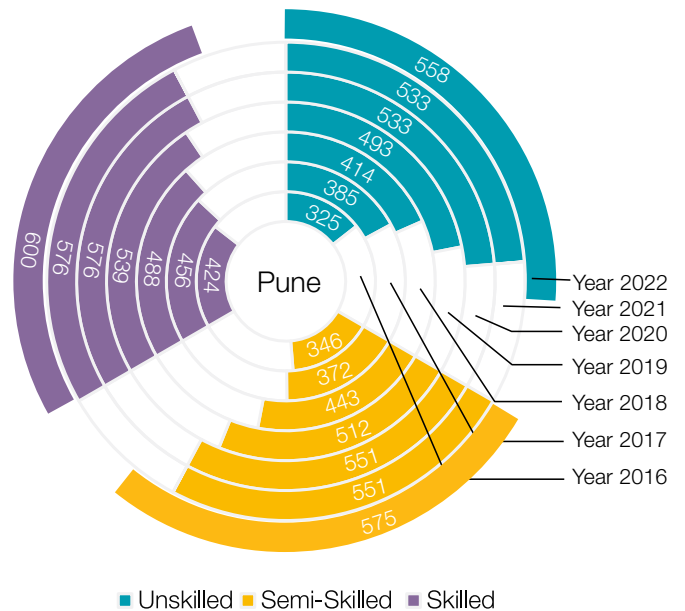
Source: Department of Labour, Government of Telangana

### 5. Bengaluru:



Source: Minimum Wage-India

### 6. Pune:



Source: Maharashtra Jeevan Pradhikaran

# Construction sector costs

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## H2 2021 Construction Costs: Sector Wise

Table 2: Sector wise costing

Building Type	Assumptions for Costs	Bengaluru ₹ / Sqft	Pune ₹ / Sqft	Delhi ₹ / Sqft
<b>Residential</b>				
Affordable	BUA: 3,00,000 sqft	2,650 to 3,200	2,650 to 3,200	2,850 to 3,200
Premium	BUA: 6,00,000 sqft	3,200 to 4,000	3,200 to 4,200	3,500 to 4,200
<b>Commercial Building</b>				
Commercial	BUA: 10,00,000 sqft	3,200 to 4,200	3,200 to 4,200	3,200 to 4,200
Office Fit-out	<i>Note: Costs based on carpet area for office fit-outs only.</i>			
Basic	CA: 15,000sqft	2,500 to 2,700	2,500 to 2,700	2,500 to 2,700
Standard	CA: 30,000sqft	2,800 to 3,400	2,800 to 3,500	2,800 to 3,600
Premium	CA: 50,000sqft	4,200 to 7,200	4,200 to 6,700	4,200 to 7,400
<b>Retail</b>				
Malls with retail stores		2,615 to 3,000	2,575 to 2,950	2,600 to 3,150
<b>Store fit-out costs on carpet area</b>				
Quick Service Restaurants	CA: 2,500 sqft	2,950 to 3,400	2,900 to 3,350	3,100 to 3,500
Apparel stores	CA:25,000 sqft	2,500 to 2,700	2,500 to 2,700	2,450 to 2,650
Discount sports store	CA:25,000 sqft	1,750 to 2,000	1,700 to 1,950	1,700 to 2,100
Jewellery	CA: 8,000 sqft	5,200 to 6,700	5,000 to 6,400	5,700 to 7,200
<b>Hospitality</b>				
3 star Hotel	100 key	4,000 to 4,850	3,600 to 4,700	4,800 to 5,700
4 star Hotel	150 key	4,850 to 5,700	4,450 to 5,300	6,150 to 7,000
5 star Hotel	150 key	7,000 to 8,700	6,500 to 8,000	7,700 to 9,200
<b>Healthcare</b>				
Hospitals	500 bed capacity	4,700 to 5,400	4,750 to 5,500	5,700 to 6,800
<b>Education</b>				
School*	500 Pupil, high school	3,000 to 3,500	3,000 to 3,050	4,450 to 5,000
University**	Campus	5,300 to 6,000	4,900 to 5,700	5,700 to 6,550
<b>Industrial</b>				
Pharmaceutical		3,500 to 4,400	3,170 to 4,000	3,700 to 4,500
<b>Others</b>				
Multi-level Car park		1250 to 1,400	1000 to 1,250	1,250 to 1,500
<b>Data Centres</b>				
Shell only	Multi-tenant	4,400 to 6,400	4,400 to 6,200	4,600 to 6,550
Shell only	Hyperscale	5,450 to 7,350	5,300 to 7,200	5,600 to 7,550
Fit-out (₹/MW)	Multi-tenant	19,80,00,000 to 24,20,00,000		
Fit-out (₹/MW)	Hyperscale	17,60,00,000 to 22,00,00,000		

