



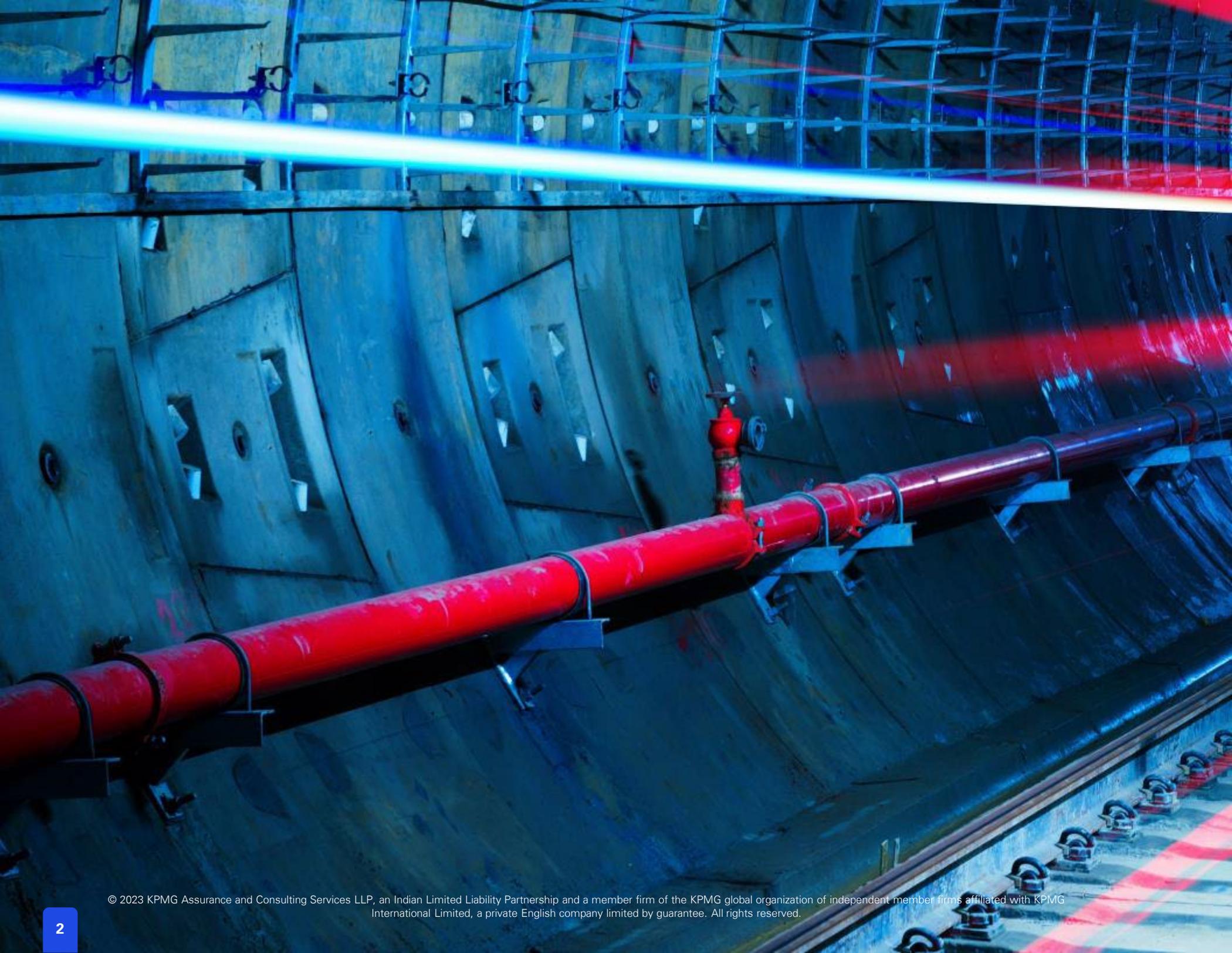
# Familiar challenges, new approaches

Global Construction Survey  
2023 – India edition



[Kpmg.com/in](https://kpmg.com/in)

—  
June 2023





# FOREWORD

The Indian construction industry is at a major inflection with large demand-side forces created through multiple government incentives for new infrastructure creation, manufacturing capacity addition and ambitious private sector growth plans involving fresh capital expenditure programmes and projects. The infusion of an enhanced ESG aware agenda, digital and technological innovations, and a renewed desire to complete projects on time and at cost despite perennial project performance challenges, driven by the significant optimism demonstrated by the survey respondents are cumulatively scripting a new construction landscape for India.

We are excited to launch the KPMG Global Construction Survey 2023 - India edition, the first of its kind for our India-region and international readers. Built on the back of the KPMG Global Construction Survey 2023 spanning 267 construction industry leaders, the India edition extracts the views and insights of 119 India-based primary survey respondents fulfilling leadership roles in project owner firms and engineering & construction firms, from both the public and private sectors.

The survey covers important topics relating to our industry growth opportunities and sentiment, performance and resilience, risk management, ESG, work-force safety, wellbeing and motivation, digital technologies and innovations including modular and offsite construction methods. The survey findings are complemented by insights and points-of-view from KPMG experts. We also have the privilege of highlighted industry point-of-views from industry leaders representing the full stakeholder spectrum of project owners, engineering and contracting (E&C) firms, and the government. Each section of this report concludes with critical takeaways and proven leading practices adopted by successful firms in India. The components can collectively guide our survey respondents, readers and our wider construction industry community to achieve success with their capital programmes and projects. We have also provided an intelligent data analysis tool to enable our readers to conduct self-assessments and benchmark practices against Indian and global survey datasets, peer group comparisons, and gain insights to protect against risks and enhance performance.

- The Indian construction sector exhibits a positive outlook with a resounding 84 per cent of respondents feeling optimistic on the future direction of the construction market. The industry continues to face headwinds from a volatile implementation environment - labour shortage, low productivities, supply chain disruptions, regulatory hurdles and challenging land acquisition scenarios. Regardless, our respondents have demonstrated new strategies and mitigation methods to become more resilient, remain competitive and ensure continued growth.
- ESG presents both opportunities and risks. On the positive side, the shift to a low-carbon, biodiverse, circular world can drive infrastructure and construction spend and bring competitive advantage, improved ROI for forward-thinking and purposeful businesses, who should be ahead of the queue for both capital and new talent. However, ESG also brings rising scrutiny and compliance requirements, as well as pressure to reduce embodied and operational carbon footprint, waste and pollution which could be costly and presents significant and multi-dimensional obstacles.



- The technology dilemma persists, as both project owners and, particularly, E&C firms ponder where to invest and how to find the substantial sums needed to become digital leaders. Some of the key breakthroughs—like modular/offsite manufacturing—are still relatively low-tech and, if not widespread, are definitely gaining momentum. Proven digital technologies with demonstrated higher performance and return on investment include integrated project management information systems,

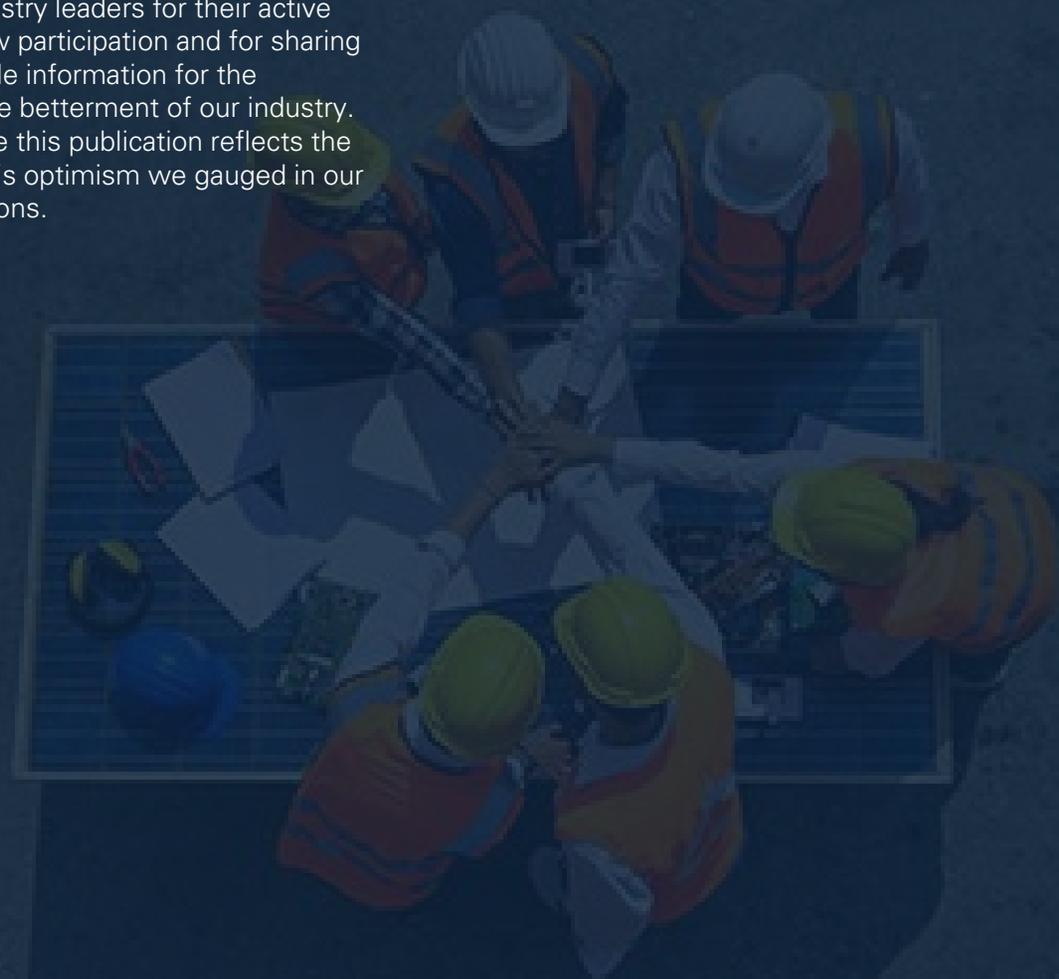


**Suneel Vora (PMP)®**

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KPMG in India

building information modelling (BIM), data analytics, machine engineering and design, modular/off-site manufacturing, mobile platforms, drones and digital twins.

- We thank all our survey respondents and industry leaders for their active interview participation and for sharing invaluable information for the collective betterment of our industry. We hope this publication reflects the industry’s optimism we gauged in our interactions.



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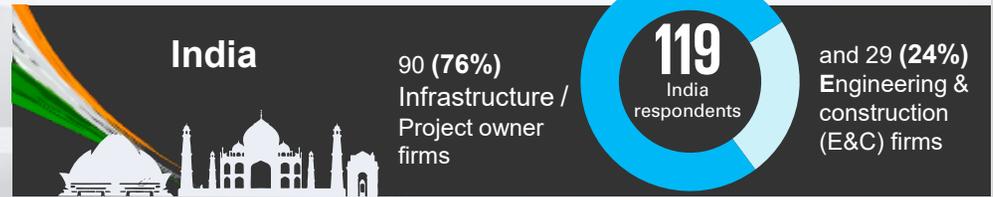
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# Survey at a Glance

Insights from our India respondents (1/2)



## Creating Profitable Growth

**84%**

respondents are optimistic about the direction of the construction market

**39%**

have confirmed at least 20 per cent time / cost overruns on their projects

**80%**

feel infrastructure stimuli will have a significant to moderate positive impact on the industry

**72%**

confirmed the most important response to current challenges is in enhancing the rigour of planning activities to increase confidence around project scope, schedule, quantities

**35%**

feel the planned revenue growth / capital expenditure will **exceed 20 per cent over the next 12 months**

**52%**

feel clearly defined and standardised project risk management processes & controls is important

## Rising influence of ESG

**60%**

respondents envision the benefits of ESG and are aggressively pursuing its maturity and improvement

**41%**

identify embedded ESG principles with reputational improvements

**90%**

Favour decarbonisation practices such as energy efficiency, construction waste reduction, more efficient use of sustainable and local materials, and use of renewable energy

**86%**

consider development of improved and innovative training programmes are important to attract next generation workforce

**62%**

feel change in behaviour, leadership and culture will drive improved safety over the next 5 years



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# Survey at a Glance

Insights from our India respondents (2/2)

## Accelerating digital and technological innovations

**88%**

respondents rate integrated project management information system (PMIS), prefabricated technologies and data analytics as highly important

**84%**

rate building information modelling (BIM) as an important differentiating technology

**50%**

saw at least 10 per cent reduced time / cost or avoided overruns by adopting BIM and modular / off-site manufacturing

**44%**

have adopted integrated PMIS and basic data analytics on all their projects

**27%**

have adopted BIM on all their projects

**37%**

use modular and off-site manufacturing on at least 20 per cent of their projects

The proportion of respondents that rate the following technologies with potential to deliver the greatest overall ROI for their projects

**Integrated PMIS:**

**73%**

**Advanced data analytics:**

**38%**

**BIM:**

**32%**

**Modular/ off-site manufacturing:**

**29%**



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# Creating profitable growth



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# A climate of growing optimism



India's construction market has witnessed a significant surge fuelled by the post pandemic recovery and extensive infrastructure development initiatives undertaken by the government. National Infrastructure Pipeline (NIP) with a projected infrastructure investment of USD1.4 Tn<sup>1</sup> covering approximately 9000 nos<sup>2</sup> infrastructure projects and the National Monetisation Pipeline (NMP) with a potential of USD70 Bn of asset creation through monetisation during FY20-25 have provided the much-needed impetus for stepping up infrastructure investment. The 'Make in India' program, 'Atmanirbhar Bharat' program and the 'Production Linked Incentive' (PLI) schemes aim to invigorate new capital investments in industrial and manufacturing sectors in the country.

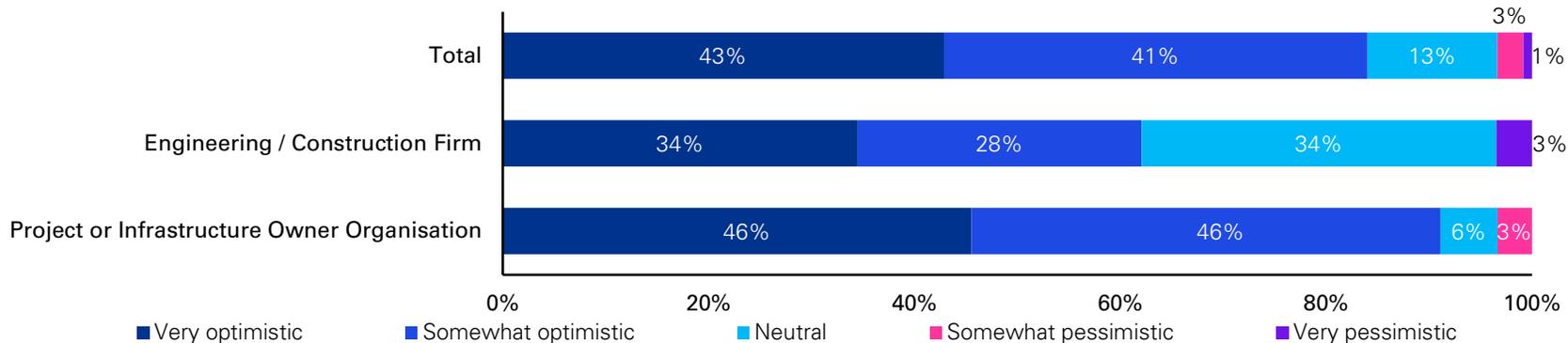
More recently, a USD2.5 Bn National Bank of Financing Infrastructure and Development (NaBFID) has been created by the Government of India, to fund infrastructure projects. 100% foreign direct investment under the automatic route is now allowed for most of the infrastructure subsectors. The construction sector already contributes a significant 8% to the nation's GDP. The size of this construction market is expected to grow rapidly given this demand at a compounded annual growth rate (CAGR) of 17.26% during the 2022-27 forecast period.<sup>3</sup>

KPMG's Global Construction Survey 2023 India Edition finds this sentiment quantified with a significant proportion of the respondents optimistic about the direction of the construction market.

Overall, the Indian construction market exhibits a positive outlook, with 84 per cent of respondents feeling either very optimistic or somewhat optimistic, compared to 66 per cent for the global market response.

Approximately 92 per cent of Indian project owner organisations express very optimistic or somewhat optimistic views, compared to 76 per cent of their global peers. On the other hand, about two-third of E&C firms in India are optimistic about the direction of the future Indian construction market, compared to half in the global scenario. E&C firms while benefiting from the market stimulus are more cautious when compared with their owner counterparts. We explore the reasons below.

**Exhibit 1: Which of the following statements best describes the direction of the construction market?**



1. Published by Invest India, June 08, 2023

2. Published in press release page, Press information bureau, January 31, 2023

3. India Infrastructure Construction Industry Report 2023, Published by Research and Markets, April 26, 2023



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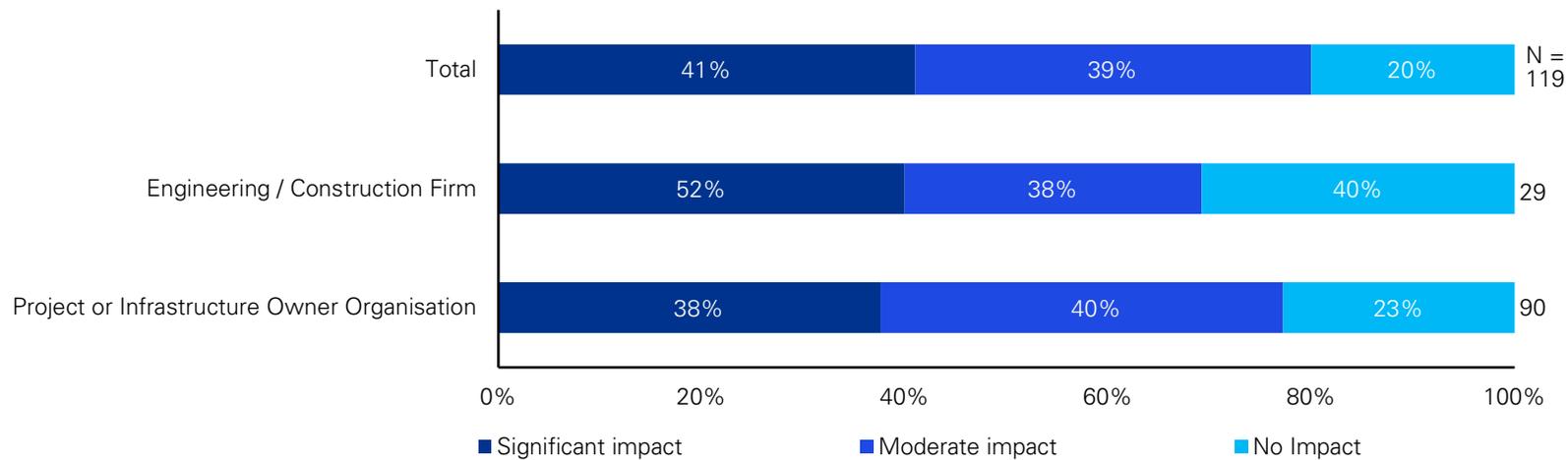
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Despite being one of the fastest-growing sectors that contributes significantly (second largest economic activity after agriculture) to the country's economic growth, the Indian construction sector continues to face a number of challenges, namely, supply

chain disruptions, escalating energy costs, materials and labour costs, and shortages of skilled workers. However, there is also a sense of anticipation and enthusiasm regarding the potential government funding, investments, and incentives for significant infrastructure

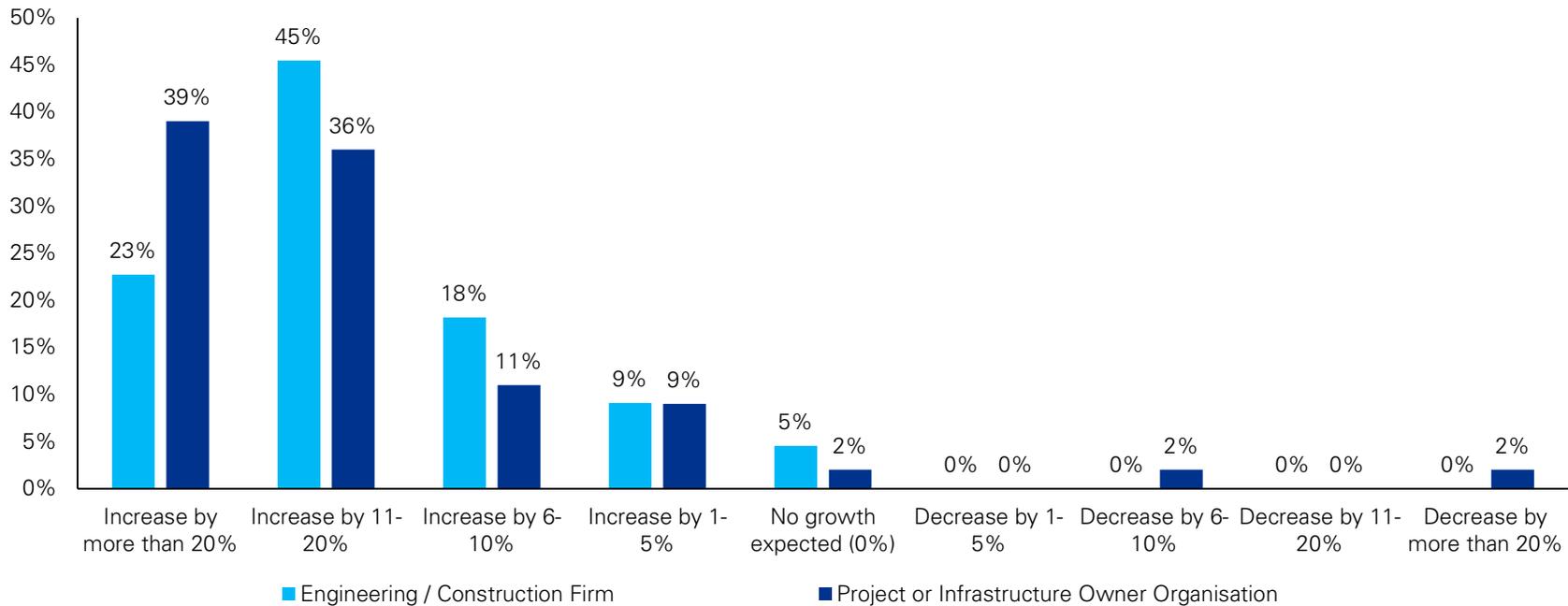
projects that is reflected by response where more than 41 per cent of the survey participants feel this funding will have a significant impact and a further 39 per cent expect a moderate impact.

