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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT
ON A
PROPOSED LOAN

IN THE AMOUNT OF US$223,996,591

TO THE

REPUBLIC OF INDONESIA

FOR AN

INDONESIA MASS TRANSIT PROJECT

April 29, 2022

Transport Global Practice
East Asia And Pacific Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective March 31, 2022)

Currency Unit = Indonesia Rupiah
IDR 14,370 = US$1

FISCAL YEAR
January 1 - December 31

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ABBREVIATIONS AND ACRONYMS

BAPPENAS	*Badan Perencanaan Pembangunan Nasional* (Ministry of National Development Planning/National Planning Development Agency)
AFD	Agence Francaise De Developpement
BBMA	Bandung Basin Metropolitan Area
BI	Bank Indonesia
BPK	*Badan Pemeriksa Keuangan* (The Audit Board of The Republic of Indonesia)
BRT	Bus Rapid Transit
CMMIA	Coordinating Ministry of Maritime and Investment Affairs
CO2	Carbon Dioxide
CPF	Country Partnership Framework
DED	Detailed engineering design
DGLT	Directorate General of Land Transportation
E&S	Environmental & Social
ESF	Environmental & Social Framework
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESRS	Environmental and Social Review Summary
EV	Electric Vehicle
FGD	Focus Group Discussion
FMA	Financial Management Assessment
GBV	Gender-Based Violence
GDP	Gross Domestic Product
GESI	Gender equality and social inclusion
GHG	Greenhouse Gas
GoI	Government of Indonesia
GRS	Grievance Redress Service
IBRD	International Bank for Reconstruction and Development
IDR	Indonesian Rupiah
IFR	Interim Financial Report
IMTP	Indonesia Mass Transit Program
IFC	International Finance Corporation
IPF	Investment Project Financing
IPPF	Indigenous Peoples Planning Framework
IPRS	Independent Procurement Reviews
IRR	Internal Rates and Return
ITS	Intelligent Transport System
M&E	Monitoring and evaluation
LARAP	Land Acquisition and Resettlement Policy Framework
LMP	Labor Management Procedures
LRT	Light Rapid Transit
MASTRAN	Indonesia Mass Transit Project
Mebidang	Medan City, Binjai City, and Deli Serdang District
MMA	Medan Metropolitan Area
MoF	Ministry of Finance

MoT	Ministry of Transportation
MoU	Memorandum of Understanding
MRT	Mass Rapid Transit
MTR	Mid-Term Review
Nox	Nitrogen Oxide
NPP	National Procurement Procedures
NPV	Net Present Value
PCM	Private Capital Mobilisation
PDO	Project Development Objective
Perpres	Presidential Regulations
PIM	Project Implementation Manual
PIU	Project Implementation Unit
PMC	Project Management Consultant
PMU	Project Management Unit
ppha	Persons per Hectare
PPSD	Project Procurement Strategy for Development
PPP	Public Private Partnership
ProgMC	Program Management Consultant
PT	Public Transport
PWDs	Persons with disabilities
RoW	Right of way
RPJMN	Medium-Term National Development Plan
SDG	Sustainable Development Goal
SEF	Stakeholder Engagement Framework
SNG	Sub National Government
STEP	Systematic Tracking of Exchanges in Procurement
SUMP	Sustainable Urban Mobility Plans
ToC	Theory of Change
UNDB	United Nations Development Business
VAT	Value Added Tax
VoL	Value of Life

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DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Indonesia	Indonesia Mass Transit Project	
Project ID	**Financing Instrument**	**Environmental and Social Risk Classification**
P169548	Investment Project Financing	Substantial

Financing & Implementation Modalities

[ ] Multiphase Programmatic Approach (MPA)	[ ] Contingent Emergency Response Component (CERC)
[ ] Series of Projects (SOP)	[ ] Fragile State(s)
[ ] Performance-Based Conditions (PBCs)	[ ] Small State(s)
[ ] Financial Intermediaries (FI)	[ ] Fragile within a non-fragile Country
[ ] Project-Based Guarantee	[ ] Conflict
[ ] Deferred Drawdown	[ ] Responding to Natural or Man-made Disaster
[ ] Alternate Procurement Arrangements (APA)	[ ] Hands-on Enhanced Implementation Support (HEIS)

Expected Approval Date	Expected Closing Date
20-May-2022	30-Jun-2027

Bank/IFC Collaboration

No

Proposed Development Objective(s)

To improve urban mobility and accessibility on high priority corridors in selected urban areas of Indonesia and strengthen institutional capacity for mass transit development.

Components

Component Name	Cost (US$, millions)
Institutional Development, Capacity Building and Technical Assistance	33.00
Demonstration Mass Transit Systems in Selected Urban Areas	331.00

Organizations

Borrower:	Republic of Indonesia
Implementing Agency:	Ministry of Transportation

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	364.00
Total Financing	364.00
of which IBRD/IDA	224.00
Financing Gap	0.00

DETAILS

Private Sector Investors/Shareholders

Equity	Amount	Debt	Amount
Government Contribution	314.00		
Government Resources	50.00		
IBRD	224.00		
Other Donors	40.00		
Non-Government Contributions	50.00		
Private Sector Equity	50.00		
Total	**364.00**		**0.00**

Expected Disbursements (in US$, Millions)

WB Fiscal Year	2022	2023	2024	2025	2026	2027	2028
Annual	0.00	13.48	31.11	74.67	51.85	35.26	17.63
Cumulative	0.00	13.48	44.59	119.26	171.11	206.37	224.00

INSTITUTIONAL DATA

Practice Area (Lead)

Transport

Contributing Practice Areas

Urban, Resilience and Land

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	Moderate
2. Macroeconomic	Moderate
3. Sector Strategies and Policies	Substantial
4. Technical Design of Project or Program	Moderate
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Substantial
7. Environment and Social	Substantial
8. Stakeholders	Substantial
9. Other	Moderate
10. Overall	Substantial

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

[ ] Yes [✓] No

Does the project require any waivers of Bank policies?

[ ] Yes [✓] No

Environmental and Social Standards Relevance Given its Context at the Time of Appraisal

E & S Standards	Relevance
Assessment and Management of Environmental and Social Risks and Impacts	Relevant
Stakeholder Engagement and Information Disclosure	Relevant
Labor and Working Conditions	Relevant
Resource Efficiency and Pollution Prevention and Management	Relevant
Community Health and Safety	Relevant
Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant
Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Relevant
Cultural Heritage	Relevant
Financial Intermediaries	Not Currently Relevant

NOTE: For further information regarding the World Bank's due diligence assessment of the Project's potential environmental and social risks and impacts, please refer to the Project's Appraisal Environmental and Social Review Summary (ESRS).