Source: Gleeds India Database

\*Classroom with basic indoor and outdoor facilities.

\*\*Learning rooms with required amenities

\*\*\*For residential floor height range, please refer to assumptions



**Table 2: Sector wise costing continuation**

Building Type	Assumptions for Costs	Mumbai ₹ / Sqft	Chennai ₹ / Sqft	Hyderabad ₹ / Sqft
<b>Residential</b>				
Affordable	BUA: 3,00,000 sqft	2,850 to 3,200	2,750 to 3,200	2,650 to 3,200
Premium	BUA: 6,00,000 sqft	3,500 to 4,500	3,200 to 4,200	3,200 to 4,200
<b>Commercial Building</b>				
Commercial	BUA: 10,00,000 sqft	3,200 to 4,200	3,200 to 4,200	3,200 to 4,200
Office	<i>Note: Costs based on carpet area for office fit-outs only.</i>			
Basic	CA: 15,000sqft	2,500 to 2,900	2,500 to 2,700	2,500 to 2,700
Standard	CA: 30,000sqft	3,000 to 3,800	2,600 to 3,200	2,800 to 3,400
Premium	CA: 50,000sqft	4,200 to 7,700	4,000 to 6,400	4,100 to 6,700
<b>Retail</b>				
Malls		2,745 to 3,200	2,575 to 3,000	2,575 to 2,900
<b>Store fit-out costs on carpet area</b>				
Quick Service Restaurants	BUA: 2,500	3,200 to 3,600	2,900 to 3,300	2,950 to 3,400
Apparel stores	BUA: 25,000 sqft	2,400 to 2,700	2,500 to 2,750	2,500 to 2,700
Discount sports store	BUA: 25,000 sqft	1,700 to 2,200	1,400 to 1,900	1,450 to 2,000
Jewellery	BUA: 8,000 sqft	5,700 to 7,200	5,200 to 6,200	5,200 to 6,700
<b>Hospitality</b>				
3-star Hotel	100 key	4,850 to 6,100	3,900 to 4,700	3,600 to 4,860
4 star Hotel	150 key	6,150 to 7,400	4,700 to 5,600	4,550 to 5,700
5 star Hotel	150 key	7,700 to 9,700	6,600 to 7,700	7,000 to 8,300
<b>Healthcare</b>				
Hospitals	500 bed capacity	5,700 to 7,000	4,400 to 5,200	4,600 to 5,400
<b>Education</b>				
School*	500 Pupil high school	4,850 to 5,200	2,700 to 3,450	2,750 to 3,850
University**	Campus	6,250 to 6,700	4,850 to 5,700	4,850 to 5,750
<b>Industrial</b>				
Pharmaceutical		4,200 to 5,700	3,300 to 4,200	3,450 to 4,300
<b>Others</b>				
Multi-level Car park		1,400 to 1,550	1000 to 1,300	1,050 to 1,400
<b>Data Centres</b>				
Shell only	Multi-tenant	4,850 to 5,950	4,300 to 5,100	4,450 to 5,300
Shell only	Hyperscale	8,000 to 8,500	6,350 to 7,200	6,300 to 7,400
Fit-out (₹/MW)	Multi-tenant	19,80,00,000 to 24,20,00,000		
Fit-out (₹/MW)	Hyperscale	17,60,00,000 to 22,00,00,000		

Source: Gleeds India Database

\*Classroom with basic indoor and outdoor facilities.

