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PREVENTION > CURE: CONSTRUCTION CONCERNS IN INDIA'S US$80BN PPP PIPELINE

The post-COVID-19 recovery is highlighting the importance of infrastructure investment—as both a recognition of insufficient infrastructure in many sectors and a driver for economic transformation, job creation, and inclusive growth. Many low-income developing countries and emerging economies face major investment needs to reach their UN Sustainable Development Goals. In light of limited fiscal space and financing constraints, however, many countries will turn to the private sector to complement public investment. As a result, interest in public-private partnership (PPP) based public procurement is likely to increase.[1]

"The underlying thread is to micro-analyse impact from a time and cost perspective"

What is a PPP? A PPP can be characterized as a project governed by a long-term contract between a government and a company, in which the company makes an investment in an asset and uses it to provide services to the government or the public, while usually being required to satisfy a set of performance criteria. The PPP contract is always a single contract for the design, construction/rehabilitation, and maintenance of the asset, sometimes including its operation as well. [2]

Last year, India unveiled a mammoth INR 6 trillion (approximately US$80 Billion) PPP-based National Monetization Pipeline (NMP) plan focused on brownfield assets (i.e., existing but under-utilized government assets) aimed at attracting private sector investment over a period of 4 years (FY2022-2025).

The most significant areas for the PPP are projected to be for Roads (INR 1.6 trillion, or 26.8% of the total budget) and Railways (INR 1.5 trillion, or 25.5% of the total budget). The other sectors: Power Transmission; Power Generation; Telecom; Warehousing; Mining; Gas Pipelines; Aviation; Urban Real Estate; Ports; Sport Stadiums; and Other Pipelines & Assets, each accounted for less than 8% of the remaining budget (total INR 2.8 trillion, or 47.6% of the total INR 6 trillion budget)

An important aspect of the PPP framework for India reflects the monetization of 'Rights' not 'Ownership' – the NMP without divesting ownership is intended to transfer operational title for the prescribed period to successful private sector bidders[3].

In this regard, one of the routes which NMP adopts is through concession arrangements, wherein PPP models such as 'Operate-Maintain-Transfer' (popular in the road sector), 'Operate-Maintain-Develop' (previously used

[1] Mastering the Risky Business of Public-Private Partnerships in Infrastructure in: Departmental Papers Volume 2021 Issue 010 (2021) (imf.org)
[2] Mastering the Risky Business of Public-Private Partnerships in Infrastructure in: Departmental Papers Volume 2021 Issue 010 (2021) (imf.org)
[3] National Monetisation Pipeline (NMP)| National Portal of India

in the airport sector in India) or the similar Rehabilitate-Operate-Maintain-Transfer structure, and 'Design Build Finance Operate and Transfer' (such as for railway station redevelopment projects) are to be engaged, with potential for construction activities to be undertaken i.e. development and redevelopment.[4]

To sensibly approach concerns which stakeholders involved in construction are likely to face in India's PPP construction chain, we were able to tap into our dispute's avoidance expertise for PPP projects. By focusing on a wealth of data relating to dispute causation factors which are project type/sector-specific, we were able to pinpoint top risk areas and suggest (high-level) mitigation measures. Our intention is to facilitate these stakeholders to make tailored choices in terms of positioning to potentially avoid disputes.

"The focus should be to gauge specific risks, reassess approaches as they exist based on similar projects/past interactions and identify areas for improvement from a dispute avoidance perspective."

NMP ASSET CLASSES

13 asset classes identified by NMP are as follows: Roads, Railways, Power Transmission, Power Generation, Telecom, Warehousing, Mining, Gas Pipelines, Aviation, Urban Real Estate, Ports, Sport Stadiums, and Other Pipelines & Assets[5]. We were able to group 11 of these into 5 blocks (please refer to table below). Asset classes of Telecom and Other Pipelines & Assets have not been considered given lack of specific PPP data.

CRUX - SECTORIAL DISPUTE CAUSATIVE FACTORS

HKA's CRUX Report identifies top dispute causative factors for engineering and construction disputes from a global, regional and sectorial basis based on in-depth data accumulated from over 1,100 projects on which we have represented, spread across 88 countries representing a total CAPEX greater than US$1.8 Trillion[6].

