India: Delhi-Ghaziabad-Meerut Regional Rapid Transit System

Mid-term evaluation

Draft Approach Paper: Methodology and Process

Independent Evaluation Office
June 2025

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Abbreviations and acronyms

ADB	Asian Development Bank
AIIB	Asian Infrastructure Investment Bank
GDP	gross domestic product
JFPR	Japan Fund for Poverty Reduction
NCR	National Capital Region
NCRTC	National Capital Region Transport Corporation
RRTS	Regional Rapid Transit System
SDG	Sustainable Development Goal
SHE	Safety, Health and Environment
PM	particulate matter

I. Introduction

A. Country context

1. India is one of the fastest growing economies in the world, with an estimated GDP growth rate of 7% for fiscal year 2024-25[1]. In addition, with a population of over 1.4 billion,[2] India is also one of the two most populous nations in the world. Urban areas, which currently house approximately 34% of the population, are expanding rapidly and by 2036, nearly 600 million people—about 40% of India's population—are expected to live in urban areas.[3] This urban expansion is anticipated to boost productivity and economic output—cities are projected to generate 70% of new jobs by 2030, produce more than 70% of India's GDP, and contribute to a near fourfold increase in per capita income.[4]

2. However, this rapid urbanisation presents a significant challenge: India's infrastructure is struggling to keep pace with the needs of its growing population.[5] Specifically, urban transport is under significant pressure, which in turn strains the country's economy. The adequacy of public transport in Indian cities has been steadily declining relative to demand, leading to a growing reliance on private vehicles. This shift has caused a sharp increase in private car ownership and heightened traffic congestion, with average vehicle speeds dropping to just 24 km/h.[6] This over-reliance on private transport has also contributed to many Indian cities being listed among the world's most polluted.

3. In response to this challenge, the Government of India is focused on transforming the nation with plans to build 100 "smart" cities to accommodate the growing urban population and ensuring seamless connectivity.[7] While these initiatives are commendable, the infrastructure financing gap—estimated at more than 5% of India's GDP—remains a significant hurdle to achieving these goals.

B. Local and sector context

4. The national capital region (NCR) is the world's second-largest urban agglomeration,[8] covering an area of 55,083 km^2 across Delhi and neighbouring states (Haryana, Rajasthan and Uttar Pradesh). Its population reached 46 million in 2011,[9] of which 62.5% was urban, and it is projected to grow to 89 million by 2031[10] with share of urban population expected to be 98% or over.[11] Delhi has been the primary centre for employment not just

[1] International Monetary Fund.
[2] Ibid.
[3] Population projections for India and states 2011-2016, Census of India 2011, July 2020.
[4] India's urban awakening: Building inclusive cities, sustaining economic growth, McKinsey Global Institute, 2010.
[5] Athar, Sohaib; White, Roland; Goyal, Harsh. *Financing India's urban infrastructure needs: Constraints to commercial financing and prospects for policy action (English).* Washington, D.C.: World Bank Group, 2022.
[6] Prottoy A. Akbar et al, Mobility and Congestion in Urban India, November 2018
[7] Bridging India's Vast Infrastructure Financing Gap, World Bank Blogs, 2025.
[8] United Nations, World Urbanization Prospects 2018.
[9] Census 2011.
[10] India: population NCR, by sub region | Statista
[11] Population projections for India and states 2011-2016, Census of India 2011, July 2020.

for its residents, but also for migrants from surrounding areas. The services and manufacturing sectors drive the economy, drawing a substantial and growing workforce. This rapid urbanisation, along with a thriving economy that contributes about 7% to India's GDP,[12] places tremendous pressure on existing infrastructure, particularly transportation.

5. The region's transport network, which includes roads, metro rail and suburban rail, has been unable to keep pace with this expansion. The road network is heavily congested, and while the Delhi Metro serves a large number of passengers, it is limited to travel within Delhi. The existing railway network, primarily operated by Indian Railways, lacks dedicated corridors for commuter services, making long-distance travel and daily commutes inefficient. As a result, in 2016, daily road traffic from Delhi to the nearby cities of Ghaziabad and Meerut (the "Delhi-Ghaziabad-Meerut corridor") reached 690,000, with 63% of commuters relying on private cars for their daily commutes and travel times were from 3 to 4 hours for an 80 km stretch of road during peak hours.[13]

6. This reliance on private vehicles has not only led to traffic jams but has also made NCR one of the most polluted regions in the world. Vehicular emissions account for nearly 40% of particulate matter 2.5 ($PM_{2.5}$) emissions in Delhi.[14] Air quality worsened across major cities of the NCR in 2023 compared to 2022, with only Ghaziabad recording an improvement in its annual $PM_{2.5}$ concentration. Delhi, with an average $PM_{2.5}$ concentration of 102.1µg/m^3, was the third most polluted city in the world and the worst in NCR. The escalating pollution, coupled with long commutes, reduces quality of life, hampers economic productivity, and exacerbates stress levels for residents.

7. With NCR projected to become the most populous urban agglomeration in the world by 2030, the demand for efficient transport solutions has never been greater. A well-developed regional transport system is crucial to alleviate congestion in Delhi, provide alternatives for people to settle in surrounding cities, and reduce the overwhelming pressure on existing infrastructure. The development of the Delhi-Ghaziabad-Meerut Regional Rapid Transit System (RRTS) corridor is essential to address these challenges, offering a sustainable, efficient, and environmentally friendly transportation option to meet the growing demands of the region.

[12] NCR Planning Board, Functional Plan for Economic Development of NCR, June 2016
[13] Project Document to the Board on a proposed loan of USD 500 million to the Republic of India for Delhi-Ghaziabad-Meerut Regional Rapid Transit System.
[14] World Air Quality Report 2023 by IQAir.

II. The project

A. Background

8. The Delhi-Ghaziabad-Meerut Regional Rapid Transit System project comprises the construction of a rapid rail corridor connecting the National Capital Territory of Delhi with the cities of Ghaziabad and Meerut, passing through the towns of Sahibabad, Muradnagar, and Modinagar, all located in the State of Uttar Pradesh.

9. The project was approved by the NDB Board of Directors on 29 September 2020 and is being implemented under a parallel financing arrangement with Asian Development Bank (ADB) and Asian Infrastructure and Investment Bank (AIIB).[15] With an estimated total cost of USD 3.759 billion, the project will receive USD 500 million in the form of a sovereign loan from NDB, USD 1.049 billion from ADB, and USD 500 million from AIIB, along with a USD 3 million grant from the Japan Fund for Poverty Reduction (JFPR), administered by ADB. The remaining USD 1.707 billion will be funded through counterpart funds from the Government of India and other sources.

10. The borrower of the NDB loan for this project is the Government of India, with the Ministry of Housing and Urban Affairs acting as the executing agency collaborating with the National Capital Region Transport Corporation (NCRTC), responsible for project implementation.

11. The project holds strategic significance for the government, NDB, and all stakeholders involved, supporting the government's National Urban Transport Policy aimed at providing safe, affordable, quick, reliable, and sustainable mobility for the increasing number of residents in urban areas seeking access to quality jobs, education, and recreational services. The project's efficient and multimodal transportation system is also a key component of the Comprehensive Action Plan for Air Pollution Control in Delhi and the NCR, playing a vital role in the High-Powered Committee established by the government to address traffic congestion in Delhi.

12. Upon completion, the RRTS is anticipated to remove 100,000 vehicles from the roads and reduce CO_2 emissions by at least 250,000 tons annually, marking a significant advancement in climate mitigation efforts, particularly in a region where six out of the ten most polluted cities in the world are located.[16]

[15] ADB and AIIB are financing under joint co-financing arrangement, with ADB partially administering the AIIB loan.

[16] Broom, D. (2020, March 5). *India dominates the list of the world's most polluted cities*. World Economic Forum.