\*\*Learning rooms with required amenities

\*\*\*For residential floor height range, please refer to assumptions



# Assumptions made and notes for reading the costs

Data provided in this report is an average range of costs. There are many cost parameters that contribute to costs and some judgement is to be applied while using the costs

indicated. The following are the parameters that are to be considered:

Site conditions	Procurement route considered	Market conditions	Residential towers heights range are as follows:  Mumbai: 130 to 140m Delhi: 125 to 130m Bangalore: 60 to 70m Hyderabad: 80 to 90m Chennai: 60 to 70m Pune: 80 to 90m
Location	Design	Assumptions made on site abnormal	
Building shape and size	Requirements of the end user	Time scale for completion	
Contract type	Quality and safety systems required	Any site restrictions	

Please note the following pertaining to the costs data provided:

- All costs noted are construction costs only
- All costs are in Indian National Rupees unless noted otherwise
- All costs are per square foot unless noted otherwise
- All cost data is indicative of costs incurred at the time of the making of the report
- The impact of Covid-19 is not accounted. All costs are pre-Covid-19 unless noted otherwise

All costs are deemed to include:

- All construction costs including shell and core, architectural works, interiors and finishes, MEP and external development works unless noted otherwise
- Contractor’s preliminaries
- Contractor’s overheads and profits
- Contingency
- Inflation (tender and construction inflation)

All costs are deemed to exclude:

- Site abnormals and any specific site conditions
- Client’s cost for land acquisition
- Client’s overheads
- Client’s profit margin
- Pre-opening costs
- Consultants, designers, and other project management fees
- Land Value
- Project Insurance
- Force Majeure
- Any administration costs incurred by the Client
- FF&E costs excluded in University, schools, hotels
- Any preclearing, logistic costs incurred by Client before site hand over to contractor
- GST
- For data centres only
  - Special infrastructure works such as mass excavation
  - Cost of the HT Sub-stations and transformers
  - Cost of the Server racks, LLE equipment

Area definitions followed in this document.

Built up area (BUA)	As per IS 3861-2002	RERA
	Plinth area shall mean the built-up covered measured at the floor level of the basement or of any storey	The built-up area includes the carpet area, plus the extra areas certified by the authorities, such as the area of the outer and inner walls, dry balcony area, etc.

All costs noted below is on the built-up area unless noted otherwise. This indicates the cost incurred on all the unusable areas, still contribute to costs.

# Sector Focus – Infrastructure

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While the Covid-19 lingers on the construction industry presses on towards a large volume of work. This industry being the second largest in the country has many projects in the pipeline.



The Union Cabinet approved the second phase of the Green Energy Corridor (GEC) on Thursday to accelerate the penetration of renewable energy in the states. The projects under this phase would be set up in seven states to help with renewable energy transmission. The worth of this project is 1200million INR. This pushes the power sector to another level.



The Government is also aiming to build 65,000km of national highways by 2022. As of October 2021, the Ministry of Road Transport and Highways constructed national highways extending 4,450 kms compared with 4,956 kms, as of October 2020.



In September 2021, the Government of the United Kingdom announced that it will invest US\$ 1.2 billion through public and private investments in green projects and renewable energy in India to support the latter's target of 450 GW of renewable energy by 2030.



In November 2021, India, the US, Israel and the UAE established a new quadrilateral economic forum to focus on infrastructure development projects in the region and strengthen bilateral co-operation. 10 GW Renewable Energy Project at Leh, is being reviewed for implementation. Such projects for the country translate to a GDP growth, inducing more normality



The government envisions a comprehensive programme for developing India's semiconductor and display manufacturing ecosystem. Global companies from Taiwan, the United States, and South Korea, among others, have expressed strong interest in investing, with a particular focus on domestic companies and start-ups in the design segment. The government also plans to establish "India Semiconductor Mission" to drive long-term strategies for the chip and display industry's long-term development.

