

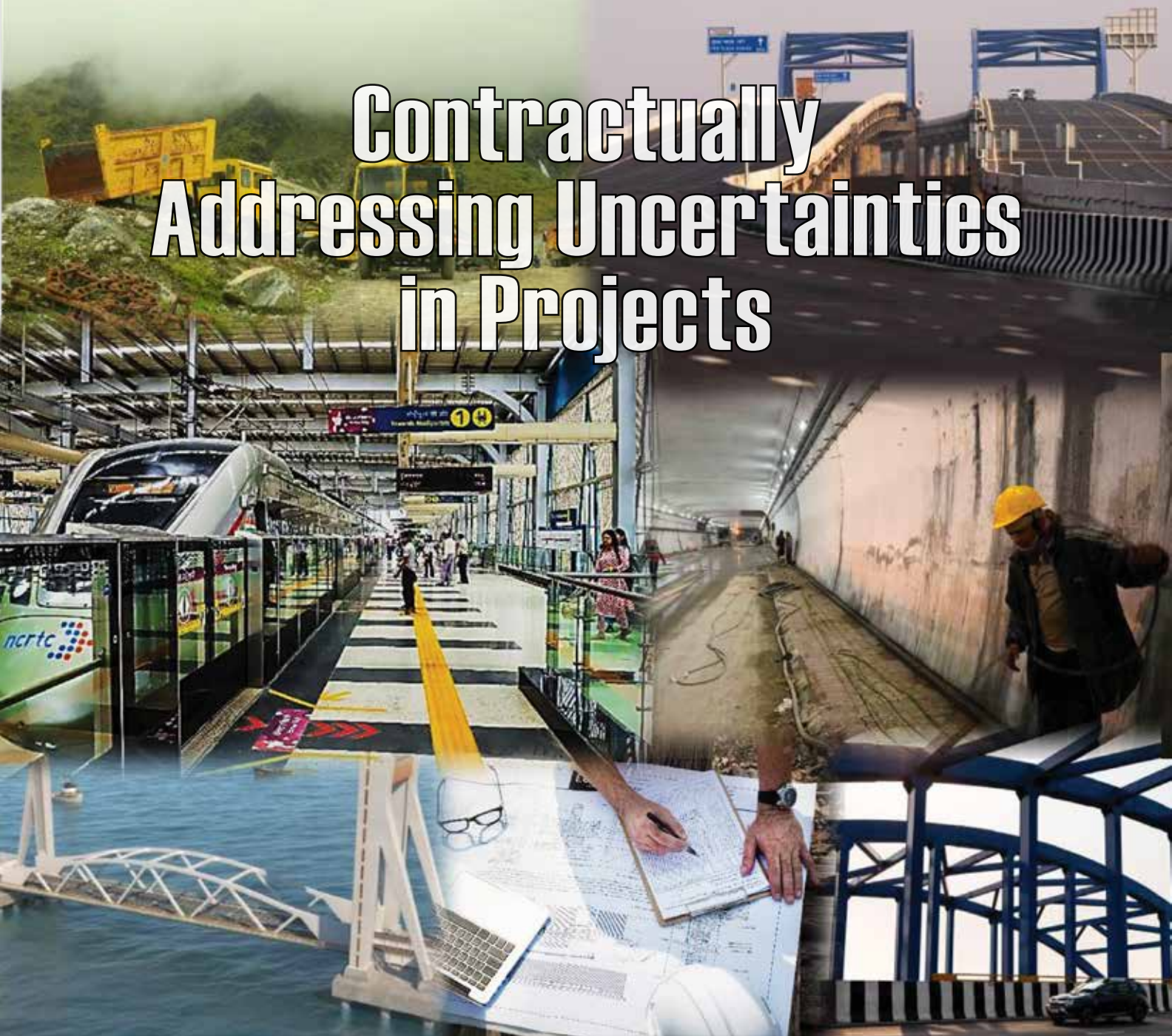
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# VIEWPOINT