B. Project objectives

13. The objective of the project is to provide safe, reliable, and comfortable transportation to residents in and around the NCR. It is expected that through effective and affordable commuter infrastructure, the accessibility of public services, businesses, commercial and cultural centres will increase quality of life of residents. Furthermore, the RRTS is designed to complement the existing metro and suburban rail systems by seamlessly integrating with them, reducing overall travel time across NCR. This multi-modal integration will create a more cohesive and efficient transport network, providing commuters with greater connectivity and convenience.

14. The overall project output by 2027 entails the construction of an 82.15 km long rapid rail corridor, including rail tracks with supporting structures (both elevated and underground), 25 stations, two maintenance depots, the installation of overhead electrification, signalling & train control systems, and rolling stock.

15. Proceeds from NDB's loan are being used to finance cost of: (i) rolling stock; (ii) signalling & train control systems, including platform screen doors; (iii) civil works for construction of multi- storied staff quarters and associated facilities; and (iv) financing charges for NDB loan. Proceeds from the ADB and AIIB loans are being used to finance cost of civil works, tracks, electrical and traction systems. The JFPR grant, administered by ADB, has been used to promote mobility and economic opportunities for women and people with disabilities.

16. The project is expected to yield significant outcomes by 2028, including: (i) an increase in the average daily passenger ridership to 740,000 (up from zero in 2020); (ii) a reduction in average travel time to Delhi from Meerut from 3 to 4 hours by road (as recorded in 2020) to one hour; (iii) an annual reduction in CO_2 of the amount of 258,035 tonnes; and (iv) increased rider safety, reliability, affordability, connectivity, and comfort, with at least 70% of surveyed commuters already expressing positive perceptions of the RRTS.

17. Overall, the project is set to boost NCR's productivity, drive economic growth, and promote balanced regional development. It will support the growth of tier-2 and tier-3 cities,[17] fostering development and reducing congestion in and around Delhi. This would foster social inclusion where improved mobility enhances access to education and job opportunities, particularly for vulnerable groups.

18. Consequently, the project will contribute to advancing multiple Sustainable Development Goals (SDGs), notably SDG 8 (decent work and economic growth), SDG 9 (industry, innovation, and infrastructure), SDG 10 (reduced inequalities), SDG 11 (sustainable cities), SDG 12 (responsible consumption), and SDG 17 (partnerships for the goals), reinforcing broader impacts on global sustainability.

[17] Cities in India are classified into four "tiers", based on population size, infrastructure, and economic significance. Delhi is a tier 1 city.

C. Project design and components

19. The Delhi-Ghaziabad-Meerut Regional Rapid Transit System has been meticulously designed to meet the transportation needs of the NCR, ensuring both efficiency and sustainability. The key components funded by NDB for this project include:

- **Rolling stock**: The RRTS employs electric multiple units that are 22 meters long and 3.2 meters wide, with stainless steel bodies for durability and efficiency. Designed for high-speed operation, the trains have a design speed of 180 km/h and operating speed of 160 km/h. Each trainset consists of six cars, with the option to expand to nine as ridership grows. The seating arrangements prioritise passenger comfort, offering ample space, overhead luggage racks, and two classes of travel (i.e. regular and a business class carriage).
- **Signalling and control systems**: The RRTS employs an advanced control system (the European Train Control System level 2/hybrid level 3), and "long-term evolution" communications system, a combination which is the first of its kind globally. This state-of-the-art signalling system ensures operational safety and efficiency, utilising automatic train protection and operation technologies to provide real-time control and monitoring of the trains.
- **Multi-storied staff quarters and associated facilities:** The staff quarters are located near the Jangpura stabling yard. The civil works contract includes site development, architectural finishes, electrical and mechanical works, plumbing, fire-fighting, external development, associated facilities and connectivity from Mathura Road.

20. Key components funded in parallel by ADB and AIIB include:

- **Civil works**: The line has elevated structures (68.03 km) in most areas, and a mix of underground and ramp sections (14.12 km) in parts of the line that pass through congested city areas. For the elevated viaduct, precast post-tensioned segmental box girder has been used on single cast in situ reinforced cement concrete pier (diameter of 2 m) with pile foundations (well foundations for major river crossing). For the underground section, twin tunnels of 6.5 m finished diameter have been constructed using a tunnel boring machine. Additionally, the corridor features 25 stations, of which several are integrated with the local metro rail services to provide seamless connectivity across NCR.
- **Permanent way:** The "permanent way" for any railway system is defined by the following features: track gauge, track structure, track centre, speed potential and axle load, ruling gradient**,** vertical and horizontal curves, rails, turnouts, track fittings, and buffer stops. The RRTS has a standard gauge (1,435 mm) and tracks are ballast-less on viaducts and tunnels and ballasted in depots (except washing, workshop and inspection lines). The use of 60 kg/m head-hardened rails ensures the durability and reliability of the track structure, particularly in high-speed conditions.

The alignment has been designed to minimise gradients and curves, ensuring efficient train operations.

- **Electrical and traction system:** The RRTS utilises a 25 kV, 50 Hz power supply for its traction system. Power is delivered to the trains via a flexible catenary system in elevated areas and a combination of flexible and rigid catenaries in underground sections. The project plans to install five power substations. Additionally, all elevated stations and depots will feature solar panels with net metering connected to the grid. Auxiliary power is supplied through 33 kV, 3-phase redundant cables running along the corridor, which will be converted to 415 V AC at auxiliary substations located at each station.

21. The JFPR grant, fully administered by ADB, is financing a range of pilot activities including toilet blocks outside station areas, assistive aids for people with disabilities, training for women and people with disabilities on safe mobility and employment opportunities, as well as gender equality and social inclusion sensitisation training and gender-related behaviour change training of public transport providers.

D. Project cost and financing

22. The total estimated cost of the project at approval was USD 3.759 billion. The funding is structured as follows:

Table 1: Project financing plan

Source of funds	Amount (USD million)	% of total
Loan from ADB	1,049	27.9%
Loan from AIIB	500	13.3%
Government counterpart funding and other sources	1,707	45.4%
Grant from JFPR	3	0.1%
Loan from NDB*	500	13.3%
Total	**3,759**	**100.0%**

* Later revised to USD 418 million, with a partial cancelation of USD 82 million initially dedicated towards the construction of the Jangpura stabling yard, operations control centre and associated facilities.

23. NDB's financing is a "sovereign project loan", following NDB's Policy on Sovereign Loans & Loans with Sovereign Guarantee. This loan has a tenor of 25 years, starting from the date of signing the loan agreement, with an 8-year grace period. The loan shall be repaid in 34 semi-annual instalments commencing after the grace period calculated based on the annuity type repayment method with a 10% discount rate per annum.

24. ADB offers a multi-tranche financing facility totalling USD 1.049 billion to support the project; and AIIB provides a USD 500 million loan. Both the first tranche from ADB and the AIIB loan will have a 25-year term, an 8-year grace period, and will require semi-annual repayments based on an annuity method with a 10% annual discount rate.

25. As of September 2024, 60.7% of the NDB loan has been disbursed (see table 2). Additionally, ADB has disbursed USD 562.64 million, which represents 53.6% of its loan, while AIIB has disbursed USD 445.45 million, or 89% of its loan.[18]

Table 2: Status of NDB loan disbursement (as at 30 September 2024)

#	Description	USD million		
		Loan amount allocated	Disbursed amount	Undisbursed loan balance
1	Rolling stock	268.47	148.32	120.15
2	Signalling, train control, platform screen doors & telecommunication system	112.65	73.75	38.90
3	Multi-storied staff quarters	31.58	31.58	-
4	Front-end fee for NDB loan	1.25	1.25	-
5	Contingency	4.05	-	4.05
6	Escalation	-	-	-
	Total	**418.00**	**254.90**	**163.10**

E. Project implementation and progress

26. The executing agency is the Ministry of Housing & Urban Affairs of the Government of India which works alongside the National Capital Region Transport Corporation, a joint venture special purpose vehicle company that serves as the project's main implementing agency.

