



Turner & Townsend

India market intelligence

Q3 2022 Winter

making the **difference**

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Foreword



As India's economic recovery maintains steady momentum, significant challenges remain across regional markets which clients will need to address to move construction activity to the next level.

Following the peaks of the COVID-19 pandemic, a more pronounced recovery was expected during the first half of 2022-23 than in the final quarter of 2021-22. However, sustained supply chain bottlenecks, elevated energy costs and global trade sanctions have hampered the recovery of the construction sector, limiting organisations' appetite for risk.

Construction costs remain high and will do so for the foreseeable future. Market uncertainty also contributes to this dynamic, with increased cost volatility resulting in higher risk premiums being added to prices, which in many instances is adding to inflationary pressures.

In light of these pressures, organisations increasingly need to adopt progressive contracts, operating models and methods of construction in a bid to find further cost efficiencies.

Linked to increasing construction costs, organisations are also facing a shortfall of skilled labour to deliver major programmes – requiring them to think ahead to attract and retain future pipelines of talent that may otherwise be lost to other sectors.

Our market intelligence report brings together insights on construction performance across India, the major cost drivers affecting construction costs and key material prices in India. With particular growth potential led by global technology giants, the report also features a spotlight on data centres in India, including the key challenges developers face and how they can set up for success.

Thank you for taking the time to read the report. We hope our market intelligence and recommendations help you deliver programmes with confidence, and we look forward to discussing the latest trends with you.

Regards,

Ashish Jain
Country Manager
Ashish.Jain@turntown.com

Economic outlook

India's economy was poised for a rebound after enduring a second wave of COVID-19 over the last quarter of 2021. While the recovery has been slower than expected, resilient foundations mean the economy can expect significant growth in the long-term.

Overall outlook

For India, which relies on critical imports from the Eastern Europe, economic growth forecasts have been downgraded as headwinds from rising inflation and supply chain disruptions continue to taper the country's recovery. Despite the expectation of slower growth, the Indian economy expanded 4.1 percent year-on-year in the third quarter of 2022. Growth has largely been driven by merchandise exports such as petroleum products, iron, steel and aluminium, with declines observed in government expenditure and private consumption relative to previous quarters.

Notwithstanding the negative spill over effects from COVID-19 and inflationary pressures, India's broad range of fiscal, monetary and public health responses have helped mitigate longer-lasting adverse impacts and supported its recovery. India's economic fundamentals and long-term outlook, therefore, remain strong despite the observed short-term effects.

The government has implemented a range of Production Linked Incentive schemes for production and manufacturing, coupled with increased spending on infrastructure and digitisation. This is expected to simulate significant growth in the longer term and enhance India's self-reliance.

Inflation

Inflation remains a major concern with increases in consumer prices and record high wholesale price

inflation at 15.88 percent year-on-year as of May 2022. Results from ongoing efforts from the Indian government and the Reserve Bank of India to address inflation concerns – including an increase in benchmark interest rate to 4.9 percent – are yet to materialise. However, we can expect to see minor improvements possibly from the last quarter of 2022, with better prospects as global inflation reduces and begins to reverse domestic prices.

Labour market

The unemployment rate increased marginally from 7.6 percent in March 2022 to 8.9 percent in April. This increase was driven by higher unemployment in rural India as the country observed a decline in urban unemployment. The Centre for Monitoring Indian Economy has opined that unreliable monsoon rains have delayed labour being deployed in rural areas, and this trend may be expected to change as rains pick up pace.

Future outlook

Overall, India's economy has been resilient and is well-positioned for growth in the long term with possibilities of coming out stronger than expected. There are expectations of potential benefits where India could become the preferred destination for investments typically directed towards Eastern Europe. These prospects, together with strong economic fundamentals, put India in a favourable economic position moving forward, especially with growing demand in the industrial and manufacturing sectors.

