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An evaluation framework for public procurement processes

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An evaluation framework for public procurement processes

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Abstract

Effective public procurement is crucial for government efficiency and the delivery of public services. To lay a foundation for policy-making and operational enhancements, this paper proposes an evaluation framework for public procurement processes that recognises the government's dual role as the state and a market participant throughout the procurement life cycle. A first-of-its-kind illustrative evaluation of the National Highways Authority of India (NHAI) identifies several areas for improving India's public procurement system. The evaluation framework and its use illuminate the complexities of public procurement in India's largest state-controlled procuring entity and serve as a standardised model for other entities to refine their procurement processes.

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1 Introduction

A government requires and uses goods and services to operate its machinery and deliver schemes and programs to its constituents. However, self-production cannot meet this need for goods and services. As a result, governments rely on public procurement, an essential component of their operational framework and the overarching economic structure.¹ This system of public procurement serves as the conduit through which resources are channelled to achieve policy objectives and meet public needs.² Whether constructing a new school, rolling out a health program, or developing transportation infrastructure, the efficacy of public procurement determines the success and timeliness of these initiatives.³ Often, as in the case of India, governments also engage in activities typically within the private sector’s domain, such as operating an airline, a telecommunications company, a bank, or an insurance company.⁴ In doing so, they assume the role of a market participant, procuring goods and services and influencing market dynamics.

An optimal public procurement system not only ensures the prudent use of public funds but also bolsters public confidence by reinforcing the belief that the government is acting in the best interests of its constituents.⁵ It is characterised by its ability to optimise the allocation of public resources, reduce rent-seeking, and strengthen public trust in government operations.⁶ Conversely, a poor public procurement system can lead to inefficiencies, mismanagement of funds, rent-seeking, and a decline in public trust. In the short term, inefficiencies in procurement processes may result in firms providing lower-quality services to the government.⁷ Over the long term, these inefficiencies can hinder economic growth and competitiveness.⁸

¹Albert Sánchez Graells, *Public procurement and the EU competition rules* (Bloomsbury Publishing 2015).

²See, for instance James Tsabora, “Public procurement in Zimbabwe: Law, policy and practice” (2014) 1(1) African Public Procurement Law Journal; Erica Bosio and Simeon Djankov, “How large is public procurement” (2020) 5 World Bank Blogs; Anjali Sharma and Susan Thomas, “The footprint of union government procurement in India” [2021] XKDR Working Paper; Aneesha Chitgupi and Susan Thomas, “The make vs buy decision of the union government” [2022] Leap Blog.

³See generally, Patrick Manu and others, “Assessment of procurement capacity challenges inhibiting public infrastructure procurement” (2018) 8(4) Built Environment Project and Asset Management 386.

⁴See, for instance, Rafael La Porta, Florencio Lopez-de-Silanes, and Andrei Shleifer, “Government ownership of banks” (2002) 57(1) The Journal of Finance 265.

⁵Anna Garc’a-Alt’es and others, “Understanding public procurement within the health sector: a priority in a post-COVID-19 world” (2023) 18(2) Health Economics, Policy and Law 172.

⁶Ronald McQuaid, “Factors and “illusions” influencing the choice of PFI-type public private partnerships” (2019) 15(3) World Journal of Entrepreneurship, Management and Sustainable Development 222.

⁷Marcella Corsi, Andrea Gumina, and Daria Ciriaci, “How e-government may enhance public procurement” (2006).

⁸Jorge Gallego, Gonzalo Rivero, and Juan Martinez, “Preventing rather than punishing: An early warning model of malfeasance in public procurement” (2021) 37(1) International Journal of Forecasting 360.

India does not have an optimal procurement system. Research indicates that government tenders often undergo modifications,⁹ the government incurs significant debt due to payment delays,¹⁰ competition is limited,¹¹ and contract execution is frequently delayed.¹² Procuring entities also tend to favour large private companies by setting eligibility criteria that exclude small and medium-sized enterprises or providing them with private information that offers a competitive advantage.¹³

However, existing literature on public procurement in India focuses on case studies, sector-specific analyses, or restricted analysis, failing to provide comprehensive insights for strategic improvement and policy reform. It overlooks the government’s dual role as the state responsible for policy-making and a market participant (or a commercial contracting party) buying goods and services. This oversight is critical, as public procurement effectiveness and efficiency lie at the intersection of state capacity and incentives. This literature has also focused on isolated stages of the procurement life cycle without considering the interconnectedness of these stages on overall procurement effectiveness and efficiency.

To address this gap and lay a foundation for policy-making and operational enhancements, this paper establishes clear benchmarks and indicators to measure public procurement processes in India, ensuring that our findings are not confined to isolated examples. After examining international benchmarks and best practices, it proposes an evaluation framework for public procurement processes that recognises the government’s dual role as the state and a market participant throughout the procurement life cycle. This approach contributes to the growing field of evidence-based literature and policy interventions in India.¹⁴

To assess the effectiveness of the evaluation framework built in this paper, we evaluate the

⁹Shubho Roy and Anjali Sharma, “What ails public procurement: an analysis of tender modifications in the pre-award process” [2020] Leap Blog.

¹⁰Prasanta Sahu, “Forget stimulus, clear your dues: Rs 7 lakh crore unpaid dues to industry by central govt depts and PSUs (Financial Express 8 September 2020).

¹¹Charmi Mehta and Diya Uday, “How competitive is bidding in infrastructure public procurement? A study of road and water projects in five Indian states” [2022] Leap Blog.

¹²Anirudh Burman and Pavithra Manivannan, “Delays in government contracting: A tale of two metros” [2022] Leap Blog.

¹³Yugank Goyal, “How governments promote monopolies: public procurement in India” (2019) 78(5) *American Journal of Economics and Sociology* 1135; Sean Lewis-Faupel and others, “Can electronic procurement improve infrastructure provision? Evidence from public works in India and Indonesia” (2016) 8(3) *American Economic Journal: Economic Policy* 258.

¹⁴See, for example, Sharma and Thomas (n 2); Burman and Manivannan (n 12); Aneesha Chitgupi, Abhishek Gors, and Susan Thomas, “Learning by doing and public procurement in India” [2022] Leap Blog; Mehta and Uday (n 11); Charmi Mehta and Susan Thomas, “Identifying roadblocks in highway contracting: lessons from NHAI litigation” [2022] Leap Blog.

NHAI, India’s largest state-controlled procuring entity.¹⁵ Through this first-of-its-kind and illustrative evaluation, we identify several areas for improving India’s public procurement system, thus optimising the allocation of public resources, curtailing opportunities for rent-seeking, and fortifying public trust. This includes better estimation of project timelines, improving the role of independent monitoring, and conducting performance evaluations. Applying the framework across a broader range of procuring entities is likely to yield a comprehensive pathway for improvement as patterns of systemic issues become clearer and best practices can be identified. This will aid governments in better procuring the goods and services needed to deliver schemes and programs to their constituents.

The rest of this paper is organised as follows: after this introduction, section 2 highlights the need for an evaluation framework for public procurement processes. Section 3 then examines international benchmarks and best practices to propose an evaluation framework while considering the government’s dual role as the state and a market participant across the procurement life cycle. Section 4 assesses the effectiveness of this evaluation framework by evaluating the NHAI, India’s largest state-controlled procuring entity, and section 5 concludes the paper.

2 The need for an evaluation framework

In India’s evolving economic landscape, the procurement of goods and services by the state is a crucial driver of its socio-economic development. Four elements underscore the significance of this public procurement system:

- its scale,¹⁶
- its impact on the operation of government machinery,¹⁷
- its role in achieving policy objectives, addressing public needs, and building public trust,¹⁸ and
- its influence on the private sector.¹⁹

However, this system faces strategic, operational, and governance challenges. For instance, Ojha and Pandey and Mehta and Uday delve into the intricacies and challenges of elec-

¹⁵National Highways Authority of India, Use of Central Public Procurement Portal (CPPP) in NHAI (2019).