27. The overall project management and coordination is conducted from the NCRTC corporate office at New Delhi. NCRTC has established four project management offices (PMOs), headed by chief project managers (CPMs) in Delhi, Ghaziabad, Modinagar and Meerut for implementing the different sections of the project. A group general manager (GGM) under director (electrical & rolling stock) is responsible for implementing the rolling stock component. Similarly, a GGM under director (systems) will be responsible for implementing the signalling & train control component. All teams are adequately staffed based on current needs. NCRTC has a total staff strength of 636 which includes 392 permanent staff.

28. NCRTC has a dedicated procurement team headed by a GGM of procurement. In addition to procurement, a separate team for contract and dispute resolution headed by a GGM is in place. The finance team is responsible for timely processing and payment of the contractors' bills and claim reimbursement from the loan through the office of the Controller of Aid Accounts and Audit of the Government of India.

29. The RRTS is already partially operating with 11 stations opened (10 elevated and one underground) from New Ashok Nagar to Meerut South Station covering more than 50

[18] Based on the most recent NDB progress report available for the period April–September 2024. As of March 2025, these figures may no longer reflect the current status and will be updated upon accordingly.

km of the Delhi-Meerut Corridor. NCRTC plans to commission – i.e. start operations on – the entire corridor by August 2025.[19]

Figure 1: Delhi-Ghaziabad-Meerut Regional Rapid Transit System corridor

30. The task completion rate for the NDB-specific outputs of the project have surpassed their halfway point. As of September 2024, the rolling stock's design, manufacture, supply testing and commissioning is at 62.4%. The design, supply, installation and commissioning of signalling and train control, platform screen door and telecommunication systems stands at 61.4 %. The civil works for multi-storied staff quarters and associated facilities are 80.4% completed (see table 3).[20]

Table 3: Physical progress of NDB funded packages

Pkg. No.	**Packaged description**	**Up to September 2024** (Planned)	**Up to September 2024** (Actual)
P9A	Construction of multi-storied staff quarters and connectivity from Mathura Road to Jangpura Stabling Yard complex	100.0%	80.4%
P24	Design, supply, installation, testing and commissioning of signalling and train control, platform screen doors and telecommunication systems	94.0%	61.4%
P30	Design, manufacture, supply, testing, commissioning and comprehensive maintenance of RRTS & mass rapid transit system trainsets, and depot machinery and plants.	75.6%	62.4%

[19] NDB Delhi-Ghaziabad-Meerut RRTS Project Progress Report (April-Sept. 2024).
[20] Based on the most recent NDB progress report available for the period April–September 2024. As of March 2025, these figures may no longer reflect the current status and will be updated upon acquisition of more recent data.

III. Project evaluation

A. Background

31. In December 2024, the NDB Board of Directors approved the IEO mid-term evaluation of the Delhi-Ghaziabad-Meerut Rapid Railway Transit System project to take place in 2025. This will be the third evaluation conducted by IEO in India, following the completion of the Madhya Pradesh Major District Roads Project evaluation in 2022 and the country portfolio evaluation (CPE) in 2024. The evaluation will be conducted in line with the NDB Evaluation Policy,[21] Evaluation Strategy for 2024-2026,[22] and the Evaluation Manual.[23]

32. While it is recognised that the project is not fully operational, and that it is too early to assess the achievement of final targets related to timely delivery, operational efficiency, and long-term impact, a real-time evaluation at this stage offers significant value.

33. With 11 out of 25 stations already operational and over 60% of the NDB loan disbursed, sufficient progress has been made to assess implementation quality, early operational performance, and to generate lessons for the remaining segments of the project. In addition, as India's first initiative in the regional rapid transit system sector, the project offers an opportunity to capture early experiences and challenges in pioneering a new transport modality, providing critical insights to inform future RRTS projects. However, the evaluation remains cautious in drawing conclusions on final impact, sustainability, or full system-level efficiency, acknowledging that such assessments will only be possible once the project achieves full operational maturity.

B. Evaluation objectives, scope, and theory of change

34. **Objectives**. The main objectives of the evaluation are to: (i) promote accountability through an independent assessment of results; and (ii) generate lessons learned and recommendations for the remaining activities and operations of the project as well as for improving the quality of similar ongoing and future operations in India and other NDB member countries.

35. **Scope**. As the project is implemented under a parallel financing arrangement with ADB and AIIB, the evaluation will adopt a dual scope. First, it will assess the extent to which the NDB-financed components have been implemented as planned and whether they meet the intended quality, design, and operational readiness standards. Second, it will examine the performance of the broader RRTS system, with a particular focus on the currently operational segments. Given that the project is still under implementation, with full corridor opening expected by June 2025 and appraisal outcome targets set for 2028, the evaluation will not attempt to fully assess the project against end-state outcome and impact targets. Instead, this evaluation adopts a real-time, mid-implementation assessment approach, focusing on: (i) the emerging performance of the operational

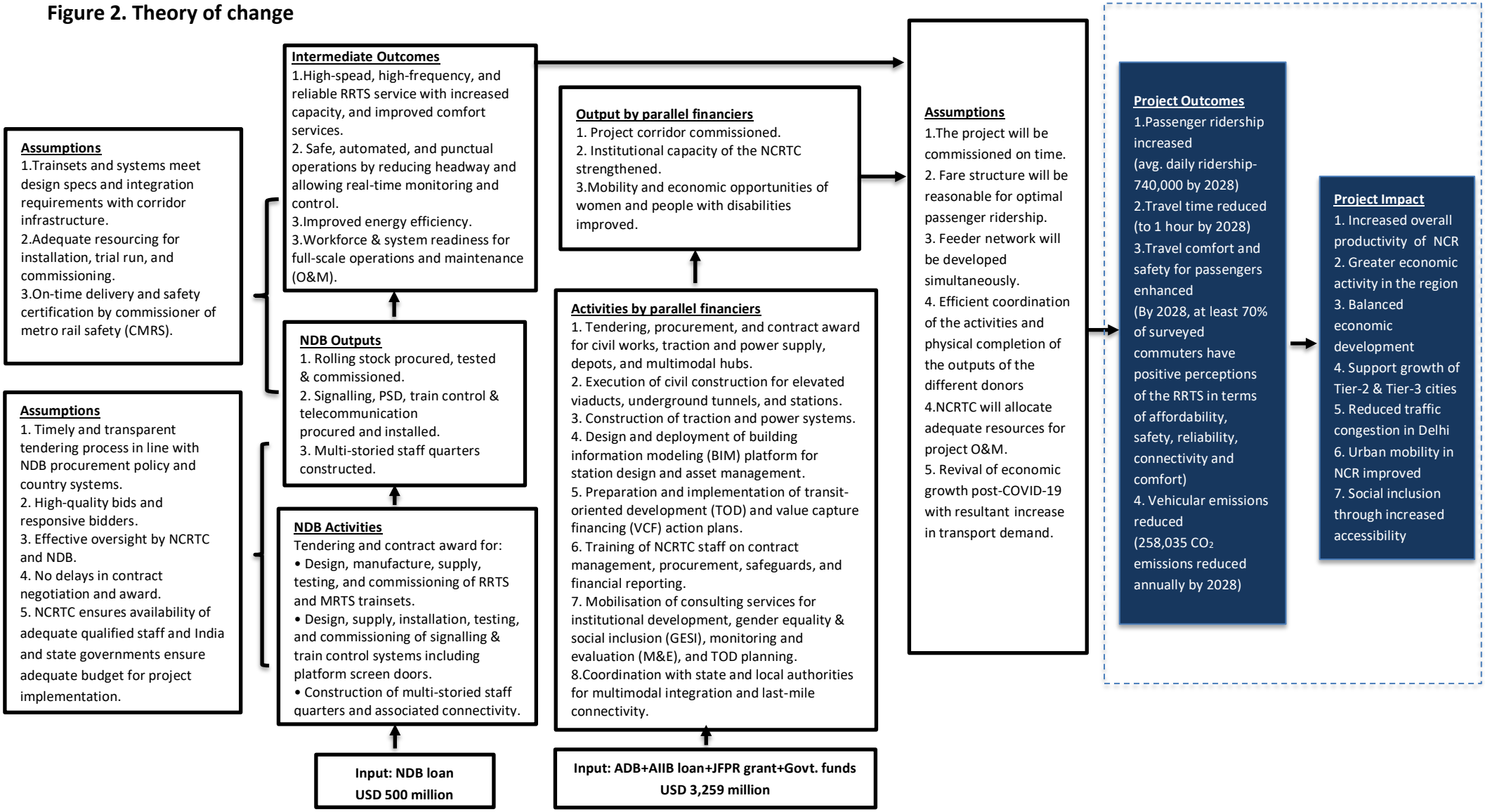
[21] NDB Evaluation Policy.
[22] NDB Evaluation Strategy.
[23] NDB Evaluation Manual.