Figure 1
Key economic indicators

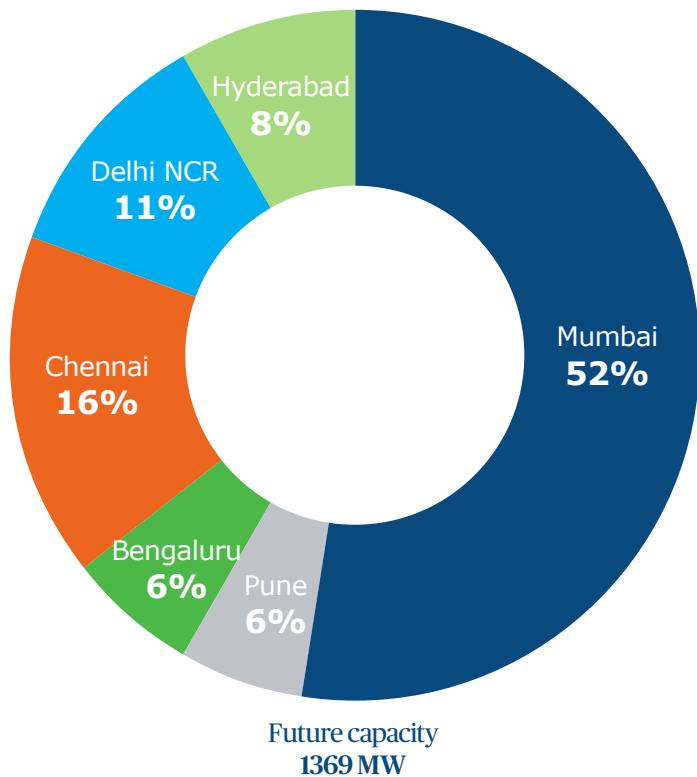
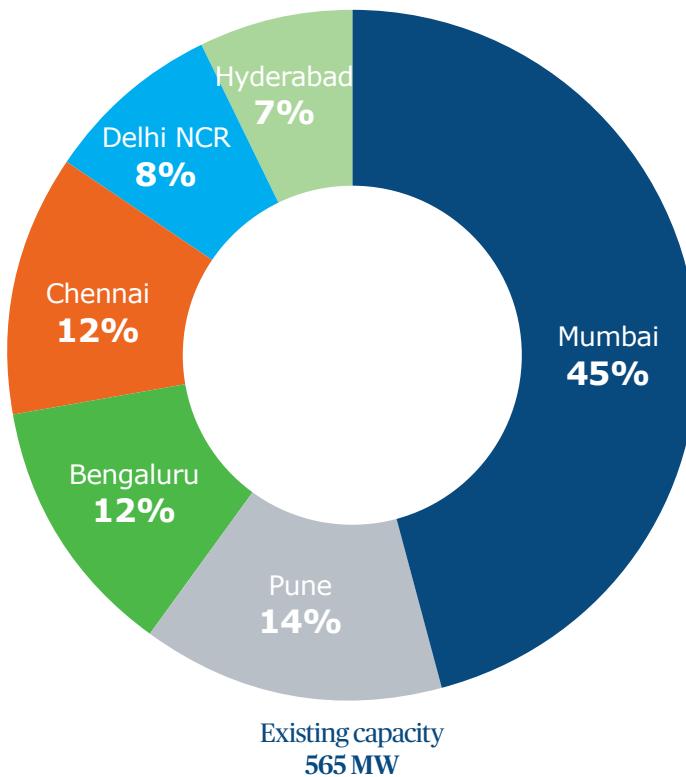
Indicator	Current period	Previous period
GDP annual growth rate	4.1% March 2021 - March 2022	8.4% September 2020 - September 2021
GDP quarterly growth rate	0.8% December 2021 - March 2022	2.1% March 2021 - June 2021
Inflation (annual)	7.04% May 2021 - May 2022	4.91% November 2020 - November 2021
Producer prices (percentage change)	15.88% May 2021 - May 2022	14.23% November 2020 - November 2021
Unemployment	7.8% April 2022	6.9% September 2021
Interest rate	4.9% June 2022	4% December 2021

Construction market

The construction sector across India has experienced moderate growth during the first half of 2022-23, as economies continue to emerge from the impacts of COVID-19.

Following the pattern of India's economy as a whole, the construction sector can expect to see gains as a result of incentives promoting production, manufacturing and infrastructure with major projects coming forward such as Navi Mumbai International Airport and the Chenab River Railway Bridge – and especially in light of infrastructure status being accorded to data centres, as we touch on later in this report.

Figure 2
Data centre capacity by city



The industry is still feeling the effects of disruption in recent years from a number of directions. On the one hand there is continued inflation of contractor preliminaries – reaching as high as 15 percent in Mumbai. As contractors struggle to recruit skilled labour, high construction costs are unlikely to abate soon.

Materials costs also remain above pre-pandemic levels, driven by surges in the cost of crude oil and diesel which contribute to production and transport costs for key construction materials.

Pent-up demand for construction projects, put on hold until now due to COVID-19 disruption, is stretching the capabilities of organisations and contractors, particularly in the office fit-out market which accounted for 25 percent of work volumes in

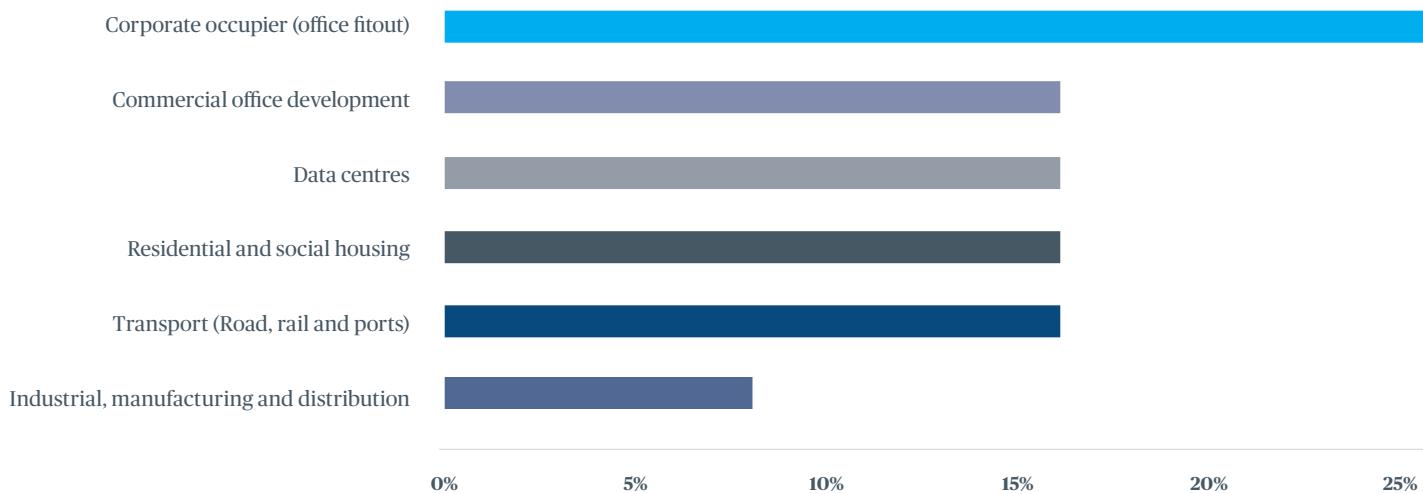
the first half of 2022-23. Office fit-out demand is unlikely to abate any time soon, as organisations seek to reimagine their office requirements and create more flexible working environments for their staff.

Data centres programmes are emerging rapidly and form a large part of this overall picture, on top of further new industrial, manufacturing and distribution programmes elsewhere. We anticipate this expansion to gain pace and contribute an increasing proportion of overall work volumes in India.

Most of the remaining construction workload in India is evenly split between commercial office development (new build), residential housing including social homes, and transport expansion including major airport programmes.