¹⁶Sharma and Thomas (n 2).

¹⁷Chitgupi and Thomas (n 2).

¹⁸Bosio and Djankov (n 2).

¹⁹Roy and Sharma (n 9).

tronic procurement.²⁰ Roy and Sharma and Sahu examine frequent tender alterations and payment delays.²¹ Uday highlights a lack of provisions concerning pre-tender (and not pre-bid) consultations.²² Manu and others and Kartika, examine corruption and inefficiency in public infrastructure procurement,²³ while Lewis-Faupel and others and Verma offer insights rooted in specific contexts regarding anti-competitive behaviour.²⁴ Lastly, Mahalingam, Devkar, and Kalidindi highlights a lack of expertise in engaging with the private sector and insufficient state capacity.²⁵

These deficiencies lead to poor contract design and inadequate risk allocation. A one-size-fits-all approach to contract design focuses on engineering specifications, neglecting service elements such as design, operation, and maintenance.

Although this literature is intricate and detailed, it tends to focus on specific areas or issues of public procurement.²⁶ Public procurement provisions pay little attention to addressing the power imbalance between contracting parties, i.e., a procuring entity exercising state power and a private supplier. Rather than equitable contract terms, there is a tendency to protect the interests of the procuring entity (the state).²⁷ This is even though it imposes contract terms with minimal scope for negotiation and consultation during contract design.²⁸ Consider a scenario where a technology company wins a government contract to provide software services. The contract terms, heavily influenced by the government's standard procurement policies, will likely impose stringent delivery timelines and penalties for delays. Yet, the same contract would not address the consequences of delayed payments by the government, a

²⁰Shashank Ojha and Indra M Pandey, "E-procurement project in Karnataka: a case of public private partnership" (2014) 39(4) *Vikalpa* 101; Mehta and Uday (n 11).

²¹Roy and Sharma (n 9); Forget stimulus, clear your dues: Rs 7 lakh crore unpaid dues to industry by central govt depts and PSUs (n 10).

²²Diya Uday, "Reinventing India's procurement laws: a global perspective" [2023] .

²³Manu and others (n 3); Desi Kartika, "The Impact of E-Procurement Implementation on Public Procurement's Corruption Cases; Evidence from Indonesia and India" (2022) 11(2) *Jurnal Kajian Wilayah* 193.

²⁴Lewis-Faupel and others (n 13); Sandeep Verma, Towards transparency in public procurement (*Business Standard* 20 January 2013).

²⁵Ashwin Mahalingam, Ganesh A Devkar, and Satyanarayana N Kalidindi, "A comparative analysis of public-private partnership (PPP) coordination agencies in India: What works and what doesn't" (2011) 16(4) *Public works management & policy* 341.

²⁶See, for example Lela Mélon, "More than a nudge? Arguments and tools for mandating green public procurement in the EU" (2020) 12(3) *Sustainability* 988; Peter Adjei-Bamfo, Theophilus Maloreh-Nyamekye, and Albert Ahenkan, "The role of e-government in sustainable public procurement in developing countries: A systematic literature review" (2019) 142 *Resources, Conservation and Recycling* 189.

²⁷Vinod Rege, "Transparency in government procurement issues of concern and interest to developing countries" (2001) 35(4) *Journal of World Trade*.

²⁸Kishor Vaidya, ASM Sajeev, and Guy Callender, "Critical factors that influence e-procurement implementation success in the public sector" (2006) 6(1/2) *Journal of public procurement* 70.

common occurrence that places a financial burden on the provider.²⁹ Similarly, a construction firm entering a public procurement contract might find itself bound to terms that require excessive performance securities without corresponding clauses for timely dispute resolution.

These disparities risk creating an environment where businesses might quote higher costs reflecting higher risk or be deterred from participating in the public procurement process. They can hinder competition and innovation and lead to higher costs, lower quality, and reduced availability of goods and services. Therefore, addressing these disparities is crucial not only for maintaining a fair and competitive business environment but also for safeguarding the interests and well-being of the public.³⁰ What is lacking is a comprehensive evaluation framework of public procurement processes which can offer insights for strategic improvement and policy reform.³¹ By such an evaluation, we can ascertain their effectiveness and inform policy planning.

3 Building an evaluation framework

Given India's experience with public procurement and the limitations of existing literature, integrating international and best practices can facilitate strategic evolution and ensure that the procurement system is conducive to achieving broader objectives of efficiency and effectiveness in public resource allocation. By methodically aligning with these practices, India can foster an open and competitive market environment, attract better vendors, and achieve effective and sustainable procurement outcomes. Specifically, such methodological alignment can help establish an evaluation framework with clear benchmarks and indicators that enable the measurement of procurement processes across departments, identify systematic weaknesses, and explore opportunities for reform. This approach ensures that the analysis and findings are comprehensive and not confined to isolated examples, as has previously been the case.

Such an evaluation framework is not just a tool for financial management but a fundamental aspect of governance that underpins the delivery of goods and services.³² Three features are desirable in such an evaluation framework:

1. *It evaluates public procurement across the procurement life-cycle.* Public procurement

²⁹Burman and Manivannan (n 12).

³⁰Jolien Grandia and Joanne Meehan, "Public procurement as a policy tool: using procurement to reach desired outcomes in society" (2017) 30(4) *International Journal of Public Sector Management* 302.

³¹Lewis-Faupel and others (n 13).

³²Grandia and Meehan (n 30).

can be divided into three stages: pre-award to award, award to completion, and completion to payment. Evaluation across these stages allows for identifying bottlenecks and inefficiencies that may affect project timelines and costs. This is crucial to ensure that each procurement stage is executed optimally, minimising delays and cost overruns and maximising procurement activities' efficiency and impact.

2. *It acknowledges the government's dual role as the state responsible for policy-making and a market participant buying goods and services.* In public procurement, the procuring entity is not just any market participant but an agency endowed with state powers. This imparts unique responsibilities and challenges. As a market participant, the procuring entity must navigate its interactions with private entities. At the same time, the state must ensure that these interactions adhere to standards of transparency and accountability. The law already acknowledges this dual role and recognises the need for the state to balance its commercial objectives with its sovereign responsibilities.
3. *It can be deployed to evaluate public procurement across sectors and procuring entities.* The data gathered from evaluating procurement processes can feed into a rating system for government departments, sectors, and agencies, enabling more sophisticated analysis. These rating systems are not just tools for internal assessments; they also convey efficiency and transparency to the public and other stakeholders, fostering trust and ensuring a participatory approach to governance. Moreover, these rating systems can enhance competitive federalism by directing funds to areas where they are most effectively utilised, thus improving resource allocation based on performance and efficiency. This approach also fosters a merit-based competitive environment across various government layers.

This framing is critical, as public procurement efficiency lies at the intersection of state capacity (planning, designing, budgeting, organisational structure, purchasing, monitoring, payments), incentives (involving the bureaucracy engaged in the procurement process), and operational efficiency (time, cost, and quality).