**Exhibit 2: What impact will the government’s funding, investment and/or stimulus of large-scale construction have on your organisation in the next 12 months?**



The optimistic and buoyant mood further reflects into the planned revenue growth wherein almost 7 of 10 respondents (both project owner and E&C firms) expect revenue growth to be at least greater than 10 per cent, and just 5 per cent of E&C firms and 6 per cent of project owner firms predicting zero or negative growth. As expected, E&C firms remain more cautious than project owners, given attendant project execution challenges and with limited visibility into owners' robust capital plans and expenditure outlays.

**Exhibit 3: For your organisation over the next 12 months, what is the planned revenue growth (For E&C firms) / planned capital expenditure (for project / infrastructure owner firms)?**

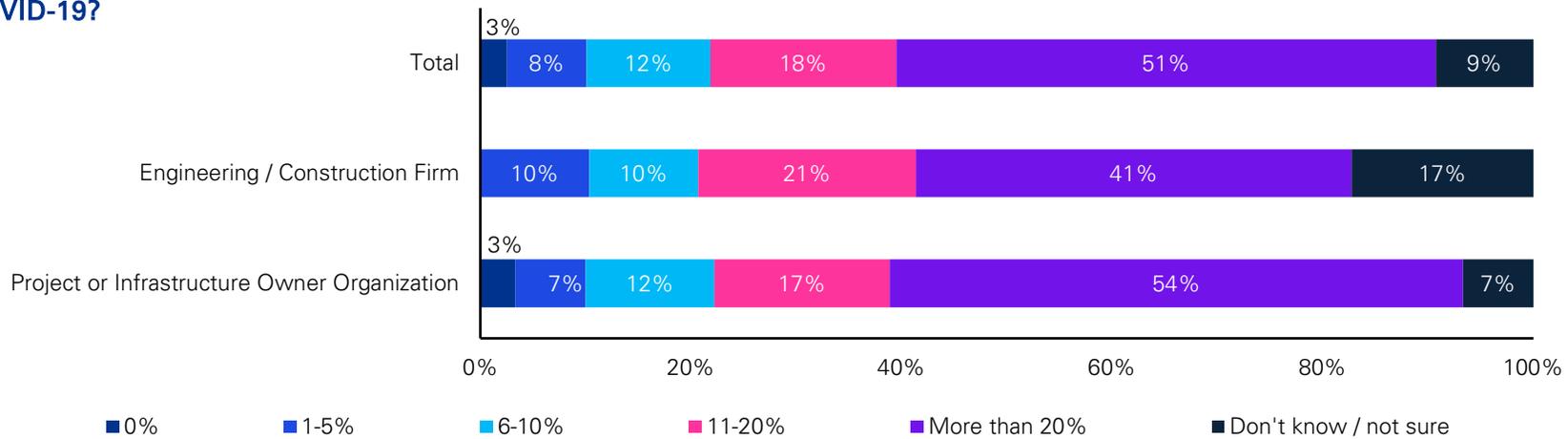


# Performance challenges persist

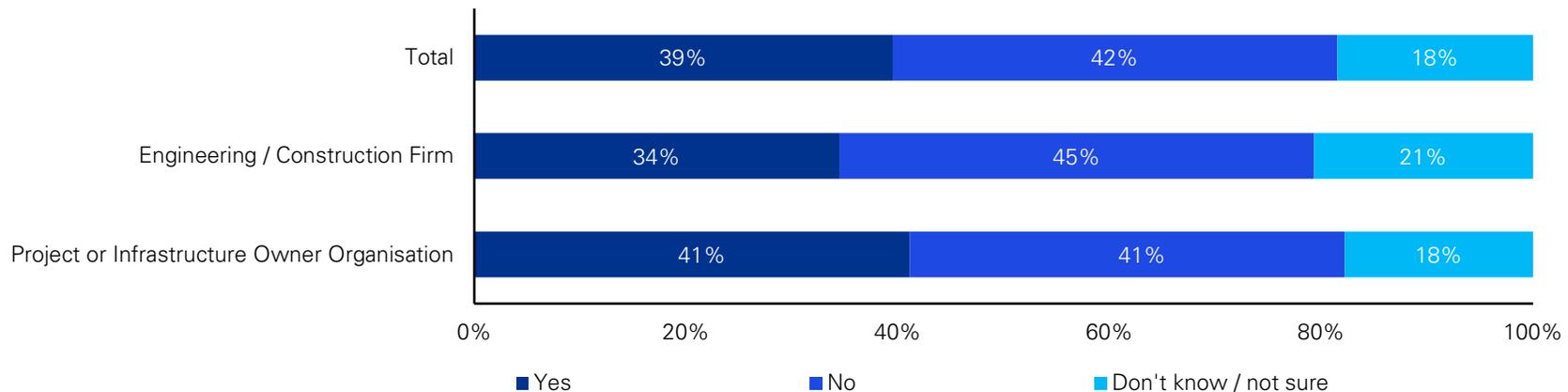


The aftereffects of COVID-19 are freshly evident with 51% of the respondents mentioning that their projects have experienced a schedule delay or cost impact of more than 20% due to COVID-19. The industry continues to struggle with poor project performance with 39 per cent (global value 37 per cent) of respondents reporting that they have missed the budget and/or schedule performance targets by over 20 per cent, over the past year due to lack of effective risk management.

**Exhibit 4: What percentage of your projects have experienced a schedule delay or cost impact attributable to COVID-19?**

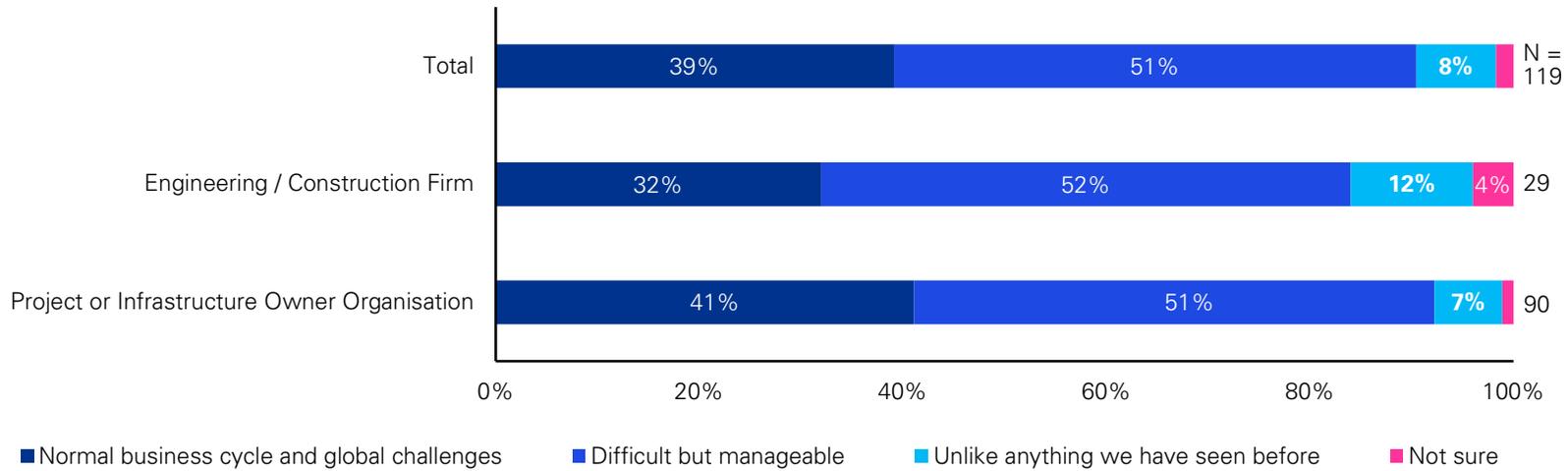


**Exhibit 5: Over the past 12 months, have any of your capital projects significantly missed budget and/or schedule performance targets (20% or more) due to the lack of effective risk management?**



Despite the construction sector finding itself facing perennial challenges of poor overall project performance, low labour productivity, supply chain irregularities and fragmented competition, cumulatively leading to higher capital costs and poorer returns, 89 per cent of our respondents describe the level of market challenges in next 12 months as 'Normal business cycle and global challenges' and 'Difficult but manageable'. This positive sentiment emanates from the strong industry stimulus and market demand side fundamentals, rating the India region respondents evenly with their global peers.

**Exhibit 6: From your organisation’s perspective, which of the following best describes the level of market challenges in the next 12 months?**



Navigation icons: Star, Home, Right Arrow, Left Arrow, A (highlighted), B, C, D, E, F.

# Building resilience for profitable growth



In response to the high volatility caused by global disruptive events, coupled with perennial poor productivity and lack of effective risk management prevalent in the Indian construction sector, both project owner firms and E&C firms are prioritising use of commodity hedging strategies to offset increasing material prices as a key risk mitigant. Our survey respondents have also highlighted another significant response for

managing uncertainty, viz. extending the duration of planning activities to increase confidence around project scope, schedule and quantities. These serve as robust mitigation methods to enhance the much needed certainty around project implementation.

Naturally, E&C firms have a relatively higher adaption to the power of hedging and extending the duration of planning activities to increase confidence around

project scope, schedule, quantities as levers compared with their project owner counterparts. The overall impending need for shared gains and pains towards driving project performance, labour productivity and supply chain consolidation improvement through proper risk management processes and controls, resilient planning and digital solutions is gradually being recognised and implemented.



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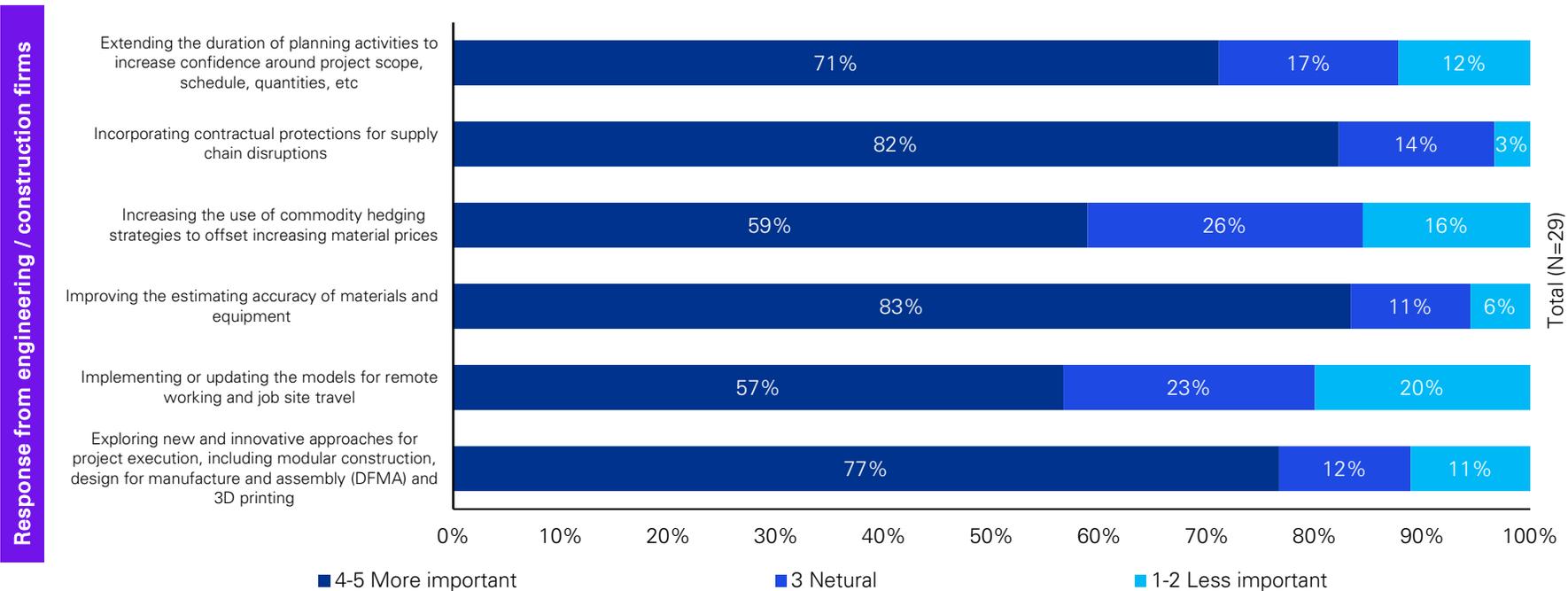
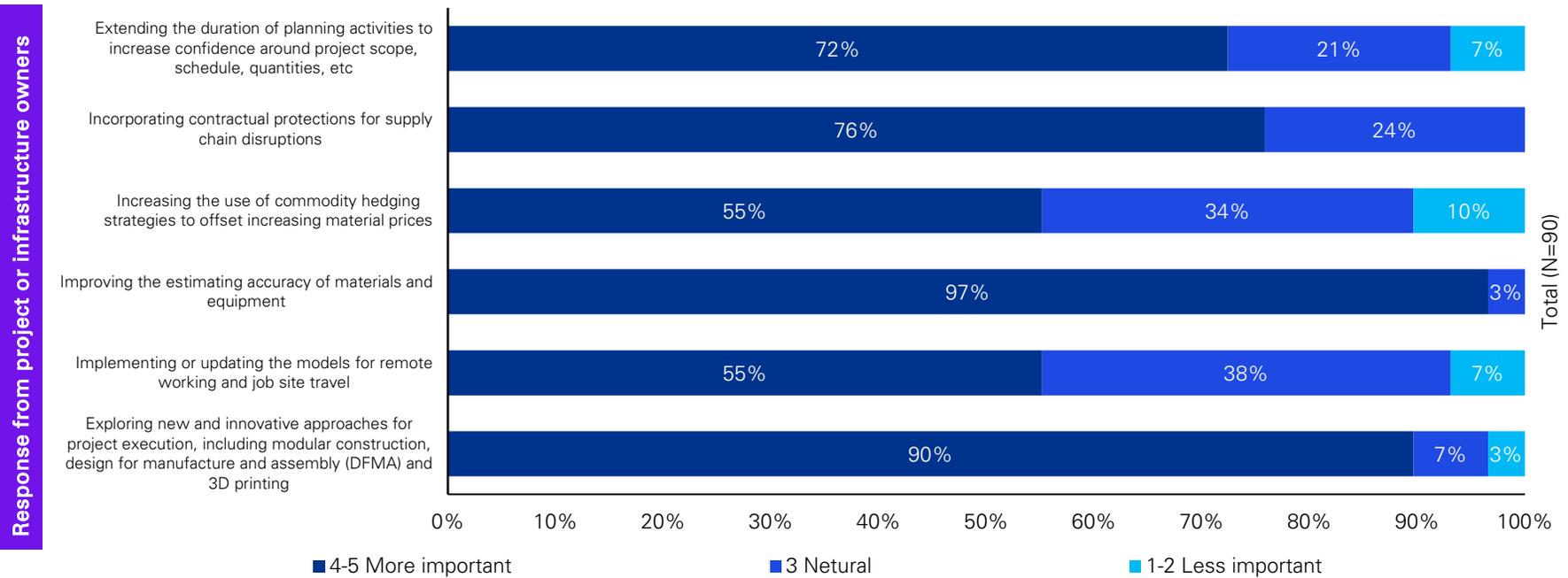
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## Exhibit 7: How important are each of the following regarding your organisation's response to supply chain disruption, cost escalation, resource constraints, deglobalization COVID-19 and other disruptive events?



# View from the industry - Building supply chain resilience



## S. N. Subrahmanyam

Chief Executive Officer &  
Managing Director, Larsen &  
Toubro Limited

“

To address the pandemic and wider geopolitical disruptions, we enhanced our supply chain with alternate sourcing channels, multiple local vendors and strategic tie-ups. We devised deeper hedging strategies, adopted just-in-time sourcing, and proactively engaged with our clients to address price variations / contractual indexation of raw material input costs.

And, in response to sometimes unreliable supply chains, we've adopted indigenisation, to gain greater independence. In one instance we manufactured complex launching equipment for India's high-speed railways. In another, during the pandemic, we assembled and operated the country's largest tunnel boring machine, creating a world record for the highest monthly tunnelling rate of 456 meters on the iconic Mumbai Coastal Road project.