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Figure 3
Sector growth



The dominance of the office and data centres sectors can be seen in each of the key markets in India: Mumbai, Delhi, Bangalore and Hyderabad. All were found to be 'warming up' for construction demand in our International Construction Market Survey 2022, with investments led by global technology giants:

- In Mumbai, growth can largely be attributed to expansion of the data centres sector, not least amid news that Amazon has secured a 21 year lease on land in the region for a new data centre.
- Delhi is witnessing a surge in Grade A office space and luxury residential apartments. In the state of Haryana, construction has begun on Ingka Centres' first mixed-use meeting place in India, bringing retail, green community areas and workspaces together.
- In Bangalore, there are high expectations for an uptick in commercial property, including data centre giant Google leasing 1.3 million sq ft of office space in the city.
- Hyderabad has seen expansion across a range of asset types including residential property, warehouses, data centres and infrastructure. The city has secured a major boost in the form of Microsoft's plans to establish its latest data centre in the area.

Construction cost

Costs for materials and labour remain well above pre-pandemic levels, led by the cost of crude oil and diesel and increases in minimum wages for labour workers.

Major cost distribution across various asset types

While every construction project is unique and the cost of projects varies from asset to asset, we are seeing a number of dominant cost drivers emerge.

The table displays 20 major cost drivers on five different types of construction project. For a high-rise mixed-use development, these drivers contribute 60 to 61 percent of construction cost while on a low-rise commercial building, they contribute 38 to 39 percent of overall construction cost. On high-rise

and low-rise residential buildings, the contribution is between 41 to 42 percent and 38 to 39 percent respectively. For a low rise Tier 3 data centre, these cost drivers account for 47 to 48 of construction cost.

On any high-rise building, concrete, shuttering and reinforcement are two clear factors contributing anywhere between 32 to 33 percent of construction cost – an increase of 3-4 percent in the last two quarters. This is mainly due to the steep increase in cement and steel prices.



Figure 4
Major cost distribution across various asset types

Key cost drivers	High rise mixed-use development	Low rise commercial building	High rise residential building	Low rise residential building	Low rise Tier 3 Data centre
Concrete	10.7%	5.5%	10.5%	13.0%	1.7%
Shuttering	3.4%	2.5%	7.7%	6.8%	0.4%
Reinforcement	18.0%	6.0%	12.0%	9.1%	5.8%
Glass	9.4%	2.5%	1.3%	1.6%	1.1%
Paint	0.4%	0.5%	0.4%	0.8%	0.1%
Ceiling	1.1%	2.1%	0.7%	0.2%	0.0%
Air Conditioning Equipment	1.8%	2.8%	1.6%	0.8%	14.3%
Generator	1.6%	3.0%	0.4%	0.3%	7.9%
Transformer (HT/LT)	0.7%	0.3%	0.3%	0.2%	1.4%
Electrical cable	1.3%	1.0%	0.6%	0.7%	8.6%
Fire Fighting pipe (GI/MS)	1.5%	3.0%	0.4%	1.0%	1.8%
Fire Fighting pump	0.7%	0.4%	0.1%	0.2%	0.2%
Chilled water pipe/ Referigeration pipe	0.7%	0.7%	0.2%	0.0%	1.3%
Vertical Transportation & escalator	4.3%	1.5%	2.8%	2.2%	0.3%
GI Ducting	0.4%	2.0%	0.1%	0.0%	0.2%
UPVC pipe	0.4%	0.3%	0.5%	0.9%	0.3%
Water supply pipe	0.5%	0.3%	0.2%	0.7%	0.1%
CCTV Camera	0.2%	2.0%	0.3%	0.2%	1.3%
Light fitting	3.2%	2.3%	0.9%	0.1%	1.4%
Sanitary fittings	0.6%	0.7%	0.8%	0.2%	0.0%
Others	39.1%	60.9%	58.2%	61.0%	51.8%

Note: Above percent contribution is indicative and may vary in a close range due to project specifics