# Cost indices

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## Cost indices

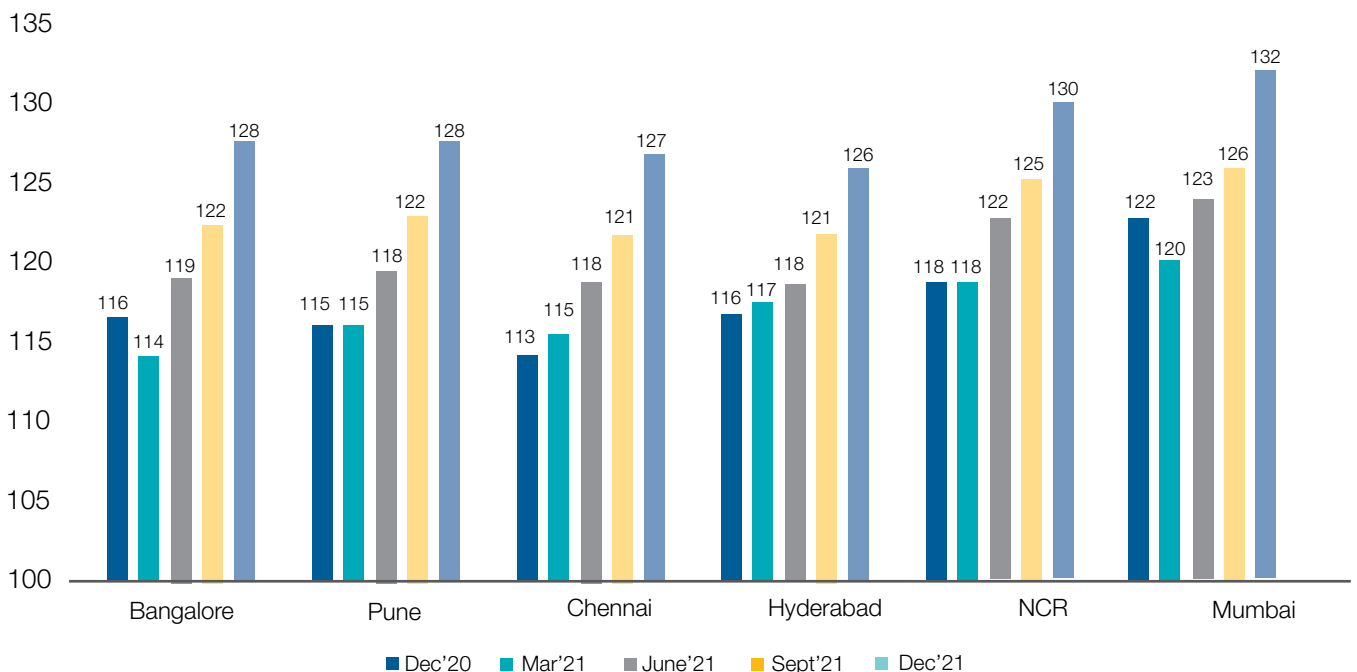
Gleeds carried out an extensive exercise to map the costs across the various Indian cities.

The following methodology was adopted to derive the indices.

- A basket of items comprising of most used materials in construction, labour and consumables was established. These goods have been identified and known to demonstrate the inflation and dynamic nature of the goods typically used in the construction sector. Approximate individual quantities within the items were taken to represent standard type of commercial building. Appropriate weightage was given to each of the items and based on weighted average method, a base Index was calculated.
- December has been considered as this is the best representation of costs before the uncertainty of the pandemic. The base city taken for calculation of Index is Bangalore.
- Cost movement for the different cities across similar timelines has been mapped and the indices were thus derived.

The graph below indicates the construction costs indices for the six major cities for the last quarters starting December 2019, with Bengaluru as the base.