Legal Covenants

Sections and Description

The Borrower, through MOT, shall be responsible for overall management and implementation of the Project, including, inter alia, to cause the BBMA Subnational Agencies and the Mebidang Subnational Agencies to assist MOT on all aspects of Project implementation, in accordance with the provisions of this Agreement and the Project Implementation Manual. (Section I.A.1 of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through MOT, shall maintain, throughout the Project implementation period, a Project Steering Committee with attributions and composition acceptable to the Bank, which shall be composed of members specified in the Loan Agreement and responsible for facilitating inter-ministerial coordination and providing oversight and strategic guidance on the development/preparation and implementation of the IMTP and the Project. (Section I.A.2 of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through MOT, shall maintain, throughout the Project implementation period, a Project Management Unit within MOT, which shall be composed of staff and experts specified in the Loan Agreement and provided with such power, financial (allocated in the DIPA) and other resources, functions and competences acceptable to the Bank, as shall be required for it to carry out day-to-day management, implementation and coordination of Project activities and development and implementation of the IMTP. (Section I.A.3(a) of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through MOT, shall maintain, throughout the Project implementation period, an MOT Project Implementation Unit within MOT, which shall be composed of staff and experts specified in the Loan Agreement and provided with such power, financial (allocatedin the DIPA) and other resources, functions and competences acceptable to the Bank, as shall be required for it to manage contracts related to the development of the BRT systems and coordinate with the BBMA Project Implementation Unit and the Mebidang Project Implementation Unit. (Section I.A.3(b) of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through MOT, shall select and engage, by not later than 3 months after the Effective Date, and thereafter maintain, throughout the Project implementation period, the services of the following consultants, each with qualifications and experience and under terms ofreference acceptable to the Bank: (a) a program management consultant, a Project management consultant and a financial management specialist, all to support the Project Management Unit; and (b) two detailed engineering design and construction supervision consultants, to support the MOT Project Implementation Unit. (Section I.A.4 of Schedule 2 to the Loan Agreement)

Sections and Description

By not later than 2 months after the Effective Date, the Borrower, through MOT, shall cause the BBMA Subnational Agencies to establish and thereafter maintain, throughout the Project implementation period, a BBMA Project Implementation Unit within the West Java Province, which shall be composed of staff and experts specified in the Loan Agreement and provided with such power, financial and other resources, functions and competences acceptable to the Bank, as shall be required for it to coordinate Project activities with national level government agencies, the Project Management Unit and the MOT Project Implementation Unit, and support the delivery of subnational agencies' responsibilities set forth in the BBMA Subnational Agreements and the Project

Implementation Manual. (Section I.A.5(a) of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through MOT, shall, prior to the withdrawal of Loan proceeds allocated to Category (2)(B), enter into and thereafter maintain, throughout the Project implementation period, one or more agreements and/or memoranda of understanding, under terms and conditions satisfactory to the Bank, with the Mebidang Subnational Agencies, to set forth the roles and responsibilities of each of the parties in relation to Project implementation (Mebidang Subnational Agreements), which, when read together, shall include the key provisions specified in the Loan Agreement. (Section I.A.6(b) of Schedule 2 to the Loan Agreement)

Sections and Description

By not later than 2 months after the Effective Date, the Borrower, through MOT, shall cause the Mebidang Subnational Agencies to establish and thereafter maintain, throughout the Project implementation period, a Mebidang Project Implementation Unit within the North Sumatera Province, which shall be composed of staff and experts specified in the Loan Agreement and provided with such power, financial and other resources, functions and competences acceptable to the Bank, as shall be required for it to coordinate Project activities with national level government agencies, the Project Management Unit and the MOT Project Implementation Unit, and support the delivery of subnational agencies' responsibilities set forth in the Mebidang Subnational Agreements and the Project Implementation Manual. (Section I.A.5(b) of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through MOT, shall, prior to the withdrawal of Loan proceeds allocated to Category (2)(A), enter into and thereafter maintain, throughout the Project implementation period, one or more agreements and/or memoranda of understanding, under terms and conditions satisfactory to the Bank, with the BBMA Subnational Agencies, to set forth the roles and responsibilities of each of the parties in relation to Project implementation (BBMA Subnational Agreements), which, when read together, shall include the key provisions specified in the Loan Agreement. (Section I.A.6(a) of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through MOT, shall, by not later than 1 month after each of their approvals and throughout the Project implementation period, submit to the Bank the approved regional medium-term planning documents of the BBMA Subnational Agencies and the Mebidang Subnational Agencies, which shall reflect the Borrower's commitment to provide Counterpart Funds required for the carrying out of activities under Part 2 of the Project during each of the said plans' period, all in accordance with the Project's financing plan and schedule set forth in the relevant Annual Work Plan and Budget and in a manner satisfactory to the Bank. (Section I.B.3 of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through MOT, shall, by not later than March 1 in each Fiscal Year commencing in 2023 and throughout the Project implementation period, submit to the Bank the approved expenditure documents of the BBMA Subnational Agencies and the Mebidang Subnational Agencies to reflect that the amount of Counterpart Funds required for the carrying out of activities under Part 2 of the Project in the subsequent Fiscal Year, as detailed in the Project's financing plan and schedule set forth in the relevant Annual Work Plan and Budget, have been secured within the Borrower's budgetary system, in a manner satisfactory to the Bank. (Section I.B.2 of

Schedule 2 to the Loan Agreement)

Sections and Description

Without limitation to the provisions of Section 5.03 of the General Conditions, the Borrower, through MOT, and/or the BBMA Subnational Agencies and the Mebidang Subnational Agencies shall provide resources in the amounts set forth in the Annual Work Plans and Budgets as Counterpart Funds for the financing of Part 2 of the Project, which shall be made available in accordance with the Project's financing plan and schedule set forth in the Annual Work Plans and Budgets. (Section I.B.1 of Schedule 2 to the Loan Agreement)