3.1 International and best practices

Three international instruments provide guidance on evolving public procurement systems; the:

1. United Nations Commission on International Trade Law (UNCITRAL) Model Law on

- Public Procurement (2014);³³
2. Organisation for Economic Co-operation and Development (OECD) – Recommendations of the Council on Public Procurement (2015);³⁴ and
 3. World Bank – Benchmarking Procurement (2017).³⁵

The UNCITRAL Model Law provides guidance to countries when drafting public procurement legislation and has played a crucial role in shaping global procurement systems, particularly in the Southern African Development Community region.³⁶ India has contributed to shaping the Model Law as a member of the UNCITRAL Working Groups on (i) Procurement and (ii) Privately Financed Infrastructure Projects. Similarly, the OECD recommendations promote competitive processes, ensure integrity and fairness, and embrace digital technologies. Studies have highlighted their role in increasing transparency and reducing rent-seeking in procurement.³⁷ Lastly, the World Bank assesses country-specific public procurement systems and promotes best practices. It offers data on procurement policies and performance, aiding countries in making informed decisions. Higher-quality procurement regulations, as assessed by the World Bank, increase competition and cost-effectiveness, attracting bidders and reducing prices.³⁸

In addition to these international instruments, industry practices can help guide nations toward more robust procurement systems. For instance, Federation Internationale Des Ingenieurs-Conseils (FIDIC) standard contracts, widely recognised and applied across jurisdictions, emphasise equitable roles, responsibilities, and risks among parties.³⁹ Similarly, contracts involving the Asian Development Bank (ADB) and the New Engineering Contract

³³United Nations Commission on International Trade Law, UNCITRAL Model Law on Public Procurement (2014).

³⁴Directorate for Public Governance and Territorial Development, OECD - Recommendations of the Council on Public Procurement (Organisation for Economic Cooperation and Development 2015).

³⁵World Bank, Benchmarking public procurement 2017: Assessing public procurement regulatory systems in 180 economies (World Bank 2016).

³⁶Stephen De La Harpe, “Procurement under the uncitral model law: A Southern Africa Perspective” (2015) 18(5) Potchefstroom Electronic Law Journal/Potchefstroomse Elektroniese Regsblad 1571; Atakilti Haileelassie Gebremichael, “Complaints Review and Remedies Mechanisms under the Ethiopian Public Procurement System: A Critical Review of the State of Law & Selected Practices” (2021) 8(2) African Public Procurement Law Journal 39.

³⁷Benjamin K Sovacool, “Clean, low-carbon but corrupt? Examining corruption risks and solutions for the renewable energy sector in Mexico, Malaysia, Kenya and South Africa” (2021) 38 Energy Strategy Reviews 100723; Jaime Rodriguez-Arana Munoz, “Profesionalizacion en la contratacion publica: Professionalization in public procurement” (2021) 2(1) Brazilian Journal of Law Research 195.

³⁸Bedri Kamil Onur Tas, “Effect of public procurement regulation on competition and cost-effectiveness” (2020) 58(1) Journal of Regulatory Economics 59.

³⁹According to FIDIC, altering contract risk-sharing equilibrium leads to increased tender prices, project delays, escalated claims, and prolonged disputes, arbitration, or contract termination.

(NEC) also promote transparency, accountability, and efficiency in project implementation, ensuring that procurement processes align with international best practices and contribute to development.⁴⁰

These instruments and practices, along with relevant literature as discussed throughout this paper, can be summarised as emphasising the following benchmarks to evaluate public procurement processes:

Table 1 Mapping benchmarks to international instruments and industry practices

The benchmarks can be mapped to varied instruments and practices

	UNCITRAL	OECD	WB	FIDIC	ADB	NEC
Transparency	✓	✓	✓			
Integrity	✓	✓	✓	✓	✓	✓
Documentation	✓	✓	✓	✓	✓	✓
Timeliness				✓	✓	✓
Negotiation	✓		✓			
Monitoring				✓	✓	✓
Dispute resolution	✓	✓	✓	✓	✓	✓

Source: Authors' compilation

Transparency: Transparency builds trust, encourages participation, and prevents unfair practices.⁴¹ It involves disclosing procurement plans and conducting pre-bid consultations.

Integrity: Integrity ensures that procurement decisions are made objectively, free from corruption, undue influence, or favouritism.⁴² By prioritising these qualities, the procurement process enables suppliers and contractors to understand the requirements and make informed decisions.⁴³

⁴⁰Stephen Brammer and Helen Walker, "Sustainable procurement in the public sector: an international comparative study" (2011) 31(4) *International journal of operations & production management* 452; Alhassan A Mansaray, "Public-Private Partnership: countries' attractiveness and the risk of project failure" (PhD thesis, Loughborough University 2018); Brian Eggleston, *The NEC4 engineering and construction contract: A commentary* (John Wiley & Sons 2019).

⁴¹Kofi Osei-Afoakwa, "How Relevant is the Principle of Transparency in Public Procurement?" (2014) 4(6) *Developing Country Studies* (IISTE); José Félix Muñoz-Soro and others, "PPROC, an ontology for transparency in public procurement" (2016) 7(3) *Semantic Web* 295.

⁴²Elodie Beth, "Integrity in public procurement: Good practice from A to Z" [2007] Organisation for Economic Co-operation and Development (OECD).

⁴³M Laraib, M Asim, and S Manzoor, "A Correlation between Process Management and Procurement

Documentation: To ensure the effectiveness and fairness of procurement processes, descriptions of the procurement subject matter should be clear, precise, functional, and objective.⁴⁴ This facilitates risk and cost assessment, enables evaluation, and minimises errors or biased actions.⁴⁵

Capacity: Procurement capacity, which denotes proficiency and expertise in managing processes, lays the groundwork by cost and time estimations.⁴⁶ It also equips procuring entities to learn from experience and adapt to evolving circumstances.⁴⁷

Timeliness: Timeliness ensures project progression and safeguards against delays, fostering a smooth workflow.⁴⁸ Conversely, time overruns indicate poor procurement processes. These overruns, which may occur due to inadequate planning, unforeseen complications, or inefficient execution, can lead to delays in project implementation and increased costs.⁴⁹

Negotiation: Post-tender negotiations between the procuring entity and a contractor should be prohibited.⁵⁰ Allowing such negotiations can discourage other parties from participating in tendering processes, lead them to alter their tender prices in anticipation of negotiations if they do participate, or prompt them to initiate litigation.⁵¹

Monitoring: Monitoring contract performance preserves the integrity of the procurement system. It combats rent-seeking and enhances compliance by identifying and rectifying

Efficiency in Manufacturing Sector” (2021) 6(2) *European Journal of Business and Management Research* 187.

⁴⁴Samuel Laryea, “Quality of tender documents: case studies from the UK” (2011) 29(3) *Construction Management and Economics* 275.

⁴⁵Sitti Hasinah Abul Hassan, Suhaiza Ismail, and Hawa Ahmad@ Abdul Mutalib, “Public procurement in Malaysia: objectives and procurement principles” (2021) 37(4) *Journal of Economic and Administrative Sciences* 694.

⁴⁶Manu and others (n 3).

⁴⁷Chitgupi and Thomas (n 2).

⁴⁸Aftab Hameed Memon, Ismail Abdul Rahman, Ade Asmi Abdul Aziz, and others, “Time overrun in construction projects from the perspective of project management consultant (PMC)” (2011) 2(1) *Journal of Surveying, Construction and Property*.

⁴⁹Ibid; Peter ED Love and others, “Understanding the landscape of overruns in transport infrastructure projects” (2015) 42(3) *Environment and planning B: planning and design* 490.

⁵⁰Steven Tadelis and Patrick Bajari, “Incentives and award procedures: competitive tendering vs negotiations in procurement” (2006) 121 *Handbook of procurement* 39.

⁵¹Laryea (n 44).

deviations.⁵²

Dispute resolution: Effective dispute resolution maintains trust and fairness in government spending. It ensures that conflicts between procuring entities and contractors are resolved efficiently, minimising disruptions and delays in project timelines.⁵³

3.2 The evaluation framework

Based on the benchmarks above, we build an evaluation framework for public procurement processes across entities (see Table 2). This framework offers a standardised method to assess public procurement. By implementing this framework, procuring entities can identify areas for improvement, ensure efficient practices, and enhance the quality of procured goods and services necessary to deliver schemes and programs.