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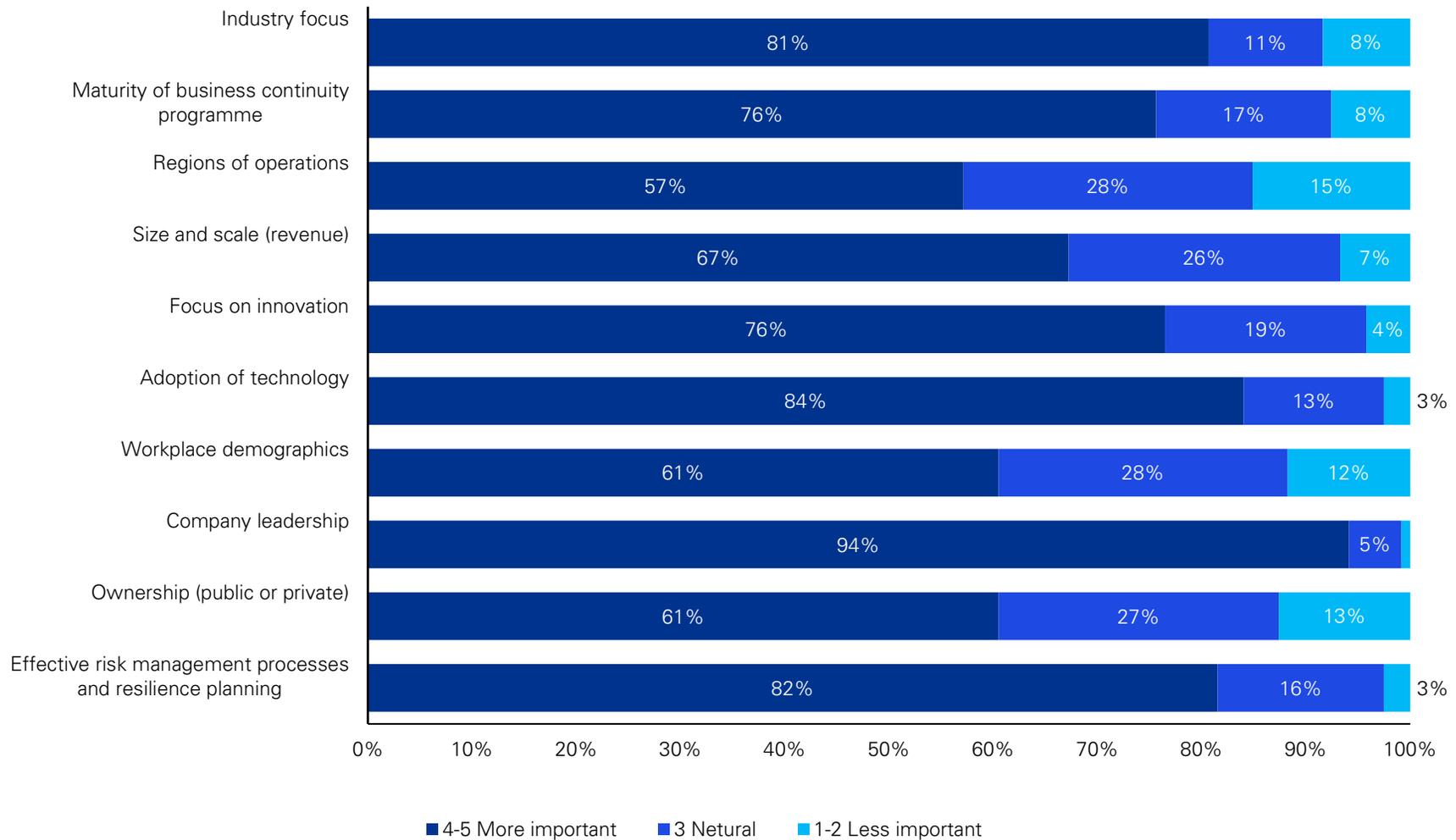
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In addition to the obvious emphasis on company leadership as the most significant determinant in of an organisation’s ability to address disruptive events, our respondents have rated effective risk management and resilience planning, adoption of technology and industry focus as the other three significant attributes that influence an organisation’s ability to respond effectively to disruptive events.

**Exhibit 8: Please rate the following attributes that influence your organisation’s success or failure in dealing with disruptive events**



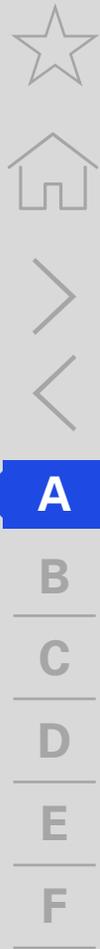
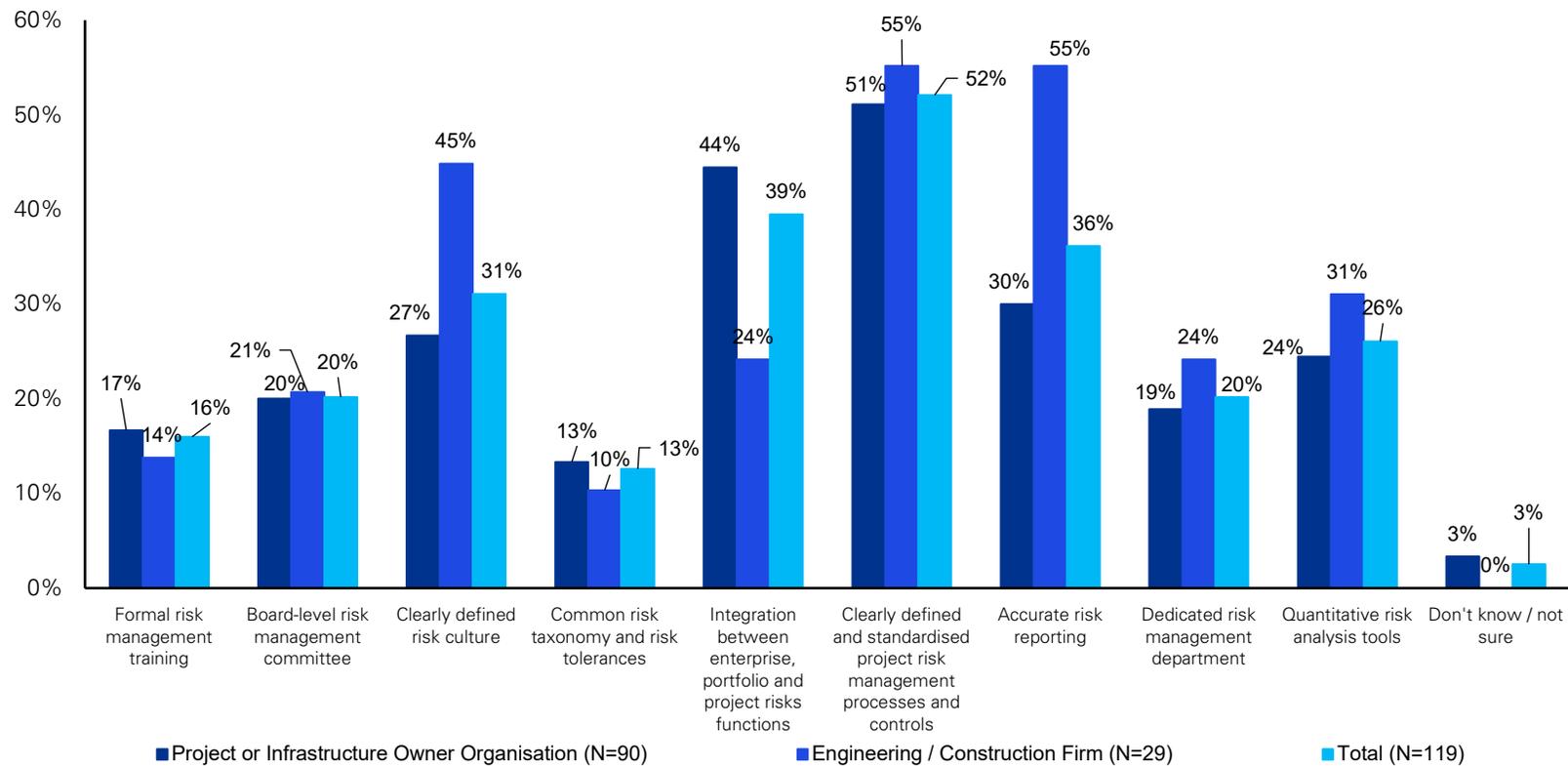
To be effective, availability of real-time project data is important and interpretation of which can be the key difference between success and failure. This makes adoption of technology as a highly responded attribute to explore new and innovative approaches as the organisation's preferred response/action (more than 80 per cent) towards such

disruptive events. The responses are similar to the previous surveys, which suggests that risk management continues to be considered an important trait among other functions.

E&C firms and owner firms have reported a single-minded focus on achieving clearly defined and

standardised risk management processes and controls. There is a great emphasis on integration between enterprise, portfolio and project risks functions (39 per cent), establishing accurate risk reporting (36 per cent) and creating a clearly defined risk culture (31 per cent) across both project owner and E&C firms.

**Exhibit 9: Which of the following elements are you focusing on to achieve successful portfolio-wide risk management? (Multiple selection allowed)**



Managing risks in construction programmes and projects requires a concerted and dynamic effort across the 3 levels of decision making, viz. enterprise, unit and project levels. As correctly identified in this survey - integration of risk management across these 3 levels, by leveraging a standardised risk management framework is vital for the risk management efforts to be optimal and effective. Mitigation measures require plans and decisions to be seen through their implementation cycles. It follows therefore that incorporating risk management actions into the construction projects' procedures, effective tracking of mitigation effectiveness and residual project risks collectively take centre stage as project execution starts, and prioritised risks and emerging risks are dynamically addressed.

Project risks are no more assessed only on the two dimensions of impact and probability. The pandemic and global supply chain disruptions have fortified 2 additional dimensions of risk assessment and prioritisation, namely the inter-connectedness of risks, and their velocity. Modelling the project for its exposure to risk on these 4 dimensions is crucial, and made relatively easier by the use of data models and analytics. Integration of predictive analytics with these risk models can enable project leaders to create scenarios allowing for better planning and preparedness to deliver on their major investment programmes and projects.

## Karun Raj Singh Sareen

Partner, Business Consulting and Transformation –  
Major Projects Advisory,  
KPMG in India



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# Key takeaways



We are seeing an unprecedented combination of post-pandemic boom and government stimulus driving the growth of our Indian construction industry. The survey finds a resounding positive sentiment towards the impact expected from the government stimulus, and consequently higher proportion of respondents expecting significant capital spend and revenue growth. The perennial project performance challenges, however, continue with a number of delayed and out-of-budget projects. Our industry is at a very critical inflection point with huge demand side forces creating larger and more complex projects while requirements for timely and within-budget completion, and scrutiny on projects increase. Companies that have demonstrated stronger resilience and implemented robust risk management practices have maintained their leadership position and served as role models for other industry players.

## Leading practices adopted successfully in India

- Prioritising use of commodity hedging strategies
- Allowing more time and rigour for planning to increase accuracy and confidence around project scope, estimated quantities, and schedules
- Implementing and updating the models for on-site and off-site working and supply management including indigenisation
- Exploring new methods of construction (e.g. modular, design for manufacture and assembly)
- Contractual protections for supply chain disruptions
- Effective risk management and resilience planning
- Standardised risk management processes and controls, clearly defined risk culture, accurate risk reporting and stronger integration of enterprise, portfolio and project level risks



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# The rising influence of ESG



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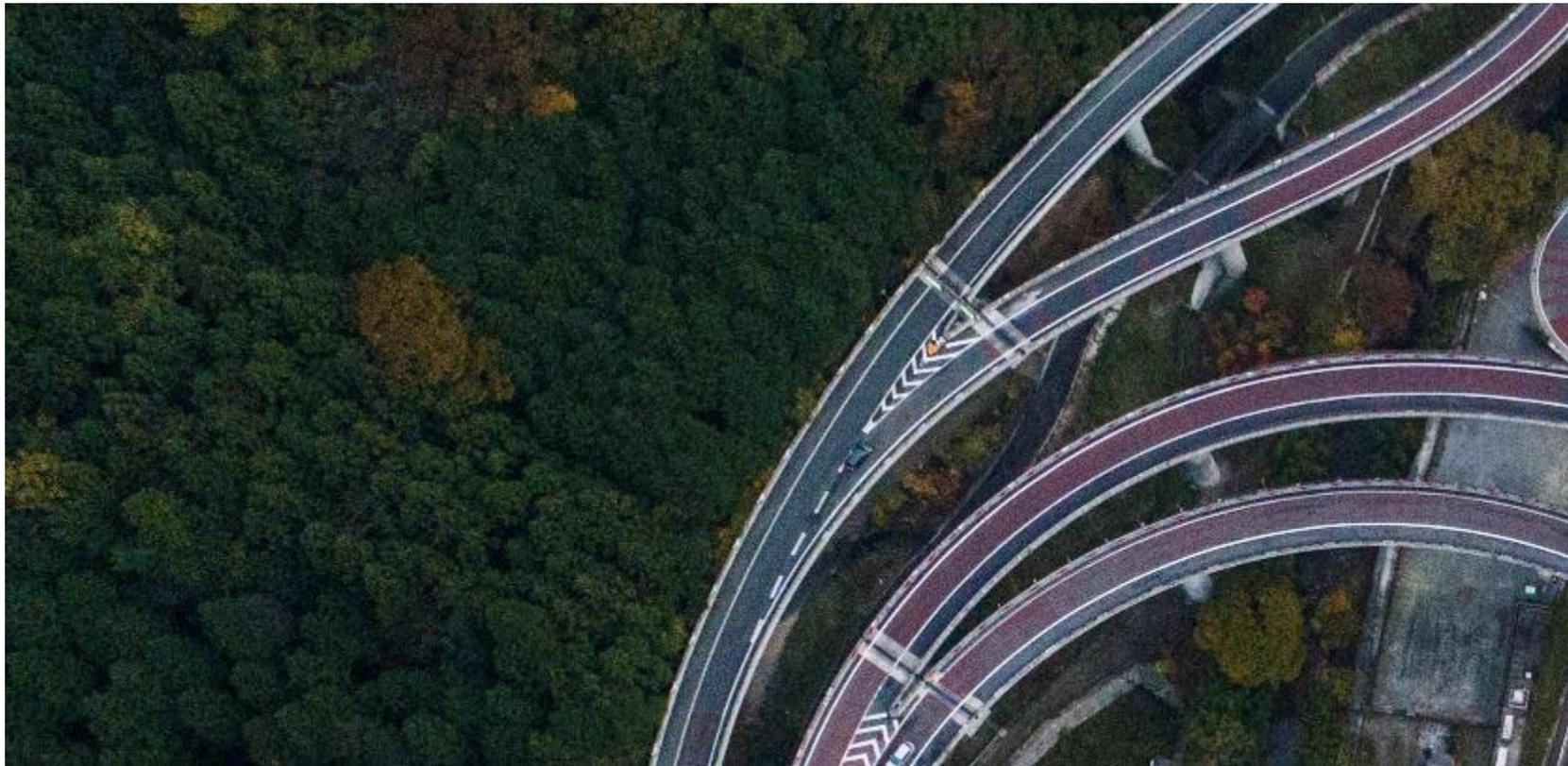
# ESG becomes a real agenda



Our recent paper<sup>4</sup>, notes how the industry is regarded as high-carbon, high-waste, and high-polluting, with significant use of scarce resources like water and minerals, moderate usage of renewable energy, and limited progress with diversity in what remains a male-

dominated sector. At the same time, E&C and owner firms face growing regulatory pressure for sustainability in both its construction methods and the infrastructure they produce. Failure to meet such demands could impact access to—and push up the cost of—

capital. Awareness around ESG and the impact it can create is growing significantly and we are seeing a slew of ESG oriented goals emerging through regulations and through self-adoption by firms. This places India on a significantly faster track.



4. [Construction in 2030](#), February 2023, KPMG



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Looking back to our Global Construction Survey from 15 years ago, the top drivers for sustainability were to seek a position as innovative or environmentally aware (cited by 56 per cent of respondents), and to increase business opportunities and competitiveness (29 per cent). As compared to this, in the 2023 survey:

We see a clear uptick in maturity and strong commitment from the respondents. Nearly 54 per cent of our collective global and Indian respondents fully envision the benefits of ESG and are aggressively pursuing maturity and improvement. The Indian respondents rated this option slightly higher at 60 per cent, with owner firms leading at 64 per cent and E&C firms trailing at 45 per cent.

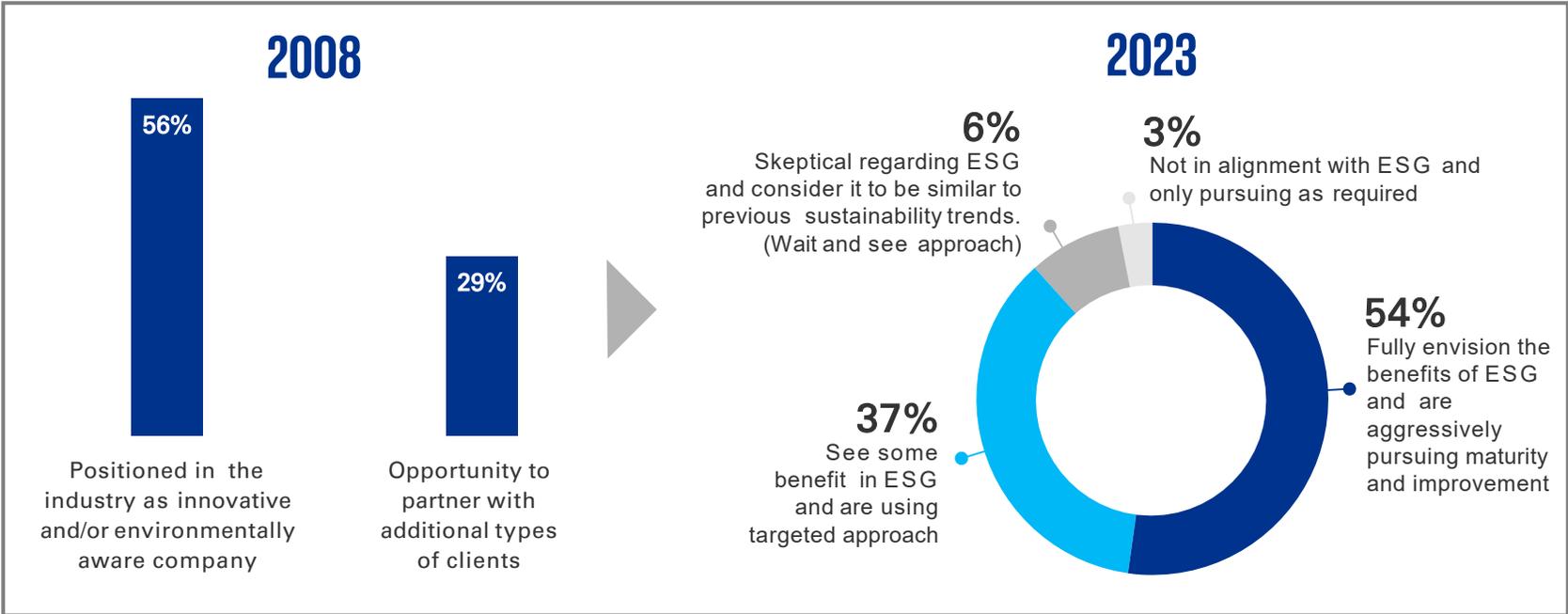


37 per cent of our collective global and Indian respondents see some benefit in ESG and are using targeted approach. The Indian respondents rated this option slightly lower at 29 per cent, with E&C firms leading at 38 per cent and owner firms trailing at 26 per cent.

More interestingly, nearly 50 per cent of the firms view implementing ESG into capital programmes and projects as a competitive advantage. This is a major shift that needs to be capitalised on by companies seeking to differentiate themselves.

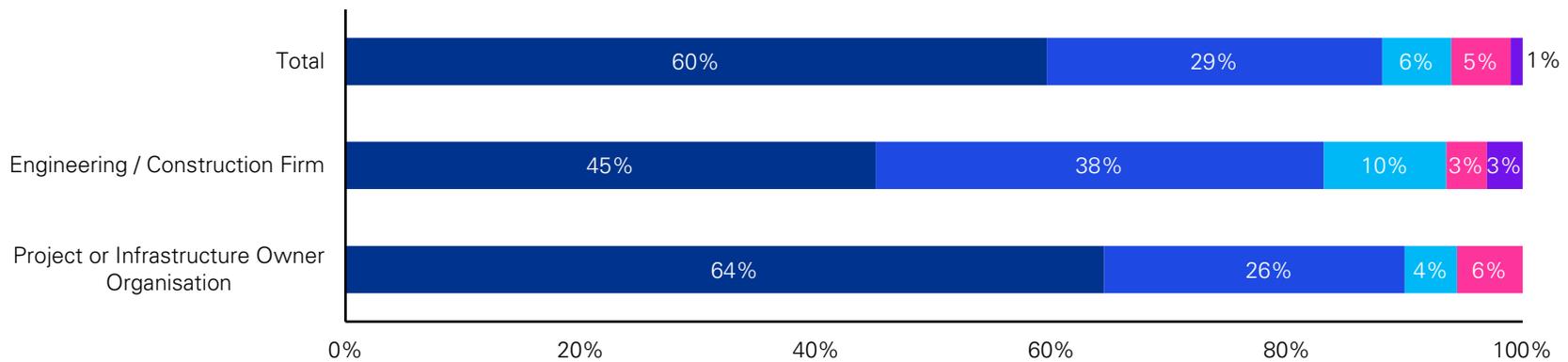
**Exhibit 10 - What is your organisation’s internal view on ESG?**

These findings represent views of global respondents and include participants from India.



