



New
Development
Bank

Evaluation Knowledge Sharing Seminar

Luoyang Metro Project: The first evaluation of an NDB-Financed Project in China

Independent Evaluation Office

1 February 2024

Beijing, China

Country and Local Context

Rapid urbanization has transformed the urban landscape in China with a growth in population from 20% in 1980 to 64% in 2022

Growth of an integrated transport sector has become critical to meet the needs of urban commuters in China

Currently, 80% of the world's urban rail projects under planning and implementation are in China

The project was for a Metro in Luoyang - a city with a long history and rich culture - transformed with rapid industrialization and urbanization

Project Data



Borrower: The People's Republic of China
中华人民共和国

Project Entity : The People's Government
of Henan Province (GOH)

河南省人民政府

Project Implementation Agency : Luoyang
Rail Transportation Co., Ltd. (LRTC)

洛阳轨道交通有限公司

Approval date: July 20, 2018

贷款批准日: 2018年7月20日

Loan signing date: August 16, 2018

贷款协议签署日期: 2018年8月16日

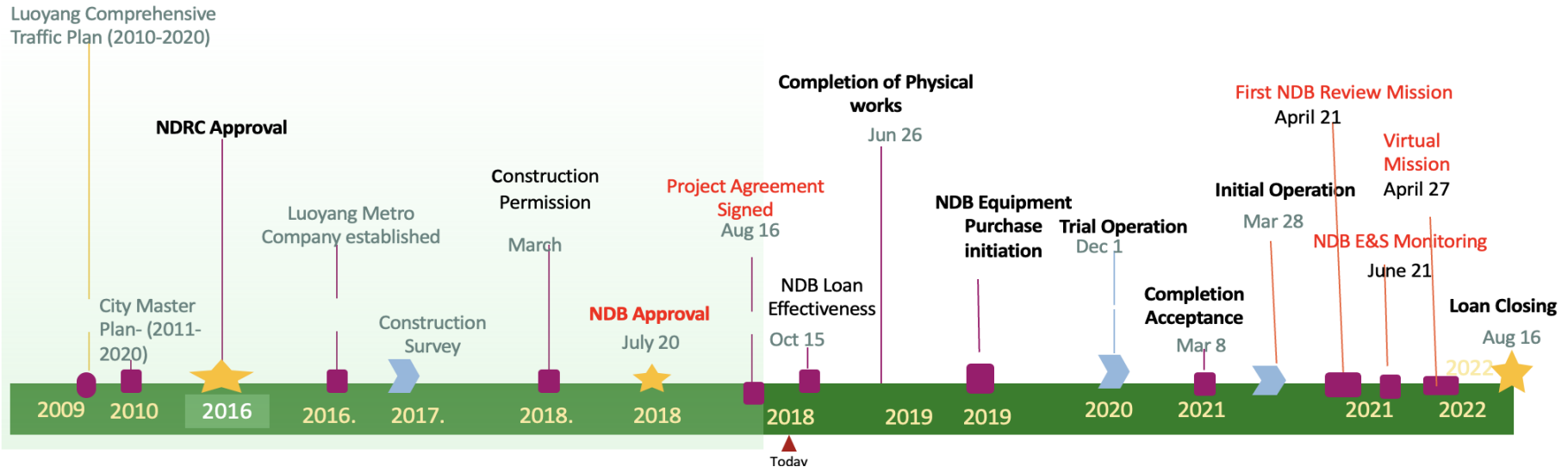
Project expected completion date: December 31, 2021

项目预计竣工日期: 2021年12月31日

Actual project completion date: March 18, 2021

项目实际竣工日期: 2021年3月18日

Luoyang Metro Project Key Milestones



Project Cost & Financing

项目总投资和融资方案

Project cost 总投资 : US\$ 2,775.7 million

NDB financing 新开发银行贷款 : US\$ 300 million

Commercial Banks 商业银行 : US\$ 1,311 million

People's Government of Luoyang 洛阳市政府 : US\$ 1,164 million

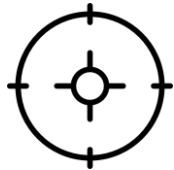


Evaluation Objective and Scope



Objectives

To assess the results and impact of the project and generate lessons and recommendations for the way forward.