Sections and Description

In order to facilitate the carrying out of Parts 2(a)(iii) and 2(b)(iii) of the Project, the Borrower, through MOT, shall take all necessary steps to put in place and maintain an overall legal, financial and institutional framework at the national and subnationallevels, as acceptable to the Bank and in accordance with further details set forth in the Project Implementation Manual, for the implementation of activities under Parts 2(a)(iii) and 2(b)(iii) of the Project through Public-Private Partnership Arrangements. (Section I.C.1 of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through MOT, shall, by not later than 12 months after the Effective Date, select and engage the services of one or more transaction advisors, each with qualifications and experience and under terms of reference acceptable to the Bank, to provide advisory services necessary for the design and execution of the Public-Private Partnership Arrangements. (Section I.C.2(a) of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through MOT, shall prepare and furnish to the Bank, by not later than (a) 1 month after the Effective Date and (b) February 15 of each subsequent Fiscal Year, for the Bank's review and no-objection, an annual work plan and budget, and such plan and budget shall be finalized, as acceptable to the Bank, by not later than (a) 2 months after the Effective Date and (b) June 1 of each subsequent Fiscal Year. The Recipient shall ensure the implementation of the Project in accordance with the Annual Work Plans and Budgets agreed with the Bank and in a manner acceptable to the Bank. (Section I.E of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through MOT, shall prepare and adopt a Project Implementation Manual, in form and substance satisfactory to the Bank, and thereafter ensure that the Project is carried out in accordance with the Project Implementation Manual. (Section I.D of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through MOT, shall, by not later than (i) 12 months prior to the completion of relevant BRT system construction or (ii) 24 months after the Effective Date, whichever occurs first, cause: (A) the BBMA Provincial Agencies to complete the establishment and/or designation of a BBMA BRT Management Entity, with a mandate, composition and resources satisfactory to the Bank; and (B) the Mebidang Provincial Agencies to complete the establishment and/or designation of a Mebidang BRT Management Entity, with a mandate, composition and resources satisfactory to the Bank. (Section I.C.2(b) of Schedule 2 to the Loan Agreement)

Sections and Description

The Borrower, through MOT, shall, by not later than 6 months prior to the completion of relevant BRT system construction, cause: (A) the BBMA BRT Management Entity to enter into BBMA BRT Operator Contracts with one or more private sector operators, each in form and substance satisfactory to the Bank, to carry out activities under Part 2(a)(iii) of the Project; and (B) the Mebidang BRT Management Entity to enter into Mebidang BRT Operator Contracts with one or more private sector operators, each in form and substance satisfactory to the Bank, to carry out activities under Part 2(b)(iii) of the Project. (Section I.C.2(c) of Schedule 2 to the Loan Agreement)

Sections and Description

By not later than 36 months after the Effective Date, the Borrower shall, in conjunction with the Bank, carry out a Mid-term Review of the Project. (Section II.2 of Schedule 2 to the Loan Agreement)

Conditions

Type	Financing source	Description
Effectiveness	IBRD/IDA	The Borrower, through MOT, has adopted the Project Implementation Manual, in form and substance satisfactory to the Bank. (Section 5.01 of the Loan Agreement)
Type	Financing source	Description
Disbursement	IBRD/IDA	No withdrawal shall be made under Category (2)(A) unless and until the Bank has received evidence to its satisfaction that the Borrower, through MOT, and the BBMA Subnational Agencies have entered into the BBMA Subnational Agreements in accordance with the provisions of Section I.A.6(a) of Schedule 2 to the Loan Agreement (Section III.B.1(a) of Schedule 2 to the Loan Agreement)
Type	Financing source	Description
Disbursement	IBRD/IDA	No withdrawal shall be made under Category (2)(B) unless and until the Bank has received evidence to its satisfaction that the Borrower, through MOT, and the Mebidang Subnational Agencies have entered into the Mebidang Subnational Agreements in accordance with the provisions of Section I.A.6(b) of this Schedule 2. (Section III.B.1(b) of Schedule 2 to the Loan Agreement)

I. STRATEGIC CONTEXT

A. Country Context

1. **Over the last decades, Indonesia has achieved impressive improvement in terms of economic growth and poverty reduction.** The annual economic growth from 2008 to 2018 averaged 5.4 percent and the poverty rate almost halved in the period between 2006 and 2019, reaching a record low of 9.4 percent. Indonesia reached strong labor market conditions though most jobs were created in lower productivity services such as trade, transport, and hospitality.

2. **The unexpected COVID-19 pandemic since 2020 resulted in the first recession in two decades with the economy contracting by an estimated 2.1 percent in 2020 in contrast to a pre-pandemic projection of 5.1 percent growth.** This was affected by a huge drop in private consumption and investment, which generated labor income losses and increased uncertainty. The government implemented an emergency fiscal package totaling as much as 3.7 and 4.0 percent of GDP in 2020 and 2021, respectively, which provided relief to households and firms and supported output. GDP growth rebounded from -2.1 percent in 2020 to 3.7 percent in 2021, supported by public consumption and exports. The recovery is coming amidst uncertain global conditions including from rising tensions in Europe.

3. **Indonesia, the world's fourth most populous country, is becoming increasingly urban**. Today over half of the population lives in cities; by 2045, the centenary of Indonesia's independence, nearly three quarters will. In 2020, Indonesia had 15 cities with a population greater than 1 million and about 12 cities with a population between 500,000 and 1 million. Rapid urbanization is increasing the importance of cities as a living space for people and as economic hubs. From the 20 million jobs created between 2001 and 2011, 18 million were in urban areas, marking a major shift in the employment base to cities. The agglomeration effects generated by the proximity of people and activities in urban areas are a key factor for their success. However, while urbanization has helped to deliver prosperity, provide economic and social opportunity, and stimulate innovation in Indonesia, it has not done so to the same extent as in many of its neighboring countries. Indonesia's cities are struggling with traffic congestion, pollution, and continued shortages in access to many basic services.

B. Sectoral and Institutional Context

4. **Congestion is among the main factors negatively impacting economic growth and equality of Indonesian cities**. Efficient mobility in urban areas is key to ensuring the economic competitiveness of cities. This is especially significant given that almost 60 percent of the Indonesian GDP originates from urban areas[1] which account for only 53 percent of the population. If the cities are congested and the workforce spends long unproductive hours commuting, the growth potential and productivity are compromised. Cities host labor markets and mobility is what makes that labor market work. An analysis by the World Bank Transport team on traffic speeds of Indonesian cities[2] found that they are slow, not only in peak periods but throughout the day, and especially for public transport vehicles, with daily average of between 23 and 28 km/h. Consequently, average

[1] World Bank Urban Flagship Time To Act 2010 Report
[2] The analysis covered Greater Jakarta (Jabodetabek) and 28 other urban agglomerations including all cities with over 1 million population.

commuting times in Indonesian cities, especially for the poor and those dependent on public transport, is high compared to peer cities. High traffic congestion in Indonesian cities costs at least US$5.6 billion nationally per year (equivalent to 0.5 percent of national GDP) in terms of excess travel time, fuel consumption and greenhouse gas (GHG) emissions. Congestion is most severe in the Greater Jakarta area, where its costs exceed US$4 billion per annum and amounts to nearly 2 percent of GDP.