sections; (ii) early trends and short-term outcomes; and (iii) the likelihood that the project will achieve its long-term objectives by 2028.

36. Given that NDB-financed components are technically and operationally embedded within a broader set of investments financed in parallel by ADB and AIIB, the evaluation will assess emerging outcomes at the system level while examining how NDB-financed outputs interact with and operate alongside other project elements to support the achievement of project-level outcomes. This integrated approach reflects the interdependent nature of implementation under a parallel financing arrangement and is intended to generate insights not only into the delivery and performance of NDB-financed components, but also into early results, emerging challenges, and lessons that can inform ongoing implementation and strengthen coordination across partners.

37. **Theory of change**. The evaluation is guided by a nested theory of change (ToC), developed to trace the causal logic linking NDB-financed inputs to project-level outcomes and impact within the broader Delhi-Ghaziabad-Meerut RRTS. A nested ToC is used in this context to recognise the integrated nature of the project. While NDB-financed components are clearly linked to project outcomes, these outcomes are not attributable to NDB financing alone. Rather, they are the result of coordinated investments across multiple financiers. As such, the evaluation will apply a contribution analysis approach, using this nested ToC to clarify the role of NDB-financed components within the broader project framework, and to assess how they interact with complementary investments funded by ADB and AIIB in delivering shared results.

Figure 2. Theory of change



C. Evaluation methodology

38. The core methodology of this evaluation will be grounded in internationally recognised evaluation criteria, as outlined in the NDB Evaluation Manual, while being suitably adapted to the specific context of India, the Delhi NCR region and the unique characteristics of the project. The evaluation will comprehensively assess project performance across five key criteria: relevance, effectiveness, efficiency, sustainability, and impact,[24] with a primary focus on evaluating the performance of the already operational segments of the Delhi-Ghaziabad-Meerut RRTS corridor (figure 1). The evaluation will specifically assess early operational quality, preliminary ridership trends and commuter responses, system integration readiness, implementation effectiveness of NDB-financed outputs, and emerging institutional lessons, while deferring final judgments on project-wide outcomes such as full ridership achievement, financial sustainability, and system-level impacts until project completion.

39. While full assessments of impact and sustainability are not feasible until the project is completed, early-stage data and NCRTC projection models will provide crucial insights into the project's potential long-term benefits and its ability to meet future demands.

40. **Customisation of evaluation methodology:** Given that large-scale transport projects operate within a complex national framework of regulations, priorities, and governance structures, the evaluation methodology has been carefully customised to not only align with the NDB's strategic priorities but also ensure strong country ownership and policy alignment with India's national development agenda.

41. The methodology has been customised in four key ways: (i) ensuring policy coherence with national transport and infrastructure strategies; (ii) integrating India's data governance standards; (iii) embedding India's own evaluation principles and criteria into the assessment framework; and (iv) adopting a participatory approach that strengthens country ownership through multi-level stakeholder engagement.

42. **Ensuring coherence with India's national policy priorities.** The evaluation has been structured to align with India's National Urban Transport Policy (NUTP), the Comprehensive Action Plan for Air Pollution Control in Delhi-NCR, and the National Infrastructure Pipeline (NIP). To reflect these priorities, the evaluation assesses the project's effectiveness in shifting commuters from private vehicles to public transport, in line with the NUTP's goal of reducing road congestion. It also examines the impact of RRTS on air quality improvements and emission reductions, which directly supports the objectives of the Comprehensive Action Plan. Additionally, the evaluation reviews the project's financial sustainability, employment impact, and long-term viability, ensuring alignment with NIP's emphasis on infrastructure as a driver of economic development. By structuring the evaluation questions under the five-core criteria around these national

[24] Please find the definition of the Evaluation Criteria in annex 1.

policy priorities, the assessment remains relevant to India's long-term transport and environmental objectives.

43. **Embedding India's institutional evaluation framework**. In order to customise the evaluation methodology to align with India's institutional evaluation framework, IEO has incorporated the "equity" criterion as part of the evaluation. This aligns with the evaluation methodology of the Development Monitoring and Evaluation Office (DMEO) in the National Institution for Transforming India (NITI Aayog) – the premier public policy institution of the Government of India – that integrates equity into its evaluation framework in accordance with national priorities. While equity is not among the five core criteria outlined in para. 38 above, it will serve as an "additional criterion" on which the project's performance will be comprehensively assessed from an equity perspective.

44. **Integration of India's data governance standards.** To strengthen evidence-based decision-making and institutional ownership, the evaluation incorporates principles from the Data Governance Quality Index (DGQI), developed by NITI Aayog's DMEO. Through the lens of the five-core criteria, the evaluation will incorporate additional questions to examine the quality, reliability, and use of project data—including ridership patterns, congestion impacts—ensuring that findings are based on validated national data sources. By reviewing the data infrastructure and reporting systems of NCRTC and Ministry of Housing and Urban Affairs, the evaluation supports improved national monitoring and governance capacity, reinforcing India's institutional leadership in infrastructure evaluation.

45. **Strengthening country ownership through stakeholder engagement:** Country ownership is further reinforced through structured engagement with key national and local institutions. The evaluation process will actively involve the Ministry of Finance, Ministry of Housing and Urban Affairs, the National Capital Region Transport Corporation, DMEO and relevant state and municipal authorities. Their participation ensures that both policy and operational perspectives are incorporated into the assessment. Beyond government entities, the evaluation also includes consultations with direct project beneficiaries, such as commuters, transport service providers, and businesses near RRTS stations.

46. In conducting its analysis, as needed, IEO will utilise mixed methods for data collection and analysis. The use of triangulation techniques will validate the analysis, leading to the assignment of a performance rating for each of the five-core criterion on a six-point scale (see table 4 below). As part of the triangulation technique, IEO may conduct a geospatial impact evaluation assessing the economic and environmental impact of the project. Utilising satellite imagery and geographic information systems, this approach will provide an independent validation of findings by cross-referencing conventional economic analysis with spatial data indicators such as nighttime light intensity, road density, and CO_2 emissions.