ESG has now become an accepted part of leaders' thinking and boardroom conversations and has entered the capital project implementation plans. By analysing the feedback provided by industry leaders in India, it is evident that a majority are actively seeking ways to embrace and harness the value of ESG in their operations. We have gleaned from interviews that many of our respondents believe that focusing on ESG will not only improve their access to capital for funding projects but also help establish the significance of possessing robust sustainability credentials to meet investor expectations.

### Exhibit 11 - What is your organisation's internal view on ESG?



- Fully envision the benefits of ESG and are aggressively pursuing maturity and improvement
- See some benefit in ESG and are using a targeted approach
- Skeptical regarding ESG and consider it to be similar to previous sustainability trends; we're taking a wait-and-see approach
- Not in alignment with ESG and only pursuing as required
- Others



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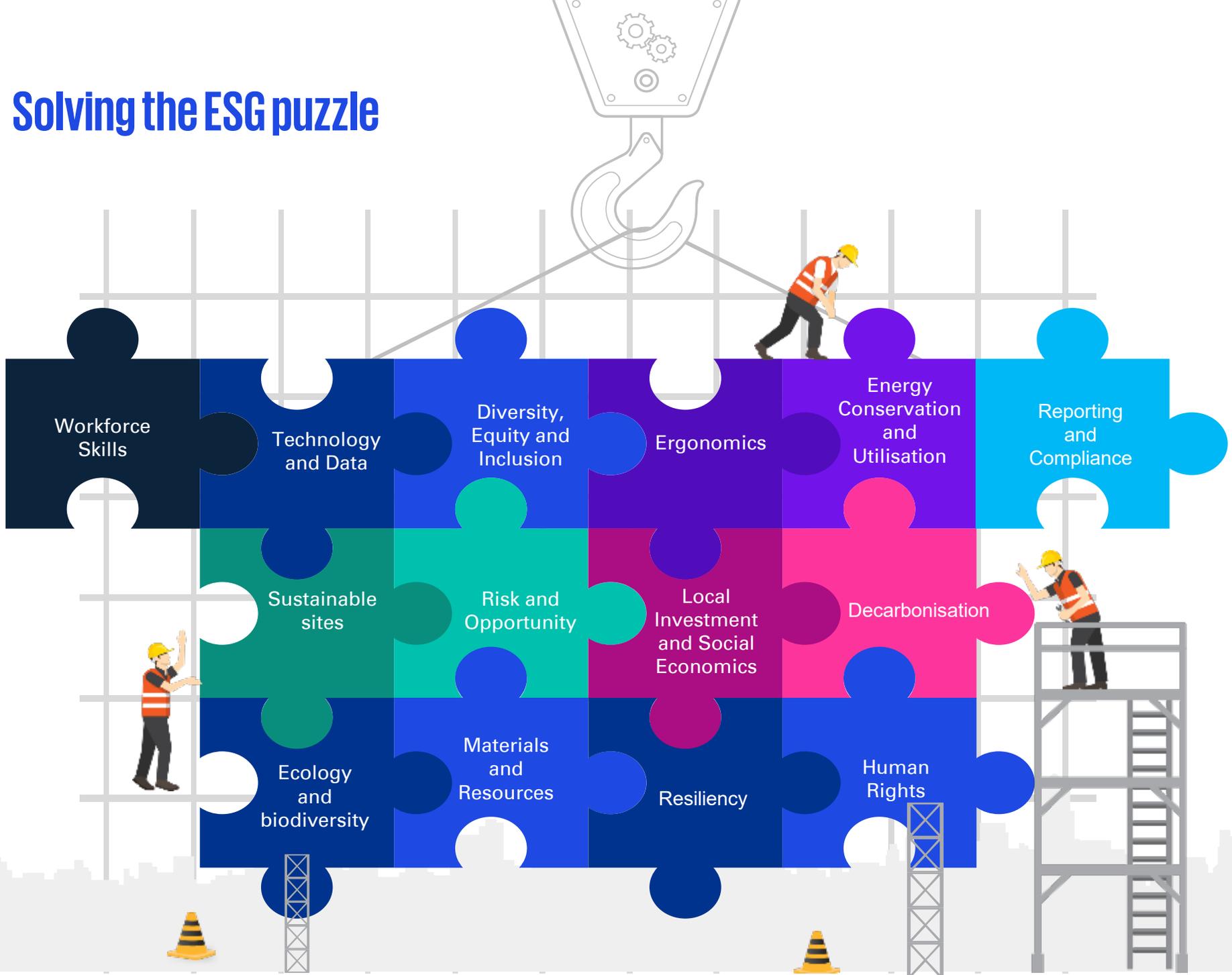
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# Solving the ESG puzzle

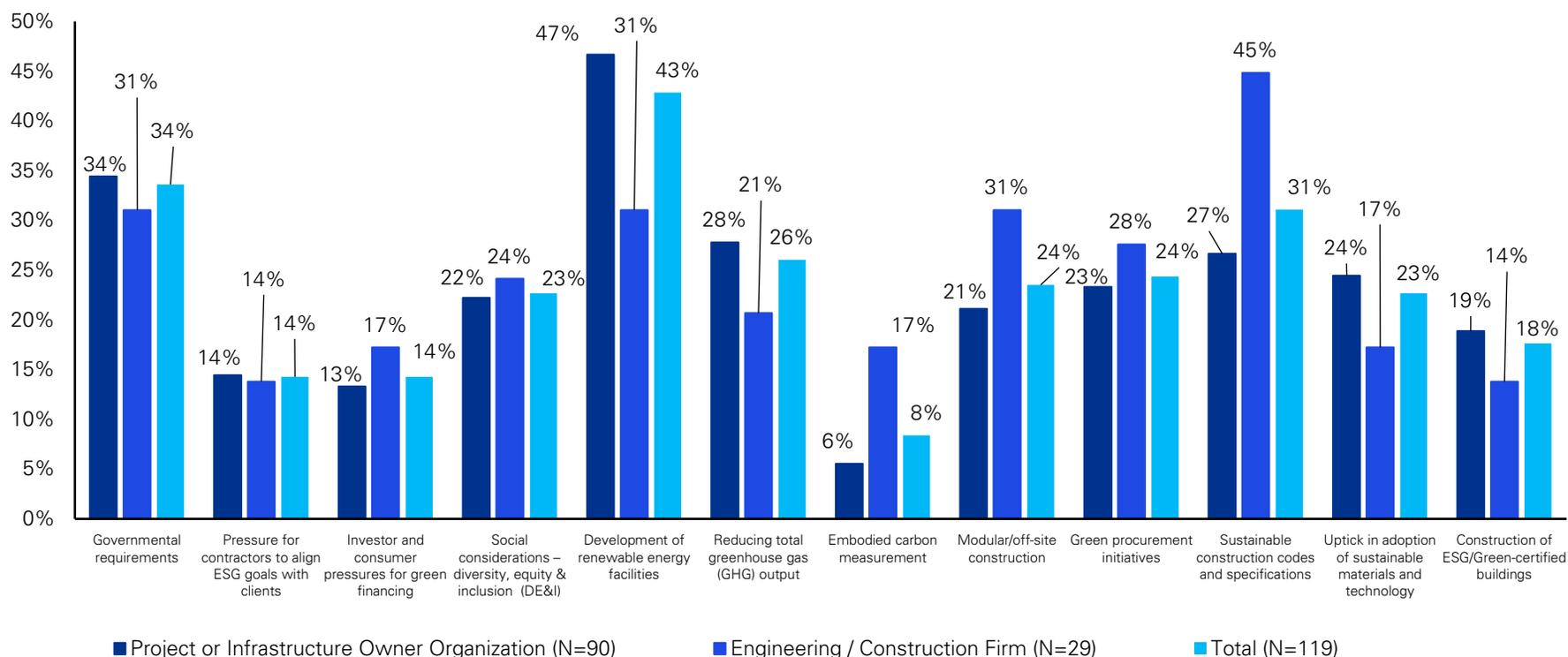


Fascinatingly, project owner firms and E&C firms differ in their views over the most crucial ESG trends. About 47 per cent of the former feel that development of renewable energy facilities is most important, while 45 per cent E&C firms are more concerned with social considerations, such as use of sustainable construction codes and specifications.

This discrepancy is understandable as owners are currently being measured by Scope 1 and Scope 2 emissions of their facilities, whereas service providers gain market advantage by adhering to requirements and standards. As increasing Scope 3 regulations come into effect globally, owners are likely to ask their contractors to disclose embodied as well as operational carbon, which in turn will direct the industry's focus to total lifetime GHG emissions.

Therefore, by integrating ESG into their business strategies and investments, engineering and construction firms, and project owners, can aim to drive value and ensure long-term business resilience. This approach brings various benefits, improving operational efficiencies, increasing return on investment, building stronger trust with stakeholders and even attracting the discerning top talent.

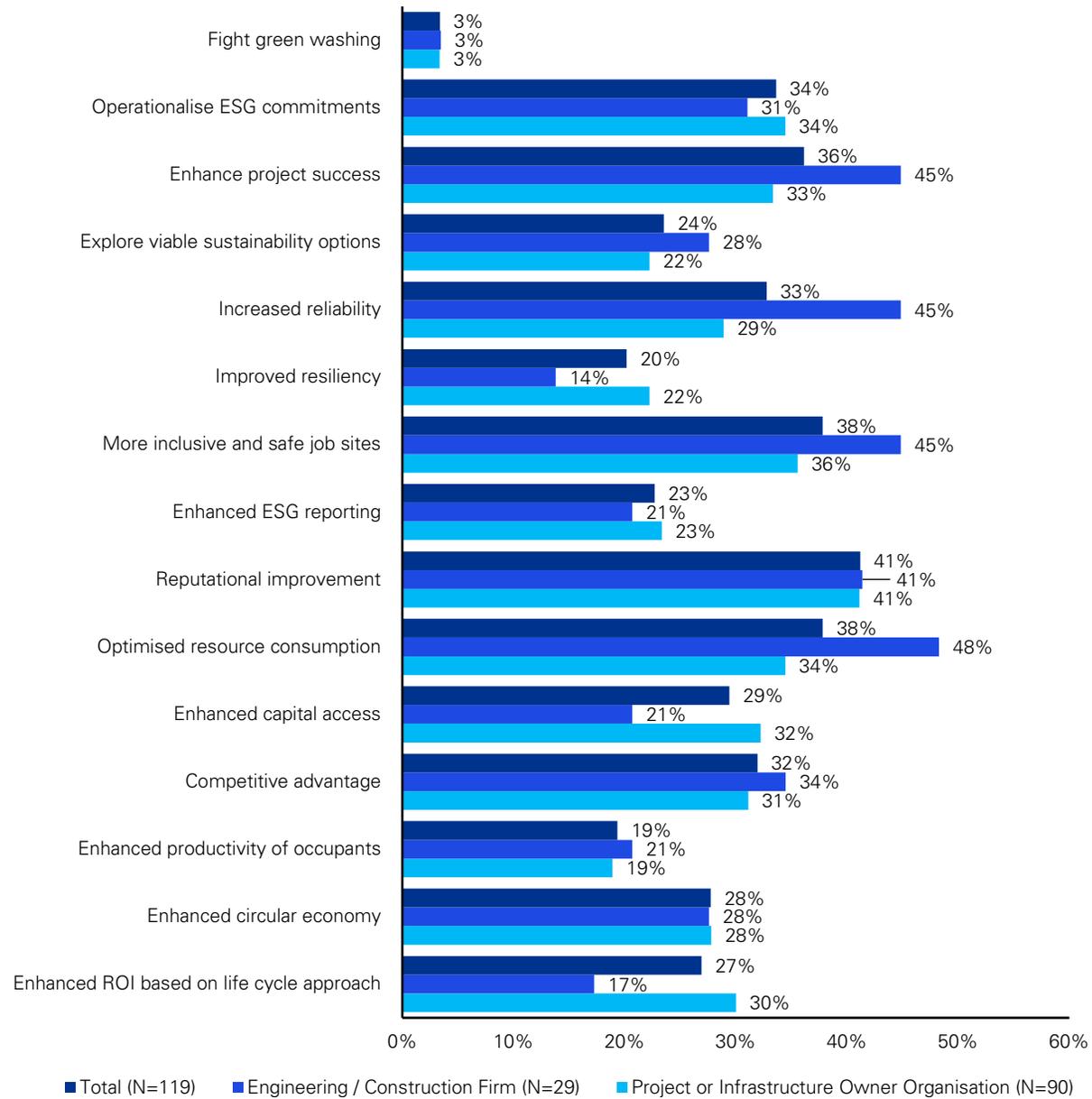
**Exhibit 12- Which of the following ESG trends are the most important for the success of your organisation? (Multiple selection allowed)**



When it comes to embedding ESG principles into capital projects and programmes, the primary benefits identified by respondents were enhancing reputation (41 per cent), promoting inclusion and ensuring safe job sites (38 per cent), optimising resource consumption (38 per cent) and enhancing project success (36 per cent).

While both our respondent groups, E&C firms and owner firms evenly are invested in ESG for improving reputation, we see this as a transient and maturing phase, given the similar priorities around ESG by both groups as a lever for enhancing project success although E&C firms lead owner firms on this lever. The other common levers across both groups that drive investment in ESG are to promote inclusion and ensuring safe job sites and optimise resource consumption. Specific levers to stay invested in ESG that differ across E&C firms and owner firms are with E&C firms prioritising ESG to also increase reliability, while project owners are relatively more focused on increased resilience, enhanced capital access and enhancing Return on Investment (RoI) through lifecycle approach.

**Exhibit 13 - What benefits could your organisation realise by implementing ESG into your capital projects and programmes? (Multiple selection allowed)**



“Companies are investing in ESG practices to incorporate sustainability into construction projects, including the use of energy-efficient materials, waste recycling, and minimising resource consumption. The health and safety of the workers during the construction phase are critical social, legal and moral obligations which the companies have to consider in their ESG program. Additionally, companies recognise that integrating ESG can help attract investors who prioritise social and environmental responsibility in their investment decisions. To accelerate the implementation and integration of ESG, the following approaches would be effective:

1. A strong commitment from leadership to foster an ESG culture throughout the organisation
2. Foster collaboration with ESG industry leaders and engage stakeholders in collective efforts
3. Implement innovative approaches and leverage technology tools to measure and optimise embodied carbon right from the building/asset design stage and sustainability solutions to monitor water, air, and soil quality. Utilising digital twins to enhance project sustainability has also seen good results
4. Transition to electric machinery and equipment to reduce emissions and promote green construction practices
5. Encourage vendors and contractors to prioritise the use of low-carbon materials and electric machinery through incentivisation
6. Explore greener transportation options like electric vehicles and utilise waterways to optimise costs and reduce carbon footprint.
7. Enhancing the resilience of the projects to the extreme climate events by integrating the mitigation and adaptation measures during the project planning and design stage.”

## Shivananda Shetty

Partner and Practice Lead ESG,  
KPMG in India



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# Decarbonisation's growing potential



Decarbonisation is becoming a central part of construction projects.

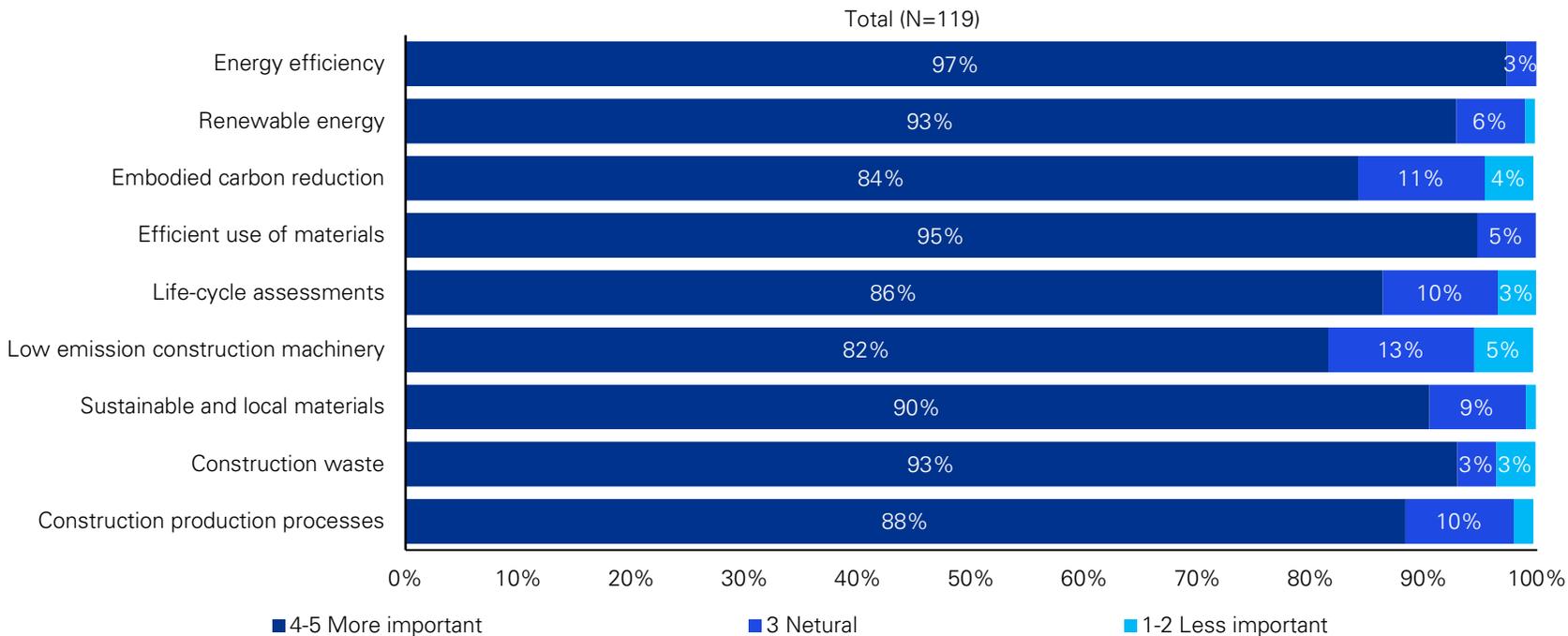
According to a recent publication by KPMG<sup>5</sup>, it has been observed that approximately 50-70 per cent of the total embodied carbon emissions occur until the physical completion stage of infrastructure projects. Within this, around 85-90 per cent of emissions are generated during the product

manufacturing phase, 7-10 per cent during transportation, and 3-5 per cent during the construction stage. Both the selection of materials and the processes involved in extraction, manufacturing, transportation, and erection significantly contribute to these emissions.

As per the 2023 survey findings for India, more than 90 per cent respondents are in favour of

implementing practices such as ensuring energy efficiency, efficient use of sustainable and local materials, use of renewable energy and reduction of construction waste. 8 in every 10 respondents believe in construction production processes, life-cycle assessments, embodied carbon reduction, and use of low emission construction machinery as important decarbonisation practices.

**Exhibit 14 - Please rate the importance of each of the following decarbonisation practices in the construction industry**



5. Embodied Carbon Management for Global Infrastructure, March 2023, KPMG



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“Addressing ESG has become an existential issue across industries. In the construction industry also, decarbonisation is on top of the agenda for all stakeholders. We live in a world where every billion-dollars spent on infrastructure development generates one million tons of embodied carbon. The annual capital outlay globally is likely to be three-fold from USD11 trillion to more than USD33 trillion. This would amplify the situation without stricter carbon controls. Conventional measures for energy efficiency and renewable energy alone are inadequate now, and equivalent (or if not less) emphasis is warranted on embodied carbon, life cycle assessment, low carbon design and material strategies. Overall, carbon conscious thinking should be at the forefront of every major decision in capital projects, with concerted actions required from the construction ecosystem.”