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## Contractually Addressing Uncertainties in Projects



# Contractually Addressing Uncertainties in Infrastructure Projects: Lessons from Implementing India's first Namo Bharat



**Shalabh Goel**

Managing Director

National Capital Region Transport Corporation (NCRTC)

## Introduction

Infrastructure projects, by their very nature, are implemented in environments marked by complexity, scale, and uncertainty. While meticulous planning, robust engineering, and efficient execution are essential, the resilience of a project is equally determined by the strength of its contractual frameworks. Contracts are not merely legal documents; they are instruments of risk mitigation, dispute minimization, and assurance of continuity in the face of disruptions.

## The Strategy

India's first Namo Bharat project, being implemented by National Capital Region Transport Corporation (NCRTC), is a testament to the fact that efficient contracts, when designed to address uncertainties effectively, can shape and pave the way for the successful implementation of a complex first-of-its-kind project. The first Namo Bharat corridor is being constructed on an 82 km stretch between Delhi, Ghaziabad, and Meerut. It is one of the very few projects in India to have been completed on time and within budget, despite the numerous challenges encountered during its implementation journey. From pandemic-induced stoppages to regulatory bans, weather extremes, and dynamic policy landscapes, NCRTC's contractual

strategies provided an apt blanket that helped shield from these uncertainties and kept the implementation progress on track. From April 2019 to date, a total of 211 bids have been finalised, amounting to ₹17,517 crores.



*Inspection Bay Line (IBL) at Namo Bharat Depot in Duhai, Ghaziabad*

Of this project costing ₹30,274 crores, about 60 percent of the funding has been provided by multilateral banks, including the Asian Development Bank (ADB), Asian Infrastructure Investment Bank (AIIB), and New Development Bank. The team at NCRTC recognised the importance of the timely approval of bidding documents. Early initiation of approval processes and regular interactions with procurement teams of funding agencies were institutionalised. This ensured that



contractual clauses were well understood and accepted by all stakeholders, minimising delays and rework.

Various procurement-related documents, procurement regulations, standard bidding documents of multi-lateral development banks (MDB), and other organizations were collected, studied, and analysed for the development of Procurement Manuals, other procurement-related policy documents, Project Procurement Strategy, Procurement plan, and preparation of various bid documents. NCRTC also adhered closely to FIDIC General Conditions of Contract (GCC), making only minimal changes to the standard bidding documents as per the project requirements. This alignment enhanced the project's credibility with international financiers and ensured consistency with global best practices.

Another element of uncertainty in infrastructure projects is the availability of suitable vendors and contractors with the required capability. NCRTC proactively organised regular vendor meets to gauge market capacity, understand trends, and identify potential partners. This practice not only reduced risks linked to limited competition but also helped align contractual terms with market realities.



*NCRTC workshop on procurement complexities*

## Land Acquisition and Shifting of Utilities

Delays in land acquisition and statutory approvals have been a recurring challenge in infrastructure projects across the country. As the expanse of the first Namo Bharat corridor stretches between two states, Delhi and Uttar Pradesh, it adds to the complexity

and risk. NCRTC made significant efforts to ensure the availability of land required for the project. This involved extensive correspondence and multiple meetings with the Government officials to facilitate land acquisition.

As per the ongoing trend in the Metro industry, shifting of utilities and road widening works are kept under the scope of the main civil contractors only. However, there are numerous instances wherein the projects were delayed due to delays in approvals or shifting of utilities like gas, water, sewage pipeline, telecom cables, etc., owing to involvement of various Government agencies. Considering this fact, at NCRTC, it was decided to take up major utility shifting works like that of EHT/ LT lines, gas, water, sewage pipeline, road-widening, and initial pile load testing works in-house, directly awarding separate smaller contracts before onboarding the main civil contractors. This eventually helped in saving considerable time usually taken up for preparing the sites for the main civil activities by taking approvals from the various agencies, carry out utility shifting, road widening works and initial pile load testing to take up the first construction activity of piling in case of works related to elevated viaduct and elevated stations, after duly taking various access and approvals for shifting of the utilities. It was also ensured that access to site provisions was finalised only after necessary land and statutory clearances were obtained. This helped the main civil contractors mobilize and start directly with the execution of permanent civil works, like piling, with the availability of clear sites. This project execution methodology and



*Namo Bharat site in Meerut*

management, coupled with contractual safeguards, protected contractors from being penalised for idle resources due to delayed clearances.