47. Based on the assessment and ratings of the composite sets of criteria mentioned above, the evaluation will form a qualitative and holistic performance judgement of "overall project achievement".[25]

48. Apart from determining the "overall project achievement", the evaluation will also assess and rate additional criteria. These are: (i) NDB performance; (ii) borrower performance; and (iii) performance from an equity perspective.[26]

Table 4 - Rating scale

#	Rating	Score descriptor
6	Highly Successful	Under the concerned criterion, the project achieved or surpassed all main targets, objectives, expectations, and results and could be considered as a model within its project typology.
5	Successful	Under the concerned criterion, the project achieved almost all (indicatively, over 80-95 per cent) of the main targets, objectives, expectations, and results.
4	Moderately Successful	Under the concerned criterion, the project achieved the majority (indicatively, 60 to 80 per cent) of the targets, objectives, expectations, and results. However, a significant part of this was not achieved.
3	Moderately Unsuccessful	Under the concerned criterion, the project did not achieve its main targets (indicatively, less than 60 per cent), objectives, expectations, and results.
2	Unsuccessful	Under the concerned criterion, the project achieved only a minority of its targets, objectives, expectations, and results.
1	Highly Unsuccessful	Under the concerned criterion, the project achieved almost none of its targets, objectives, expectations, and results.

D. Evaluation questions

49. The methodology has been customised as appropriate to a project evaluation of the transport sector within the Indian context. As part of this approach paper, key evaluation questions have been formulated for each evaluation criterion and will be the starting point for assessing project progress and results (see annex 2). Some of the key questions that will be applied are as follows:

- To what extent are the project's objectives relevant to national, provincial, and municipal priorities, and how well do they align with national and regional transport policies (such as the National Urban Transport Policy) and urban mobility strategies? Additionally, how well does the project align with and contribute to NDB's General Strategy for 2022-2026?

[25] It is important to note that while IEO will assess the impact and sustainability criteria, the decision to rate these criteria and include their ratings in the evaluation of the overall project achievement will be made following the IEO's field visit and discussions with key stakeholders.
[26] Please refer to annex I for definitions of NDB performance, borrower performance, and the equity criteria.

- Is the project design supported by an explicit theory of change? How flexible is the project design to accommodate future transport needs and demographic shifts with respect to anticipated population growth and urbanisation trends in the region?
- To what extent does the project's actual progress—across construction, procurement, and systems installation—align with planned targets? Have there been cost overruns? Additionally, have the appraisal targets for ridership demand, fare revenues, and modal shift from private vehicles been validated in the project's current operational section?
- To what extent did the financing partners coordinate in managing interdependencies across components—such as ensuring readiness of ADB/AIIB-funded civil infrastructure for NDB-funded rolling stock and systems—and in jointly supporting NCRTC's capacity to integrate and operationalise parallel investments?
- How well does the current operational model validate the likelihood of the project's long-term financial sustainability, given that the initial financial sustainability assessment was conducted using conservative assumptions?
- To what extent has the operational segment of the RRTS improved accessibility (schools, hospitals etc) and economic opportunities?
- What were the environmental impacts of the project during construction, such as deforestation, land use changes and what mitigation measures were implemented to address them?
- How does the rolling stock's energy efficiency and regenerative braking system contribute to reducing the project's overall carbon footprint? Were passenger comfort, safety, and accessibility aspects adequately incorporated into the rolling stock design to meet international benchmarks?
- How well does the signalling system and control centre support safe, automated, and high-frequency operations, in line with India's growing urban transport needs? To what extent have the signalling & train control systems been stress-tested for performance under degraded modes-such as power fluctuations, partial signature failure, or operation control centre (OCC) downtime? How are fallback protocols functioning in the operational segment?
- What potential does the project have for promoting green building practices and the use of renewable energy, such as rooftop solar in the context of multi-storied staff quarters and stations?
- How fairly have benefits—such as increased accessibility, employment, and TOD-related opportunities—been distributed across socio-economic groups, especially peri-urban and informal communities?

E. Evaluation team and process

50. The evaluation will be conducted under the overall leadership and oversight of Mr. Ashwani K. Muthoo, the Director General of IEO. Ms. Nidhi Chaudhary, IEO Evaluation Specialist will be the lead evaluator, and she will be supported by a team of experts, including Ms. Prajna Naidoo (Evaluation Analyst), Mr. Indranil Bose (Transportation Expert) and Ms. Preeti Prajapati (IEO Intern). IEO will have sole responsibility for the content and quality of the evaluation report and related outputs.

51. This will be a joint evaluation by IEO, in collaboration with ADB and AIIB, the project's other financiers. At its most integrated level, joint evaluations entail undertaking all activities jointly, such as producing a joint evaluation approach paper and joint final evaluation report, cost-sharing for hiring any consultant experts for the evaluation, jointly presenting the report to Boards and other stakeholders, and so on. While such an approach can promote methodological harmonisation and institutional coordination, it often comes with challenges, including differing institutional priorities, procedural complexities, and extended timelines.

52. In this case, the joint evaluation follows a more flexible model, with ADB and AIIB participating as peer reviewers rather than full co-producers of the evaluation. Their role includes reviewing the draft approach paper and draft evaluation report, while also extending to participation in key discussions. Although they are not involved in every stage of the evaluation process, their active contribution in shaping the evaluation methodology, providing substantive feedback on the approach paper and evaluation framework, and engaging in discussions on key findings ensures that the principles of joint evaluation—knowledge-sharing, methodological alignment, and cross-institutional learning—are embedded in this approach, making it a meaningful form of joint evaluation. This collaborative approach also strengthens the credibility of the evaluation findings and enhances the overall quality of the assessment.

53. The evaluation will comprise the following phases.

    (i) **Desk review**. IEO will conduct an initial literature review. The documents to be reviewed will include, inter-alia, the project design document, loan agreement and its amendments, the project progress reports, project performance assessment reports, and supervision reports, and any other relevant documents made available by NDB, ADB, AIIB, the borrower, and the implementation agency. The team will also review policy documents and plans of the Government of India, the Government of Uttar Pradesh and NCRTC's expansion strategy.

    (ii) **Approach paper**. Based on the desk review as well as the information and feedback shared by AIIB and ADB, IEO has prepared this draft approach paper, which will be shared with key stakeholders for their feedback. The final version will incorporate their inputs and be completed ahead of the main mission, ensuring all key partners have the opportunity to contribute their valuable insights.

(iii) **Main mission**. The main mission will be conducted from 19-27 May 2025. The purpose of the mission is to engage with key stakeholders to further clarify the timing, purpose, and scope of the evaluation, gather insights on project highlights, emerging results and implementation challenges, collect relevant additional data and documentation, and observe on-the-ground progress through site visits to assess how project components are translating into tangible outcomes.

(iv) **Interim reporting.** Before drafting the evaluation report, IEO will prepare an interim report (3-5 pages) which includes initial findings of the project evaluation. This report will be shared with ADB, AIIB, NDB Management, NCRTC and other in-country key stakeholders to solicit feedback and clarify any technical or contextual aspects. This step is critical to ensure that findings are well understood, grounded in operational realities, and aligned with stakeholder's perspectives. By incorporating this early round of engagement, IEO aims to strengthen the relevance and clarity of the final report and lay a solid foundation for the effective update of lessons and recommendations.

(v) **Drafting of the evaluation report**. Building on the desk review, fieldwork and feedback on the interim report, IEO will draft the main evaluation report. The draft will be shared with ADB, AIIB, NDB Management and in-country partners concerned for comments. The report will be finalised considering the comments received. An audit trail will be produced illustrating how the comments received have been incorporated by IEO in the final report.

(vi) **NDB Management Response.** Based on the final evaluation report, NDB will prepare a written Management Response, which will be included in the final report at the time of its publication.

(vii) **Knowledge sharing and outreach.**[27] The final evaluation report inclusive of NDB Management Response will be published on the IEO webpages and disseminated to key audiences using diverse communication instruments. Evaluation findings will also be shared through relevant social media and communication instruments. An Evaluation Lens[28] and Infographic will be prepared and disseminated. The dissemination of the main evaluation report will be done in line with the provisions of the Evaluation Policy and Evaluation Strategy, approved by the Board.