The evaluation framework divides the benchmarks along two axes. The first pertains to the role of the procuring entities, either as (i) the state or (ii) a market participant. The second pertains to procurement stages: (i) pre-award to award, (ii) award to completion, and (iii) completion to payment. For instance, as the state, procuring entities must ensure transparency before awarding a tender. To evaluate transparency, the framework assesses whether procuring entities publish procurement plans, which aids in planning and reduces the need for emergency procurement.⁵⁴ It also evaluates whether the entity conducts pre-bid consultations, which are beneficial for identifying suppliers early in the process.

3.2.1 Data sources

We rely on diverse data sources, each offering unique insights into public procurement processes.

1. Annual Reports of the procuring entity: These reports provide a retrospective analysis of procurement activities. They include financial statements, performance metrics, and

⁵²Jillian Clare Kohler and Deirdre Dimancesco, “The risk of corruption in public pharmaceutical procurement: how anti-corruption, transparency and accountability measures may reduce this risk” (2020) 13(sup1) *Global health action* 1694745.

⁵³Onaopepo Adeniyi and others, “Compliance with the stipulated procurement process in local governments: a case from a developing nation” (2020) 13(5) *International Journal of Procurement Management* 678.

⁵⁴Paul R Schapper, João N Veiga Malta, and Diane L Gilbert, “An analytical framework for the management and reform of public procurement” (2006) 6(1/2) *Journal of public procurement* 1; Monika Bauhr and others, “Lights on the shadows of public procurement: Transparency as an antidote to corruption” (2020) 33(3) *Governance* 495.

insights into procurement processes.

2. Comptroller and Auditor General (CAG) Reports: These reports offer a third-party audit perspective, providing insights into financial management and compliance, including adherence to procurement laws. They help identify inefficiencies and discrepancies in procurement processes.
3. Centre for Monitoring Indian Economy (CMIE) Capex Database: This database provides information regarding capital expenditures across sectors, including project reports, investment flows, and procurement status updates. It offers insights into allocating and utilising capital in public projects, enabling analysis of investment efficiency and economic impact.
4. Central Public Procurement Portal (CPPP): This centralised electronic portal for public procurement in India provides data on tender notices, bid submissions, and contract awards. For details concerning the CPPP, see Appendix A.
5. Procurement Laws: Procurement by the Union government is governed by the General Financial Rules (GFR) and the procuring entity’s manuals, guidelines, and model contracts.⁵⁵ These instruments set the standards for bidding, contract awards, and execution. They help assess compliance and understand the framework underlying procurement decisions.

3.2.2 Limitations

The proposed evaluation framework marks progress in standardising the evaluation and improvement of procurement processes. However, it operates within limitations. The first is its reliance on indicators that act as proxies for principal benchmarks, which may overlook nuanced aspects of processes across procuring entities. Additionally, depending on publicly available data can result in missing internal factors or dynamics that are crucial for evaluating procurement processes.

For instance, timely payment is essential for ensuring smooth execution and fostering trust between contracting parties.⁵⁶ One method to evaluate payment delays could be through

⁵⁵Uday (n 22).

⁵⁶Bernard Hoekman and Bedri Kamil Onur Tas, “SME participation in public purchasing: procurement policy matters” (2020) 38 Robert Schuman Centre for Advanced Studies Research Paper No RSCAS.

balance sheet data.⁵⁷ However, the absence of reporting requirements and the limited availability of data restrict our analysis.

Similarly, evaluating transparency in public procurement processes includes counting the number of pre-bid consultations. However, it is also essential to assess whether suggestions from bidders and affected parties during these consultations are integrated into the decision-making process. Evaluating integrity includes counting the number of vigilance complaints against procuring entities. A more comprehensive approach would examine the number of complaints that lead to penal action. The lack of data on these additional indicators prevents a complete evaluation. This highlights the need for procuring entities to enhance transparency not just in their operational processes but also in their data collection and reporting practices.

While acknowledging these limitations and the need for further enhancements, this evaluation framework marks a step forward in improving the Indian public procurement system. It bridges the gap between theoretical benchmarks and practical applications. Its implementation can enhance the quality of public services and strengthen trust and integrity in government operations.

⁵⁷Pavithra Manivannan and Bhargavi Zaveri, “How large is the payment delays problem in Indian public procurement?” [2021] Leap Blog.

Table 2 Evaluation framework

Benchmark	Procurement stage	Indicator
Procuring entity as the state		
Transparency	Pre-award to award (Stage I)	<ul style="list-style-type: none"> • Publishing long-term plans • Conducting pre-bid consultations
Integrity		<ul style="list-style-type: none"> • Stipulating registration, eligibility, and selection criteria • Restricting unfair and undue benefits to contractors
Capacity		<ul style="list-style-type: none"> • Vacancies in concerned departments • Estimating tender values and timelines
Dispute resolution	Completion to payment (Stage III)	<ul style="list-style-type: none"> • Providing detailed dispute resolution provisions
Procuring entity as a market participant		
Documentation	Pre-award to award (Stage I)	<ul style="list-style-type: none"> • Providing clear description of procurement subjects • Issuing corrigenda or cancelling tenders
Timeliness (planning)		<ul style="list-style-type: none"> • Time overruns in planning
Negotiation	Award to completion (Stage II)	<ul style="list-style-type: none"> • Allowing post-award negotiations
Monitoring		<ul style="list-style-type: none"> • Monitoring contract implementation (procuring entity) • Monitoring contract implementation (contractor)
Timeliness (implementation)		<ul style="list-style-type: none"> • Time overruns in implementation

3.2.3 Large-scale procuring entities

Contrary to existing literature, this evaluation framework analyses both the (i) government’s dual role as a state and a market participant (ii) throughout the procurement life-cycle. It incorporates nine benchmarks, each measurable using publicly available data. Its adaptability enhances its applicability across contexts and sectors, making the framework a tool for improving public procurement processes. It can guide policymakers in developing strategies to address challenges and optimise the allocation of public resources.

Looking ahead, it is crucial to focus on large-scale procuring entities. Given their scale and reach, these entities embody and influence the practices and norms within a public procurement system. Interventions and improvements in these entities can set a precedent and a model for smaller entities. This approach draws from the World Bank’s Ease of Doing Business (EoDB) Index, which assesses business regulations in each country’s two largest business cities.⁵⁸ This methodological choice is based on the premise that if the regulatory environment in these cities is problematic, it likely indicates even greater challenges in smaller cities. Therefore, by evaluating these cities, the EoDB provides an overview of the national business environment. Applying this logic to public procurement can offer a similar best-case scenario assessment. If large-scale procuring entities such as Bharat Sanchar Nigam Limited, National Highways and Infrastructure Development Corporation, and Airports Authority of India encounter systemic issues in their processes, it is reasonable to infer that other entities might face similar, if not greater, challenges. This perspective ensures an efficient and focused approach and promises that the findings and recommendations will be of value and impact.

4 Evaluating NHAI

To assess the effectiveness of our framework, we evaluate the procurement processes of the NHAI, India’s largest state-controlled procuring entity, with tenders worth over 3,70,000 crore rupees (USD 44.5 billion).⁵⁹ Its parent ministry, the Ministry of Road Transport and Highways of India (MoRTH), accounts for over half of India’s capital expenditure (CapEx) on procurement.⁶⁰ This operational experience should have endowed NHAI with expertise that reflects a spectrum of procurement processes and methodologies. Furthermore, the government’s intensified focus on infrastructure development, especially in road transport,⁶¹

⁵⁸World Bank, *Doing business 2020* (The World Bank 2020).

⁵⁹Use of Central Public Procurement Portal (CPPP) in NHAI (n 15).

⁶⁰Sharma and Thomas (n 2).

⁶¹Dewangi Sharma, “India’s Push for Infrastructure Development” [2024] Invest India.

underscores the NHAI’s role as a driver of public procurement by the Indian state.