Major components affecting construction cost

Cement and steel

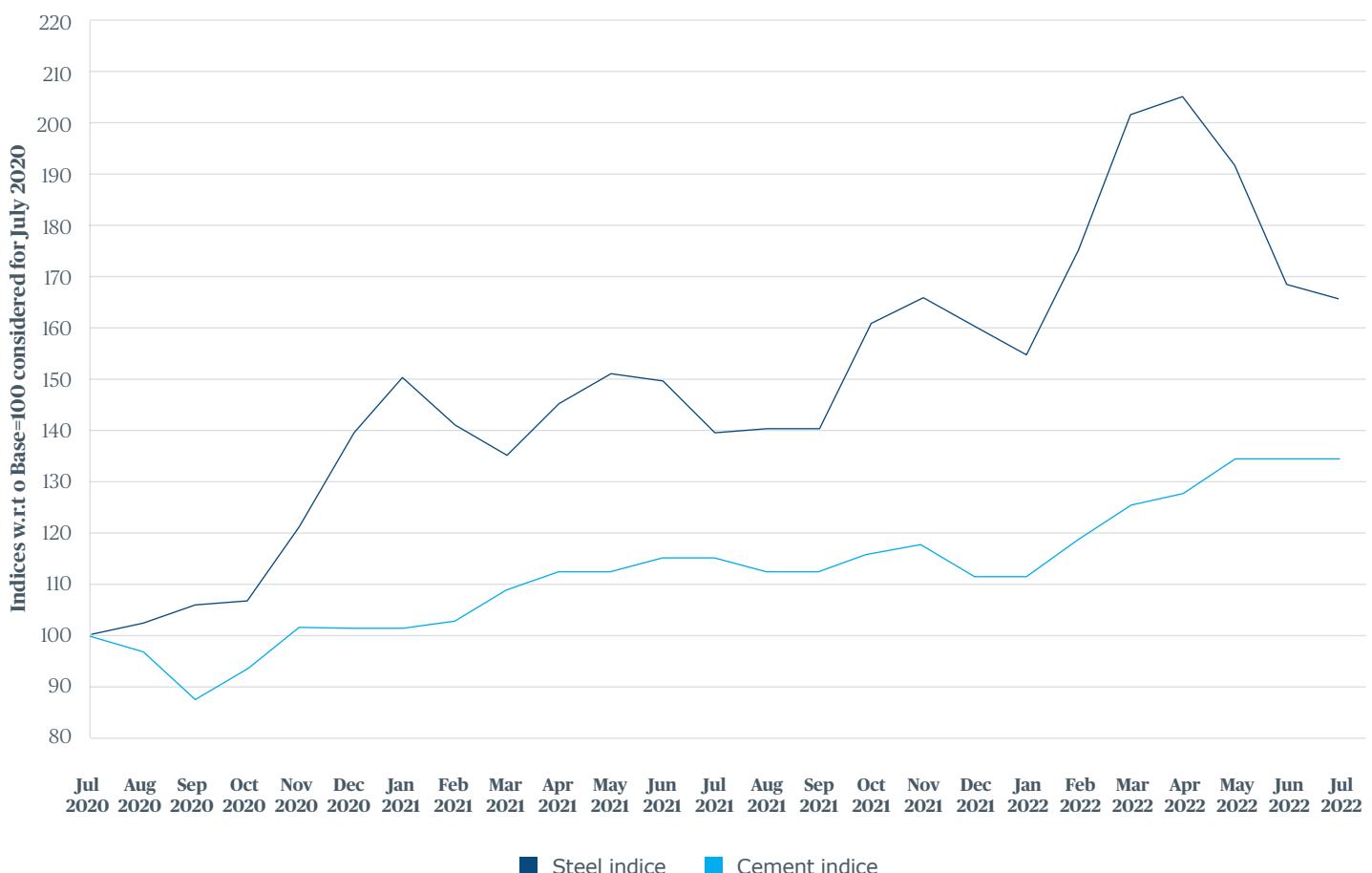
The last 6-8 months steel have seen major fluctuation in cement and steel prices. It was anticipated that steel prices would continue to decline from December 2021 levels, but on the contrary prices rebounded and touched a new peak in March-April 2022 due to supply chain bottlenecks.

For the first time in a long time, steel has seen a decline in price from May 2022-23, driven by reduced demand in domestic and export markets,

especially in China. Export demand has been hit hard by May's introduction of a 15 percent duty on steel exports.

Cement prices meanwhile continue to rise due to sustained increases in input costs, not least diesel prices, inward freight and manufacturing costs.

Figure 5
Basic price indexing for cement and steel

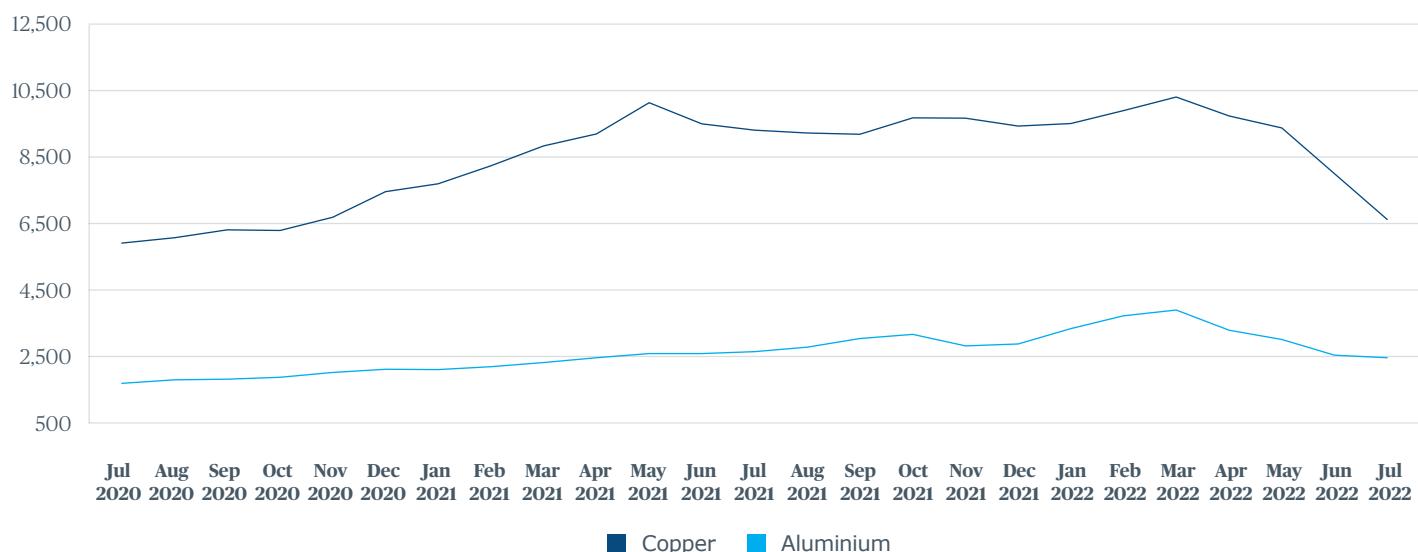


Metal

Copper and aluminium prices continue to touch new peaks, even after a positive period during the worst of COVID-19 related supply chain disruption. This was largely due to the conflict in Ukraine and ensuing uncertainty. As uncertainty has declined, so too have copper and aluminium prices, further supported by a slowdown of demand in China.

Figure 6
Copper and aluminium

USD/MT



Fuel

Crude oil prices remain high, with a volatile outlook. In the face of the gap in oil supplies left by sanctions on Russia, suppliers have been found unable to fill the gap. This has inevitably had a knock-on effect on diesel costs.