[27] To strengthen utilisation and institutional learning, IEO is also supporting the development of an action plan for the effective update of lessons and recommendations from IEO evaluations, which should be formalised soon.

[28] A two-page reader-friendly brochure containing a summary of the evaluation findings and recommendations.

F. Evaluation timeline

54. The following table captures the specific deliverables of the evaluation, along with a corresponding timeline.

Table 5. Provisional timeline

Deliverable	Timeline
Draft Approach Paper shared with key partners	April 12
Approach Paper finalised	May 9
Main evaluation mission to India	May 19-27
Interim report of initial findings shared with key stakeholders	June
Feedback received on interim report	July
Draft evaluation report shared with key stakeholders and external peer reviewers (AIIB, ADB) for comments	August
Report finalised and shared with NDB Management	September
Preparation of NDB Management Response	September/October
Report published	November

Annex 1. Evaluation criteria definition

Criteria	Definition
Relevance	The assessment of relevance will examine the extent to which: (i) the objectives of the project are consistent with beneficiaries' requirements, country needs, institutional priorities and partner and donor policies; (ii) the design of the project is consistent with the objectives; and (iii) the project design has been (re-) adapted to address changes in the context. Finally, under relevance, an assessment will also be made of the compatibility of the intervention with other interventions in a country, sector or institution.
Effectiveness	The extent to which the project achieved, or is expected to achieve, its objectives and results at the time of the evaluation, including any differential results across groups. The analysis of effectiveness involves taking account of the relative importance of the objectives or results.
Efficiency	Focuses on how well resources are used. In particular, the assessment of efficiency will examine the extent to which the project delivers, or is likely to deliver, results in an economic and timely manner.
Impact	The extent to which the project has generated, or is expected to generate, significant positive or negative, intended or unintended, higher-level effects.
Sustainability	Assesses whether project benefits will last or are expected to last after completion. More specifically, sustainability is about whether the net benefits of the project will continue or are likely to continue.
Equity	Includes an assessment of how well the project promotes inclusive growth and ensures equitable access to the needs of vulnerable and marginalised groups.
NDB and borrower performance	This criterion assesses the contribution of partners to project design, execution, monitoring and reporting, supervision and implementation support, and evaluation. The performance of each partner will be assessed on an individual basis with a view to the partner's expected role and responsibility in the project life cycle.

Annex 2. Evaluation framework

Evaluation criteria	Evaluation questions	Sources
Relevance	• To what extent are the project's objectives aligned with the national, provincial, and municipal development priorities? How relevant is the project to Delhi NCR and local community needs? • To what extent does the project align with national and regional transport policies (such as the National Urban Transport Policy, National Mission on Sustainable Habitat) and urban mobility strategies? To what extent is the project aligned with NDB's policies and NDB's General Strategy? • To what extent does the project contribute to the United Nations' Sustainable Development Goals? • Has the project maintained its relevance despite funding modifications and loan restructuring? • Did the design of the inputs, outputs, outcomes of the project follow the logical results chain to achieve the project objectives? • Was the project design relevant to best practices appropriate for regional rapid transit systems? What kind of technical innovation does the project bring to the sector? • Is the project design flexible enough to accommodate future transport needs and demographic shifts with respect to anticipated population growth and urbanisation trends in the region? • To what extent does the selection of rolling stock (speed, capacity, design, energy efficiency) align with India's future demand projections and technical standards? • What potential does the project have for promoting green building practices and the use of renewable energy, such as rooftop solar in the context of multi-storied staff quarters and stations? • How well does the signalling system and control centre support safe, automated, and high-frequency operations, in line with India's growing urban transport needs? To what extent have the signalling & train control systems been stress-tested for performance under degraded modes-such as power fluctuations, partial signature failure, or OCC downtime? How are fallback protocols functioning in the operational segment? • How well does the station infrastructure align with the transit-oriented development (TOD) guidelines under India's urban planning strategy?	• National and state policies and plans. • Interviews with government officials and borrower. • Review of project document to the Board. • Review of projects' feasibility report. • NDB General Strategy for 2022–2026 • Interviews with NDB staff and Management. • Project documents provided by NCRTC. • Station area development plans, TOD zoning, land use maps, urban integration frameworks.
Effectiveness	• What percentage of the corridor is fully operational, and how does it compare with the timeline? • To what extent has the operational segment of the RRTS achieved its key outcome targets- increasing ridership, reducing travel time, cutting vehicular emissions, and enhancing travel comfort and safety? • How effectively has the rolling delivered on intended service quality parameters, such as train speed, energy efficiency, passenger capacity, and comfort levels?	• NCRTC data on key outputs and outcomes. • Physical inspections, review project implementation reports and interviews with relevant

Evaluation criteria	Evaluation questions	Sources
	• How effectively has the signalling system delivered on intended service quality parameters, such as train scheduling, safety, and high-frequency service? • Has the modal shift from private vehicles to RRTS been realised in the operational sections, and is there early evidence of reduced road congestion? • To what extent has the project contributed to improved multimodal connectivity and commuter satisfaction in the currently operational sections of the RRTS? • What innovative technologies have been applied in this project to improve project delivery? • Was land acquisition and resettlement as minimal as anticipated at appraisal? Was there any loss of livelihood as part of the resettlement plans? • To what extent did the project have an impact on the environment due to tree felling, noise and vibration, dust and air pollution during construction, disruption of water bodies and drainage patterns, and waste generation? • Based on current progress and challenges, what key adjustments are needed to ensure the project fully delivers on its intended outcomes once the entire corridor is operational? • To what extent has the DGM RRTS project catalysed or supported Transit-Oriented Development (TOD) in the operational segment of the corridor?	staff and key stakeholders. • Discussions with commuters & local community. • Data from transport department – vehicular traffic. • Review of project managers initial outcome estimations for the operation segment. • Documents on multi-modal planning, GIS-based access and connectivity, discussions with other inter-modal transport network managers. • Review of the ESIA report by NCRTC.
Efficiency	• What is the project's economic internal rate of return (EIRR) based on the current level of completion? • Are there any cost overruns? What are the primary reasons for cost overruns in project execution, and how do they compare with industry benchmarks? • What impact have inflation, foreign exchange fluctuations, and global supply chain disruptions had on investment efficiency, particularly for imported components? • Were the cost-benefit assumptions made at appraisal regarding ridership demand, fare revenues, and modal shift from private vehicles validated in the operational section? • Has the project suffered any operational challenges or technical failures during implementation? • To what extent is the project being implemented within timelines estimated at design? What were the key causes of project delays, and how were they addressed? • Did the project consistently meet the loan and financial covenants as set out in the loan agreements and the appraisal document? • Was the loan amount disbursed according to the conditions in the loan agreement? • Were there any necessary amendments to the loan agreements due to project changes, and if so, how efficiently were these amendments executed?	• Cost-benefit analysis/ documents on economic and financial analysis. • Physical and financial progress reports by NDB/ADB/NCRTC. • Operational data from NCRTC- ridership trends, incident logs, revenue statistics. • Documents on multi-modal planning, GIS-based access and connectivity. • Onsite inspections and interviews with NCRTC, NDB staff, and other transport agencies.