Thus, evaluating NHAI can provide insights into public procurement processes in large-scale procuring entities and the efficacy of our framework. It holds the potential to identify areas for improvement across government operations, achieve policy objectives, and meet public needs.

4.1 Methodology

To evaluate the benchmarks in the manner specified in Table 2, we first analyse the:

1. GFR (2017);
2. Revised standard Engineering, Procurement, and Construction (EPC) Agreement for National Highways and Centrally sponsored road works proposed to be implemented on EPC Mode (2019);⁶²
3. Model Concession Agreement for NHs works under the Hybrid Annuity Mode (HAM) (2020);⁶³ and
4. Model Concession Agreement of Build, Operate, Transfer (BOT) (Toll) Project (2020).⁶⁴

We then source data from the CPPP. Specifically, we analyse 12 variables for 75 tenders awarded by the NHAI between 2018 and 2023, selected using a stratified random sampling method. These include:

- | | |
|-------------------|----------------------------------|
| 1. Bids | 7. Financial bidders |
| 2. Bid validity | 8. Period of work |
| 3. Contract type | 9. Pre-bid meeting place, if any |
| 4. Contract value | 10. Regional Office (RO) |
| 5. Corrigenda | 11. Selected bidder, and |
| 6. Dates | 12. Tender value |

⁶²In an EPC contract, the procuring entity pays for the project and outsources all design and construction risks to a private entity.

⁶³HAM contracts combine elements of traditional public-private partnerships and annuity models. The procuring entity provides partial funding in a phased manner, while the private entity contributes the remaining investment. The procuring entities compensate the private entity with annuities over the project’s life.

⁶⁴BOT is a project financing model in which a private entity receives a concession from the procuring entity to finance, design, construct, and operate a facility. The private entity manages the facility for a predetermined period to recoup its investment and generate profit, after which control of the facility reverts to the procuring entity.

We also incorporate data from NHAI annual reports, CAG reports, and the CMIE’s CapEx database, focusing on 1,331 *Road Transport Infrastructure Services* NHAI projects. Of these, data for the year of the award was available for 813 projects. We focus on projects awarded between 2016 and 2023, providing us with a dataset of 495 projects. In addition to the above variables, this dataset includes information on project status, location, and time and cost overruns.

As Tables 3 and 4 show, most NHAI tenders are based on EPC and HAM models, with the latter used for larger projects and gaining favour in the last three years. On average, tenders receive eight technical and seven financial bids, aligning with the thumb rule of eight or more bidders for a road contract.⁶⁵

Table 3 Summary statistics: CPPP

Tenders by NHAI, based primarily EPC and HAM contracts, average eight technical and seven financial bids.

Contract Type	Count	Total Bids	Financial Bids	Tender Value (rs. Million)
BOT	9	4.7	2.9	NA
EPC	31	8.8	7.5	4176.5
HAM	35	8.8	8.3	9029.3
Overall	75	8.3	7.4	6718.4

Source: Authors’ compilation from CPPP

⁶⁵Srabana Gupta, “Competition and collusion in a government procurement auction market” (2002) 30 Atlantic economic journal 13; Antonio Estache and Atsushi Iimi, “Procurement efficiency for infrastructure development and financial needs reassessed” [2008] (4662) World Bank policy research working paper.

Table 4 Summary statistics: CMIE

While EPC contracts represent over 59.7% of the identifiable contract types, HAM contracts have gained favour in the last three years.

Contract Type	1997 - 2016	2016 - 2020	2021 - 2023	Not available	Total
PPP	1	1	-	7	9
BOT	26	4	5	65	100
HAM	8	71	87	17	183
EPC	244	201	95	78	618
Not available	39	11	20	351	421
Total	318	288	207	518	1331

Source: Authors' compilation from CMIE Capex

4.2 NHAI as the state

4.2.1 Pre-award to award

Transparency Transparency is crucial to foster trust between governments and their constituents. Transparent procurement processes enable public scrutiny, reducing the risks of rent-seeking and mismanagement.⁶⁶ As Table 2 shows, we assess whether NHAI publishes long-term procurement plans and conducts pre-bid consultations.

GFR mandates that all procuring entities publish procurement plans.⁶⁷ This mandate is oriented more towards disclosing budget heads than creating systematic procurement plans. Accordingly, NHAI publishes annual reports that include procurement plans for the upcoming year.⁶⁸

⁶⁶Osei-Afoakwa (n 41); Muñoz-Soro and others (n 41).

⁶⁷Rule 144 (x), General Financial Rules 2017.

⁶⁸See, for instance, National Highways Authority of India, *Annual Report: 2017–18* (2017); National Highways Authority of India, *Annual Report: 2018–19* (2018); National Highways Authority of India, *Annual Report: 2019–20* (2020); National Highways Authority of India, *Annual Report: 2020–21* (2021).

Table 5 Pre-bid consultations by NHAI

NHAI holds infrequent pre-bid consultations and allocates limited time for addressing potential concerns

RO	Pre-bid consultations	Total tenders	Clarification time (days)
Chennai	0	1	NA
Chandigarh	3	12	23
Hyderabad	1	2	9
NHAI HQ	10	60	67
Total	14	75	54

Source: Authors' compilation from CPPP

GFR also *advises* conducting pre-bid consultations to clarify any uncertainties regarding technical specifications and details.⁶⁹ These consultations should be communicated in the bid document and occur well before the bid opening date.⁷⁰ However, there is no mandate for such consultations, allowing procuring entities to opt-out at their convenience. Table 5 shows that NHAI rarely holds pre-bid consultations and allocates limited time to address concerns. Our analysis reveals that only 19% of the tenders underwent pre-bid consultations, averaging 54 days. The time for these consultations, defined as the interval between the consultation and the bid opening date, is ostensibly generous. The time for bidders to assimilate the consultation feedback and modify their bids is shorter. This is because the consultation process consumes part of this time, and the remaining duration for bid adjustment may be insufficient to address and incorporate the insights gained from the consultation.

Integrity The state engages in procurement processes as a public representative entrusted with managing resources. In this role, upholding integrity is crucial. It ensures that procurement decisions are made objectively, without corruption or favouritism.⁷¹ This commitment to integrity helps maintain a level playing field where all suppliers have equal opportunities,⁷² fostering competition and innovation. When the state acts with integrity, it reinforces the principles of good governance and accountability, ensuring that procurement activities align with public interest rather than individual gains.⁷³ Evaluating integrity includes analysing

⁶⁹Rule 173 (x), General Financial Rules 2017.

⁷⁰Ibid.

⁷¹Laraib, Asim, and Manzoor (n 43).

⁷²Beth (n 42).

⁷³Ibid.

whether NHAI stipulates registration, eligibility, and selection criteria for bidders. Given legal requirements,⁷⁴ all tenders we considered provide such criteria.

In addition to stipulating such criteria, the GFR and Model Concession Agreements also include a “code of integrity” and an “integrity pact”, respectively.⁷⁵ This system is structured to ensure adherence to all laws, rules, and regulations while promoting efficient resource utilisation, fairness, and transparency. NHAI commits to preventing corruption and ensuring equal treatment of all bidders. Conversely, bidders must declare any transgressions in the past three years that could lead to exclusion from the tender process.⁷⁶ Once a contract is awarded, an Independent External Monitor (IEM) is appointed to review compliance.⁷⁷

However, according to the CAG, concessionaires (contractors) have received several unfair or undue benefits since at least 2016, leading to losses for NHAI. For example, a concessionaire was granted an undue benefit of rupees 93.78 crore (USD 11.3 million) by erroneously setting the *Appointed Date*.⁷⁸ This is when the concessionaire gets the right to work on the highway project. Due to this error, the project was completed 71 days late, not 14 days ahead of schedule, as initially calculated by NHAI. Instead of granting a bonus of rupees 15.45 crore (USD 1.9 million),⁷⁹ the concessionaire’s payment should have been reduced by rupees 78.33 crore (USD 9.4 million). In another case, NHAI failed to recover damages of rupees 693.24 crore (USD 83.3 million) from a concessionaire for not undertaking repairs and maintenance of the project highway due to the absence of an escrow agreement.⁸⁰ Without such an agreement, NHAI lacked control over the project funds.⁸¹ These examples resulted in losses for both NHAI and the exchequer.