5. **Private transport dependence is increasing in Indonesian cities**. Much of the growth in Indonesia's urban population has been in urban areas remote from centers of employment and commerce. Residents need motorized transport to reach jobs, education and social activities and the coverage and quality of public transport provided does not offer a credible alternative to motorcycles and cars. This has resulted in unsustainable growth in car and motorcycle ownership (8.5 percent and 10.5 percent p.a. respectively, from 2007 to 2017) and consequently a high level of motorization (488 per 1,000 people in 2017; out of this, 430 were motorcycles).[3] The use of motorcycles is growing exponentially. In Greater Jakarta, the share of motorcycle use has grown from 22 percent in 2002 to 78 percent in 2018[4].

6. **Transport is one of the major contributors to GHG emission and cities have a major share in them**. It is estimated that 25 percent[5] of GHG emissions from energy in Indonesia are on account of transport and these are the fastest growing. Road transport is responsible for over 90 percent of the overall fuel consumption and the growing concentration of GHG emissions and other pollutants[6], and therefore, requires special attention. Personal passenger vehicles constitute the bulk of the vehicle fleet in the country[7] and with rapid urbanization and growing income levels, the demand for passenger transport is likely to grow fast to constitute a growing portion of the road transport emissions. Indonesia is also increasingly vulnerable to climate change and natural disasters and needs to put policies in place to ensure adequate resilience of core infrastructure and services.

7. **Motorization is leading to serious air quality and road safety issues**. By 2019, Jakarta had overtaken Beijing for the first time as among the world's most PM2.5 polluted capital cities reflecting the rapid urbanization[8]. Road safety is a major concern area in Indonesia owing to the high number of deaths due to traffic crashes. Traffic accidents with the number of road fatalities in Indonesia reaching 29,478 people in 2018 are the third biggest cause of death in Indonesia, just behind heart disease and stroke. This costs large economic losses considering that 77 percent of the victims are in the productive age group (15-64 years)[9].

8. **Public transport mode shares in urban areas are low and declining**. The availability and quality of public transport is highly deficient and largely left to fragmented unorganized players with very depreciated fleets. As a result, the share of public transport compared to private modes is very low. The cities that have invested most in mass transit, Jakarta and Bandung, have a public transport modal share of around 10 percent[10]. While this is regarded to be at the low end of the range for cities of comparable size and income levels, it is even worse for

[3] World Bank analysis using Statistics Indonesia data ("Number of motor vehicles by types, Indonesia 1949-2017").
[4] Jabodetabek Transport Policy Integration 2, JICA, 2019
[5] Ministry of Environment & Forests, Government of Indonesia, 2019.
[6] Transportation energy consumption and emissions - a view from city of Indonesia by Iwan Sukarno, Hiroshi Matsumoto & Lusi Susanti, Future Cities & Environment, 24 June 2016
[7] Limited work done by team on freight and logistics so far but more expected in coming year.
[8] World Air Quality Report, IQAir, 2020
[9] RPJMN 2020-24
[10] Bandung Low Carbon Mobility Plan, Systra, 2017 and Jabodetabek Transport Policy Integration 2, JICA, 2019

other Indonesian cities with public transport share at around 5 percent or lower, as is the case for Surabaya metropolitan area with a population of 9 million. By contrast, large and rapidly growing cities in China generally manage to get 20-30 percent modal share for public transport while other Asian cities with well-developed networks, such as Seoul, Singapore, Tokyo, Hong Kong SAR, China, Mumbai and Kolkata achieve modal share for public transport of more than 50 percent. The lack of deliberate action on the public transport agenda now may result in much larger future costs for cities as they keep growing and get more congested. The pandemic has negatively impacted public transport resulting in a decline in ridership and further increase in personal mode shares.

9. **Public transport is unorganized and of poor quality**. The minibus, or *angkots* as they are called, constitute the traditional public transport systems in most of Indonesian cities which for a long time have been the mainstay of the city mobility system and operate with varying degrees of regulation. Overcrowding during peak hours, safety, long commute time, lack of reliability and cleanliness are some of the common issues plaguing the system and are also the reason for the rapid shift of commuters to personal modes as the income levels keep increasing and more attractive ride hailing services appear. Some cities or provincial governments offer bus transport within the city or metropolitan area but this tends to be limited with a negligible mode share. For example, the share of the transport provided by Bandung City and West Java Government in the Bandung Basin Metropolitan Area (BBMA) is less than 3 percent of the overall public transport in the urban area.

10. **Users find public transport (including the *angkots*) and streets unsafe, especially women users** According to surveys conducted in Medan, a large proportion of transport users found the streets and *angkots* to be unsafe, 76 percent and 57 percent public transport users respectively. Amongst users a larger proportion of women than men felt that the streets and *angkots* were unsafe. While women in BBMA and Mebidang (Medan City, Binjai City, and Deli Serdang District) have more complex daily mobility patterns than men, they have limited access to household cars and higher dependency on public transport, which they find unsafe**.** Further details on gender and mass transit in BBMA and Mebidang are provided in the Section IV. E. Gender below.

11. **To date, private sector investment in public transport has been limited.** Privately owned and operated bus fleets provide a portion of the services of the TransJakarta bus rapid transit (BRT), however the newly operational light rapid transit (LRT) in Palembang and mass rapid transit (MRT) in Jakarta do not have any private sector investment. Public private partnerships (PPP) were attempted for two urban transport projects in Bandung, however both failed to reach financial closure due to overly optimistic demand projections, and full allocation of revenue risk to the private sector with the unrealistic assumption that revenue would be sufficient for full cost recovery. Provision of bus service through private operators is the preferred model by MOT under their recently launched scheme, but careful preparatory work, including feasibility and demand studies, to determine appropriate risk allocation will be needed to ensure that any PPP structure is successful. As per existing regulatory framework, contracting for private bus operators is possible either under existing MOF provision which mandate a maximum period of three years for multi-year contracts or under the PPP Regulation whereby Availability Payments may be eligible for up to 49 percent subsidy support from Ministry of Finance and contract tenure can be for longer, however, this needs to follow a more detailed laid down process.

12. **Capacity to plan and implement urban transport is limited at the city level.** After decentralization in 1999, the responsibility for addressing urban transport in Indonesian cities has been shifted to sub-national governments. However, cities continue to lack the technical expertise to adequately plan, design, implement and operate urban transport systems as well as the necessary fiscal capacity to fund and support mass transit systems.

Cities/districts mostly rely on the central government for these issues. This is because urban public transport services have been traditionally offered by informal paratransit schemes with a very limited role left to the sub-national governments. Lack of technical expertise is also reflected in lack of integration between transport and spatial planning and ineffective regulation of traffic and transport.