Evaluation criteria	Evaluation questions	Sources
	• What are the efficiency implications of integrating the RRTS with existing transport networks (Delhi Metro, buses, etc.)? • Assess the efficiency of NCRTC's data management systems in facilitating seamless information exchange across different government and transport agencies.	• Review of financial documents, audit reports. • Review of loan agreement. • Data Governance Quality Index (DGQI) Methodology Toolkit by Niti Aayog's DMEO.
Sustainability	• How well does the operational segment perform in terms of cost recovery, considering farebox revenue and operating costs? What does this indicate about the financial sustainability of the full corridor? • What mechanisms for revenue generation through Transit-Oriented Development (TOD) and value capture financing have been initiated in the operational corridor? To what extent are these efforts progressing, and how sustainable and reliable are they as long-term funding sources for corridor-wide operations? • Does NCRTC demonstrate the institutional capacity—staffing, technical systems, financial management—to operate and maintain the current segment efficiently? How likely is this capacity to scale as the full system becomes operational? • Is there evidence that the project has embedded systems for learning and adjustment—such as feedback loops from operations, staff training, or planning updates based on early experience? • What contingency plans and systems are in place to handle service disruptions in the operational segment? Are these scalable across the rest of the corridor? • Are systems in place for sustained low-carbon operations, including energy sourcing, resilience to climate stress, and future-proofing of infrastructure? • Is there a long-term strategy for expanding services/integrating with future transit projects in the NCR? • Do affordability, accessibility, and inclusion mechanisms ensure long-term equitable usage, especially for lower-income and vulnerable groups? • Are contingency and emergency systems tested, resourced, and ready to handle sustained safe operations and crises? • Examine the resilience of data infrastructure—whether data collection and monitoring processes are adaptable to future advancements in technology and policy changes.	• Discussion with NCRTC staff, Ministry of Housing and Urban Affairs. • Discussion with social protection experts. • Discussion with E&S Environmental and Social (E&S) experts. • Review of project design reports and projections. • Cost benefit analysis, financial internal rate of return and WACC review, if available. • Discussions with local communities members. • Review of NDB E&S procedures. Discussions with E&S staff and consultants. • Data Governance Quality Index (DGQI) Methodology Toolkit by Niti Aayog's DMEO.
Impact	• How has the operational segment of the RRTS contributed to improved accessibility and economic opportunities for local populations, particularly in peri-urban areas? • What are early indicators of improved living standards/poverty reduction near the operational corridor?	• Review of baseline data. • GIS analysis of station catchment areas and population

Evaluation criteria	Evaluation questions	Sources
	• How effectively has the project influenced employment generation, including the number of temporary vs. permanent jobs created during construction and operation? • What are the estimated reductions in vehicular carbon emissions due to the operational RRTS segment, and what are the projections for full completion? • What has been the environmental impact of project-related activities, including deforestation, land use changes, shadow pillar near residential areas, and noise pollution and what mitigation measures have been implemented? • How have affected communities been compensated/rehabilitated and has the compensation mechanism been adequate or were there significant discrepancies between planned and actual compensation? • How have changes in land use influenced urban planning and spatial equity? • Has the project facilitated knowledge transfer, capacity building, or technological innovation within India's rail-based urban transit sector? • What unintended positive or negative effects have emerged from the operational corridor, including increased congestion near stations or displacement of informal transit services? • How does the project's fare policy impact affordability, particularly for lower-income groups, and does it encourage equitable access to mobility? • Determine whether the project's data systems enhance India's institutional capacity for large-scale infrastructure governance beyond RRTS.	density. • Interviews with local businesses and commuters • Focus group discussions with low-income or resettled households. • NCRTC E&S reports. • NSSO/local data. • Interview with relevant government officials. • GIS overlay of land use patterns (pre/post) • Interview with social protection experts. • Travel pattern analysis by NCRTC- operational segment. • Interview with E&S sector experts. • Data Governance Quality Index (DGQI) Methodology Toolkit by Niti Aayog's DMEO.
Equity	• How has the project contributed to local economic development and poverty alleviation, particularly in areas directly served by the operational section of the RRTS? • How fairly have benefits—such as increased accessibility, employment, and TOD-related opportunities in the operational segment—been distributed across socio-economic groups, especially peri-urban and informal communities? Did they offer decent work conditions, including for women and informal workers? • To what extent have fare structures or subsidy mechanisms addressed affordability constraints for low-income commuters, students, elderly, and other vulnerable populations? • How equitably were affected communities treated during land acquisition and displacement processes, and were compensation and rehabilitation mechanisms adequate and inclusive across social groups?	• GIS methodology to measure economic activity using nighttime light, and built-up area - operational RRTS. • NCRTC documents on accessibility, employment. • Focus group discussions with vulnerable groups, marginalised communities. • Project feasibility report.

Evaluation criteria	Evaluation questions	Sources
	• To what extent were stakeholder consultations inclusive and responsive to the concerns of vulnerable and affected groups, including women-headed households, informal workers, and resettled communities? • What steps were taken by NCRTC and the borrower to help local communities—particularly the most vulnerable—adapt to livelihood, mobility, or spatial changes resulting from the project? • Were station locations and access infrastructure (e.g., feeder systems, last-mile connectivity) designed and implemented in a way that promotes equitable access across peripheral, informal, and lower-income neighbourhoods? • How did the project contribute to social inclusion by improving access to education, healthcare, and employment opportunities through enhanced connectivity? • What is the potential for the project to continue to benefit local communities in the long term, particularly in terms of job creation, improved mobility, and access to services?	• Fare/ticketing data- NCRTC. • Field visits and station designs. • Data on App downloads - NCRTC. • Latest national statistical surveys. • Data from Origin-Destination survey by NCRTC. • Discussion with DMEO. • Discussions with NCRTC.
NDB performance	• How adequate was NDB's support during the preparation stage, including the soundness of the project document and the loan agreement? • How well did NDB facilitate the signing of the loan agreement and the timely effectiveness of the loan? • To what extent did NDB provide quality and timely support to the borrower and executing agencies, including guidance on anticorruption measures, safeguards, and project compliance during implementation? • How effective were NDB's supervision efforts during project implementation, including the quality and frequency of review missions, inception missions, and mid-term reviews? • How did NDB maintain collaborative relationships with the borrower, other financiers and stakeholders to ensure the project's success and ensure the achievement of the project's objectives? • To what extent did NDB's team exhibit continuity during the project lifecycle, and was there adequate expertise available for project supervision and oversight? • Did NDB contribute to enhancing the capacity of the executing agency by facilitating the resolution of technical, financial, and operational issues during project implementation? • How well did NDB manage the coordination and reporting requirements between itself and the cofinanciers, ensuring efficiency in fund disbursements, compliance, and monitoring? • Was there any delay in project initiation or implementation due to NDB's internal processes or oversight, and how did NDB mitigate such delays? • Did NDB's interventions contribute to the adoption of innovative practices in project design, management, or implementation?	• Review of project appraisal document, loan agreement. • Disbursement data by NDB. • Interviews with NDB staff and NCRTC officials. • Review of results framework, progress reports, and effectiveness of KPIs. • Review all related project documents.

Evaluation criteria	Evaluation questions	Sources
Borrower performance	• How did the borrower (Government of India) and executing agency (NCRTC) demonstrate ownership and commitment to the project, particularly in terms of project preparation and ensuring loan effectiveness? • What was the level of support provided by high-level government and NCRTC leadership for the successful implementation of the project, including in the face of challenges such as land acquisition or regulatory delays? • How effectively did NCRTC ensure that the project activities were implemented according to plan, including adherence to the scope, budget, and schedule? • How well did NCRTC and the borrower comply with loan covenants, safeguard requirements, and fiduciary obligations throughout the project cycle? • What role did the executing agency play in engaging with stakeholders (local communities, contractors, other government agencies) to ensure their support and participation in the project? • How timely and adequate was the provision of counterpart funding by the borrower, and were there any financial challenges that impacted project execution? • To what extent did NCRTC manage and coordinate the involvement of various agencies and contractors, ensuring seamless execution across different project components (e.g. stations, rolling stock, signalling systems)? • What steps did NCRTC take to ensure long-term project sustainability, including securing adequate O&M resources and institutional capacity? • How well did NCRTC address and resolve any issues related to resettlement, compensation, or other social impacts during implementation? • How has the borrower (Government of India) and NCRTC ensured the continuation of momentum and focus on the project despite any internal challenges or external changes (e.g., political shifts, funding delays)?	• Interviews with NDB staff and NCRTC officials. • Review of results framework, progress reports, and effectiveness of KPIs. • Review all related project documents.