Following steady increases in crude oil prices throughout all quarters of 2021-22, modest increases have continued into the first half of 2022-23. This means current oil prices remain well above pre-Covid-19 levels.

Figure 7
Crude oil prices in India

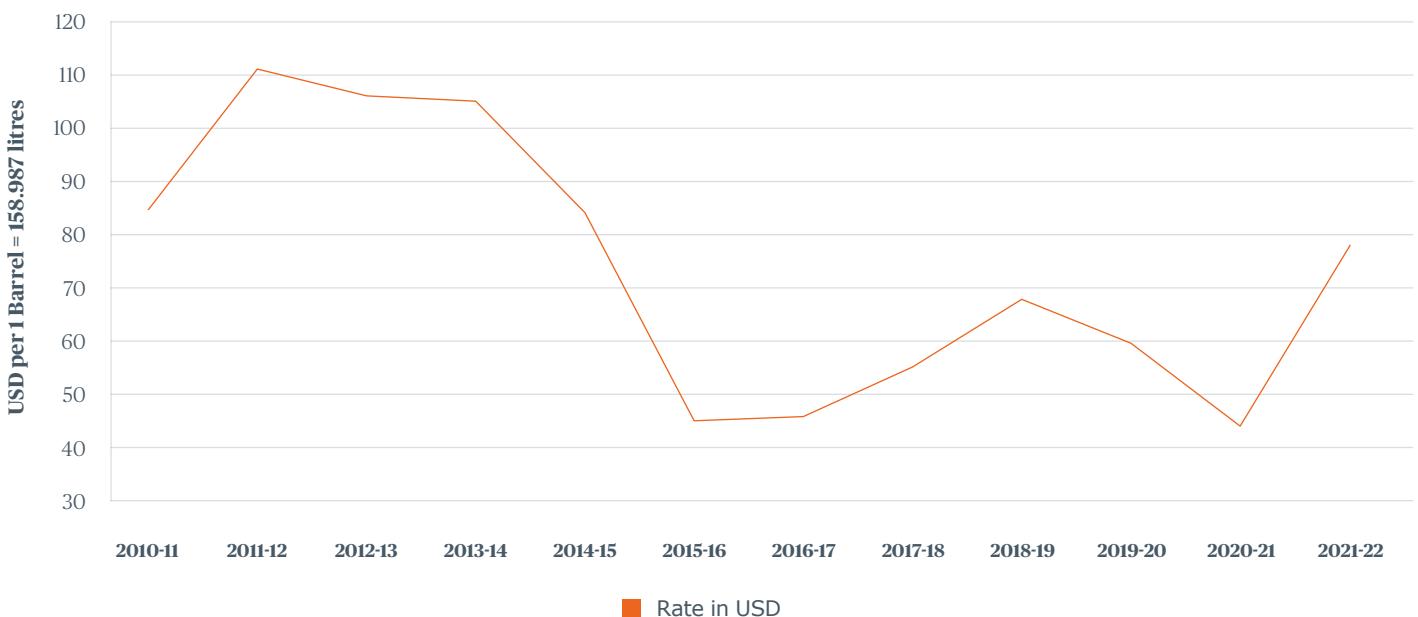


Figure 8
Quarterly crude oil prices in India (Q1 2018 to Q2 2023)



Diesel prices have seen a modest decrease below the three figure mark across India in the first half of 2022-23, however prices remain at an unsustainable rate that adds further pressure directly or indirectly to construction material prices including cement and associated transport costs. The slight decreases to prices may be at least partially attributed to the government's record reduction in excise duty on petrol and diesel in November, which we referenced in our previous report.

Organisations should consider where reductions in transport requirements can be made through careful pre-planning of procurement strategies including localised production. This will help not only achieve construction cost reductions, but assist in decarbonising projects and programmes.

There should also be an emphasis on forming long-term frameworks with suppliers so that clients can share the pipeline of work well in advance and secure the materials and services at agreed bulk rates.

Figure 9
Diesel prices in India - city wise



Foreign exchange market (Forex)

Most India construction projects are impacted by Forex variation due to the use of imported products like high-end mechanical, electrical and plumbing (MEP) equipment including lifts, extra-low voltage (ELV) systems, workstations, chairs, light fittings and sprinklers. The extent of Forex impact varies from project to project and according to the applicable currency and country of origin.

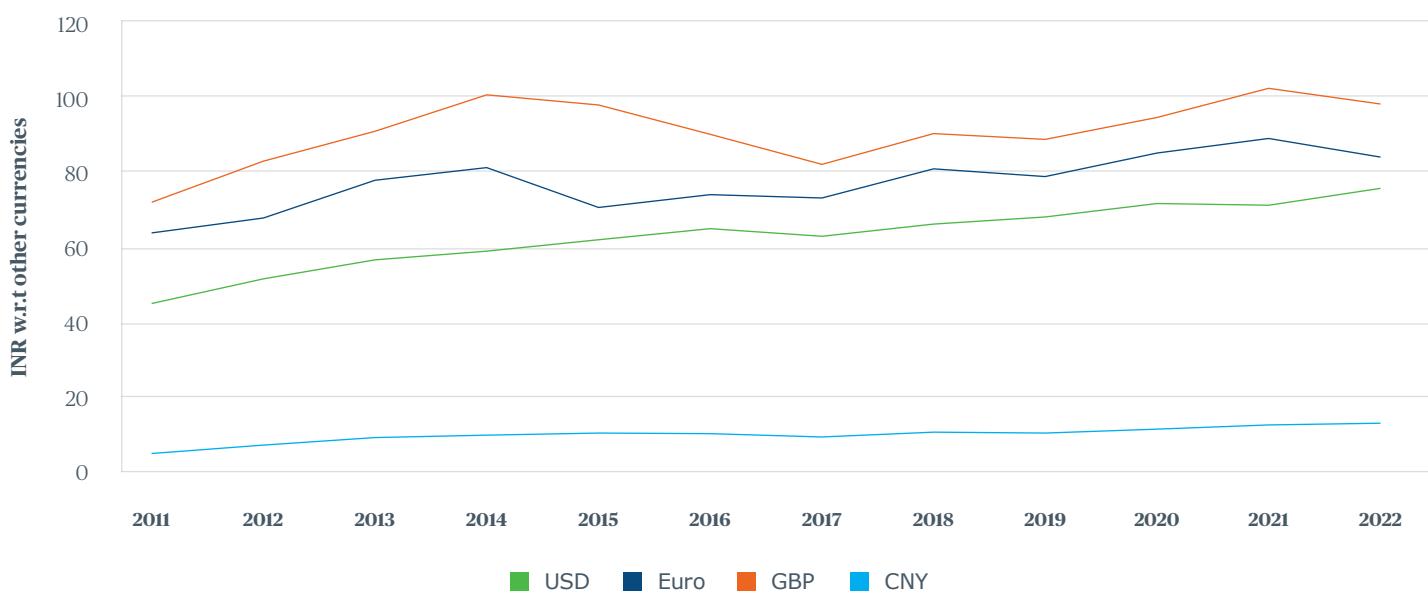
Conversion rates for the Rupee currency have seen something of a reversal in the year to date relative to 2021. In the first half of 2022, the Rupee has appreciated by 3.58 percent relative to GBP, 5.43 percent in comparison to the Euro and depreciated by 0.95 percent in relation to Chinese Yuan.