13. **Most of the cities lack the necessary fiscal capacity to implement mass transit systems**. The recent analysis completed by the World Bank shows that the cost of implementing an LRT of 20km exceeds the borrowing capacity of all the Indonesian cities except for Special Capital Region (DKI) Jakarta, and only seven cities have sufficient borrowing capacity to meet the costs of a BRT of 30km. Moreover, based on data of the budget plan of large Indonesia cities in 2015, cities only allocated between 0.13 percent to 1.53 percent of their budgets for public transport capital expenditures.

14. **The institutional structures are not appropriate to plan and manage transport in metropolitan areas.** A city may only plan and regulate services within its boundaries, and Provincial Transport Agencies are responsible for developing and operating inter-district transport services but have no authority over services within cities and districts or kabupatens. At the national level, the Ministry of Transportation (MoT) is responsible for transport coordination between provinces and setting guidelines and regulation but has no authority over services within subnational administrative areas. Ministries and national agencies have their own, ad-hoc and uncoordinated, programs to support cities. However, these schemes are lacking in transparency about the allocation process across cities and a systematic approach to solving urban mobility issues.

15. **Ministries and national agencies have launched programs to support cities within existing regulatory contexts with limited results**. There is a lack of transparency about how the resources are allocated and to which cities, and lack of coordination among national ministries. For example, the central bus-purchasing scheme had been one of the main programs of the Directorate General of Land Transport (DGLT) at MoT to build public transport capacity in cities, but it was suboptimal due to low capacity of the cities in managing bus service. In a few instances the buses were operated after 2-3 years. The program was focused mainly on providing assets on a once-off basis, and paid little attention to quality of operations or adequate maintenance. Based on the lessons learnt, DGLT has recently launched the Buy the Service scheme which offers transport service on select corridors as opposed to providing buses with management and oversight by DGLT. This reflects the constraints placed by the regulatory framework which only allows in-kind support to sub-national level. For rail-based urban transport development, the absence of a mechanism for financial support from central to sub-national government resulted in the need for a Presidential Regulation (Perpres) to be issued for each project, as recently was done for LRT development in Palembang. As a result of inadequate planning and the absence of sub-national funding sources Palembang City requires significant subsidies from the central government on an annual basis to operate its LRT. The GoI attempted to address the needs of the cities in mass transit. The Medium-Term National Development Plan (RPJMN) for 2015-2019 had extremely ambitious targets for investment in mass transit schemes in 44 cities. By the end of 2019, only 2 modern urban railway systems were operational (an LRT in Palembang and a Metro Rail in Greater Jakarta), with another LRT under construction in Greater Jakarta.

16. **TransJakarta provides important lessons for other cities on mass transit.** TransJakarta, the BRT in Jakarta, began its operation in January 2004, and by July 2020, had 13 corridors spanning 250 km. Some routes operate on both dedicated lane and mixed traffic. Poor quality of the early designs of stations and buses resulted in overloading in some sections, and initial ridership was low. In the early years, TransJakarta was managed by a management agency that reported directly to the governor and operated its own buses, but with no integration

with existing public transport services (e.g., *angkot*, minibuses). In 2007, Jakarta Government established a special delivery unit under Transport Agency of Jakarta and started contracting out the service to private operators. TransJakarta became a subnational owned company of Jakarta Government in 2014 and since then it has been integrating its services with other public transport in Jakarta, including MRT and commuter rail, and can also generate non-farebox revenue. In recent years, a proactive approach to stakeholder engagement with existing operators and integrating the services with *angkots* for improved first and last mile services has reaped significant benefits in terms of improved ridership. TransJakarta is funded by Government of Jakarta Province, including the subsidy. Although the mode share of TransJakarta is low, ridership has increased to 1 million passengers per day in 2020. While the TransJakarta service is far from perfect, it does offers valuable lessons for other cities in Indonesia wishing to implement BRT namely:

- High quality infrastructure design and vehicle specifications.
- Integration between BRT routes and with other public transport services.
- Centralized, off-board, fare collection and recent steps to provide fare integration with *Angkot* feeder services.
- Management by a regional state-owned company, with operations contracted to private companies.
- Public funding model for the gap between revenue and expenses has enabled fares to be kept low and encouraged ridership.

17. **Integration with existing operators is one of the key success factors of BRT and bus service improvement in Indonesia.** Jakarta and Semarang are two cities in Indonesia that have successfully integrated existing operators to the new system. In Jakarta, *angkot* owners merged to a cooperative. 10 cooperatives were established in 2019 and contracted by TransJakarta, using gross cost contract, to provide first and last miles service for TransJakarta passengers. The *angkots* are integrated with TransJakarta in terms of service and payment and Jakarta government, through TransJakarta, subsidize the *angkots*. In 2020, TransJakarta, Jakarta MRT, Jakarta Propertindo (property company of Jakarta government), and PT Moda Integrasi Transportasi Jabodetabek (holding company between Jakarta MRT and Greater Jakarta commuter rail) established a holding company called JakLingko. JakLingko integrates service and payment of TransJakarta buses (including angkots), Jakarta MRT, Jakarta LRT, airport rail, and greater Jakarta commuter rail. In Semarang, public transport operators with at least 50% of overlapping routes were scraped and merged into a consortium. The consortium was then contracted (using gross cost contract) by TransSemarang (special service delivery unit). As an outcome of extensive consultations with existing operators, the angkot cooperatives and owners, agreements were reached for the proposed integration of *angkots* into the BRT system.

18. **Indonesia Mass Transit Program**. Given the multiple constraints at sub-national levels for urban transport development, the establishment of a national program supporting mass transit development is a necessity. The GOI acknowledges that it is the national interest to support efficient and livable cities to promote economic growth and improve the quality of life of citizens. Other countries such as Mexico, Colombia, China, and India have national programs to support cities in developing mass transit systems. These countries, and associated national support programs have substantially differing characteristics, and the World Bank technical assistance program in 2016-2019 supported the GoI to identify international best practice and options for the development of the Indonesia Mass Transit Program (IMTP) were proposed that elaborated main principles, criteria and implementation modalities to increase financial, technical, and institutional capacities of sub-national

governments to plan, implement and manage public transport[11]. The Indonesian government's IMTP will provide a structured approach to identification, planning and implementation of mass transit in metropolitan areas. It will channel support from the National Government to projects which meet rigorous eligibility, readiness and viability criteria and ensure allocation of resources well prepared and viable projects.