Annex 3. Evaluation report outline

Acknowledgement	**1 page**
Preface by DG IEO	**1 page**
List of Acronyms	**1 page**
Executive Summary	**3-4 pages**
Management Response	**2-3 pages**
Background	
● Country Context	2 pages
● Sector, project, and local Context	2 pages
● Government/ local initiatives for infrastructure development	1 page
Project Background	
● Project objectives	1/2 page
● Project design and components	1 page
● Project cost and financing	
● Implementation arrangements	2 pages
● Implementation progress	1 page
Evaluation objectives, methodology and process	
● Objectives	1/2 page
● Methodology, questions, and rating system	2-3 pages
● Limitations	1 page
● Evaluation process	1 page
Evaluation findings	10 pages
● Relevance	
● Effectiveness	
● Efficiency	
● Impact	
● Sustainability	
● Overall project achievement	
Other assessment criteria	4-5 pages
● NDB and borrower performance	
● Equity	
Conclusions and recommendations	
● Conclusions	2 pages
● Recommendations	1-2 pages
Annexes	

Annex 4. Project design and monitoring framework

Design summary	Performance targets/indicators	Reporting mechanism
Impact: Enhancing the overall productivity of NCR leading to greater economic activity and a more balanced economic development of the region		
Outcomes	**By 2028:**	
(1) Passenger ridership increased	Average daily passenger ridership of 740,000. (Baseline: zero in 2020)	Post-implementation monitoring survey by NCRTC.
(2) Travel time reduced	Reduction in average travel time to 1 hour (Baseline: 3 to 4 hours by road in 2020)	
(3) Vehicular emissions reduced	258,035 tonnes of CO_2 reduced annually (Baseline: zero in 2020)	
(4) Travel comfort and safety for passengers enhanced	At least 70% of surveyed commuters have positive perceptions of the RRTS in terms of affordability, safety, reliability, connectivity and comfort.	
Outputs	**By 2027:**	
Delhi-Ghaziabad-Meerut Regional Rapid Transit System constructed	Construction of 82.15 km long rapid rail corridor with rail track with support structure (elevated and underground), 25 stations and two maintenance depots, overhead electrification, signalling, train control and telecommunication systems and rolling stock.	Project progress reports and a project completion report by NCRTC.
Activities with milestones		**Inputs**
(a) Invitation of tenders for all NDB packages by Q1-2021 (b) Award of contract for all NDB packages by Q4-2021 (c) Completion of NDB-funded civil works packages by Q4-2025 (d) Supply and installation of system components and rolling stock by Q1-2026 (e) Project Commissioning by Q3-2027		• NDB Loan: USD 500 million. • ADB Loan: USD 1,049 million. • AIIB Loan: 500 million. • JFPR Grant: USD 3 million. • Counterpart funds from government and other funding sources: USD 1,707 million

Annex 5. Project risk analysis and mitigation measures

Risk	Mitigating Measures
Implementation (Medium)	**Design:** The broad technical parameters of the project have been finalised in consultation with Ministry of Railways. Detailed design consultants have been mobilised to support NCRTC for finalising designs of various project components. The general consultant will be responsible for proof-checking the designs which will be approved by NCRTC. **Project delays and cost overruns**: Though the project has been well prepared and significant provision has been made for contingencies, given the scale of the project and the unforeseen impacts of the COVID-19 outbreak, there is a possibility of cost and time overruns. Cost overruns, if any, shall be borne by NCRTC, Government of National Capital Territory of Delhi and Government of Uttar Pradesh. NCRTC is making use of latest technology tools to achieve optimisation in planning, efficiencies in execution, and effectiveness in monitoring and governance.
Procurement (Low)	**Procurement and contract management**: The complexity of procurement activities is high given the nature of the project. However, the staff responsible for procurement at NCRTC have been trained in carrying out procurement as per the requirements of multilateral funding agencies. As a result, NCRTC has developed the capacity to manage procurement activities for MDB-funded projects.
Operational (Medium)	**Operations and maintenance (O&M):** NCRTC intends to outsource major O&M activities in order to utilise the expertise and efficiency of private sector. The rolling stock supply contract includes 15 years of comprehensive maintenance. In case there is a shortfall in revenues to meet O&M costs and NCRTC is unable to fund the shortfall, it will be borne by Government of National Capital Territory of Delhi and Government of Uttar Pradesh.
Market and Financial (Medium)	**Financial and economic viability:** Capital-intensive projects, such as the RRTS are implemented as public services and full cost recovery may not be feasible. The financial viability of the project is dependent on the successful use of innovative financing instruments such as land value capture and transit oriented development. Shortfall in debt service, if any, shall be borne by the Government of National Capital Territory of Delhi and Government of Uttar Pradesh.
Environmental and Social (E&S) (Medium)	**E&S risks**: Medium E&S risks result from the requirement of prior regulatory approvals, such as forest clearance, tree felling permissions, impacts on communities alongside the route passing through densely populated urban areas. Mitigation measures have been provided in the environmental impact assessment (EIA) report to minimise the impacts and are in line with the country systems and NDB's environmental and social standard (ESS-1) requirements. NCRTC will ensure effective implementation of specific management plans and permit conditions and provide periodic progress update as defined in the environmental and social impact management plan (ESIMP). **Land acquisition and resettlement:** The private land acquisition requirement is about 139 hectares. The physical and economic settlement is significant. The land acquisition is planned through negotiated settlements as per the state/union territory policies for private land acquisition. Resettlement will be carried out as per the resettlement plan prepared for the project, taking into consideration the country systems and ADB's safeguard requirements. The resettlement plan is in line with the specific requirements of NDB's ESS-2. NCRTC will ensure implementation of the resettlement plan and provide periodic progress update as defined in the ESIMP. **Occupational health and safety:** Safety, health and environment (SHE) plans will be prepared by contractors as per NCRTC's requirements for SHE and will be reviewed and approved by GC and NCRTC. Contractors will be responsible for the implementation of SHE plans, whereas GC and PMOs will be responsible for supervision and monitoring.

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Section A - NDB's Policies, Guidelines and General Strategies

- New Development Bank Policy on Partnerships with National Development Banks, December 2015
- New Development Bank Policy on Loans without Sovereign Guarantee to National Financial Intermediaries, January 2016
- New Development Bank Environment and Social Framework, March 2016
- NDB Project Implementation Guidelines, April 2018
- New Development Bank General Strategy for 2022-2026: Scaling Up Development Finance for a Sustainable Future, May 2019
- New Development Bank General Strategy for 2022 – 2026, July 2022
- New Development Bank Evaluation Policy - August 2022
- New Development Bank Evaluation Strategy 2024-2026, November 2023

Section B - Project Documents

- Project Document to the Board for Delhi- Ghaziabad-Meerut Regional Rapid Transit System, July 30, 2020.
- Concept Note, Delhi-Ghaziabad-Meerut Regional Rapid Rail Transit System (RRTS) Project, June 12, 2020.
- Loan Agreement, Delhi-Ghaziabad-Meerut Regional Rapid Rail Transit System (RRTS) Project, by and between the Republic of India and NDB, November 19, 2020.
- Project Agreement, Delhi-Ghaziabad-Meerut Regional Rapid Rail Transit System (RRTS) Project amongst Ministry of Housing and Urban Affairs, Government of India and NCRTC and NDB, 19 November 2020.
- Aide Memoire Delhi-Ghaziabad-Meerut Regional Rapid Rail Transit System (RRTS) Project Fact Finding Mission, July 13 - 17, 2020.
- Aide Memoire for Regular Project Review Mission for Delhi-Ghaziabad-Meerut Regional Rapid Rail Transit System (RRTS) Project, March 07-09, 2022.
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