These challenges are also evident in Table 6, highlighting the increase in vigilance complaints at NHAI related to procurement, etc. Vigilance complaints pertain to obtaining gratification by abusing official positions. The proportion of procurement-related complaints has risen from 36% to 57% in just four years.⁸²

⁷⁴Rules 173, 186, and 200, General Financial Rules 2017.

⁷⁵Rule 175, *ibid*; National Highways Authority of India, Standard Request for Proposal for National Highways and Centrally sponsored road works proposed to be implemented on EPC Mode of Contract (MoRTH 2019).

⁷⁶General Financial Rules 2017.

⁷⁷Standard Request for Proposal for National Highways and Centrally sponsored road works proposed to be implemented on EPC Mode of Contract (n 75).

⁷⁸Comptroller and Auditor General of India, *Report 13 of 2019, Compliance Audit Observations* (2019).

⁷⁹*Ibid*.

⁸⁰Comptroller and Auditor General of India, *Report 33 of 2022, Compliance Audit Observations* (2022).

⁸¹*Ibid*.

⁸²*Annual Report* (n 68); *Annual Report* (n 68); *Annual Report* (n 68); *Annual Report* (n 68).

Table 6 Vigilance cases concerning construction, maintenance, quality, procurement, contractual matter etc.

The proportion of procurement etc. related complaints has risen from 36% to 57% in just four years

Pending vigilance cases			
Year	Procurement etc.	Total	%
2017-2018	210	587	35.78
2018-2019	217	454	47.78
2019-2020	265	483	54.87
2020-2021	227	395	57.47

Source: NHAJ Annual Reports

Capacity Capacity denotes proficiency in managing procurement processes. A focus on capacity ensures that the state can estimate, budget, and manage procurement projects, minimising cost and time overruns. It is supported by the principle of learning by doing, which enables a procuring entity to refine its skills and expand its knowledge base.⁸³ By developing and maintaining its capacity, the state adapts to procurement challenges and upholds its responsibility towards public interests, distinguishing its role from that of a market participant.

However, our evaluation suggests that NHAJ has not demonstrated the ability to learn from experiences and enhance its processes. This is evident in its approach to estimating tender values. Table 7 shows that it has consistently overestimated the value of EPC contracts while underestimating the value of HAM contracts. This challenge also extends to estimating project and bidding timelines (see Table 10). Although Table 8 demonstrates that NHAJ acknowledges that larger projects require longer completion times, an analysis of time overruns during implementation (see Table 11) indicates that it struggles to estimate these periods.

⁸³Patrick Manu and others, “Contribution of procurement capacity of public agencies to attainment of procurement objectives in infrastructure procurement” (2021) 28(10) Engineering, Construction and Architectural Management 3322; Chitgupi, Gorsj, and Thomas (n 14).

Table 7 Learning valuation

NHAI consistently overestimates the value of EPC contracts while underestimating the value of HAM contracts.

Contract Type	Minimum Value	Average Value	Maximum Value
Deviation of financial bids from tender value			
BOT	NA	NA	NA
EPC	24%	21%	18%
HAM	2%	-4%	11%
Deviation of contract value from tender value			
BOT	NA	NA	NA
EPC	11%	9%	3%
HAM	-11%	-16%	4%

Source: Authors' compilation from CPPP

Table 8 Learning timelines

NHAI acknowledges that larger projects require longer completion times

Period of Work (Days)	Count	Tender Value (rs. millions)	Contract Value (rs. millions)
365 - 475	6	401	457
475 - 585	6	1008	735
695 - 805	47	7875	7969
805 - 915	7	8688	6886

Source: Authors' compilation from CPPP

Due to lack of tender values, we do not include BOT contracts, which reduces the count to 66 projects.

One reason for these challenges could be the vacancies in key positions at NHAI, including those responsible for Public-Private Partnerships (PPP). The position of Member (PPP) was vacant between 2018 and 2020,⁸⁴ and one Member (Projects) position was vacant between 2018 and 2019.⁸⁵ The absence of a dedicated member can lead to a lack of leadership and

⁸⁴ *Annual Report* (n 68); *Annual Report* (n 68); *Annual Report* (n 68).

⁸⁵ *Annual Report* (n 68); *Annual Report* (n 68).

direction in managing projects, hinder the decision-making process, and delay project implementation. While leadership positions are critical, the adequacy and qualifications of the staff executing the groundwork are equally important. Comparing these figures with best practices and assessing the qualifications of these staff members could provide insights into challenges and areas for improvement. However, as section 3.2.2 indicates, our analysis is limited to publicly available data, which does not include the number of sanctioned posts, vacancies, or training details and thus precludes such a comparison.

4.2.2 Completion to payment

Dispute resolution Effective dispute resolution ensures fairness and efficiency, minimising project timelines and cost disruptions.⁸⁶ When resolving procurement disputes, procuring entities operate like any market participant, adhering to and governed by contract terms. However, given the state’s scale and authority, its dispute resolution approach can disproportionately affect courts and other resolution forums.⁸⁷ This underscores the need for heightened attention to dispute resolution mechanisms in public procurement.

Notably, dispute resolution includes several dimensions. For instance, contractors should be able to challenge procurement decisions or actions before an independent body, participate in, be heard at, and access proceedings, and present evidence.⁸⁸ Appeals from decisions made by the independent body should be allowed through court proceedings.⁸⁹

However, neither the GFR nor any legislation provides detailed guidelines on dispute resolution in public procurement. No tribunal or independent body is tasked with settling such disputes. In response, NHAI has developed its own mechanism for dispute resolution through Model Concession Agreements and policies.⁹⁰ These agreements outline a four-step process for resolving disputes:

⁸⁶Yannis Bakos and Chrysanthos Dellarocas, “Cooperation without enforcement? A comparative analysis of litigation and online reputation as quality assurance mechanisms” (2011) 57(11) *Management Science* 1944.

⁸⁷Jim Smith and others, “Procurement of construction facilities in Guangdong Province, China: factors influencing the choice of procurement method” (2004) 22(5/6) *Facilities* 141.

⁸⁸UNCITRAL Model Law on Public Procurement (n 33).

⁸⁹*Ibid.*

⁹⁰National Highways Authority of India, Establishment of a Conciliation & Settlement Mechanism for Contractual Disputes under the contract agreements with the Contractors/ Concessionaires/ Consultants in NHAI (MoRTH 2017); National Highways Authority of India, Standard EPC Agreement for National highways and Centrally Sponsored road works proposed to be implemented on Engineering (MoRTH 2018); National Highways Authority of India, Model Concession Agreement (MCA) of BOT (Toll) Project (MoRTH 2020); National Highways Authority of India, Model Concession Agreement for Hybrid Annuity Project (MoRTH 2020).

Table 9 Number of cases by drivers of litigation

Over 68% of cases involving the NHAI result from unsuccessful arbitration proceedings

Cause of dispute	Petitioner		Total
	NHAI	Firm	
Arbitration	123	137	260
Payments	15	75	90
Termination	1	31	32
Total	139	243	382

Source: Mehta and Thomas, 2022

1. *Amicable settlement:* In a dispute arising from a concession agreement, either party may engage a conciliator to assist in reaching an amicable settlement. Parties must provide each other access to relevant, non-privileged records, information, and data.
2. *Negotiation:* If an amicable settlement fails, the dispute may be escalated to the chairpersons of the NHAI and the contractor’s Board of Directors for negotiation and resolution.
3. *Arbitration:* If the chairpersons fail to resolve the dispute within the specified timeframe, either party may initiate arbitration proceedings. The arbitral award shall be final and binding.⁹¹
4. *Litigation:* If the arbitral award is challenged in court, the party against whom the award is made must make an interim payment of 75% of the award, secured by a bank guarantee for 120% of this amount.