From which, on the basis of handpicked 50 relevant PPP projects globally from 2009, representing a total CAPEX of over US$118 Billion, we have identified 22 relevant heads of claims or dispute (i.e. dispute causative factors) for each NMP asset class (grouped together as colour-coded below), attributed ranks from 1 onwards, and suggested mitigation measures from a pre-contractual/tender, contractual and/or execution perspective:

CRUX INSIGHT

[4] Page 22. Vol_I_NATIONAL_MONETISATION_PIPELINE_23_Aug_2021.pdf (niti.gov.in)
[5] Page 14 NATIONALMONETISATIONPIPELINEVol2.pdf (niti.gov.in)
[6] CRUX Interactive Dashboard - HKA

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S. No.	Cause of Claim or Dispute	CRUX Rankings[7]					High-Level Mitigation Measures
		Aviation, Rail, Roads & Ports	Power Transmission & Generation	Warehouse, Sport Stadiums & Urban Real Estate	Mining	Gas Pipelines	
1	**Physical Conditions were unforeseen**	Rank 1	Rank 1				• Ensuring contractual specifications provided by the employer are reviewed and confirmed through certified/credible ground, site and soil testing specialists. • Abstaining from making assumptions based on experience and/or familiarity of terrain (especially on linear projects). • Understanding extent of employer's testing responsibility, digesting reports provided entirely, and verifying if contract documents apportion risk appropriately.
2	**Design was incomplete**	Rank 1	Rank 4	Rank 2		Rank 1	• Ensuring allocation of adequate design personnel with all relevant stakeholders commensurate to project complexity. • Setting realistic design deliverable targets and core design parameters. • Involvement of all relevant stakeholders periodically in the design review process and required follow-up actions.
3	**Tender errors and/or inaccurate estimates**	Rank 3		Rank 7			• Abstaining from blindly relying on the tender information and micro-analysing accuracy of specifications. Working closely with the execution team to confirm ability to cater to tender requirements. • Proactive utilization of the tender query process to inject realism, educate and engage with employers, and suggest as maybe appropriate, practical alternatives.

[7] Note where the same ranking has been attributed to more than a single cause of claim or dispute, then the following ranks have been accordingly adjusted.

							• Efficient usage of site survey/visit opportunities to gather data/undertake checks to spot tender errors/inaccuracies.
4	**Design was incorrect**	Rank 3	Rank 1	Rank 3		Rank 3	• Periodically and independently analyse design accuracy and its viability. • Conducting multi-disciplinary workshops regularly to manage and resolve design variations with an aim to avoid design clashes and conflicting instructions. • Effectively coordinating project's different components and their interfacing. • When possible, using fabricators and manufacturers to undertake detailed design, whose experience is likely to be more nuanced than design consultants. • Harnessing supply chain potential to clarify design requirements, maturity of design and outcomes required.
5	**Claims were spurious, over-inflated, opportunistic and/or unsubstantiated**	Rank 3					• Focusing on appropriate and complete packaging of claims in a contractually compliant manner within applicable timeframe, providing importance to sequential/regular submission while avoiding duplication. • Retaining and streamlining comprehensive and detailed records for supporting potential claims. • Involving experienced and well-suited claim management consultancy at an early stage to prioritize claims with merit and explore repackaging.

6	**Targets and/or expectations were unrealistic**	Rank 6					• Adopting a long-term approach focused on project delivery as opposed to short-term commercial gains. Working closely with the execution team right from the tendering stage to micro-analyse targets and expectations. • Project-specific expert involvement at an early stage for analysing specification requirements in the context of timeframe and budget.
7	**Access to site/workface was restricted and/or late**	Rank 6				Rank 8	• Undertaking a detailed review of rights of way, access limitations, environmental permitting, scope-based interface issues, and historical adherence by employer and other pertinent stakeholders to access timeframes. • Based on project complexity, ensuring adequate remedies, including contractual entitlement for extension of time and cost for restricted and/or late access is commensurate to impact caused by access issues.
8	**Change in scope**	Rank 6		Rank 1	Rank 5	Rank 3	• Clearly setting out stage and division-specific scope responsibility and utilizing tender query process for obtaining additional clarity. • Defining scope change appropriately depending on project nature and complexity, and obtaining execution and commercial team consensus on extent of change permitted. • Ensuring that the change order/variation process is sensible, practical and when exercised is in compliance with the timelines stipulated. • Engaging change management process tools, deriving information • from key personnel and maintaining a common document management system.