19. **The GoI intends to implement the IMTP as one of its priorities.** The RPJMN for 2020-2024, was more pragmatic than RPJMN 2015-2019 in identifying and prioritizing mass transit investments. The current RPJMN used IMTP selection criteria, identified public transit as an area for priority attention and has a more realistic target to implement mass transit in 6 metropolitan areas, namely Jakarta, Surabaya, Medan, Bandung, Makassar, and Semarang. The development of sustainable urban mobility plans (SUMP) as a basis for urban mobility investments and mass rapid transit proposals to be considered for funding has gained ground with the preparation of the first SUMP for the BBMA with support from the Bank. Following the guidelines developed with technical inputs of the World Bank, SUMPs are now under preparation for five of the six cities identified under RPJMN. MOT under the Sutrinama-Indobus Project with GIZ, is developing Feasibility Studies for Bus Rapid Transit projects in Bandung, Semarang and Makassar.

20. **The proposed World Bank-funded project (MASTRAN) will support implementation of the first phase of the IMTP** and will cover institutional and capacity development and investment in road-based mass transit systems in BBMA and Mebidang. Initial implementation in Bandung and Medan will create a foundation for mass transit implementation in other cities. Subsequent rollout of the IMTP is expected to focus on the metropolitan areas of Surabaya, Semarang and Makassar in accordance with the RPJMN for 2020-2024. The next phase of projects would benefit from project development assistance under the Project and expected to be supported by bilateral and multilateral donors.

21. **Electric mobility has been identified as a major prospective area of development for Indonesia.** In August 2019, the Indonesian Presidential Regulation No.55/2019 was issued to enact the Electric Vehicle (EV) National Program for Road Transport, which laid out the framework for the development of battery electric vehicle industry and sector in Indonesia. The Coordinating Ministry for Maritime and Investment Affairs (CMMIA) is responsible to develop a clear roadmap for the development of electric mobility in coordination with multiple stakeholder ministries (Transport, Energy, Environment, Industry, Finance, National Planning, Home Affairs). Transjakarta is currently undertaking e-bus pilots. DGLT is planning electric bus pilots in the cities of Bandung and Surabaya under their Buy the Service Scheme.

22. **Outside of the Greater Jakarta region, Bandung and Medan were found to be the cities with highest peak hour congestion** and have been selected as demonstration cities under the Project based on key parameters of eligibility (population, population density, peak hour speed, congestion intensity and fiscal capacity), readiness (completed urban mobility plan, corridor demand estimate, an appropriate institutional structure, and a public participation plan) and project viability (alternatives analysis, reference design, viability analysis, environmental and social management, and a project implementation plan).

- **Bandung City was ranked as the second most congested city** (behind Jakarta Selatan), out of 38 cities in Indonesia in a recent big-data diagnostic undertaken by the World Bank. Peak hour traffic speed within Bandung

[11] Indonesia Sustainable Urbanization (IDSUN) Multi-Donor Trust Fund (P156103) - Development of Urban Transport Support Platform: Program Design

City was the third slowest, at 17km/h. The average travel speed of buses in Bandung is 10 km/h, and the average travel speed of minibuses is even lower as they frequently stop to wait for passengers. Greater Bandung is located in West Java Province and consists of the cities of Bandung and Cimahi; the kabupatens of Bandung and Bandung Barat; and three kecamatans (villages) of Kabupaten Sumedang. The population of the Greater Bandung metropolitan area in 2019 was 9.0 million making it the third largest urban agglomeration in Indonesia after Jakarta and Surabaya. Bandung City, the capital of West Java Province, is located about 140 km from Jakarta, and is regarded as a major center for economic, academic and tourism activities. In addition to tourism, major economic activities in the region comprise manufacturing, textiles, pharmaceuticals, financial, food entertainment and services. Around 12.3 million trips are made daily within the Greater Bandung metropolitan area. Mode choice is dominated by motorcycles, which are used for 62 percent of daily trips while public transport is lightly used, with only 9 percent of daily trips.

- **Medan City was ranked as the third most congested city** (behind Jakarta Selatan and Bandung), out of the 38 cities tested in the World Bank diagnostic referred to above. The functional area of Mebidang, the capital of North Sumatra Province, covering the city of Medan, the City of Binjai and the District of Deli Serdang, has a population of 4.9 million in 2019 making it the largest metropolitan area outside of Java, and the fourth largest metropolitan area in the country. Mebidang is located in the north of Sumatra, in close proximity to the neighboring countries of Singapore and Malaysia. This location has resulted in a multicultural population and strategic trading location. While historically Mebidang's economy was based on agriculture it has expanded into manufacturing of automotive, components, production of machinery, tiles, pulp and paper. Motor vehicle ownership in Mebidang is predominantly motorcycles, which comprise over 86 percent of the vehicle fleet and public transport has a mode share of about 6 percent.

23. **Congestion and dispersed spatial development result in poor accessibility.** The downward spiral of increasing motorization reduced public transport usage and reduced service provision has resulted in poor coverage and low frequency of public transport services. The very narrow street system compounds the problem, with most streets only appropriate for motorcycles, bicycles and walking. The spatial development pattern is very dispersed with only 2.5 million of the 9 million BBMA population living within the City of Bandung. Density in the City areas is around 150 persons per hectare (ppha) while the areas outside the city boundary have density around 20 ppha. Employment is however concentrated within the city area resulting in long commute times from the low density outlying areas. As a result of these factors the level of accessibility in both Bandung and Medan is substantially lower than comparable cities outside Indonesia, pointing to the significant role for transit oriented development strategies in these cities.

C. Relevance to Higher Level Objectives

24. **Alignment with GoI Priorities.** The proposed MASTRAN operation aligns with GoI's development priorities as defined in the National Medium Term Development Plan (RPJMN) 2020-2024. Under the national development agenda articulated in RPJMN, the target in urban transport program is to develop mass transit in 6 metropolitan cities due to its strategic role in the overall national development goals. The project is aimed at improving urban mobility conditions in cities, making the city safer, more resilient, and livable. As such, it is aligned to Sustainable Development Goal 11 (SDG11), make cities and human settlements inclusive, safe, resilient, and sustainable.

25. **MASTRAN is aligned with the Indonesia Country Partnership Framework (CPF) FY21-25,** in particular, Engagement Area II on Improve Infrastructure, Objective 2.1 Improve infrastructure provision and quality of service. The CPF recognizes that inadequate infrastructure jeopardizes sustainable growth and competitiveness as it raises the costs of services. Consistent with the intent of the CPF, MASTRAN is a 'platform' that endeavors to overcome financial and technical constraints to deliver mass transit systems across major Indonesian cities. The national platform approach from IMTP aims to improve central coordination, strengthens regional governments' capacity to develop local government-driven investments.

26. **Alignment with World Bank Corporate objectives.** The proposed IMTP operation consistence with World Bank Group's twin goals, of ending extreme poverty and promoting shared prosperity, through improving infrastructure and local service delivery. This project is consistent with the Bank's strategy for a "Green, Resilient and Inclusive Recovery" reflecting the challenges from COVID and the climate crisis[12]. Investment operations on mass transit under MASTRAN program would improve mobility and accessibility in sustainable way which also support equality, minimize gender disparity, generate positive contribution on climate change and transport decarbonization issue, improve urban road safety condition and contribute to post-pandemic recovery.