Scope

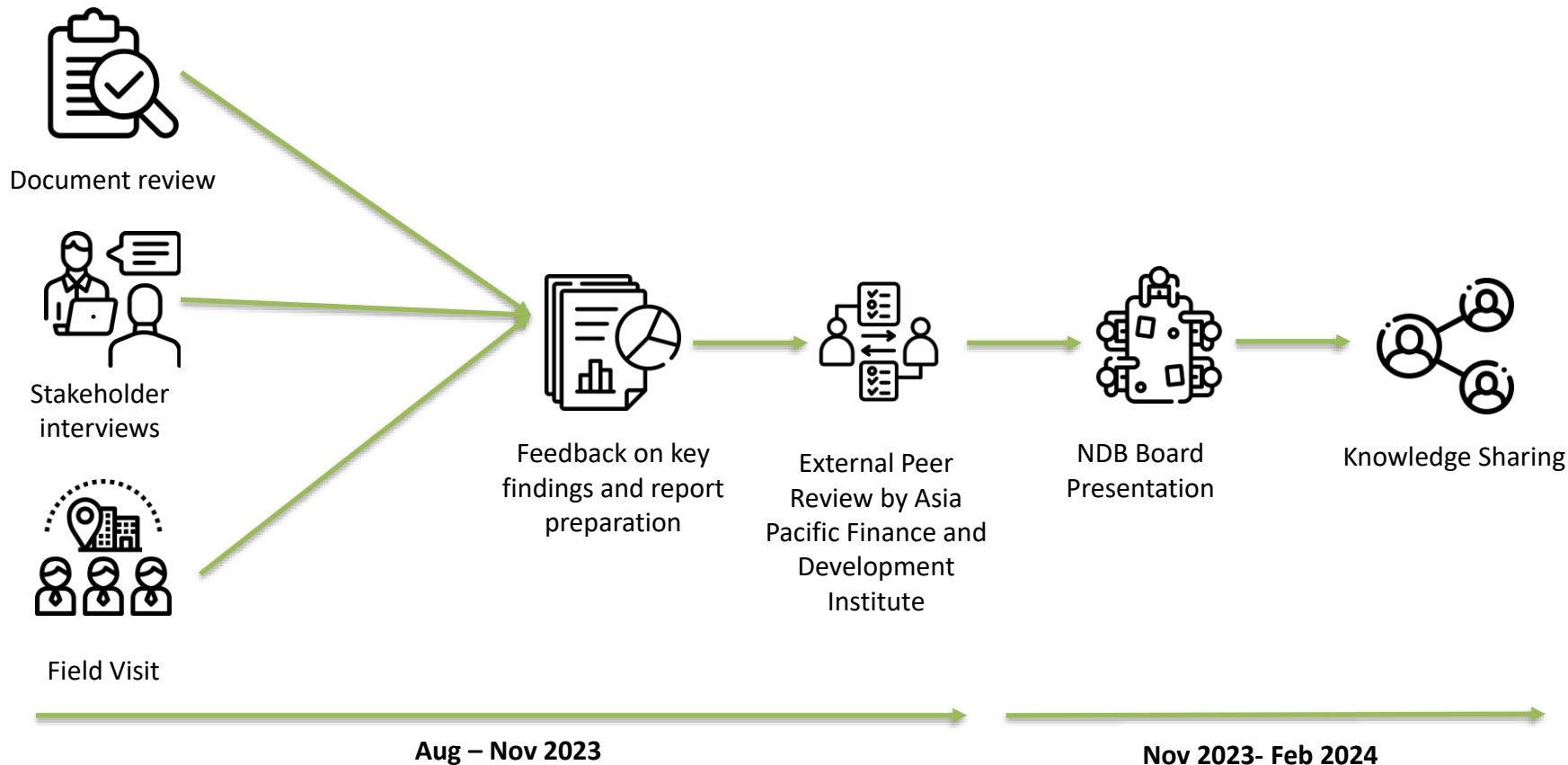
The project was reviewed as a whole including all aspects of metro Line 1 with a focus on NDB financing. The evaluation examined not just the physical infrastructure and technical aspects of the project but also institutional, personnel management, financial, social and environmental safeguards, the use of innovation, digital technology, energy efficiency and sustainability.

Evaluation Methodology

- Use of internationally recognized evaluation criteria (*relevance, effectiveness, efficiency, impact and sustainability*), and NDB and Borrower Performance
- Use of *six point rating scale* to assess performance by criterion
- Use of *mix methods* - qualitative and quantitative for data collection and analysis
- Use of *triangulation techniques* to generate findings and assign ratings

Criteria	Ratings
Highly successful	6
Successful	5
Moderately successful	4
Moderately unsuccessful	3
Unsuccessful	2
Highly unsuccessful	1

Evaluation Process



Objectives 目标

Create a sustainable integrated urban transport system in Luoyang city in Henan Province

在河南省洛阳市建立一个可持续的城市综合交通系统

Components 内容

Component 1: Construction of Line 1 (construction of stations and boring of tunnels)
(子项目1: 1号线施工建设含车站和隧道工程)

Component 2: Equipment for Line 1 (purchase and installation of equipment such as train sets, power lines, signaling, communication, fare collection, etc.)
(子项目2: 1号线地铁列车、电力、信号、通信和票务等系统设备采购和安装)

Component 3: Design, construction management and technical assistance (consultancy for project documents, reports, approvals, staff and management training, and research)
(子项目3: 设计、施工管理和技术支持等)

Implementation 执行

Luoyang Urban Rail Construction Command Office: strategic leadership, policy guidance, institutional coordination

洛阳市轨道建设指挥部: 总体领导、政策指导、制度协调

Project implementing agency:
Luoyang Rail Transportation Co., Ltd. (LRTC)