9	**Bias and/or failure to cooperate**	Rank 9			Rank 5		• Promoting transparency among all relevant stakeholders by maintaining appropriate communication channels through written and timely correspondences. • Promptly addressing issues as they arise and keeping stakeholders posted of actions taken when issues require longer duration. • Engagement of personnel to serve as a single point of contact, coordinating internally and with ability to behave professionally/non-emotionally under pressure.
10	**Cash flow and payment issues**	Rank 9		Rank 7	Rank 5	Rank 8	• Involving the finance team from the tendering stage to confirm acceptability of payment mechanism, which is to be practical, sensible and in line with the applicable standards. • Ensuring timely and accurate submission of invoices with requisite information, ensuring follow up and closely tracking recovery. • Planning for contingencies, including alternative funding arrangements, should there be a cash flow issue.
11	**Shortage of skilled and non-skilled workers**		Rank 1		Rank 1		• Focusing on upskilling, training and mentorship to ensure sufficiency of skilled workers. • Advance manpower management of non-skilled workers considering foreseeable milestones and having contingency plans for unforeseeable situations.

12	**Operational performance**		Rank 4		Rank 1	Rank 5	• Implementing lessons learnt from operational challenges faced in similar projects and devising appropriate mitigation measures for ensuring sync/overcoming snags between different internal teams required to function as a unit for smooth execution. • Apportion risks and opportunities to the stakeholder(s) best positioned to handle and mitigate them and maintain and adhere to a risk register. • Utilization of a common standard format for all reports to be prepared/submitted and could include instructional guidelines on which reports are to be prepared.
13	**Design information issued late**		Rank 4	Rank 4		Rank 1	• Depending on responsibility for design, ensure availability of adequate contractual remedies depending on project design complexity and its late issuance. • Allocate/ensure allocation of adequate design personnel and set realistic timelines for design deliverables. • Ensure all relevant stakeholders are involved in a periodical design review process without deviating from the design intent.
14	**Workmanship deficiencies**		Rank 4				• Obtaining adequate clarity and ensuring transmission of quality standards to staff/workers in-charge of construction. • Attracting and retaining most essential workers for critical works and providing formal training and mentoring schemes for new or inexperienced workers. Budgeting to factor training to improve quality and support productivity. • Carefully approaching engagement of cheap unskilled labour which is likely to result in need for

							rectification work or latent defects issue.
15	**Materials and/or products delivered late**		Rank 4				• Supply chain labour productivity to be considered as a foremost factor in engagement. • Factoring unexpected weather conditions, logistical issues, government restrictions and possibility of shortage of raw materials, and planning for contingencies. • From an execution perspective, implementing adequate measures to counter slow decision-making, poor planning and scheduling, unrealistic construction duration, and excessive variations and changes[8].
16	**Approvals were late**		Rank 4		Rank 5	Rank 5	• Identifying all approvals required, setting out responsibility for initiating and obtaining, and availability of commensurate contractual remedies for delays. • Deriving from previous projects/experience as to duration for obtaining statutory approvals and undertaking external inquiry as to new/altered procedures. • Developing a project schedule in advance, factoring all relevant supply chain members, employer and interfacing third parties, and focusing on adhering to the schedule with proper communication channels to potentially pre-empt late approvals.

[8] Causes of shortage and delay in material supply: a preliminary study, MM Rahman, YH YAP, NR Ramli, MA Dullah and MSW Shamsuddin, IOP Conference Series: Materials Science and Engineering MSEM2711037.pdf (iop.org)