**Graph 21: Cost indices city-wise**



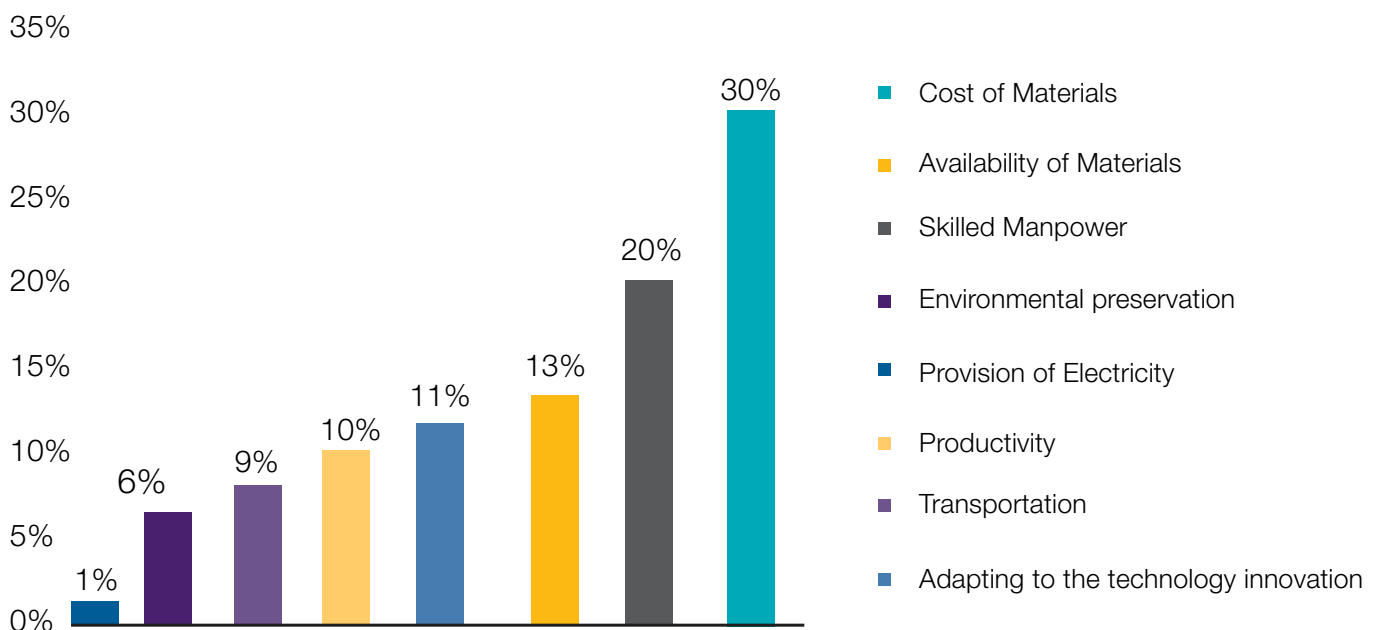




## Possible challenges

1. **Cost of materials:** Continued increase in material costs disallows budget planning and consumes contingency funds.
2. **Availability of materials:** With the growing demand and production reservation material availability at the required time of execution is proving to push planning skills and supply chain management to a level less familiar in the present market.
3. **Skilled manpower:** In the recent couple of years, though the workforce has returned to the site, there is a reluctance of moving far away from home in case of another lockdown. This has created pockets of a scarcity of skilled labour across the country in various trades
4. **Environmental protection:** The COVID-19 has reaffirmed the importance of nature and its preservation. While previous designs did consider elements of recycling and reuse, present designs are forced to also include more natural designs.
5. **Provision of electricity:** With the ever-increasing demand and growth in popularity of advances such as electric vehicles, renewable energy sources there are several challenges in the provision of electricity, mostly in countries such as India.
6. **Productivity:** Social distancing, and staggering of works, affects productivity. Many of the labour workforces are now only adapting to this change. This impacts all existing timelines, and contractors are left grappling with timelines that cannot be met.
7. **Transportation and freight:** With uncertainty and a high rise in cases all over the world, travel is restricted and more difficult. Transportation of goods within the country is much slower and more uncertain with changing rules across states. Freight charge in the present has been seen to become 50% of the original charges and in some locations are crossing over 100% the original charges. This poses a big threat to project budgets.
8. **Adapting to new technology:** The construction industry has always been slow to adapt to new technology, but in the imposed CV-19 circumstances it is now required. The progress on this front is still slow but the understanding and adoption of the same are still quite distant.