## Yash Pratap Singh

Partner, Business Consulting and Transformation – Major Projects Advisory, KPMG in India



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# View from the industry - Switch to renewable energy alternatives



## Abhyuday Jindal

Managing Director,  
Jindal Stainless Limited



Being the largest stainless-steel manufacturer in India, Jindal Stainless is committed to pave the way for the industry to define and execute their ESG goals. Steel is a hard-to-abate sector when it comes to carbon reduction. However, given the global importance of climate change, we have developed a thorough roadmap for carbon reduction at both our manufacturing facilities in Hisar, Haryana and Jajpur, Odisha. We have embarked on a mission to achieve Net Zero by 2050, ahead of the government's goal of 2070.

We are the first stainless steel company in India to set up a green hydrogen plant and have already switched to renewable energy alternatives which will also power our new capacity expansion projects. Along with the recently announced ~300 MW utility-scale captive wind-solar hybrid project and a ready-to-commission floating solar plant, we also plan to augment rooftop solar capacity at our Hisar unit and put up a new facility at our Jajpur unit. Efforts to increase green cover and include EVs in our transit systems are yielding good results. We achieved a reduction of ~2.4 lakh tons CO<sub>2</sub>e in the last two fiscals (FY22 and FY23) and are ambitious about our goals in the coming years. Moreover, we are focused on providing long lasting and sustainable solutions for the construction and infrastructure industry not just through flat products but long products as well.

Since stainless steel offers high strength-to-weight ratio and inherent corrosion resistance while reducing maintenance requirements and lifecycle costs, it is the inherently better choice for sustainable and green infrastructure that puts less load on the environment. With that vision, we acquired a long products manufacturing facility to add wire rods and rebars to our existing product portfolio. We are also focused on reducing embodied carbon from our upcoming expansion projects. With implementation of measures such as use of green cement, reduction in cement and steel quantities by optimising design, use of alternative materials such as GFRP, we are on track to reduce embodied carbon in all our capital expansion programmes.



# Digital technology drives safety



The construction sector has made impressive advances in worker safety in the past decades, and the responses to our global survey suggest that companies continue to prioritise this vital area. For both project owner and E&C firms, the single most crucial factor is the tried-and-trusted behavioural, leadership and cultural change, to create a climate with zero-tolerance towards accidents. Respondents—especially

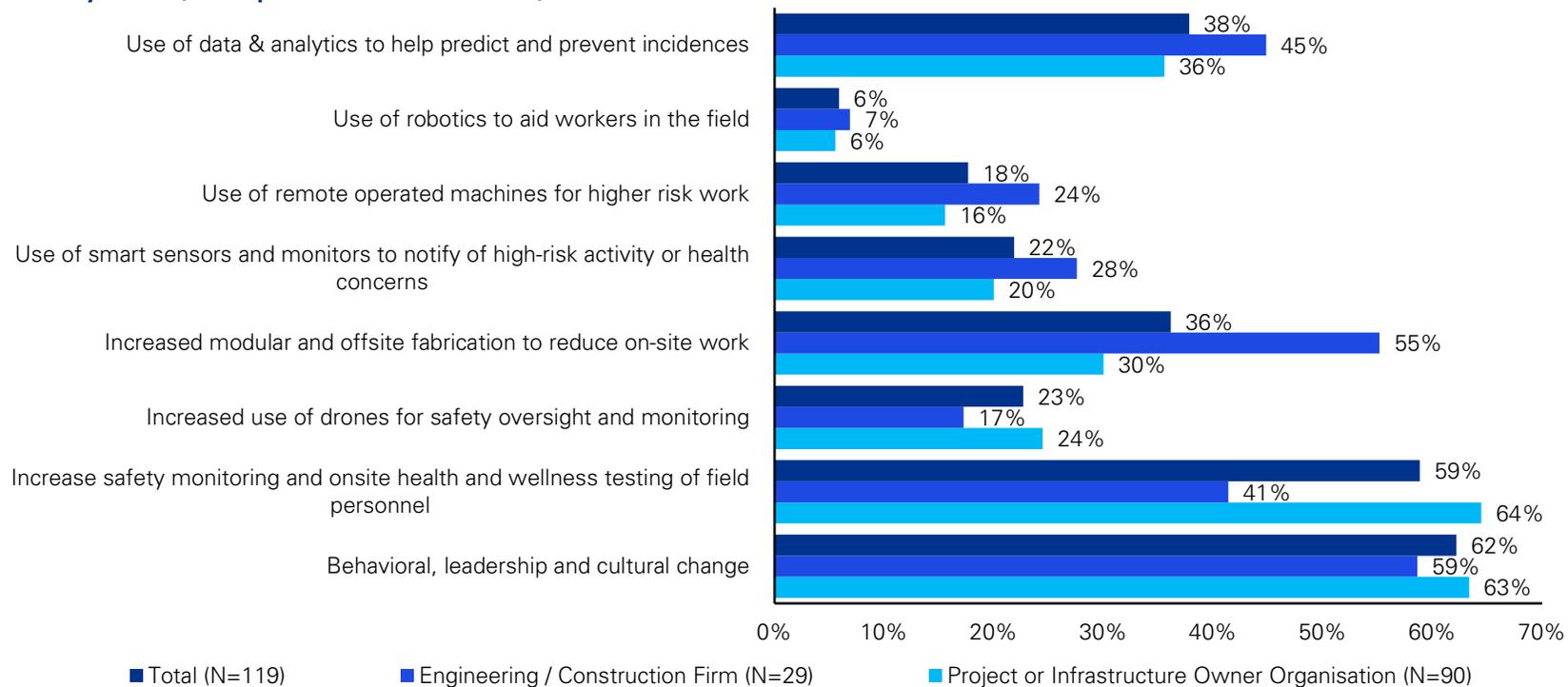
owners—are keen to increase safety monitoring and onsite health and wellness testing of workers, to reduce the risk of incidents.

In the 2023 survey, we see a strong commitment from the respondents towards new technology and methods to improve workers' safety with 64 per cent wanting to focus on increase in the safety monitoring and onsite wellness of

the workmen, and nearly 63 per cent project owners feeling change in behaviour, leadership and culture as the top advancements.

Nearly 55 per cent of E&C firms view implementing modular and offsite fabrication as an advantage, for driving safety.

**Exhibit 15 - What are the top advancements that will positively impact worker safety on your projects over the next 5 years? (Multiple selection allowed)**



Technology plays a significant role to create safer working spaces, with respondents making greater use of data and analytics (D&A) to predict and prevent, as well as modular/offsite fabrication to reduce potentially dangerous onsite tasks. Our survey results suggest that other innovations are at an earlier stage, with less frequent use, such as smart sensors and monitors, drones, remote-operated machines, and robotics. The low take-up of such potentially advantageous technologies could be a wake-up call for progressive players to improve their safety records through digitalisation and automation.

Mental health is becoming destigmatised in the industry, with

many companies taking tangible steps to support workers, including risk assessments that cover both physical and mental health, sharing resources around mental wellbeing, and offering practical help like trained peer support. With focus on worker wellbeing, firms should implement IoT-based solutions for monitoring worker health and safety, such as wearable sensors that can detect heat stress or fatigue, and alert workers and managers to take necessary precautions.

The use of PPE and worker wellbeing has become high-priority, with some construction companies going the extra mile by providing employees with innovative new PPE items that not only help keep them safe, but also enable

them to do their jobs more comfortably, such as 3D printed masks and safety footwear that helps revitalise blood flow through the legs and feet and gives the wearer greater energy<sup>6</sup>.

Use of Virtual Reality to promote and impart simulation based innovative trainings to the workforce can give real time experience of various mishaps that could occur during the project construction and operations phase.

As one would expect, safety is a crucial pillar of ESG-led performance and continues to be part of all ESG ratings assessments.



6. Grant Prior, "Anti-fatigue safety footwear boosts energy," Construction Enquirer, October 3, 2019

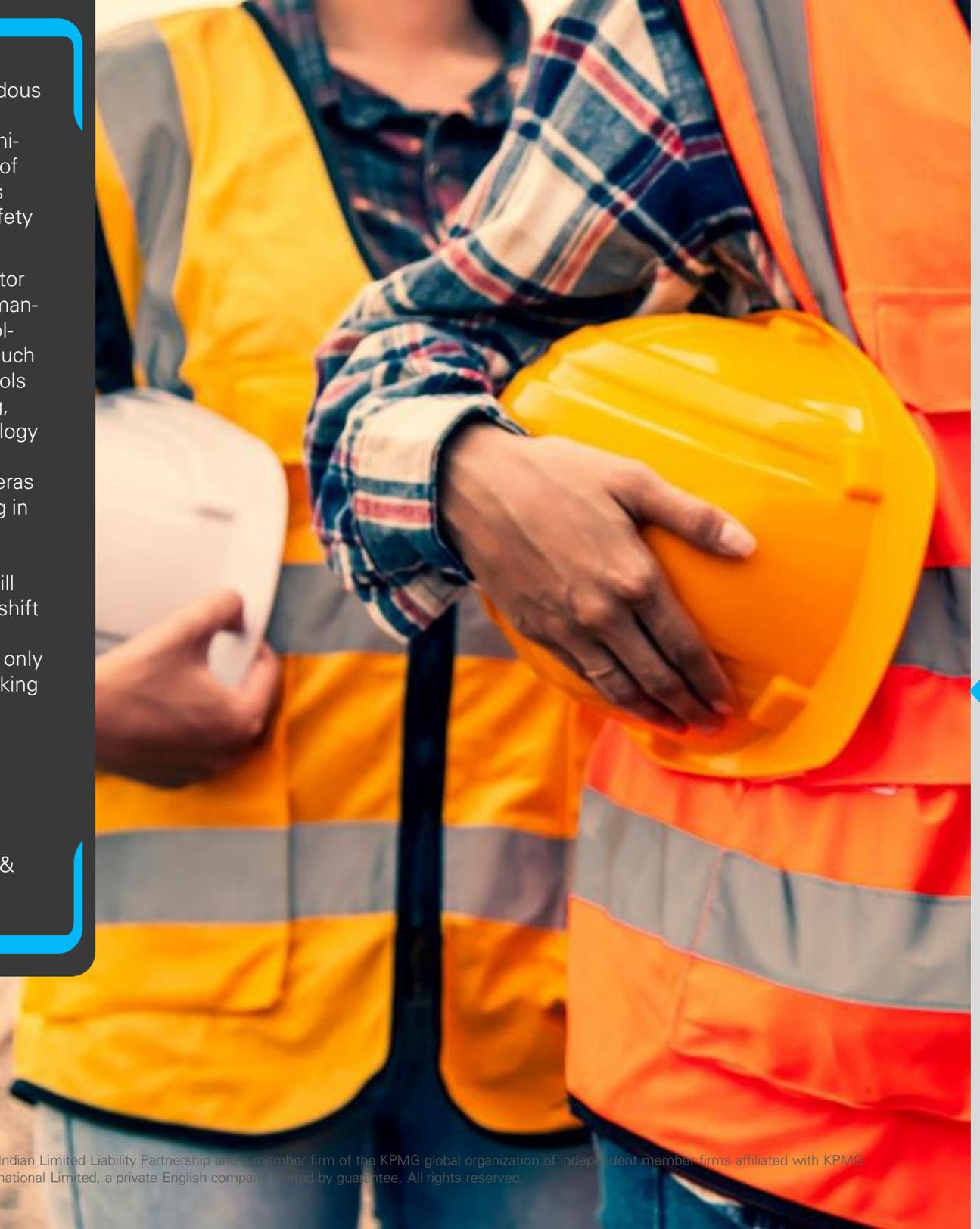


“Construction is one of the most hazardous sectors due to inherent risks such as significant involvement of unskilled/semi-skilled workforce, continuous churning of workforce, heavy machinery, hazardous project locations and lack of specific safety awareness.

It is high time that the construction sector transforms its approach from being human-dependent to technology-based, for fool-proof safety at the construction sites. Such an approach can include using digital tools including apps for reporting and training, automation and use of high-end technology such as AI and ML with tools such as drones, smart sensors, integrated cameras for effective monitoring, analytics aiding in prediction, warning and prevention of unsafe acts and conditions. Predictive forecasting and analytical capabilities will support the owners and contractors to shift from manual to real time predictive and proactive management. This would not only help better monitoring and decision making by the leadership team but also would strengthen the training and behavioural safety of the employees and workers.”

## Anand Kulkarni

Technical Director, Environment Social & Governance, KPMG in India



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# Attracting the NextGen talent



Attracting the best graduates means offering fulfilling careers on the cutting edge of innovation, in purposeful, sustainable organisations, offering varied development paths, flexible working conditions and greater work-life balance. More and more employees are looking for companies that prioritise Diversity, Equity and Inclusion (DEI), employee health and wellbeing, community building, and strong governance—while minimising their environmental impact.

As we discuss in *Construction in 2030*<sup>7</sup>, the sector has a golden opportunity to shed its male-dominated, ‘hard-hat, manual labour’ image by becoming more technology- and sustainability-oriented. This shift should help persuade graduates that this is an exciting industry to join.

Another KPMG paper, “*Navigating the tech hiring freeze*”<sup>8</sup>, argues for a greater focus on workforce planning to determine an organisation’s talent needs and identify how to satisfy these demands by training and upskilling. And by building a compelling digital

workplace experience, E&C firms can enthuse existing workers and attract future stars.

Respondents to this year’s Global Construction Survey consider the development of improved and innovative training programmes as the number one strategy to attract next-generation talent into the sector. The metaverse offers particularly exciting opportunities to onboard, train, and interact. In “*Want to win in the metaverse? Think internal first*”<sup>9</sup>, KPMG surveyed companies from the technology, media and telecommunications industry and found the top uses of the metaverse were for internal activities such as employee capability development and onboarding, and employee collaboration.

Given continued digitalisation, investment in the metaverse could be a catalyst for improving the employee experience.



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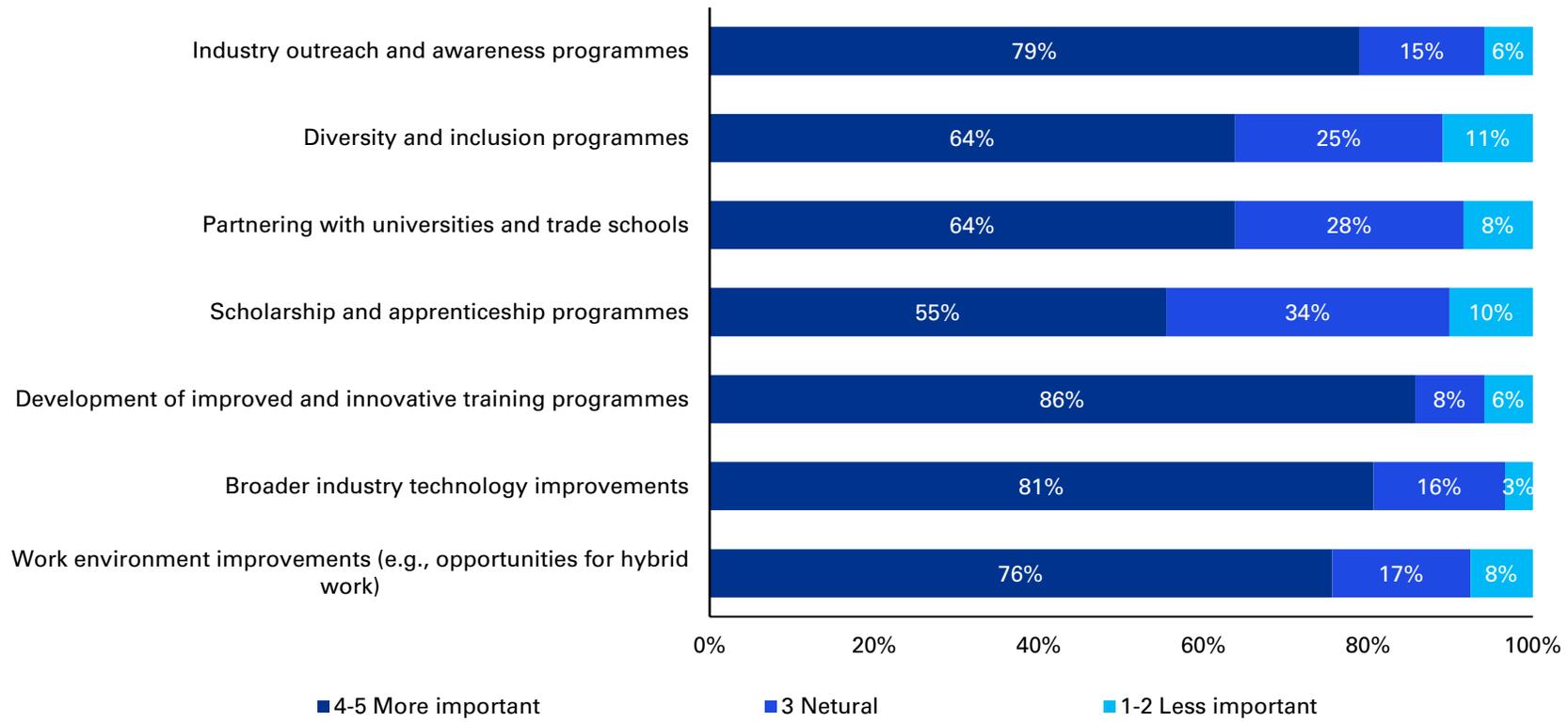
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7. “[Construction in 2030](#),” February 2023, KPMG,
8. [Navigating the tech hiring freeze](#),” January 2023, KPMG
9. [Want to win in the metaverse? Think internal first](#),” KPMG

**Exhibit 16 - How important are each of the following strategies to attract the next generation workforce to the construction industry?**



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“There has been a revival in demand in the construction industry post pandemic with the market in India being fairly competitive. While the growth outlook for the industry appears strong, attracting and retaining the next generation of workforce has become more challenging than ever. The skill gap across the industry has only widened in recent times, with organisations increasingly adopting new technologies, and focusing on digitisation and automation accompanied by the push for sustainable practices such as green building certifications, energy efficiency, and reducing carbon footprints.

Organisations can act now with targeted strategies to address the situation. The focus of HR must shift towards people centricity, analytics, enabling the new ways of working and prioritising a strong employee value proposition. We strongly believe that reskilling and upskilling will be the most effective drivers to attract and retain talent, and developing improved and innovative training programmes is the way to go. Other critical areas such as industry outreach and awareness programmes, coupled with investing in technology improvements and embracing the new ways of working, will also be key in driving the talent attraction and retention agenda in the industry.”

## Vishalli Dongrie

Partner, People and Change,  
Business Consulting, KPMG in India



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# Key takeaways



Over the past 15 years, firms have evolved from being environmentally aware to actively funding ESG initiatives and prioritising capital investments with the specific ESG lens. 60 per cent of our Indian respondents fully envision the benefits of ESG and are aggressively pursuing maturity and improvement, and another 29 per cent seeing some benefit in ESG and are using a targeted approach. Our respondents believe that focusing on ESG will not only improve their access to capital for funding projects but also help establish the significance of possessing robust sustainability credentials to meet investor expectations, and attract better talent.

Decarbonisation is becoming a central part of construction projects, and respondents listed energy efficiency, reducing construction waste, and more efficient use of materials as the most important decarbonisation practices.

Construction safety has always reigned as a priority agenda, and driving a behavioural, leadership and cultural change continues to be identified as the top factor to drive safety at our construction sites. Technology is playing a significant role to create safer working spaces, with respondents making greater use of data and analytics (D&A) to predict and prevent, as well as modular/offsite fabrication to limit potential safety events. Leaders in the industry are also emphasising the use of AI/ML, drones, smart sensors and monitors, drones, remote-operated machines, robotic technologies, virtual reality and even 3D printing to create customised protective gear to create safer and more comfortable workplaces.