17	**Inadequate response to information requests**		Rank 4				• Ensuring information requests are clear and specific to prevent going back and forth and submitting them as much in advance as possible. • Tracking and following-up on information requests and addressing them diligently in site meetings. • Abstaining from proceeding on the basis of assumptions where responses are unclear and approaching it from the perspective of having potential cascading effect on other domains.
18	**Poor management of subcontractor/supplier and/or their interfaces**			Rank 5			• Establishing an appropriate contractual framework, providing preference to credibility over purely cost, provision of adequate securities/guarantees, maintaining a resourceful internal team to keep subcontractors/suppliers/interfaces on track, and maintaining proper and periodical communication channels. • Setting a project-specific threshold/rating mechanism and utilizing this to track poor performance, adherence to rectification requests and prioritizing relationship.
19	**Contract management and/or administration failure**			Rank 6	Rank 5		• Establishing a clear controls structure with a single point of contact, such as a coordination manager, who can liaise, keep track and direct various teams, namely contracts, commercial, engineering, site, cost, and legal. • Utilizing a single project reporting dashboard, used by all, so that there is 'a single version of the truth' of performance against all agreed measures. • Periodical internal and external meetings, tracking, follow-up actions based on appropriate responsibility apportioning.

20	**Contract interpretation issues**			Rank 7	Rank 5	Rank 8	• Use of an established and suited standard form contract as opposed to preferring bespoke contracts. When using the former, not tailoring general conditions through specific conditions to such an extent that it results in a contractual deadlock. • Identifying the clauses of relevance from an execution perspective and seeking clarity through tender queries where discrepancies exist. In contract interpretation, adopting a holistic approach as opposed to identifying clauses independently which are favourable. • Engaging experienced and suited law firms having expertise in reviewing from a sector-specific and applicable law perspective. • Where these issues arise during execution, analysing behavioural patterns which indicate agreement might help overcome uncertainties.
21	**Level of skill and/or experience**			Rank 10	Rank 1		• Ensuring staff in managerial and supervisory position have adequate prior experience in handling similar projects. • Resourcing and maintaining skilled and unskilled workers capable of catering to project demands. • Subject to contractual restrictions, apportioning responsibility and risk to the party best placed to own, manage and • mitigate issues.
22	**Poor interface management with third party**				Rank 1	Rank 5	• Clearly identifying, and demarcating extent of scope and possible third-party interfacing. Updating the interface schedule as scope alteration occurs during execution. • Regularly communicating with employer (or their representative) in relation to interfacing status and issues.

CONCLUSIONS – POSITIONING TO PREVENT DISPUTES

NMP represents India's first attempt at large scale monetization, and which is likely to involve a steep learning curve. By focusing on the ranking information above, certain sectorial tips on positioning have been highlighted below:

i) **Aviation, Roads, Rail & Ports** – Positioning should recognize scale and linear nature of these projects, planning for difficulties to be presented by unforeseen physical conditions and evolving design. Tender/estimates, accuracy of design information, claims packaging and unrealistic expectations require proactive verification and error-correction. Access issues and scope changes can be countered by focusing in advance on permissible extent of impact on schedule and scope deviation on a project-specific basis.

ii) **Power Transmission & Generation –** By factoring technical complexity and scale of execution, focus on ensuring favourable contractual rights and remedies will assist to deter unforeseen physical conditions, incorrect/incomplete design and worker shortages. Sequential advance planning and implementing contingencies can counter issues relating to operational performance, late design information, and late supply/approvals.

iii) **Warehouse, Sport Stadium and Urban Real Estate –** Acknowledging risks presented by the vertical nature of these projects, permissible extent of scope deviation viewed through the lens of collateral impact on execution/interface, obtaining and proactively pushing for design clarity and correction, and monitoring/improvising efficient management (subcontractor/supplier/interface) will serve to benefit.

iv) **Mining** – These projects are labour intensive, equipment integral and likely to present safety issues. By pre-planning and having well-suited contingency measures, issues relating to worker shortages, skill/experience, operational performance and third-party interface management could be deterred.

v) **Gas Pipelines** – Increased focus should be placed on managing schedule and cost overruns attributable to incomplete/incorrect/late design, scope change, poor interface and operational performance issues.

The underlying thread in all of the aforementioned is to micro-analyse impact from a time and cost perspective. For which, the focus should be to gauge specific risks, reassess approaches as they exist based on similar projects/past interactions and identify areas for improvement from a dispute avoidance perspective.

Should you have any questions or require support for positioning, please feel free to contact Anand Udayakumar at anandudayakumar@hka.com

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