项目执行机构: 洛阳轨道交通有限公司

Luoyang Metro Line



Evaluation Findings Areas of Strength



Strong
commitment of
the Government
at all levels
各级政府坚定的
承诺

Supportive eco-system
for the investment
支持项目成功的良好
生态系统



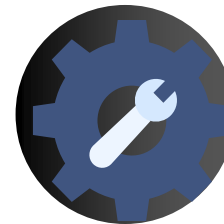
Attention to social
and environmental
safeguards
对社会和环境等社
会保障机制的关注

Proactive approach to
build the institutional &
physical infrastructure
提前谋定的机构能力
和基础设施设施建设

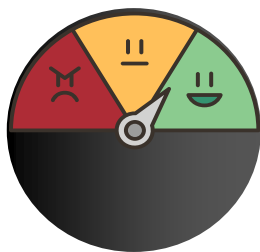


Personnel
recruitment, training,
management and
retention
支撑建设和运营的人
才制度，即人员招聘、
培训、管理和稳定的
团队

Strong operation
and maintenance
systems
强有力的运行维
护体系



Evaluation Findings Areas of Strength



Project completed
within time and budget
在预算和计划时间内
建成了质量优秀的地
铁项目



High degree of
customer satisfaction
赢得了非常高的客户
满意度



Strong focus on
innovation and
energy efficiency
高度致力于创新和
能效

Key Metrics on Energy Efficiency, Cost Savings and Reduction in CO₂

	Reduction in Energy Consumption (kWh)	Operation Cost Savings (CNY)/year	Reduction in Carbon emissions (tons)
Convertible Ventilation Conservation Module (可开启通风转换通风装置)	732,000	410,000	418
LEV-DER Module Pilot in LML 1 (1号线试点磁悬浮直膨压缩机)	240,000	156,000	137
Magnetic Levitation Compressor + Terminal Water-cooled Direct-expansion Refrigeration (LEV-DER) Technology (磁悬浮压缩机+末端水冷直膨式制冷机)	1.17mn	657,440	670
Efficiency of Operations Stations of Luoyang Metro (LMRC的总节能)	5.1123mn	2.863mn	29,155

Evaluation Findings

Areas of Further Development

The Project has an average daily ridership of 93,000 passengers from January to August in 2023
日均客流量达9.3万人

The three-year Passenger Cultivation Period
客流预测的3年客流培育期

The financial sustainability of the project
公益性项目的财务可持续性

A comprehensive M&E system
全面监测和评价系统

Need for greater attention to documenting and Sharing Lessons & Good Practices
需要更加重视文本质量、分享知识和经验



Evaluation Ratings of the Project

The overall project achievement is *Successful*

Criterion	IEO Ratings	
Relevance 相关	Successful 成功	5
Effectiveness 效果	Successful 成功	5
Efficiency 效率	Highly successful 非常成功	6
Impact 影响	Highly successful 非常成功	6
Sustainability 可持续	Successful 成功	5
Overall project achievement 项目整体评价	Successful 成功	5
NDB performance 对新开发银行团队的评价	Moderately successful 基本成功	4
Borrower performance 对借款方团队的评价	Highly Successful 非常成功	6

Key Conclusions

The story of the LML1 Project is one of significant success
洛阳地铁1号线是一个重大的成功项目

A mammoth institutional and operational structure was created from scratch to ensure the safe and efficient management of the system
从零开始，建立了一支确保安全、高效的地铁建设和运营团队

Introduced very compassionate principles of customer care, resettlement and compensation
引入富有同情心的乘客关怀，安置和补偿原则



Construction of a state-of-the-art metro line in record time
在创纪录短的时间内建设了一条先进地铁线路

LRTC has incorporated energy efficiency and technical innovations
洛阳地铁将技术创新融合于能源高效率的行动

The first metro line to include facilities for nursing mothers
首条提供哺乳期母亲哺乳设施的地铁线

Key Conclusions

Spearheaded the development of a range of information technology products

率先开发了一系列信息技术产品

The project success owes much to the high degree of technical and institutional support

项目的成功在很大程度上归功于技术和体制的大力支持

The LML1 also showcases how effective coordination and collaboration can yield dividends

项目还展示了有效的协调与合作是如何产生红利



The experience of the LML1 project demonstrates that a strong supportive ecosystem is vital to the success of a project
该项目的经验表明，一个强大的支持性生态系统对项目的成功至关重要

Financial Feasibility
Monitoring and evaluation
Supervision processes,
knowledge management

Key Recommendations



**Strengthening project
evaluability**
增强项目的可评价性



**A Sharper Focus on Green
and Climate-resilient
Technologies and Innovations**
更清晰地聚焦绿色和抵御气
候变化的技术与创新



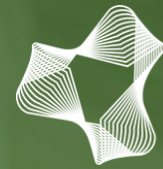
**Strengthening the
value additions of the
Bank at project design**
加强新开发银行
在项目设计中的增加附加值的
作用



**Improving project
implementation support
and supervision**
改进项目实施中支持和督
导



**Developing knowledge products
based on projects to facilitate
scaling up**
开发基于项目的知识产品，推
进知识的分享和规模化利用



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Thank you!