Following last year's signs of resistance to USD, the Rupee depreciated by 4.41 percent.

This is reflected in the major component costs for construction we have outlined above, as greater spend is committed to buying the dollars needed to secure key imports.

The government is continuing attempts to arrest these trends through the 'Make in India' initiative and inviting global manufacturers to set up facilities in India. The recent news that India can expect investment totalling \$25 billion (USD) as a result of its local semiconductor incentive scheme is a welcome indicator of the local production of key components coming forward in the mid to long term.

Figure 10
Forex rate chart



Key material prices in India

Materials	Unit	Mumbai	Delhi NCR	Bangalore	Hyderabad
	INR /50 kg bag				
Cement - OPC-53	INR /50 kg bag	300	270	290	282
Steel reinforcement	INR/MT	65,300	60,000	61,700	62,000
Structural steel (L angle, Channel and H beam)	INR/MT	73000	71,950	72,000	72000
6mm clear glass	INR/sqm	861	850	865	880
8mm clear glass	INR/sqm	1232	1,250	1154	1180
10mm clear glass	INR/Sqm	1540	1,500	1442	1475
12mm clear glass	INR/sqm	1850	1,700	1730	1750
6mm toughened glass	INR/sqm	1120	1,000	1051	1100
8mm toughened glass	INR/sqm	1650	1,500	1401	1450
10mm toughened glass	INR/sqm	1950	1,750	1751	1780
12mm toughened glass	INR/sqm	2150	2,000	2101	2150
100 mm thick block work	INR/sqm	410	518	442	455
150 mm thick block work	INR/sqm	620	770	572	598
200 mm thick block work	INR/sqm	832	984	702	741
100 mm thick block work - AAC (600*200*100 mm)	INR/sqm	475	312	450	414
150 mm thick block work - AAC (600*200*150 mm)	INR/sqm	680	468	675	612
200 mm thick block work - AAC (600*200*100 mm)	INR/sqm	900	623	945	828
Heavy duty GI pipe 25mm to 150 mm	INR/RMT	250-1650	237-1617	253-1725	253-1725
Heavy duty MS pipe 25mm to 150 mm	INR/RMT	210-1500	199-1426	204-1456	204-1456
GI sheet-24g (90 GSM)	INR/sqm	410	351	461	385
GI sheet-22g (90 GSM)	INR/sqm	575	464	546	459
GI sheet-20g (120 GSM)	INR/sqm	660	588	643	584
GI sheet-18g (120 GSM)	INR/sqm	850	710	837	845
LT chiller - Water cooled (Non VFD)	INR/TR	19K-21K	19K-20K	20K-22K	19K-20.5K
Transformer - 11/415 KV Oil Cooled	INR/KVA	2050-2150	1900-2000	2100-2200	1900-2000
LT Generator - 415 V	INR/KVA	9200-9400	8200-8400	8300-8500	8400-8600

Note: All prices are based on Turner & Townsend's internal project data and market intelligence. Above prices include project level commercial discounting available in supply chain. Above prices do not include contractors' overhead and profit and taxes.

Labour

In India, every state declares minimum wages for various categories (skilled, semi-skilled and unskilled) which are revised year-on-year based on GDP.

Minimum wages have significantly increased in major cities across the region, including skilled, semi-skilled and unskilled labour, as employers bid to address sustained skills shortages. This includes modest

increases in minimum wages from central government across all skill levels.

While this contributes to the overall escalation in construction costs, there is a recognition across the sector that wage inflation is necessary to secure the skills needed for delivery.