## Deliverables and Payment Terms

Cost overruns and disputes often arise from poorly structured deliverables and payment terms. NCRTC addressed this by ensuring that milestones and payments were designed in an optimal, sequential manner. Thus, as per the contract, on receipt of a bill, 80 percent of the payment must be made within 7 days, while the balance 20 percent must be made within 28 days after all the details are checked. This approach aligned payments with actual progress, incentivised timely delivery, and minimised grounds for conflict. Contractors benefited from predictable cash flows, while NCRTC retained assurance of accountability and performance.

## Risk Sharing

NCRTC treated contracts not as static documents but as dynamic frameworks capable of accommodating disruptions without derailing timelines or finances. A proactive stance was adopted in embedding flexibility and risk-sharing provisions into the contracts. While several uncertainties were anticipated, others emerged during execution, requiring contractual mechanisms to step in as safeguards.

## Operations and Maintenance Contracts

Setting another one-of-a-kind benchmark in the field of Operations and Maintenance, NCRTC awarded a 12-year O&M contract to DB RRTS India, a subsidiary of Deutsche Bahn AG, the National Railway operator of Germany. The work was awarded through an international competitive bidding process. This one-of-a-kind contract covers day-to-day operations and maintenance of key systems like signalling, tracks, and E&M, while excluding civil structures, rolling stock maintenance, and Automatic Fare Collection (AFC). This is a performance-based contract structured on a gross-cost model, which provides long-term cost visibility while linking payments to measurable

service quality parameters. It ensures reliability, safety, and efficiency in the daily operations. Alongside this, NCRTC has also adopted the first-of-its-kind model for integrated procurement cum long-term (15 years) comprehensive maintenance of rolling stock through private participation to capture lifecycle costing. This procurement model was adopted to tap the use of the most suitable technologies and durable components on the one hand and the latest state-of-the-art technologies and practices on the other, at optimum costs. The comprehensive O&M contract and the aforesaid procurement cum long-term maintenance contract are now being considered for adoption by Indian Railways and other Metro companies.



*A Nammo Bharat coach being inspected*

## Provisions for Unforeseeable/ Unforeseen Events

The COVID-19 pandemic was perhaps the most unprecedented disruption faced during the project implementation phase. By December 2019, the World was sinking into panic due to the looming threat, much of which was still unknown. A question also arose for NCRTC about how to proceed with the bids. At first, the date of the bids was extended. Pre-Bid meeting, an integral part of procurement, used to take place in the form of in-person meetings. It was, however, tried for the first time on virtual platforms and was well received by the industry. A total of 24 representatives from all across the globe, including those from Korea, France, Germany, China, and Turkey, participated in the first-ever pre-bid meeting conducted by NCRTC on a virtual platform. The success of this initiative could be assessed from the fact that queries from several other

organisations were raised to learn from the experience of the pre-bid meeting on a virtual platform. NCRTC has, since then, made the pre-bid meeting on virtual platforms its norm. It was the innovative approach of NCRTC that a total of 39 bids amounting to ₹10,966 crores were awarded during the pandemic period. So, NCRTC Team was fully active during the COVID period as well, despite various challenges.