27. **Support for decarbonization of the transport sector and building resilience to transport infrastructure and services.** The IMTP and MASTRAN will influence policy and design of transport systems to support decarbonization of the transport sector following Indonesia's Nationally Determined Contributions (NDCs). This will be achieved by a shift to larger and more fuel-efficient vehicles, shift from personal modes to public transport, reduced congestion, and expected electrification of a portion of the BRT fleet. The project will support transit orientated development where mixed-use developments of higher density will provide opportunity for reduced travel and use of non-motorized transport modes. The proposed IMTP and MASTRAN will contribute to implementing the climate adaptation vision stated in the NDC and the National Medium-Term Development Plan (RPJMN 2020-2024), which aims to reduce vulnerability to climate change and disaster risks in all development sector.

28. **Contribution to post-pandemic recovery**. The COVID-19 global pandemic caused huge impacts on public transport systems across the world, impacting construction times, ridership demand, and operational revenues. Public transport ridership on Indonesian systems such as TransJakarta have reduced, and the longer-term impacts are unclear. The project will incorporate design features to minimize public health risks and encourage use of public transport services.

II. PROJECT DESCRIPTION

A. Project Development Objective

PDO Statement

29. To improve urban mobility and accessibility on high-priority corridors in selected urban areas of

[12] *https://www.worldbank.org/en/news/speech/2021/03/29/building-a-green-resilient-and-inclusive-recovery-speech-by-world-bank-group-president-david-malpass*

Indonesia and strengthen institutional capacity for mass transit development.

PDO Level Indicators

30. The proposed key results indicators are the following (see section VII for Results Framework):

a. Average travel time for public transport users on the intervened metropolitan corridors in BBMA and Mebidang (minutes).
b. Average daily passenger ridership per weekday on the BBMA and Mebidang BRTs (number).
c. Jobs accessible by public transport within 90 minutes commuting period in BBMA and Mebidang (percentage).
d. User satisfaction with public transport services (with a focus on safety and security) along BBMA and Mebidang BRT corridors, disaggregated by gender (percentage).
e. Establishment of institutional structures to manage mass transit at the national and sub-national levels.
f. Women employed in BBMA and Mebidang BRT operations at both managerial and crew levels (percentage).

B. Project Components

31. **MASTRAN will be the first phase of a comprehensive national mass transit program (IMTP).** In accordance with the relevant laws on decentralization, cities/sub-national governments shall be responsible for service delivery of urban transport and must take full responsibility for the full lifecycle of public transport systems within their municipal areas. The Ministry of National Development Planning/National Planning Development Agency (Bappenas) led IMTP preparation, with technical assistance from the World Bank since 2016. IMTP's main objective is to increase financial, technical, and institutional capacities of sub-national governments to plan, implement and manage public transport. IMTP principles were reflected by the Government of Indonesia (GoI) in the Medium-Term National Development Plan (RPJMN) for 2020–2024 which targets to implement mass transit system in six metropolitan areas, including BBMA and Mebidang (the other four metropolitan areas are: Greater Jakarta, Greater Surabaya, Greater Makassar and Greater Semarang). During its implementation, MASTRAN is expected to set the foundation for the preparation and implementation of mass transit systems in the other metropolitan areas identified in the RPJMN for 2020–2024. MASTRAN will help to finalize the program design, develop a pipeline of projects for the program, build institutional capacity and, through the implementation of select good practice mass transit systems, will have the necessary demonstrational impact for its scale up and to achieve more livable cities in Indonesia.

32. **The project will be jointly co-financed by Bank and AFD.** AFD will contribute $39,999,391 equivalent in co-financing to support the project by not later than December 31, 2022 and all activities, except for those identified to be financed solely by counterpart funds, will be jointly financed once the AFD financing becomes effective. The Bank and AFD will enter into a co-financing agreement pursuant to the World Bank-AFD Framework Agreement. The Bank will be the lead agency.

33. **MASTRAN is proposed as a combination of mutually reinforcing investments and institutional strengthening activities to support the roll-out of IMTP and the first phase of implementation in BBMA and Mebidang.** The Project will have two main components, namely:

- **Component 1: Institutional Development, Capacity Building and Technical Assistance (estimated cost: US$33.2 million, to be financed by IBRD and AFD).** This component will provide support to MoT and sub-national governments to roll out IMTP. This will involve activities to fine-tune and operationalize the national program based on the experience with the implementation of the demonstration mass transit projects and support the first phase roll-out in BBMA and Mebidang. This component will include the following three sub-components:
  a. **Sub-component 1A: Program management and technical assistance to implement and manage IMTP (US$15.2 million).** This sub-component will provide support to MoT to structure and operationalize IMTP, including (i) IMTP design, management and monitoring and evaluation (M&E); (ii) revising and/or developing policies and regulatory frameworks to ensure IMTP sustainability; (iii) assistance for mass transit projects preparation in other Indonesian metropolitan areas (other than BBMA and Mebidang) identified in accordance with 2020-24 RPJMN priorities and agreed with the Bank; (iv) developing guidelines, manuals, and other technical materials to facilitate IMTP implementation, including on (a) PPP adoption in bus operations, (b) funding mechanisms for mass transit projects including urban transport funds, (c) traffic and parking management strategies, and (d) transit-oriented–development (TOD)[13]; (v) implementing training programs to address any capability gaps identified, which could include, among others, workshops, exposure visits and peer-to-peer knowledge exchange activities for national and sub-national agencies and officials across Indonesia, in relation to the activities under this sub-component; and (vi) hiring a Program Management Consultant for coordinating and overseeing the multiple activities relating to the smooth implementation of this sub-component. This Sub-component will also be used to create the opportunity to develop a learning agenda, where cross learning can take place among the cities participating in the program.

  b. **Sub-component 1B: Institutional development at DGLT and sub-national levels in BBMA and Mebidang (US$2.5 million).** This sub-component will include activities to strengthen capacities of the government agencies and institutions at the national and subnational levels to plan, implement and/or operationalize the demonstration BRTs in BBMA and Mebidang, including, among others: (i) reviewing the existing institutional capability; (ii) estimating the institutional and capacity development needs at national level for the establishment of a dedicated unit to manage a national program on mass transit projects, and at BBMA and Mebidang level for the establishment of a metropolitan level institutional arrangements for planning and development of integrated transit as well as management of mass transit operations (including organizational structures, necessary skillsets, staffing and training plans) and assistance with operationalization of the institutions, including to carry out regulatory and administrative reviews and amendments that may be required; (iii) developing a funding mechanisms and financing plans to support the BRT systems at BBMA and Mebidang; and (iv) designing and implementing training programs to address any capability gaps identified in relation to the activities under this sub-component, which could include, among others, workshops, exposure visits and peer-to-peer knowledge exchange activities for national and sub-