Graph 22: Possible challenges in the future



# New Methods – The Possible Future

## “Digitisation is optimizing the construction sector”

Digitalisation is slowly fuelling contractors to improve the building process. From paper to computer the construction drawings are digitised using Building Information Modelling. Digital information (from sensors, drones, photos, and construction drawings) is converted into data. The main goal for construction companies for digitalisation is to increase efficiency. The information provided during the building process can be improved enormously. Managing the most up-to-date information flow to colleagues, subcontractors, and suppliers goes automatically. So, all involved parties are directly informed of the latest adjustments. This makes it possible to prevent errors. Finally, there will only be one digital source of information (SSOT) keeping everyone informed of the latest adjustments to the digital (3D) design and different steps in the building process. In this way, all involved parties are aware of the real-time situation of the construction process.

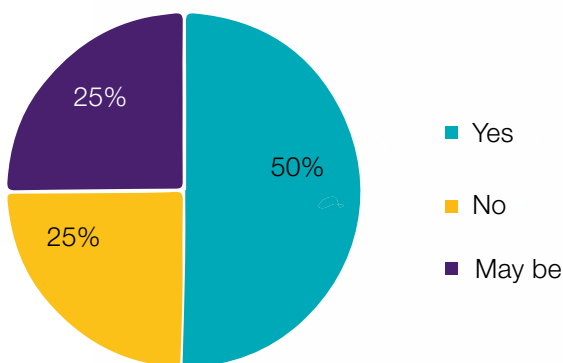
Digitalisation not only improves construction processes. Companies can also improve their strategic decisions to base them on facts from the data that becomes available through digitalisation.

It is seen in the past year that productivity has dropped in the construction industry to about 10%. Mitigation of the same with the existing labour force is not possible with the strict social distancing, quarantine and logistic norms that are involved for construction execution. This makes way for more modern methods such as modular construction, the work is carried out in factory environment with limited wastage and time efficiency.

As technology advances, so do construction techniques, often in difficult-to-understand ways. With so many emerging trends and methodologies, it can be difficult to determine which opportunities are worth the time and effort required to properly evaluate and implement, and which are not. One such technique worth considering is modular construction. It has been identified by industry experts as one of the key drivers of growth in 2020. By 2031, India aims to have provided affordable housing to 600 million people. To meet this ambitious goal of rapidly producing affordable yet high-quality housing on a massive scale, construction industry leaders are increasingly turning to modular construction. The Indian construction industry is currently undergoing large-scale digitalization with the goal of making construction faster, greener, safer, and more cost-effective. Modular construction, aided and enabled by digital processes such as constructible BIM, is quickly emerging as the preferred choice for new real estate projects.

When asked if the construction industry has adapted to digitisation/BIM integration post COVID-19 75% of the respondents believe that they have.

**Graph 23: Adaptation to Digitisation/BIM integration Post COVID-19**



# Conclusion

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2022 has entered into a new variant, but with the resilience that the world has shown and the vaccination, there is hope that the pandemic may now be on its way to becoming an epidemic. The construction industry the 2nd largest contributor to the country's economy is likely to re-emerge stronger than before. Economic growth, inflation and the construction industry are interdependent and impact each other. For a balanced economy, a stable construction industry is necessary, which can be accomplished by focusing on the inflation rate behaviour to keep it steady, otherwise, the project cost overrun would continue.

Construction sites are changing as new technology improves the ability to win projects and increases profit margins. With renewed work schedules and varied productivity, the industry resets itself. The roles of industry professionals and frontline workers are shifting because of trends and movements. Harnessing building trends will become increasingly important as the sector gets more competitive and the market transforms.

In 2022, India's investment outlook is set to be dominated by an increased focus on clean and sustainable growth and capitalizing on local production strengths – in other terms, decarbonization and deglobalization.

While 2021 has proven to be a year of struggles, the economic growth stepped into a positive trend in that year, promising a sure growth in the year 2022.



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Click on <https://tinyurl.com/gleedsregister> to complete the registration.

For queries regarding the registration, please write to us at [register@gleeds.in](mailto:register@gleeds.in)

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