NHAI has implemented detailed dispute resolution provisions and performs well on this indicator in our evaluation framework.

Despite these provisions, NHAI is still a party to significant litigation. For instance, at the High Court of Delhi, NHAI represents 40% of the cases in which the Union government is a

⁹¹Following an Office Memorandum issued by the Ministry of Finance on 03 June 2024, arbitration should not be automatically included in public procurement contracts. Instead, procuring entities are encouraged to rely on amicable settlement and mediation. In high-value contracts, a committee consisting of a retired judge and a retired officer or technical expert may oversee negotiations or mediation. Courts should handle disputes that are not resolved by these methods. This does not detract from our evaluation of the NHAI having implemented detailed dispute resolution provisions. Guidelines for Arbitration and Mediation in Contracts of Domestic Public Procurement 2024.

party.⁹² In 2017, it was a party to litigation with claims of approximately rupees 5,700 crores (USD 685.2 million) and arbitration proceedings with claims of rupees 38,000 crores (USD 4.6 billion).⁹³ However, discussions with practitioners and corresponding literature suggest that this may indicate gaps in the effectiveness of the arbitration mechanisms, which are often appealed in litigation.⁹⁴ It does not necessarily reflect on NHAI's processes. Therefore, while our evaluation framework rates NHAI's performance as satisfactory in providing detailed dispute resolution mechanisms, the litigation underscores the need for further analysis.

4.3 NHAI as a market participant

4.3.1 Pre-award to award

Documentation To ensure the effectiveness and fairness of procurement processes, the descriptions of the procurement subject matter should be clear, precise, complete, and objective.⁹⁵ This encourages participation from bidders, facilitates risk and cost assessment, and minimises the potential for errors or biased actions.⁹⁶ This documentation by a procuring entity mirrors that by any market participant. Just as a market participant would document commercial activities to safeguard against legal disputes, ensure clarity in transactions, and maintain operational efficiency, the procuring entity must be rigorous in its documentation.

Per the GFR, the description of the procurement subject matter should be objective, functional, generic, and measurable.⁹⁷ It should also specify the necessary characteristics without referencing a trademark, name, or brand.⁹⁸ This practice is applied in all requests for proposals by NHAI.⁹⁹ Thus, it performs satisfactorily on our first indicator concerning documentation. However, in our sample, 63 tenders, accounting for 84% of the total, were supplemented by corrigenda. This indicates that projects frequently underwent restructuring, altering initial parameters. NHAI is also known to consistently issue corrigenda. Roy and Sharma reported an average of 29.7 corrigenda per project.¹⁰⁰ This highlights the unpredictability and challenges bidders face in forming legitimate expectations and reflects

⁹²Mehta and Thomas (n 14).

⁹³Establishment of a Conciliation & Settlement Mechanism for Contractual Disputes under the contract agreements with the Contractors/ Concessionaires/ Consultants in NHAI (n 90).

⁹⁴Mehta and Thomas (n 14); Madhav Goel and others, Reducing challenges to arbitration awards: lessons from court data (26 October 2023).

⁹⁵Laryea (n 44).

⁹⁶Abul Hassan, Ismail, and Ahmad@ Abdul Mutalib (n 45).

⁹⁷Rule 142, General Financial Rules 2017.

⁹⁸Ibid.

⁹⁹Standard Request for Proposal for National Highways and Centrally sponsored road works proposed to be implemented on EPC Mode of Contract (n 75).

¹⁰⁰Roy and Sharma (n 9).

insufficient attention to pre-bid consultation, bidder comments, and a lack of capacity within NHAI.

Timeliness (planning) Timeliness is crucial to ensuring the efficient progress of any project. Adhering to a predefined timeline helps maintain competitiveness and efficiency in market dynamics, adding predictability to the procurement process. Therefore, measuring time overruns is vital for evaluating public procurement processes.¹⁰¹ These overruns indicate inadequate planning, delays in the supply chain, or other operational inefficiencies

Table 10 Time taken during the bidding process

Finalising projects takes over twice as long as the theoretical conceptualisation

Contract Type	Bid Validity	Actual	Publishing to submission	Submission to opening	Opening to contract
BOT	120	251	34	1	216
EPC	121	201	77	1	123
HAM	124	317	109	1	207
Total	122	261	87	1	173

Source: Authors' compilation from CPPP

Table 10 shows that finalising projects takes over twice as long as the theoretical conceptualisations. This discrepancy between actual and theoretical timelines is particularly pronounced in the case of HAM contracts, which could be attributed to the large scale of the projects and the need for extensive planning. It underscores the need for better timeline estimation during project conceptualisation, especially for large-scale projects.

4.3.2 Award to completion

Negotiation Negotiations between the procuring entity and a contractor should be prohibited after the tender has been submitted. Post-tender negotiations can create perceptions of unfairness and rent-seeking, discouraging parties from participating in future tendering processes. Alternatively, participants might alter their tender prices in anticipation of negotiations. This is similar to the private sector, where negotiations following a bidding process

¹⁰¹Young-Ill Park and Theopisti C Papadopoulou, "Causes of cost overruns in transport infrastructure projects in Asia: their significance and relationship with project size" (2012) 2(2) Built Environment Project and Asset Management 195.

can compromise the integrity of the process and lead to disputes or mistrust among the parties involved.

While GFR discourages negotiation between the procuring entity and contractors, it is permitted when *exceptional circumstances* or *unavoidable situations* warrant negotiation.¹⁰² Due to a lack of data, we cannot confirm how frequently such discretionary power is exercised. However, negotiations, when they occur, may contribute to the time required to finalise contracts, i.e., the time between bid opening and awarding the contract (see Table 10). This is despite the requirement for procuring entities to adopt standard contracts wherever possible, making modifications only after obtaining financial and legal advice.¹⁰³

Monitoring Monitoring is pivotal in contract performance. It enables timely interventions to mitigate risks and prevent overruns or failures.¹⁰⁴ Similar to transactions in the private sector, monitoring public procurement is crucial to safeguarding stakeholders' interests and ensuring that the transaction objectives are met effectively and efficiently.

Per GFR, contract performance must be continuously monitored, with notices issued for any breach of provisions.¹⁰⁵ For NHAI contracts, an IEM is authorised to issue directives and review compliance with contract obligations. However, this monitoring focuses on the contractor. The IEM assesses the contractor's compliance with its obligations.¹⁰⁶ In contrast, no comparable monitoring mechanisms exist for the NHAI. This is because NHAI continues to act as the state rather than adopting the more balanced perspective of a market participant. This approach creates an asymmetry in the monitoring process, where NHAI's adherence to contractual and procedural norms, including land acquisition and payments, is subjected to less scrutiny than that imposed on contractors. This imbalance can lead to a skewed accountability system, affecting the fairness and effectiveness of the procurement process.

Timeliness (implementation) As previously discussed, timeliness is crucial to ensure the efficient progress of any project, acting as a deterrent against unnecessary delays. However, most analyses of procurement processes focus on the pre-award to award stage, overlooking the award to completion stage due to a lack of legal guidance or benchmarks. This is a

¹⁰²General Financial Rules 2017, Rule 173 (xiv).

¹⁰³Rule 225, *ibid.*

¹⁰⁴Kohler and Dimancesco (n 52).

¹⁰⁵Rule 195, 205, and 226, General Financial Rules 2017.