Talent acquisition and retention for our construction industry has faced recurring headwinds vis-à-vis other competing industry sectors. Respondents have shared successful talent retention and development practices by enhancing the employee value proposition, built on people-centric practices, creating a sense of pride in delivering marquee projects for the nation, reskilling/upskilling, leveraging analytics for customised employee journeys, innovative training programmes and the frequent recognition of achievements and successes. Industry outreach and awareness programmes, coupled with investing in technology improvements, embracing the new ways of working, ESG and sustainability aware goals will also be key in driving talent attraction, motivation and retention agenda for our industry.



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# Leading practices adopted successfully in India

- Integrating ESG into business strategies and investment decisions with the aim to drive value and ensure long-term business resilience
- Emphasising the firm's ESG agenda can lead to attracting investments and top talent, improving operational efficiencies, increasing return on investment, enhancing safety, inclusion, and building stronger trust with stakeholders
- Optimising the embodied carbon at the concept and design stage of the project, and even carbon management during the projects' construction can deliver the maximum output towards decarbonisation and ESG goals
- Leveraging digital tools and innovative technologies can improve the safety record and create greater reassurances for management, employees and workers
- Employee value proposition driven initiatives coupled with innovative training and upskilling programs can help enable the skills gap to be bridged as well as attract and retain the talent for our construction industry.





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# Accelerating digital and technological innovations



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Digital and technological innovations are crucial transformational participants in the new construction landscape. Construction technology funding reached a record high of USD2.1 billion<sup>10</sup> in 2021 in USA and the similar metric for India was a record high of USD104.2 million<sup>11</sup>. Technology giants are serving as potential collaborators, enabling the industry with exciting innovations and rapid advancements, but also gaining mastery over data, owning platforms and attracting top talent. India particularly, enjoys an ecosystem of multiple start-ups, regional players, and entrepreneurs incubated at academic and other funded institutes, adding to the pool of technology innovators benefiting the construction industry. With improved

integration of digital and technological innovations, and multiple other transformational forces shaping the construction industry such as digital, ESG, supply chain evolutions, are we experiencing a veritable start of a construction renaissance?

The KPMG 2017 Global Construction Survey took a deep dive into technology and found an industry embracing building information modelling (BIM), analytics and project management information systems (PMIS), drones, smart sensors, and a few bold innovators exploring 3D printing, machine learning (ML), virtual reality (VR) and robotic process automation (RPA).

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10. Business Line "Funding for construction tech start-ups hits seven-year high" published on 07 July 2021
11. Construction dive report "Construction technology funding skyrockets to record levels" published on 6 October 2021



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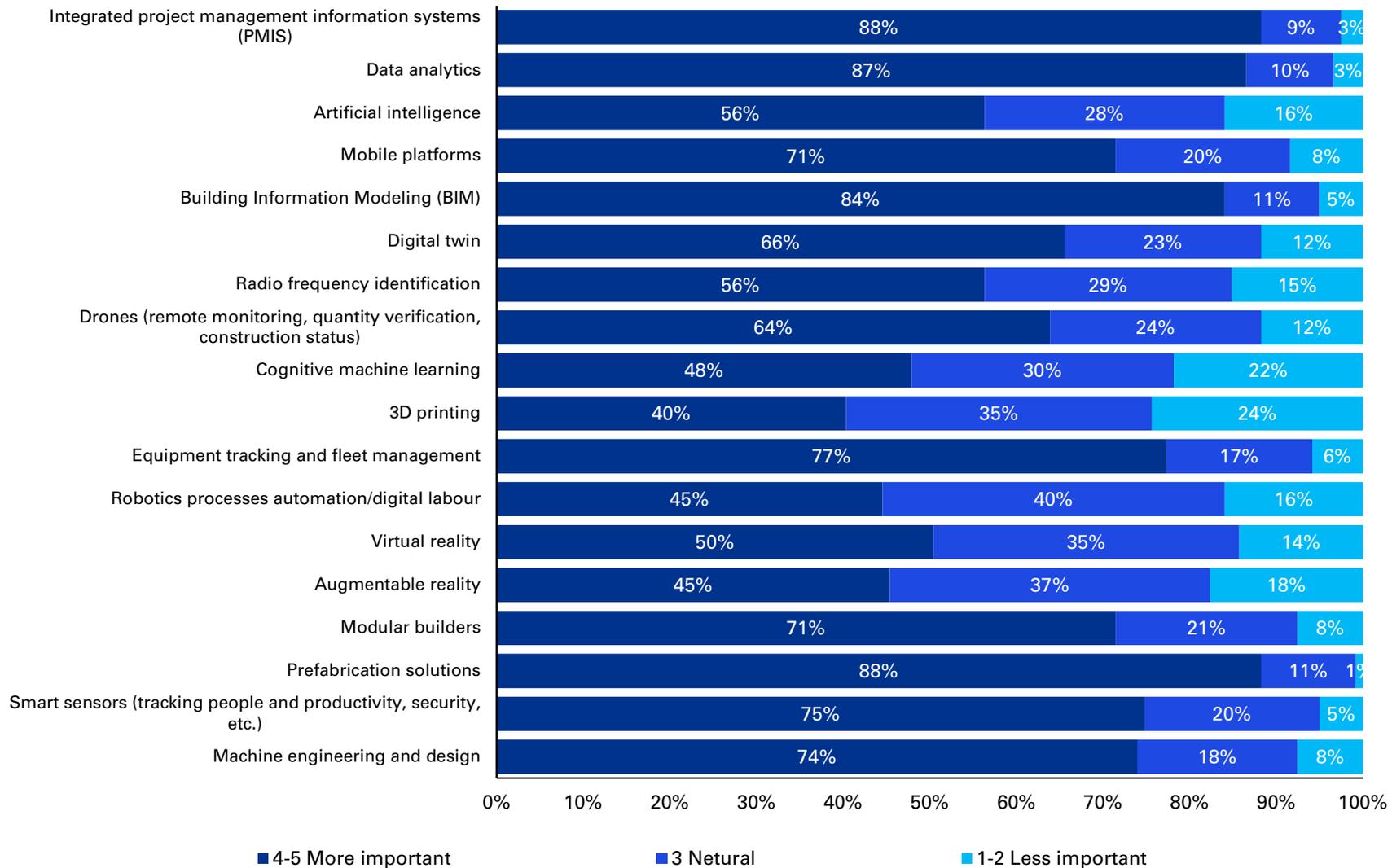
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Fast forward to this year's survey, over 70 per cent of Indian respondents rated integrated project management information systems (PMIS), data analytics, building information modelling (BIM), equipment tracking and fleet management, prefabrication solutions, and modular builders as more important. Of this, respondents from E&C firms assigned relatively higher importance to technology solutions such as data analytics, mobile platforms, building information modelling (BIM), drones, modular builders, and smart sensors.

**Exhibit 17: Please rate the importance of each of the following technology solutions in capital projects**

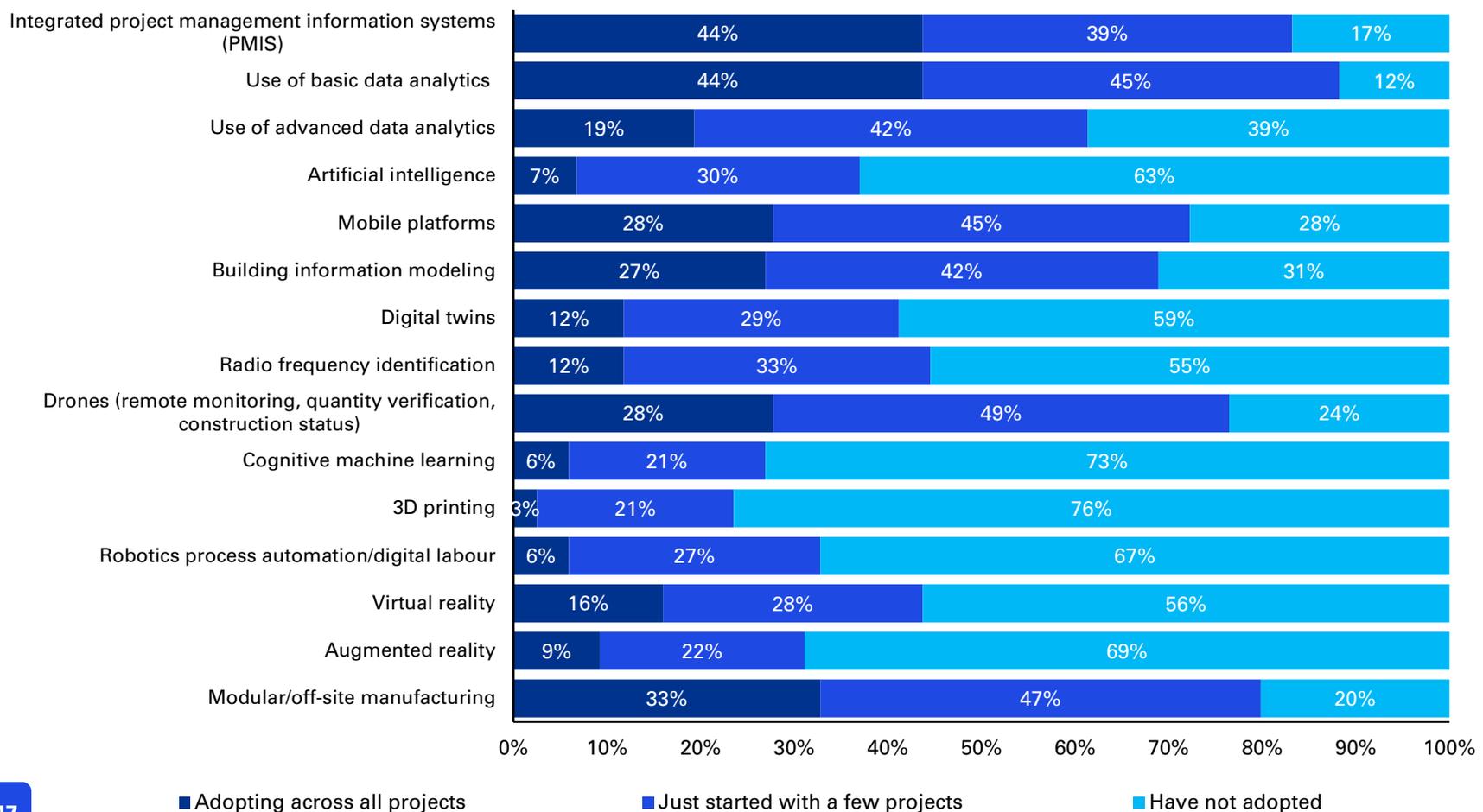


When adoption of these digital technologies is assessed across 'all projects', and this is a critical metric, respondents reported relatively lower numbers. 44 per cent of respondents stated that basic data analytics and integrated project management information systems are the most widely adopted technologies in construction. Mobile platforms were cited by 28 per cent of respondents, use of drones for remote monitoring, quantity verification, and construction status (28 per cent). followed by building information modelling (BIM) at 27 per cent. In the Indian market, an exciting development is the growing popularity of modular/off-site manufacturing (33 per cent).

E&C firms have significantly higher adoption of technologies such as mobile platforms and building information modelling (BIM) compared to the owner firms. Conversely, owner firms have significantly higher adoption of visualisation technologies such as virtual and augmented reality, and digital twins.

The utilisation of AI, encompassing digital twins, intelligent construction equipment, data and document management, and improved safety and communication, has experienced substantial growth globally. The adoption rate has risen to 40 per cent in 2023, a notable increase from 29 per cent in 2021. A similar trend can be observed in the Indian market, with 37 per cent of respondents indicating that they are either currently adopting or have recently started to adopt AI.

**Exhibit 18: Please rate your level of adoption of each of the following technologies**



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Innovation and digital are familiar buzzwords in board rooms, offices and construction sites, and some firms have made impressive progress. We have seen robotic dogs that 'sniff out' unsafe incidents and practices at construction sites, capture ongoing construction in three dimensions for close-to-real-time work measurement, and check design alignment vis-à-vis a 3D model. Then there is the project owner organisation that ordered out all major packages in record time, by collectively bargaining with its service providers, shaving precious months off the implementation schedule. In another example, a prime contractor uses 5D BIM layered with its custom workflows and lean construction methodology, for a fully integrated concept-to-design-to-delivery approach.

Digital technologies serve as one of the largest levers for owners and E&C firms to implement innovative ideas and solve project implementation problems. The key is to use a combination of already available and tested technologies.

In the rush for instant results that yield a positive, short-term ROI, multiple potential investments in digital and technological innovations are overlooked. A 3–5 year horizon is realistic when assessing the investment case. And the importance

of cultural barriers in both owner and E&C firms' organisations should not be underestimated; a shift in culture is often necessary to drive innovation at business unit, functional and individual levels, creating a virtuous cycle of greater adoption and furthering innovation.

As our survey responses demonstrate, established industry players are deploying PMIS, BIM and advanced data analytics, and are making inroads into the use of digital twins, AI, VR/AR, 3D printing, RPA. The successful adopters are championing digital adoption and technology innovations from the very top and investing in educating their teams. In addition to encouraging digital technology use for project implementation, leaders are also applying these technologies to conduct management reviews for enforced governance, sending a further signal that the organisation is shunning conventional, manual methods and striving for digital and technological leadership."

## Suneel Vora (PMP)

Partner, Business Consulting and Transformation – Major Projects Advisory and Industry 4.0, KPMG in India



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# Investing in the right technologies

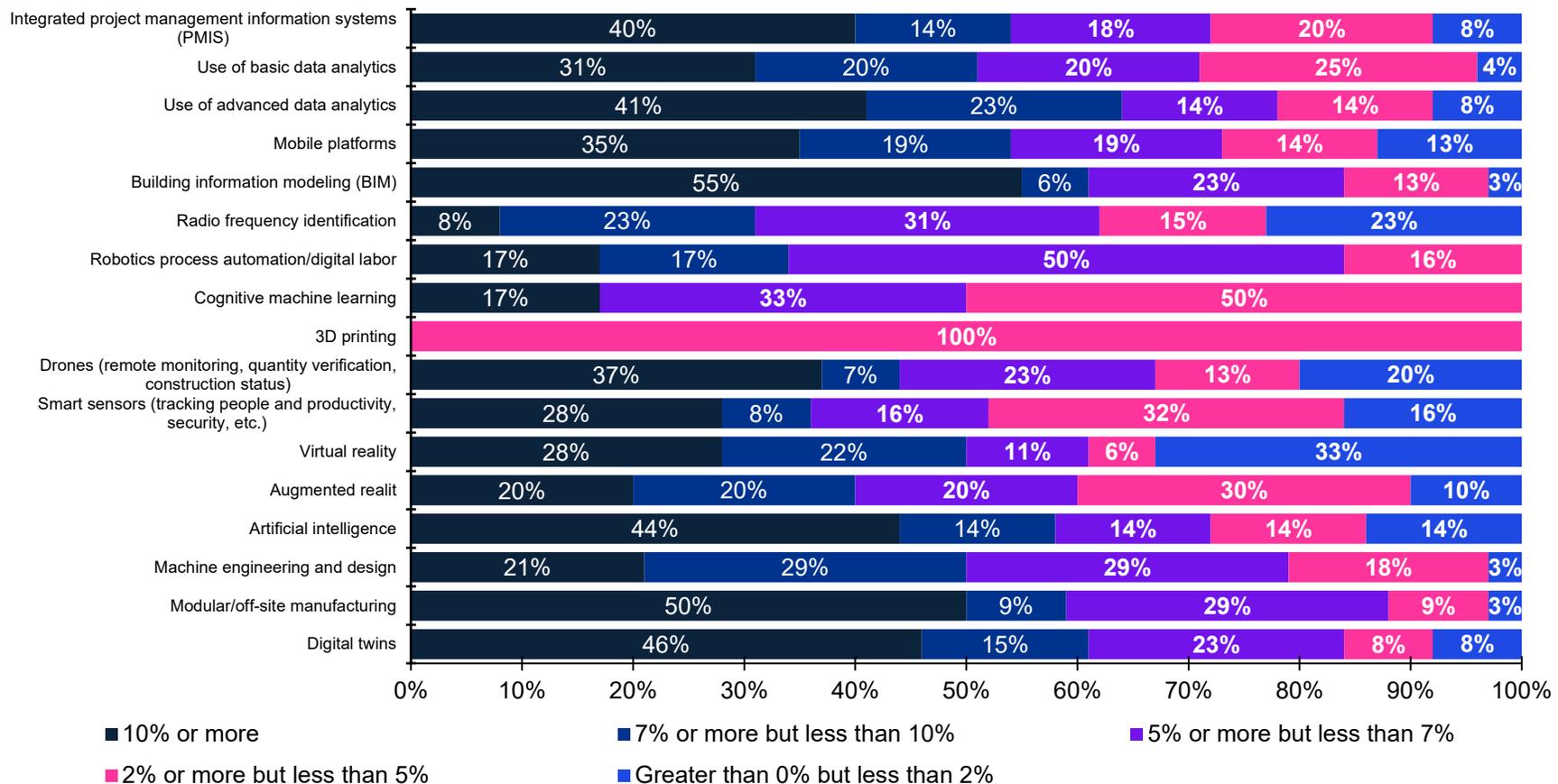


The industry's mixed record of going over budget and over schedule is something that everyone involved in construction has been striving to overcome for decades. So, it was fascinating to hear how the various new technologies were contributing to cost

and schedule performance improvement or avoiding overruns. Approximately half of our respondents adopting building information modelling (BIM), modular/off-site manufacturing and digital twins saw a significant performance improvement of

10 per cent or more through reduced timelines, costs and overruns. Additionally, the responses demonstrate a positive industry attitude towards adopting artificial intelligence, integrated PMIS, advanced data analytics, and drones.

**Exhibit 19: For the technologies adopted by your organisation, select a percentage range that best reflects the performance improvement achieved in reducing cost and schedule (or avoiding overruns)**



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63 per cent respondents from Owner firms reported technologies such as building information modelling (BIM) achieving more than 10 per cent improvement, given their heavy involvement with design agencies during the conceptualisation and design development phases. E&C firms' respondents reporting 10 per cent or more of performance improvement through adopting BIM were relatively lower at 42 per cent. It is important to note that as E&C firms start adopting the fourth and fifth dimension of BIM, namely, management of time and cost respectively, the benefits from BIM technology are expected to be higher for E&C firms as well and possibly surpass their owner firm peers.

There are some owner firms' respondents who have reported 10 per cent or more of performance improvement by leveraging robotics and process automation / digital labour, cognitive machine learning and radio frequency identification, both being relatively new technologies in the construction industry. This is another area where we see significant potential for the E&C firms to exploit for greater project performance improvement.

Integrated project management information systems continue to offer the greatest returns as reported by both categories of respondents, owner firms and E&C firms. Approximately a third of the respondents reported the use of

advanced data analytics and building information modelling (BIM) offering high ROIs. An exciting insight we learnt is around the high return on investment (RoI) enjoyed through adoption of modular/off-site manufacturing by E&C firms (34 per cent of the respondents) and owner firms (27 per cent of the respondents). Correlating this insight with the performance improvement achieved with the same technology, just under half of our respondents from both categories reported 10 per cent or more of performance improvement from modular and off-site manufacturing, making this a veritable lever for project performance improvement.