Figure 11
Minimum wages

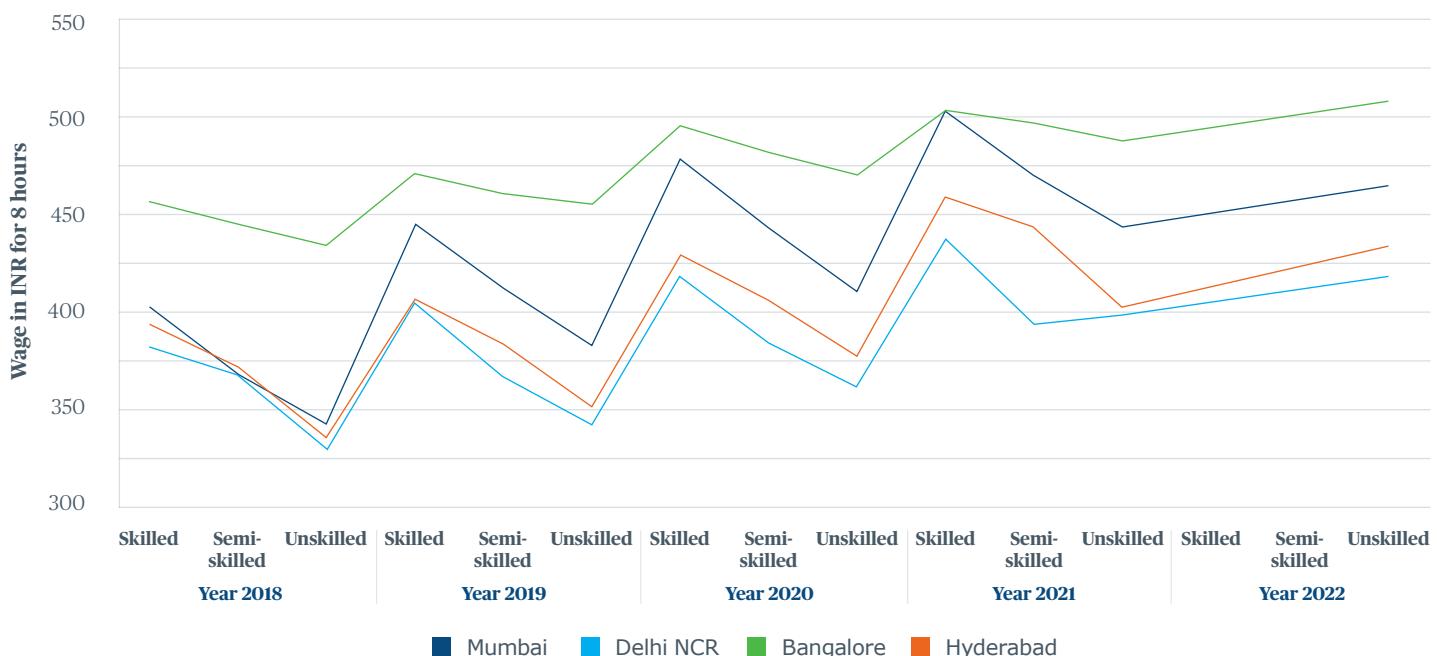
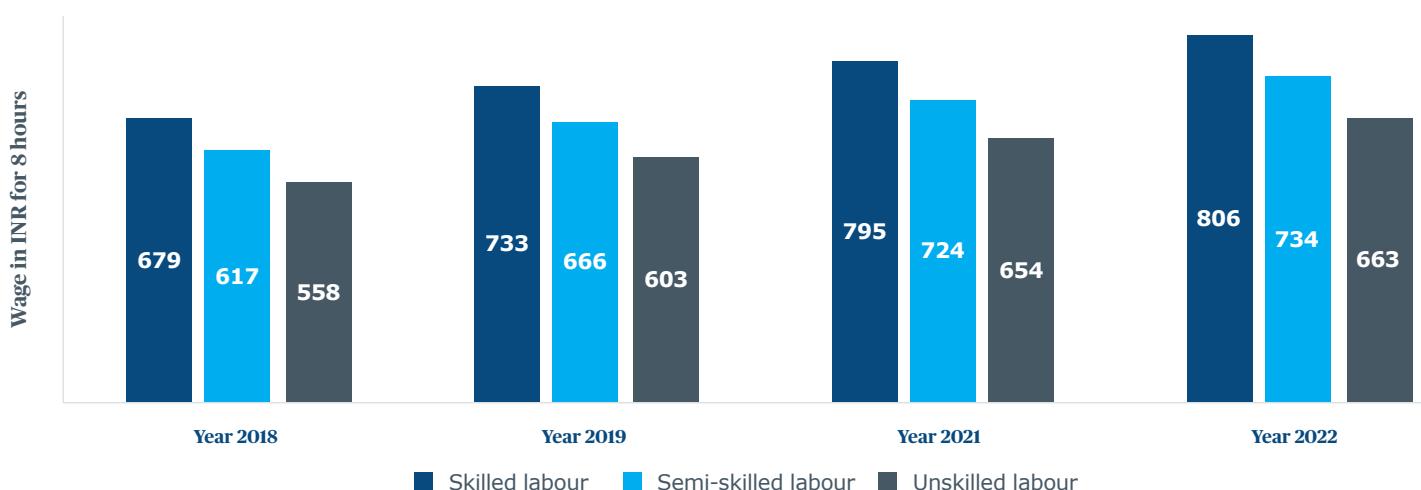


Figure 12
Minimum wages by Central Government for construction sector



Construction employers will however be encouraged by the decreased urban unemployment levels in India and will hope to capitalise on this to attract a raft of further talent to their own workforce. To maximise the attractiveness of their offering, clients and

contractors need to think beyond wages alone, and deliver a competitive rewards and remuneration package, including healthcare benefits, high quality accommodation for construction workers, relevant and regular training, and best practice governance.

Spotlight on

The rise of data centres

The Indian data centres (DC) industry's capacity is expected to witness a five-fold increase in the next five years, with an overall 3,900-4,100 MW of capacity coming online according to ratings agency ICRA.

A significant proportion of demand is driven by large global hyper-scalers like Amazon Web Services, Google, Microsoft, Facebook, IBM, Uber and Dropbox as these giants outsource their storage needs to third party DC providers. However, home-grown demand is also playing a growing role in driving the industry's expansion, with Indian corporates like the Hiranandani Group and the Adani Group joining established players such as NTT, CtrlS, Nxtra and STT India.

Recognising the role data centres will play in accelerating the country's digital economy, the Delhi government's support for the industry in the 2022 Budget has been welcome. The decision to grant infrastructure status to data centres can be a game changer, enabling large corporates to access longer tenured debt at competitive rates and foreign funding.