¹⁰⁶Model Concession Agreement for Hybrid Annuity Project (n 90); National Highways Authority of India, Standard EPC Agreement for National Highways and Centrally sponsored road works proposed to be implemented on EPC Mode (MoRTH 2019); Standard Request for Proposal for National Highways and Centrally sponsored road works proposed to be implemented on EPC Mode of Contract (n 75).

significant oversight, as our analysis of NHAI projects since 2016 reveals a pattern of time and cost overruns. Of the 495 awarded projects, 335 (68%) have experienced either a time overrun, a cost overrun, or both. Table 12 shows that EPC and HAM projects have cost overruns exceeding 90% and time overruns of 53% and 39%, respectively. These figures are alarmingly high, reflecting a failure in the oversight and management of these projects.

Table 11 Cost and time overruns

Since 2016, 335 (68%) of the 495 awarded projects have either a cost overrun or a time overrun or both.

Award period	Cost and Time	Only cost	Only time	None	Total	%
2016	25	12	8	5	50	90%
2017	18	7	3	6	34	82%
2018	30	14	10	7	61	89%
2019	23	36	7	4	70	94%
2020	11	20	10	32	73	56%
2021	7	39	6	37	89	58%
2022	3	31	3	38	75	49%
2023	1	10	1	31	43	28%
Total	118	169	48	160	495	68%

Source: Authors' compilation from CMIE CapEX

Table 12 Quantum of overruns

EPC and HAM projects have cost overruns over 90% and time overruns of 53% and 39%, respectively

Median	EPC	HAM
Original Cost (rs. million)	4462	6830
Escalated Cost	8558	13239
Cost overrun (%)	92%	94%
Original Time (days)	860	1025
Escalated Time	1319	1422
Time overrun (%)	53%	39%

Source: Authors' compilation from CMIE CapEX

4.4 Results

Table 13 summarises the results of applying the proposed evaluation framework to the NHAI. These results don't just reflect NHAI's procurement processes but serve as a tool for improving them. Through this first-of-its-kind and illustrative evaluation, we identify several areas for improving India's public procurement system, thus optimising the allocation of public resources, curtailing opportunities for rent-seeking, and fortifying public trust. This includes better estimation of project timelines, improving the role of independent monitoring, and conducting performance evaluations. By addressing the concerns identified in the evaluation, NHAI can implement changes to enhance efficiency, transparency, and accountability, leading to effective resource utilisation and improved project outcomes.

More importantly, the results validate the efficacy of the evaluation framework. Its comprehensive nature, encompassing a range of benchmarks, allows for a detailed evaluation of public procurement processes. Its application to NHAI demonstrates its potential to evaluate and improve procurement processes across procuring entities. Given the diverse and complex nature of public procurement in India, this makes it an ideal tool for widespread use. Future research can explore its application in different contexts, potentially leading to the development of a standardised nationwide evaluation of public procurement.

Table 13 Evaluating NHAI

Benchmark	Procurement stage	Indicator	Results
NHAI as the state			
Transparency	Pre-award to award (Stage I)	<ul style="list-style-type: none"> ● Publishing long-term plans ● Conducting pre-bid consultations 	<ul style="list-style-type: none"> ● NHAI publishes long-term plans ● NHAI holds infrequent pre-bid consultations and allocates limited time
Integrity		<ul style="list-style-type: none"> ● Stipulating registration, eligibility, and selection criteria ● Restricting unfair and undue benefits to concessionaires 	<ul style="list-style-type: none"> ● NHAI stipulates necessary criteria ● It does not always restrict unfair or undue benefits
Capacity		<ul style="list-style-type: none"> ● Vacancies in concerned departments ● Estimating tender values and timelines 	<ul style="list-style-type: none"> ● There are vacancies across concerned offices ● NHAI overestimates EPC contracts while underestimating HAM contracts
Dispute resolution	Completion to payment (Stage III)	<ul style="list-style-type: none"> ● Providing detailed dispute resolution provisions 	<ul style="list-style-type: none"> ● Model Concession Agreements provide detailed dispute resolution provisions
NHAI as a market participant			

Documentation	Pre-award to award (Stage I)	<ul style="list-style-type: none"> • Providing clear description of procurement subjects • Issuing corrigenda or cancelling tenders 	<ul style="list-style-type: none"> • NHAI provides descriptions of the procurement subject • It frequently issues corrigenda
Timeliness (planning)		<ul style="list-style-type: none"> • Time overruns in planning 	<ul style="list-style-type: none"> • There are time overruns in planning
Negotiation	Award to completion (Stage II)	<ul style="list-style-type: none"> • Allowing post-award negotiations 	<ul style="list-style-type: none"> • GFR does not restrict post-award negotiations
Monitoring		<ul style="list-style-type: none"> • Monitoring contract implementation (procuring entity) • Monitoring contract implementation (contractor) 	<ul style="list-style-type: none"> • The IEM does not monitor NHAI • The IEM monitors NHAI
Timeliness (implementation)		<ul style="list-style-type: none"> • Time overruns in implementation 	<ul style="list-style-type: none"> • There are time overruns in implementation

5 Conclusion

Public procurement is crucial to operating the government machinery and delivering schemes and programs to its constituents. Given its scale, well-governed public procurement can enhance public sector efficiency and bolster trust. Recognising the importance of an optimal public procurement system, this paper proposes an evaluation framework and applies it to the NHAI, yielding actionable recommendations for improvement. It scrutinises the government's dual role as a state and a market participant throughout the procurement life-cycle, a topic often overlooked in existing literature. It thus paves the way for evidence-based policy interventions to enhance the efficiency, transparency, and effectiveness of the Indian public procurement system.

Extending this evaluation framework is essential to building on this foundational work. The task now involves evaluating other large-scale procuring entities. This endeavour is about identifying areas for improvement and understanding the patterns that define public procurement processes. The insights from this work can inform policy-making and catalyse systemic improvements, contributing to enhancing and refining the public procurement system.

A The central public procurement portal

The CPPP is a centralised electronic portal for disseminating and managing public procurement notices and related data. It is a tool for policymakers, researchers, and stakeholders to analyse procurement patterns, spending efficiency, and market dynamics in the public sector. Key features and functions include:

- E-Tendering: The portal facilitates the electronic handling of all tendering activities, including the publication of tender notices, submission of bids, and tender evaluation.
- Standardisation: By providing a format for tender notices and bidding documents, the CPPP ensures consistency and clarity in procurement processes across procuring entities.
- Audit and Tracking: The portal maintains a digital record of all transactions and activities, enabling audit trails and accountability in public procurement.

This paper uses specific variables from the CPPP, including the number of bids for a project, bid validity, and contract type. Each variable provides insights into the procurement process, enabling an analysis of government spending, procurement efficiency, and the competitive landscape among bidding entities.

- Bids: Refers to the number of proposals submitted in response to a tender.
- Bid validity: Refers to the period during which prospective bidders can submit bids on a project.
- Contract type: Describes the nature of the contract awarded. This includes but is not limited to EPC, HAM, and BOT contracts.
- Contract value: Represents the financial worth of the contract awarded to the successful bidder. It reflects the agreed-upon price for the full scope of work or supply as specified in the tender.
- Corrigenda: Refers to any changes, amendments, or clarifications related to the tender document.
- Dates: Encompasses timelines associated with the tender, such as the release date, closing date, and other dates for any milestones or events during the tender process.
- Financial bidders: This variable lists the entities that have submitted financial bids for a tender.
- Period of work: Indicates the duration over which the work or supply specified in the contract is estimated to be completed.
- Pre-bid consultation meeting place, if any: Details the location and the time of any

pre-bid meetings. These meetings are convened to clarify aspects of the tender and answer potential bidders' queries.

- RO: Identifies the regional office responsible for the tender.
- Selected bidder: Names the entity awarded the contract following the tendering process.
- Tender Value: Refers to the estimated financial value of the contract as stated in the tender document. This value may differ from the final contract value.