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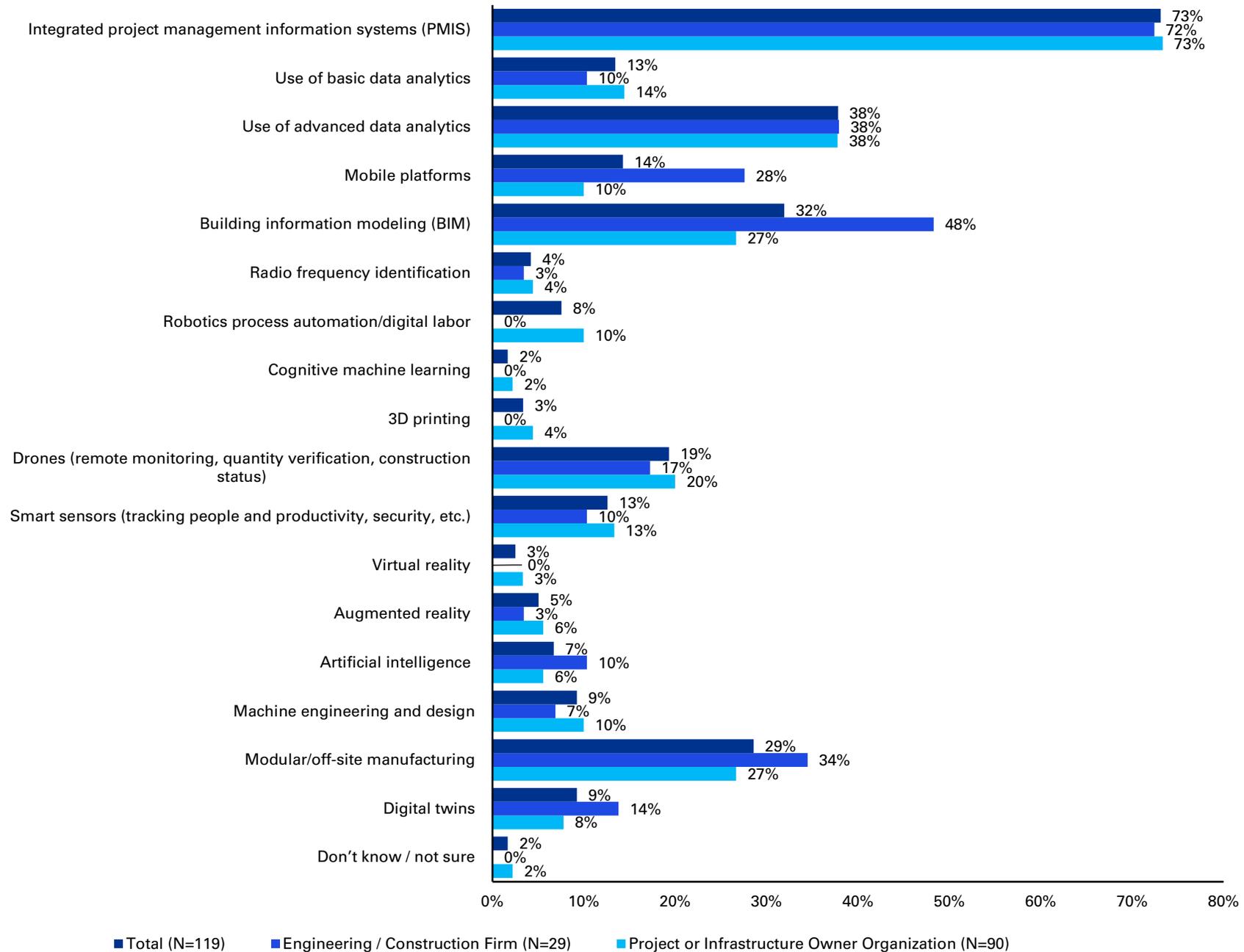
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## Exhibit 20: Technologies with potential to deliver the greatest overall ROI (multiple selection allowed)



# The modular construction's moment has arrived



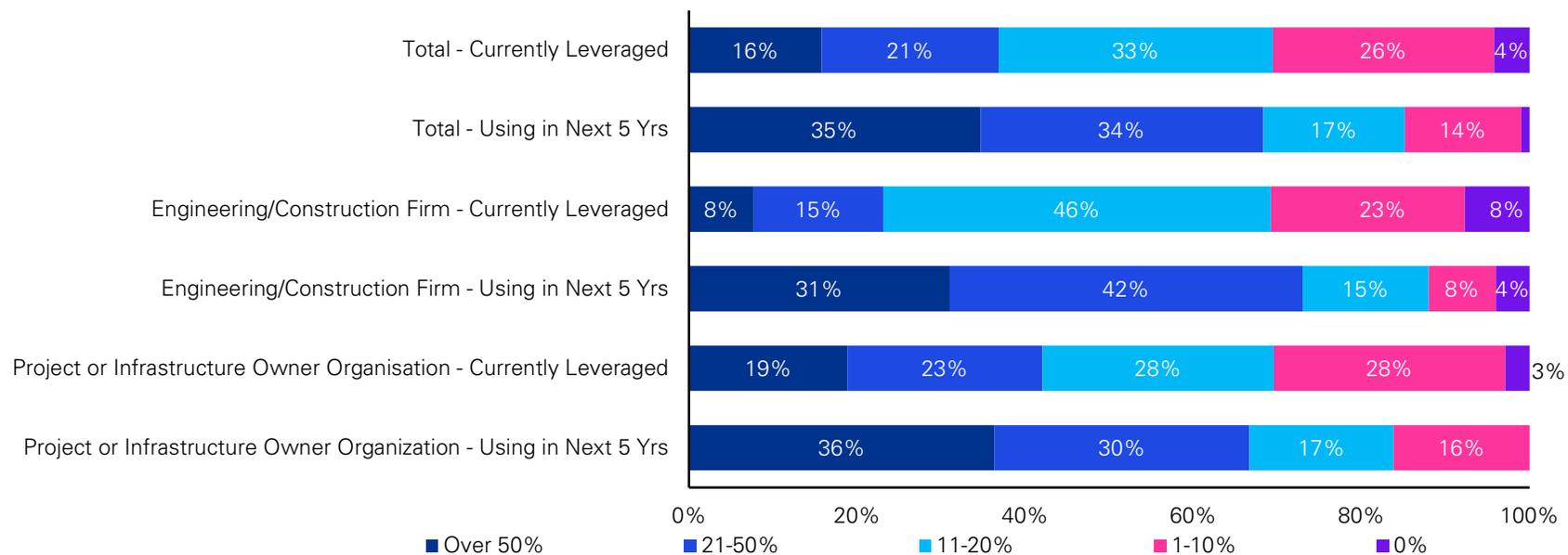
Modular and off-site manufacturing offers multiple benefits by shifting construction processes from the site to the factory floor or even a factory-like environment, positively impacting safety, supply chain and labour management, delivery timelines, costs and risk management, as well as better control on the carbon footprint. This approach utilises standardised designs, resulting in cost reduction, improved quality and safety, and accelerated

construction timelines. 8 per cent of E&C firms reported employing this approach in over 50 per cent of their projects, and a significant number (61 per cent) of E&C firms' respondents reported having used modular and off-site manufacturing in 11 per cent to 50 per cent of their projects.

It is noteworthy that 35 per cent of respondents anticipate a significant increase in adoption, expecting to

incorporate this technology in over half of their projects within the next five years. The sentiment towards modular off-site manufacturing is overwhelmingly positive, with 96 per cent of respondents expressing a strong desire to leverage its benefits in their projects. Approximately one-third of both owner firms and E&C firms intend to leverage modular and off-site manufacturing in over 50% of their projects in the next 5 years.

**Exhibit 21: What percentage of your projects currently leverage, or do you anticipate using modular/off-site manufacturing in 5 years?**



“One of the factors limiting modular manufacturing is the current day size and capacity of the existing facilities. While new facilities are emerging, ambitious large scale projects will need dedicated yards, underlying finance and upfront investment. The survey findings from both owner firms and E&C firms in India provide a strong indicator of the industrial-scale business opportunities offered by modular and off-site manufacturing in the upcoming 5 years.

Given the large infrastructure pipeline and the demand for high quality, safe and on-time/on-cost projects, modular construction provides an important solution. As confidence in modular construction gradually rises, and last mile execution improves, we expect these constraints to diminish. By creating greater awareness across multiple industry communities, policies that promote standardization, mainstreaming of lean techniques like last planner, creating better risk sharing through balanced contracts and with government encouragement, modular construction will receive the much-needed scale making it a game-changer for India.”

## Puneet Narang

Partner, Business Consulting  
and Transformation –  
Major Projects Advisory,  
KPMG in India



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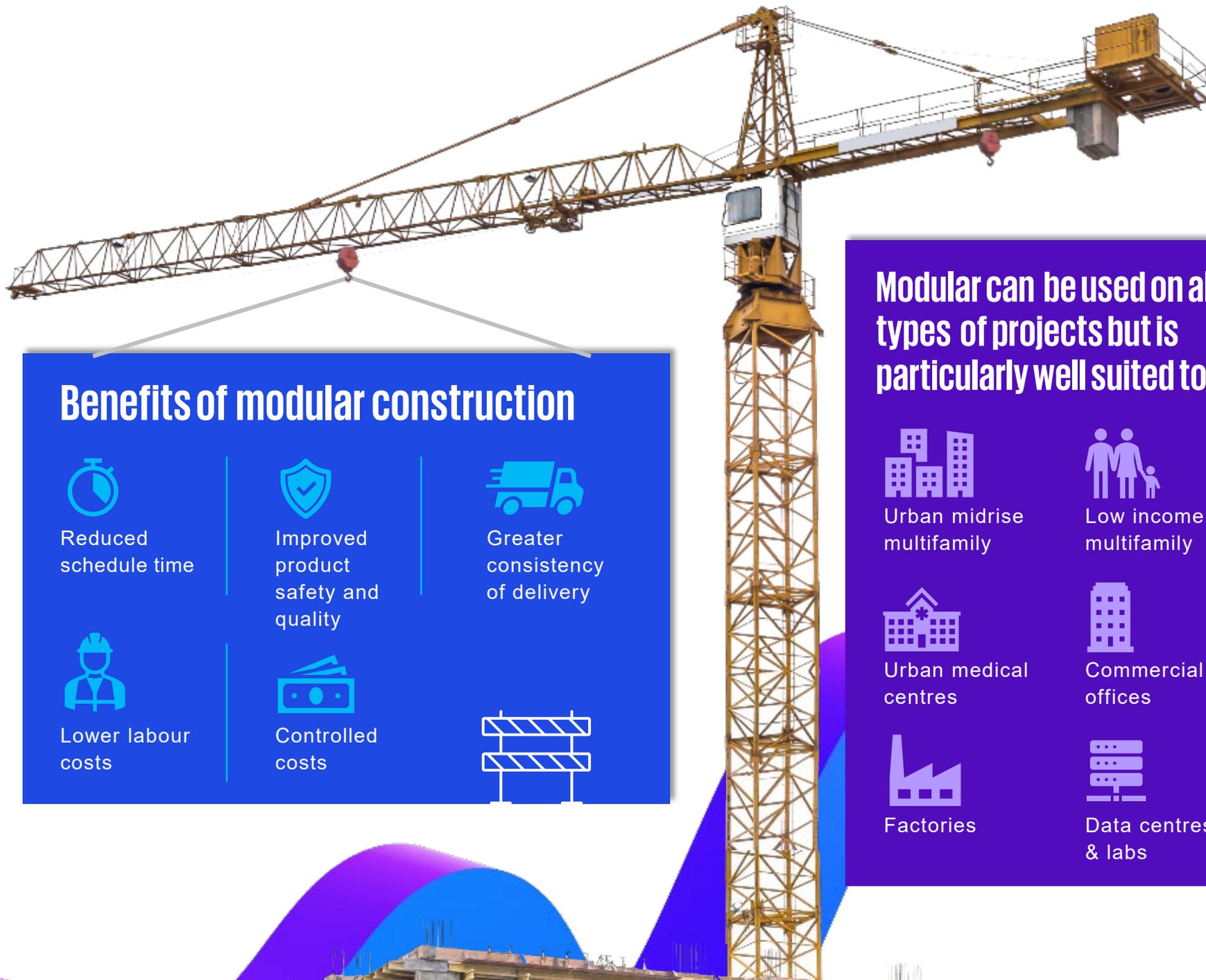
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## Benefits of modular construction



Reduced schedule time



Improved product safety and quality



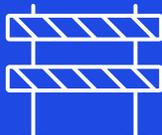
Greater consistency of delivery



Lower labour costs



Controlled costs



Modular can be used on all types of projects but is particularly well suited to:



Urban midrise multifamily



Low income multifamily



Urban medical centres



Commercial offices



Factories



Data centres & labs



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# View from the industry - CIDCO's transformative capital projects are pioneering excellence in Navi Mumbai's urban infrastructure development



## Dr. Sanjay Mukherjee

Metropolitan Commissioner, Mumbai Metropolitan Region Development Authority (MMRDA)

Dr. Sanjay Mukherjee shared his views with KPMG when he was designated as the Vice Chairman & Managing Director, City and Industrial Development Corporation (CIDCO) of Maharashtra (2020-2023) on 31 May 2023

“

CIDCO is pursuing its vision to elevate Navi Mumbai to global eminence through a multitude of transformative capital projects. These capital projects include world's largest mass housing project, comprising 125,000+ nos. housing units, largest greenfield city development of NAINA (Navi Mumbai Airport Influence Notified Area) with > 371 sq. kms, India's only dual airport system greenfield airport (Navi Mumbai International Airport), Navi Mumbai Metro, Water Supply and Urban transport projects amongst others that collectively are worth more than USD18 billion.

Driving timely completion of these projects has been a priority for CIDCO. In addition to strong programme management, CIDCO has adopted innovative financing and construction methods. We have also been able to resolve issues on troubled projects and fast track completion of projects at CIDCO.

The mass housing project has achieved remarkable milestones under Mission 96, viz. constructing a 12-storey residential tower with 96 tenements in just 96 days using the latest precast technology. Furthermore, the casting of 1415 slabs in a mere 727 days at the Taloja node showcased CIDCO's exceptional speed of 1.94 slabs per day by leveraging its partner ecosystem effectively. This is the only scheme which has kept the prices under check by providing affordable housing for common citizens.

CIDCO has leveraged precast construction technology and digital technologies such as building information modelling (BIM) to achieve success on multiple capital projects. Being a leader in development of new cities in India, CIDCO appreciates the importance of technology adoption, innovative financing, partner ecosystem development, effective stakeholder engagement, and focus on sustainable green construction.

”

# View from the industry - Embracing modularisation and digital technologies



## S. N. Subrahmanyam

Chief Executive Officer &  
Managing Director, Larsen &  
Toubro Limited



“ Our clients are becoming ever more demanding, which is why we employ multiple digital construction technologies and continue to focus on improved productivity. Greater pre-fabrication, pre-casting, and modular manufacturing improves quality, reduces the risk of error, and speeds up construction, as does mechanisation and automation.

By combining prefabricated, pre-finished volumetric construction (PPVC), structural steel construction, modular construction and 3D printing, we have managed to reduce typical project durations by an incredible 50 per cent. In one example, we successfully built 96 residential flats in just 96 days, and a seven-story building in less than 45 days. These kinds of timescales would have been unthinkable a few years ago.

And thanks to our digital tools and systems, we now get the benefit of real-time updates, predictive forecasting and better collaboration between different teams — together they enable faster decision-making. Digital twins accelerate development of designs and allow us to customise designs more closely to client needs.

It's not just about construction; digitalisation also enhances operations of our client's assets to reduce operating and maintenance costs, by making them smarter. And 5G is set to bring even higher speed and lower latency.

Underpinning much of this is our continued investment in our IT and technology services businesses, which we plan to grow multi-fold. We are building our capabilities in high-growth areas such as data centres, cloud, AI, cybersecurity, and blockchain, among others.

We have already launched two new digital e-commerce platforms: a B2B marketplace for industrial goods (called L&T SuFin), and an online learning platform for upskilling and vocational training (L&T Edutech).

With these kinds of advances, we are confident that our business will be in a strong position to compete in an increasingly digital world.

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# Key takeaways



The moment for the Indian construction industry to embrace digital technologies is clearly upon us. Projects have suffered delays and budget overruns for decades. Digital and innovative technologies offer the much needed performance boosts that can possibly overcome relatively uncontrollable factors enabling projects to achieve schedule and budget expectations. This survey clearly establishes the growing acceptance for the multiple digital and technological innovations basis the highest performance improvement and the return on investment achieved

The benefits of digital and technological innovations and the associated return on investment are best accrued with a transformation-scale exercise spanning business processes, technology, organization, with hands-on change and culture management. Often, establishing a dedicated and structured project management office (PMO) focused on technology implementation is observed to be necessary.

With improved enabling technological infrastructure available in India at economical rates such as data management, networks, cloud computing, platform integration, and a flourishing ecosystem of construction technology start-ups and the software giants, our construction industry in India is well-poised to exploit the opportunities offered by digital and technological innovations. Firms are seeking to gain competitive advantages by furthering the adoption of digital technologies and driving performance improvement.

Additionally, with more firms adopting digital technologies the wider ecosystem and the industry will also gain collectively. Accelerated adoption will result in the industry transforming itself, from being project-based and fragmented to becoming more consolidated, integrated, predictable and standardised.

## Leading practices adopted successfully in India

- Integrated project management information systems, building information modelling (BIM), data analytics, machine engineering and design, modular/off-site manufacturing, mobile platforms, drones and digital twins are providing the highest performance improvement and return on investment
- Modular and off-site manufacturing is showing substantial promise and is poised to serve as an industry game-changer over the next 5 years
- A top-driven approach for digital and technological innovations leads to higher adoption
- A transformation-scale initiative spanning business process, organisation, technology with active culture and change management is required for effective adoption and benefits generation.



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# About the survey and benchmarking tool



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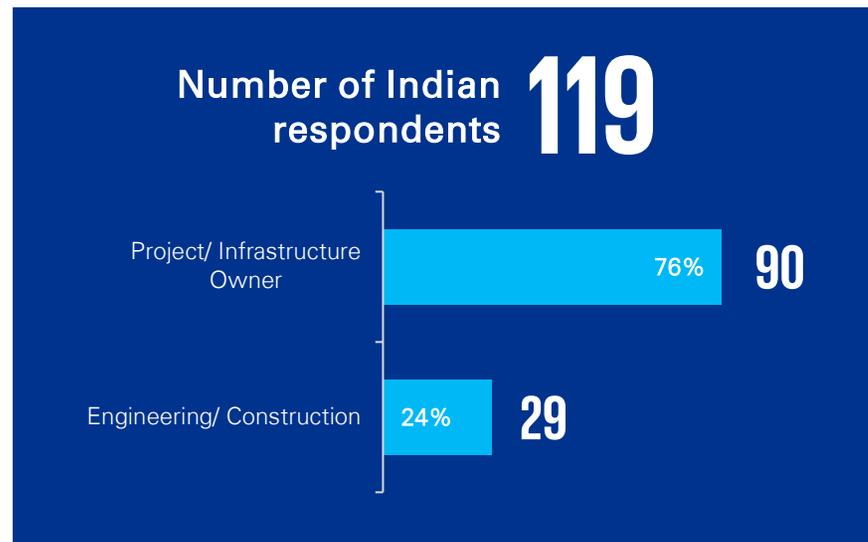
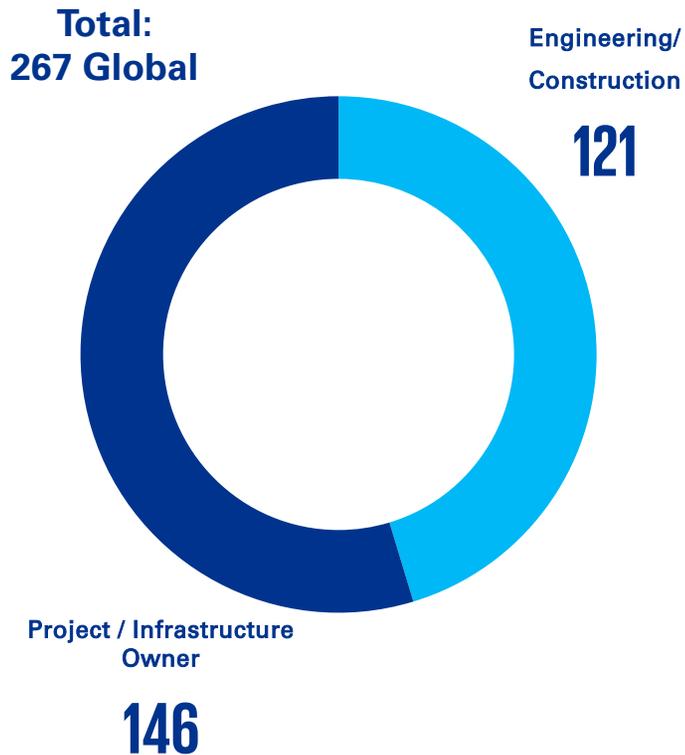
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The KPMG Global Construction Survey 2023 saw participation from 267 senior industry leaders of which 121 represented engineering & construction (E&C) firms and 146 represented project / infrastructure owner firms. 45 per cent of the respondents operate in the India

and are charged with implementation of significant capital investment programmes and projects. The India Edition of this survey captures the views of these 119 respondents which collectively across both groups of owner firms (90 no.) and E&C firms (29 no.).