Selecting a site

As state governments compete to attract investment, practical considerations around site selection and location remain. In a recent sector survey the risk of

natural disasters such as floods and typhoons remained a dominant concern for 22 percent of respondents. In regions where power sources can be unreliable, 12 percent focused on power availability as their second most important priority – and our advice would always be to take power directly from state grids.

Network dynamics remain critical, with only 15 cable landing stations in five cities: Mumbai, Chennai, Cochin, Tuticorin and Trivandrum. To meet the growing demand from business and improve low international latency, carriers in Mumbai have constructed several subsea cable landings to provide quick and reliable connections to Europe, Asia-Pacific and the Middle East.

Mumbai is followed by Chennai, which is a major entry and exit point for international subsea cables connecting the Asia-Pacific region. Chennai is expected to see the second highest capacity addition due to its twin advantages of submarine cable landing stations and lower development costs.

Elsewhere Ambattur and Siruseri continue to be growth districts for urban data centre development.

City	Prominent locations	Advantages
Mumbai	Navi Mumbai and Chandidaval	Cable landing stations, assured power supply and state incentives
Bengaluru	Whitefield and Electronic City	Demand from being India's IT hub, the unofficial capital of e-commerce and digital start-ups
Delhi	Noida, Manesar and South Delhi	Demand is driven by concentration of telecom industries, government departments and hyper scalers
Chennai	Siruseri and Ambattur	Cable landing stations, demand from local IT sector and large hyper scalers and state incentives
Pune	Pimpri and Chakan	Proximity to Mumbai, presence of IT companies and demand from enterprises and hyper scalers
Hyderabad	High Tech City and Budvel	Demand is driven by IT sector and hyper scalers and favourable policies
Kolkata	Salt Lake and Ultadanga	Demand from higher consumption of OTT

Assembling the right team

Successful delivery of DC projects relies on getting the right advice and team in place.

Authority approvals are among the greatest construction challenges, including environmental clearance for greenfield sites and approval for new build construction. To mitigate this clients should appoint a local, competent permit consultant to advise and support towards timely approvals.

Land transactions are an equally time-consuming process and involve extensive technical and legal due diligence. Working with an expert transaction

manager with experience in the region can be invaluable to effectively manage approvals and documentation.

In light of power reliability concerns, and expectation of future imperatives to increase energy efficiency, energy consultants are also an important decision. Power Usage Effectiveness (PUE) is a critical element to factor into data centre designs, and needs consideration in the early stages of programme establishment.

Contracting and procurement models

Construction can be challenged by local socioeconomic risks impacting programme timelines, together with a shortfall of skilled vendors and a reluctance to deploy modern methods of construction. This should be managed through effectively coordinated contracts at the onboarding stage, together with a thorough pre-qualification and procurement evaluation. Contracts should also make clear the preferred methods of construction.

Traditional models persist for procuring key materials, minimising the risk by default from contractors and designers. However, a Design and Build approach is gaining popularity – particularly for hyper-scale data centres. As the breakdown below demonstrates, Design and Build offers greater programme certainty, while retaining the same level of risk transfer and allocation. The downside is a slight decrease in cost certainty and quality control, plus perceived difficulties responding to change.

Objective / Procurement method	Programme certainty	Cost certainty	Quality and Design control	Risk transfer / Allocation	Ease of changing employer's requirements	Default by vendor
Traditional / General contracting	High	Medium	High	Medium	Medium	Low
Design and Build	Medium	Low	Medium	Medium	Low	High

A similar pattern can be observed in approaches to contracting models, with a reluctance to shift the dial from traditional approaches. Lump sum contracting models are typically preferred for larger programmes, whereas an Item Rate approach is currently preferred for smaller, isolated projects.

Clients running major programmes should equally consider the value of an Item Rate approach, in light of escalating materials prices in an increasingly volatile market. The value for money and flexibility offered by an Item Rate model – together with the time gained back during project set-up – provide advantages that outweigh sacrifices in cost certainty and risk to the client.

Objective / Contracting method	Early start of works	Cost certainty	Value for money	Ability to accommodate changes	Risk to client	Quality of works
Traditional / General contracting	Low	Medium	High	High	Medium	Low
Design and Build	Medium	Low	Medium	Medium	Low	Medium

In a market characterised by rising competition and wider cost escalation beyond the data centre market, keeping a close handle on costs will be a priority for the sector.

Looking ahead

In the expanding data centres sector and across India's construction market, we have outlined decisive steps clients can take to reduce programme costs and deliver growth.

Forward planning with long-term frameworks and flexible contracts holds the key to successful partnerships throughout the value chain, as organisations adapt to volatility in the market and mitigate cost increases.

Labour shortages will persist for the foreseeable future but clients and contractors should be aiming to turn the tide quickly by making their employment offering as attractive as possible.

We have reflected on the surging construction demand led by the technology sector, not least the demand for data centres. The vast power demands of data centres mean that developers will need a razor sharp focus on well thought through project set-up, to secure the necessary power and ensure energy efficient operation.

The outlook is a cautiously optimistic one, but construction clients cannot afford to take their foot off the gas if India's recovery is to continue and gain momentum.



About Turner & Townsend

Through the commitment, capability and care our team brings we build trust between clients, suppliers, governments and society. Delivering better outcomes that have a positive impact on the world around us.

We work smarter to face the challenges of the future; bringing the clarity that helps teams to realise their full potential across the real estate, infrastructure and natural resources sectors.

It's how we've made the difference for 75 years.

Transforming performance for a green, inclusive and productive world.

Our team



Laxman Nebhwani
Director, Major Programme
Laxman.Nebhwani@turntown.com



Sarang Molkar
Cost Management Director, South India
Sarang.Molkar@turntown.com



Shrinivas Hitnalli
Cost Management Director, West India
Shrinivas.Hitnalli@turntown.com



Shikha Shah
Director, North India
Shikha.Shah@turntown.com



www.turnerandtownsend.com

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