The construction of the project, which started in 2019, was also severely affected by the disease wreaking havoc all across the globe. Nationwide lockdowns brought construction activities to a halt, labour availability dropped sharply, and supply chains were severely disrupted. The second wave in 2021 worsened the situation. However, NCRTC's contracts contained provisions for such extraordinary circumstances that allowed for extension of time and cost compensation. This contractual foresight prevented adversarial relationships with contractors and ensured that the project could regain momentum rapidly once restrictions were eased. As a result, the Priority Section of the corridor was commissioned, as per scheduled timelines, on 20<sup>th</sup> October 2023. This was unprecedented and something which NCRTC is proud of.



*Namo Bharat casting yard*

## Changes in Law and Regulations

Changes in law during long project cycles are another source of uncertainty for such mega infrastructure projects. Shifts in taxation regimes, introduction of new regulatory standards, or amendments in labour and safety laws can have financial and operational implications. NCRTC's contracts include provisions to account for

such changes, ensuring that contractors are not unfairly burdened while protecting the project's viability.

Large-scale urban infrastructure projects are often subject to regulatory interventions aimed at balancing development with environmental and social considerations. NCRTC's contracts provide for time extensions and cost compensations in such situations as well, where delays are attributable to authorities rather than contractors. The National Green Tribunal (NGT) imposing temporary bans on construction activities in Delhi-NCR to control air pollution is one such example. Similarly, work had to be suspended during religious pilgrimages or festivals that require movement restrictions for safety and law-and-order reasons. By clearly defining responsibility for such disruptions, contractual disputes were avoided, and contractors were not penalised for circumstances beyond their control. This clarity builds trust and ensures smoother cooperation in the subsequent phases of construction.

## Weather & Climate Factors

Infrastructure projects often face risks linked to exceptional weather conditions and unexpected physical site conditions. NCRTC's contracts included provisions to allocate these risks appropriately, either through insurance mechanisms or shared responsibilities, thereby safeguarding both the contractor and the client from disproportionate liabilities.



*Namo Bharat casting yard for underground section*



## Insurance Provisions

Comprehensive insurance provisions within the contracts covered works and contractor's equipment, injury to persons and damage to property and contractor's personnel, and liabilities for breach of professional duty. It served as a critical safety net, ensuring that unforeseen incidents did not translate into crippling financial shocks. By mandating robust insurance mechanisms, NCRTC reinforced the resilience of the project ecosystem.

## Contracts - The Way Ahead

As India undertakes a wave of mega projects under visionary initiatives such as the Gati Shakti National Master Plan, National Infrastructure Pipeline, and urban transformation programs, the learnings from NCRTC's contractual strategies are highly relevant. It's inevitable for large, complex projects to face uncertainties, whether from global crises, environmental constraints, or changing regulatory frameworks. Going ahead, success will depend not just on engineering and financing effectiveness but on the robustness of contractual frameworks as well.

NCRTC's experience demonstrates that contracts can be designed to share risks equitably, incentivise performance, and safeguard all parties. This requires foresight, proactive stakeholder engagement, and alignment with international standards. For clients, it means assuming responsibility for approvals and clearances before site handover. For contractors, it provides assurance that unforeseeable risks will not

become crippling liabilities. For financiers, it enhances confidence in the project's long-term resilience.

The Delhi-Ghaziabad-Meerut Namo Bharat corridor is a pioneering case of how uncertainties in large infrastructure projects can be contractually managed. NCRTC's proactive strategies in addressing pandemic disruptions, regulatory restrictions, environmental risks, and market uncertainties provide a model of resilience.

As India continues to invest heavily in transformative infrastructure, the importance of contractual preparedness cannot be overstated. Contracts that anticipate uncertainties, allocate risks fairly, and build in mechanisms for continuity are essential to ensure successful project outcomes. NCRTC's experience offers a valuable blueprint for practitioners, policymakers, and financiers alike, underscoring that in the journey of building a 'Viksit Bharat', resilient contracts are as important as robust engineering.



*Sahibabad Namo Bharat Station in Operation*



*Namo Bharat depot at Duhai, Ghaziabad*