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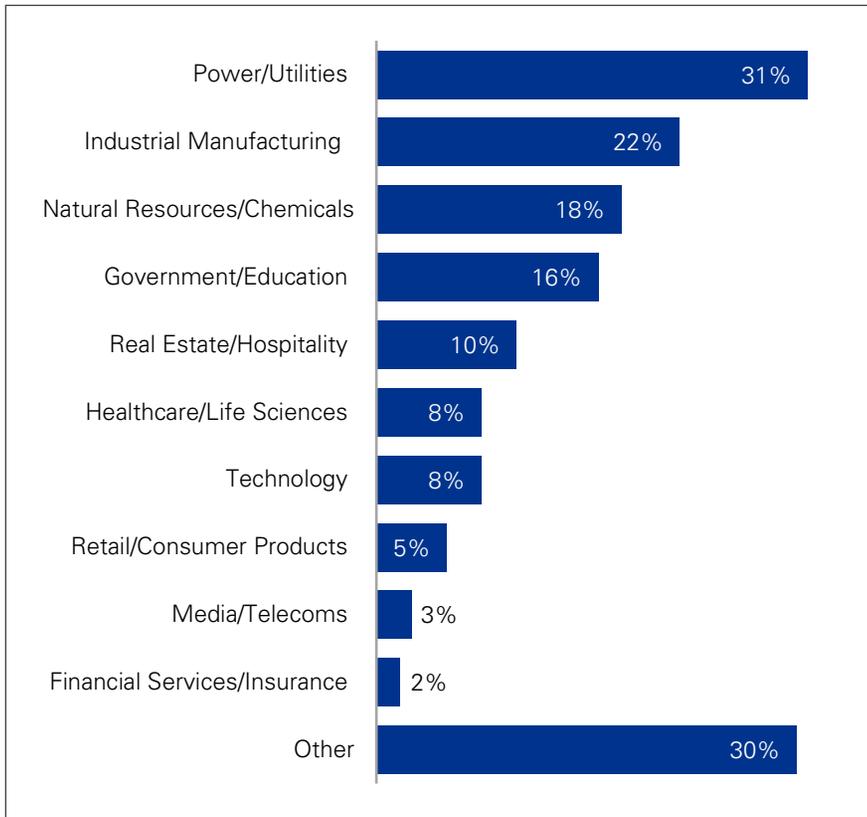
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Overall, this survey provides a diverse range of perspectives from various industries, entity types, and revenue brackets, with a specific emphasis on organisations engaged in significant capital investment projects in India. The data collected sheds light on the revenue distribution and industry sectors represented by the surveyed entities.

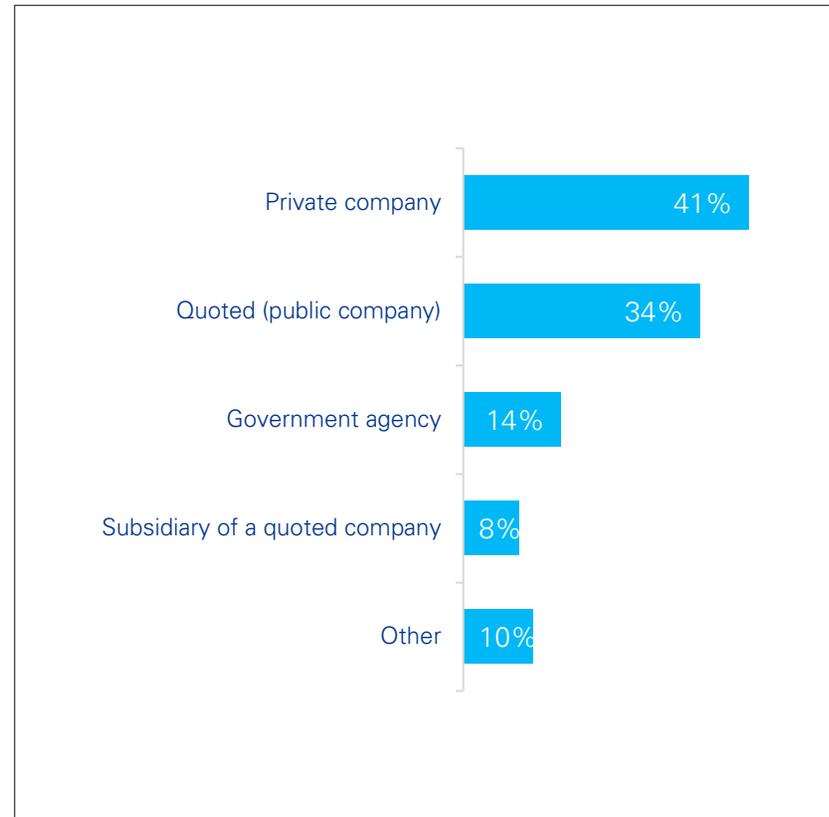
16 per cent of the respondents from India reported approximate entity revenue from operations in the last 12 months as more than USD20 billion. 13 per cent of the Indian respondents reported approximate entity revenue from operations in the last 12 months between USD5 billion and USD20 billion. The concentration of entities in the lower revenue brackets of less than USD5 billion (71 per cent respondents)

in India suggests a vibrant and competitive market. Smaller entities can contribute to increased competition, innovation, and cost-effectiveness in the construction industry. This is advantageous for project owners as it provides them with a diverse range of options, potentially leading to competitive pricing.

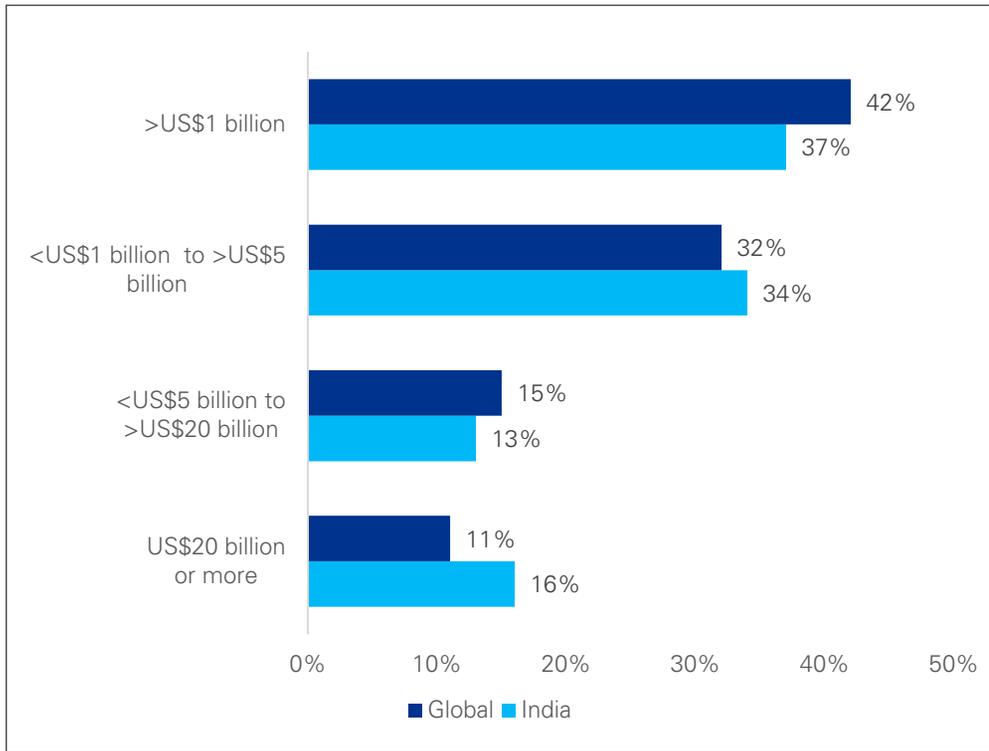
**Industry sector (multiple selection allowed)**



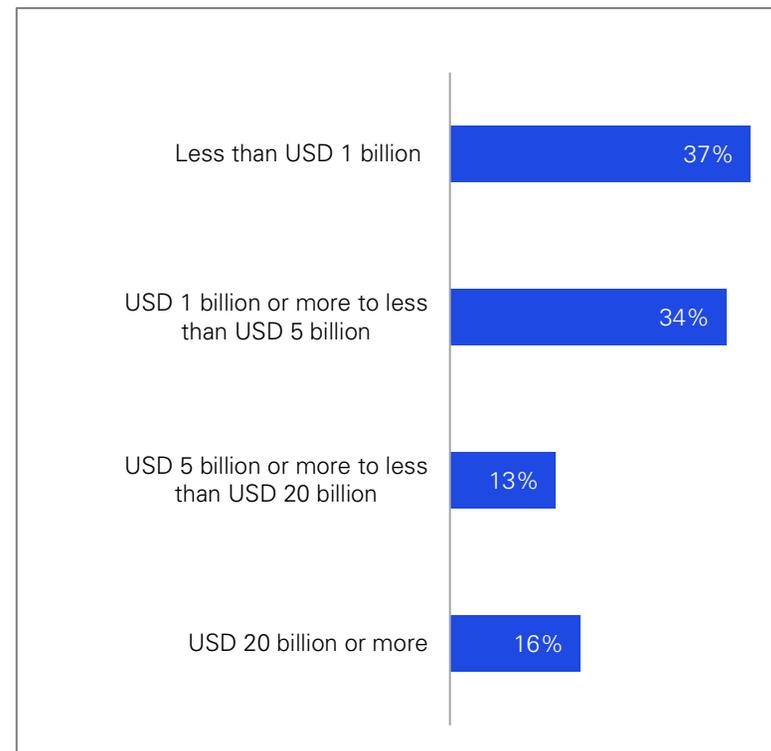
**Entity Type (multiple selection allowed)**



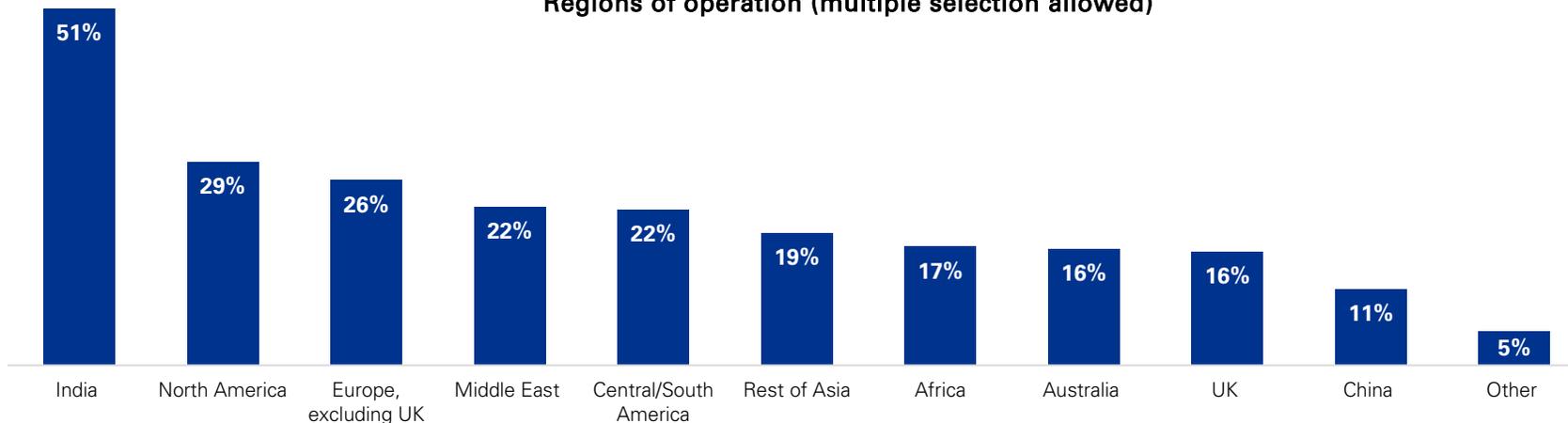
### Comparison: Revenue from operations in the last 12 months



### Approximate entity revenue from operations in the last 12 months



### Regions of operation (multiple selection allowed)



# About the Tool and User Manual

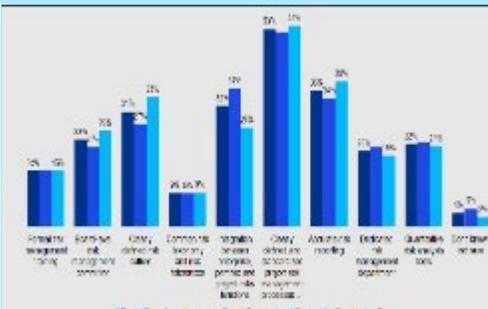
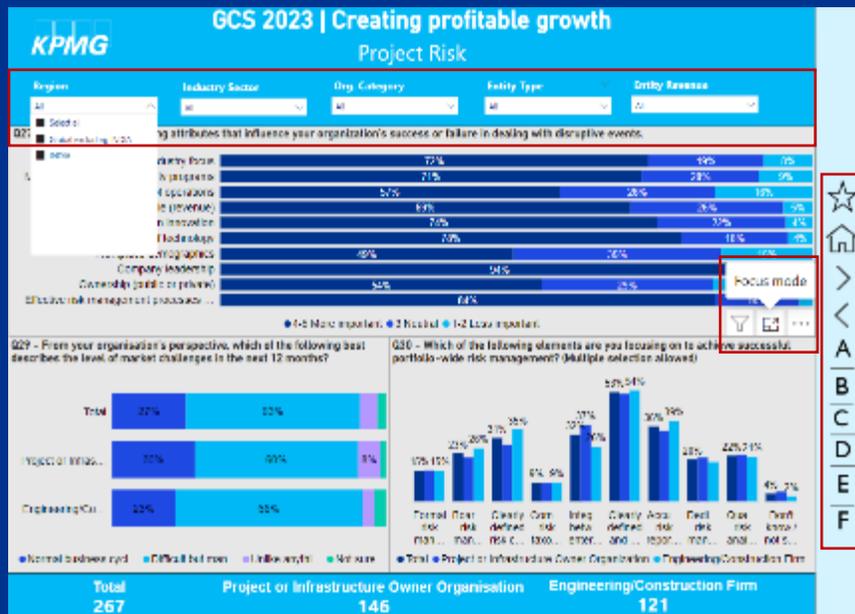
We are excited to provide our readers with a data analysis tool built on the Indian and global datasets created as part of the KPMG Global Construction Survey 2023. This is an online tool that will enable users to conduct self-assessments and benchmark practices collated by us through interviews and survey responses, make peer group comparisons, and gain insights to protect against risks and enhance performance. The tool can be accessed at the Global Construction Survey 2023 – India edition website.

## Specific benefits:

- Access to visually enhanced survey output and valuable construction industry datasets available uniquely with KPMG
- Trend analysis and comparison across India / Global datasets and smart data filters for analysis by industry sector, entity, size and organisation category
- Ability to build investment basis for digital and other project performance enhancement levers by leveraging the leading practices and specific datasets developed

*Use the navigation bar to move across the respective sections for reference to detailed insights and leading practices provided in the report*

Smart filters

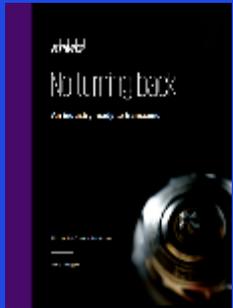


*Extract individual graphs by using the 'focus mode' for creating back ups for insights developed using the datasets and leading practices provided in the KPMG Global Construction Survey 2023.*

## Disclaimer:

*This benchmarking tool represents the data from the responses received as part of KPMG Global Construction Survey 2023 in a confidential manner. Please do refer to the important disclaimers provided in the report that also govern the use of the outputs of this online tool.*

# KPMG Global Construction Survey - Past editions



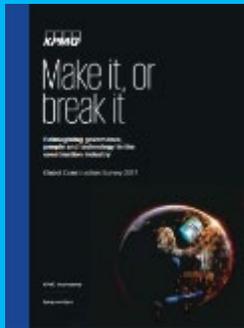
## 2021: No Turning Back

This survey examines how leaderships view organisational resiliency, risk management, portfolio project management, Diversity, Equity and Inclusion (DEI), and technology attributes in managing growth and impact of disruptive events.



## 2019: Future-Ready Index

Our groundbreaking 2019 survey benchmarks how prepared companies are for a highly competitive and unpredictable future and provides a self-assessment checklist



## 2017: Make it, or Break it

This survey examines how executives feel about governance, people and technology, and how the industry can make the kind of step change needed to bring performance in line with stakeholder expectations



## 2016: Building a Technology Advantage

This survey explores the early stages of the construction industry's investments in technology and what needs to change to begin reaping the benefits.

## Prior KPMG Global Construction Surveys



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B

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**D**

E

F



E

# Our authors and contributors



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# KPMG's Major Projects Advisory consulting business in India



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KPMG entities in India are professional services firm(s). These Indian member firms are affiliated with KPMG International Limited. KPMG was established in India in August 1993. Our professionals leverage the global network of firms, and are conversant with local laws, regulations, markets and competition. KPMG has offices across India in Ahmedabad, Bengaluru, Chandigarh, Chennai, Gurugram, Hyderabad, Jaipur, Kochi, Kolkata, Mumbai, Noida, Pune, Vadodara and Vijayawada.

KPMG entities in India offer services to national and international clients in India across sectors. We strive to provide rapid, performance-based, industry-focussed and technology-enabled services, which reflect a shared knowledge of global and local industries and our experience of the Indian business environment.

With our reviving economy in the post COVID era and pressure on performance, companies are revising

Management teams are sanctioning capital projects to enhance capacities to fuel growth. Capital projects, however, are indeed a complex business. Limited project management talent available internally and externally, coupled with varying regional influences and regulatory requirements, and differing stakeholder needs, further exacerbate the difficulty for successful project implementation.

Under Business Consulting, we offer **Major Projects Advisory (MPA)** services in India, as part of a globally integrated practice, with over a decade of value-led consulting experience, globally and in India, focused on efficient, cost effective and faster delivery of large scale and complex capital projects at portfolio, programme and project levels from conceptualisation to project implementation and operationalisation. Our Major Projects Advisory team helps enhance performance of your capital investments and projects. The

experienced team enables project stakeholders achieve success in their projects, by integrating industry experience with hands-on expertise, technical and financial competencies, effective methods, and time-tested digital and technology tools. Our clients gain from an improved visibility provided by KPMG in India, enhanced governance and control and reduced project time, cost and risk.

We have advised and overseen capital expenditure worth ~USD220 billion over the past 13 years in India for 150+ clients, across practically all industry sectors. Over the years, KPMG has continually invested in developing solutions to address the core need of our clients in better managing capital programmes and projects, which easily constitute their single, largest expenditure each year. Capital programmes and projects enabled by KPMG tend to have reduced time, cost and risk with higher governance, oversight and visibility.

**KPMG's MPA team in India:**  
**160+ professionals**  
 comprising engineers, MBA's, chartered accountants, architects, digital specialists)




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have overseen capital expenditure worth  
**USD220 billion**



across sectors:

Airports and Aviation	Automotives	Bankers, Financiers and PE funds	Chemicals	Consumer markets	
Funding and multi-laterals	Government	Healthcare	Industrial manufacturing	Metals and mining	Oil and gas
Pharmaceuticals	Power and utilities	Railways and Metros	Real estate	Renewable energy	
Roads and highways	Technology	Telecom	Urban infrastructure	Water and irrigation	



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**30** years  
and beyond

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