[13] TOD activities under component 1A will build upon a study on "*Developing Integrated Passenger Terminal with Transit-oriented Development and Public Private Partnership*" which is being implemented by the World Bank with funding from the Quality Infrastructure Investment Partnership. The main objective of that study is to provide actionable recommendations on land use regulations and concept designs options f integrated terminal development in Mebidang that can be implemented in conjunction with the BRT system.

national agencies and officials from, among others: DGLT, West Java Province, BBMA, North Sumatra Province, and Mebidang.

c. **Sub-component 1C: Project management and technical assistance for demonstration BRTs in BBMA and Mebidang (US$15.5 million)**. The timely implementation of this sub-component is critical to initiate BRTs-related civil works. Preliminary terms of reference are being drafted during project preparation to enable early procurement during project implementation. This sub-component will provide technical and operational assistance to MOT on Project management and implementation, and provide support to MOT to assist the BBMA and Mebidang subnational level agencies to carry out their responsibilities in relation to the delivery and operationalization of the BRT systems. Such support includes, among others, to: (i) review, develop and finalize the preliminary and detailed engineering designs (DEDs) and other technical studies for BRTs infrastructure, facilities, equipment (e.g. Intelligent Transport Systems (ITS) and rolling stock) and services, ensuring resilience against natural hazards such as flooding events, and safe and universal access to all passengers, and incorporating gender equality and social inclusion (GESI) and COVID-19 preparedness features; the technical studies would include, among others: (a) demand estimates; (b) service and operations plans; (c) environmental and social management documents; (d) traffic and demand management strategies and plans; (e) modal integration and accessibility improvement plans[14]; (f) stakeholder engagement, planning and implementation support for the reorganization, improvement or integration of *angkots* to complement the design and operations of the BRT systems; and (g) transaction advisory to help design bankable business models for bus services contracting, prepare tender documents and concessions agreements and support bid process and contract award necessary for the design and execution of public-private partnership arrangements under the project; (ii) develop and implement a comprehensive public outreach and communications strategy and plan; (iii) hire detailed engineering design and construction supervision consultants for both BRT constructions; (iv) hire a Project Management Consultant for coordinating and overseeing the multiple activities relating to the smooth implementation and operationalization of the two demonstration projects; and (v) conduct road safety audits on BRT corridors during design, during and after civil works construction, and support data collection and analysis for fatal road crashes.

- **Component 2: Demonstration Mass Transit Systems in Selected Urban Areas (estimated cost: US$330.79 million**; of which IBRD and AFD are expected to finance US$230.79 million; GoI US$50 million and Private Sector US$50 million). This component will support the implementation of safe, resilient, green and integrated mass transit projects in BBMA and Mebidang. This component will include the following two sub-components:

  a. **Sub-component 2A: BRT in BBMA.** This sub-component will support the development of a bus improvement project to enhance connectivity between the east-west urban corridors of BBMA. It will have an approximate length of 20.4 km running through the central area of BBMA. The system will include 17.3 km of segregated bus lanes, 3.1 km of mixed traffic lanes, and 36 stations.

[14] A study on *"Developing Integrated Passenger Terminal with Transit-oriented Development and Public Private Partnership"* is being implemented by the World Bank with funding from the Quality Infrastructure Investment Partnership in regard to the Mebidang BRT which will form a basis for accessibility and integration initiatives.

b. **Sub-component 2B: BRT in Mebidang.** This sub-component will support the development of a BRT corridor with a dedicated right of way (with an approximate length of 21 km, with 2 terminals and 31 stations, with 8 stations in one direction streets) between Pinang Baris in the west and Amplas Bus Terminals in the southeast of Mebidang. The BRT service proposes to connect to adjoining agglomerations of Sunggal/Binjai City in the west and Tanjung Morawa/Lubuk Pakam in the east.

- For each of the above sub-components, this component will finance the following elements:
  a. **Sub-components 2(a)(i) and 2(b)(i): Goods, works, and services for the construction of the BRT core infrastructure and to ensure BRTs adequate integration with the existing transport networks.** This will include, among others, road infrastructure and its drainage system, enhancement of main corridor and adjacent streets to include road safety provisions, landscaping, depot, terminals, stations, intersections, corridor traffic management systems, sidewalks, pedestrian crosswalks, and some bike lanes along the corridors. Clearance of the right-of-way (RoW) will be financed by GoI through an approved resettlement plan.

  b. **Sub-components 2(a)(ii) and 2(b)(ii): Installation and operationalization of: (A) ITS** including fleet management, vehicle tracking, passenger information, grievance management; (B) automatic fare collection systems which will enable a centralized control of bus operations, fare management and customer interface; and (C) traffic signaling and management systems. Open data protocols will be used to avoid getting locked into proprietary technologies.

  c. **Sub-components 2(a)(iii) and 2(b)(iii): BRT fleet procurement, operations and maintenance.** The BBMA and Mebidang subnational agencies will be responsible for the procurement of BRT bus fleet and the operations and maintenance of the BRT systems (including bus fleet and associated infrastructure) through public-private partnership arrangements. The subnational agencies will establish and/or designate BRT Management Entities to contract the private sectors to finance, operate and maintain the BRT fleet and system under a contract based on payment by service provided and quality of service levels and revenue risk being borne by the sub-national agency. Transaction Advisor(s) would be hired under sub-component IC to support this. The funding for this sub-component will be from counterpart funds and private sector contributions. IBRD and AFD funds will not be used to support activities under this sub-component.

C. Project Beneficiaries

34. **The BBMA BRT and Mebidang BRT expected area of influence include a population of 9 million and 5 million, respectively**. The population living in the influence zone of the BRTs will have access to safe, resilient, green and integrated mass transit transport systems. They will also benefit from reduced congestion, travel time, pollution, and traffic accidents. Women, and marginalized groups[15] of both metropolitan areas will be targeted beneficiaries of these BRTs because as they heavily rely on public transport for their daily activities due to their limited access to private vehicles as revealed on the GESI assessments conducted by the World Bank in March-April 2021. These vulnerable groups will have increased access to job/income-generation opportunities. The proposed routes will increase access to public transport for people living in the poorest areas of BBMA and

[15] Marginalized or vulnerable groups in Greater Bandung and Greater Medan are identified as persons with disabilities (PWDs), the elderly, children, pregnant women and the sick.

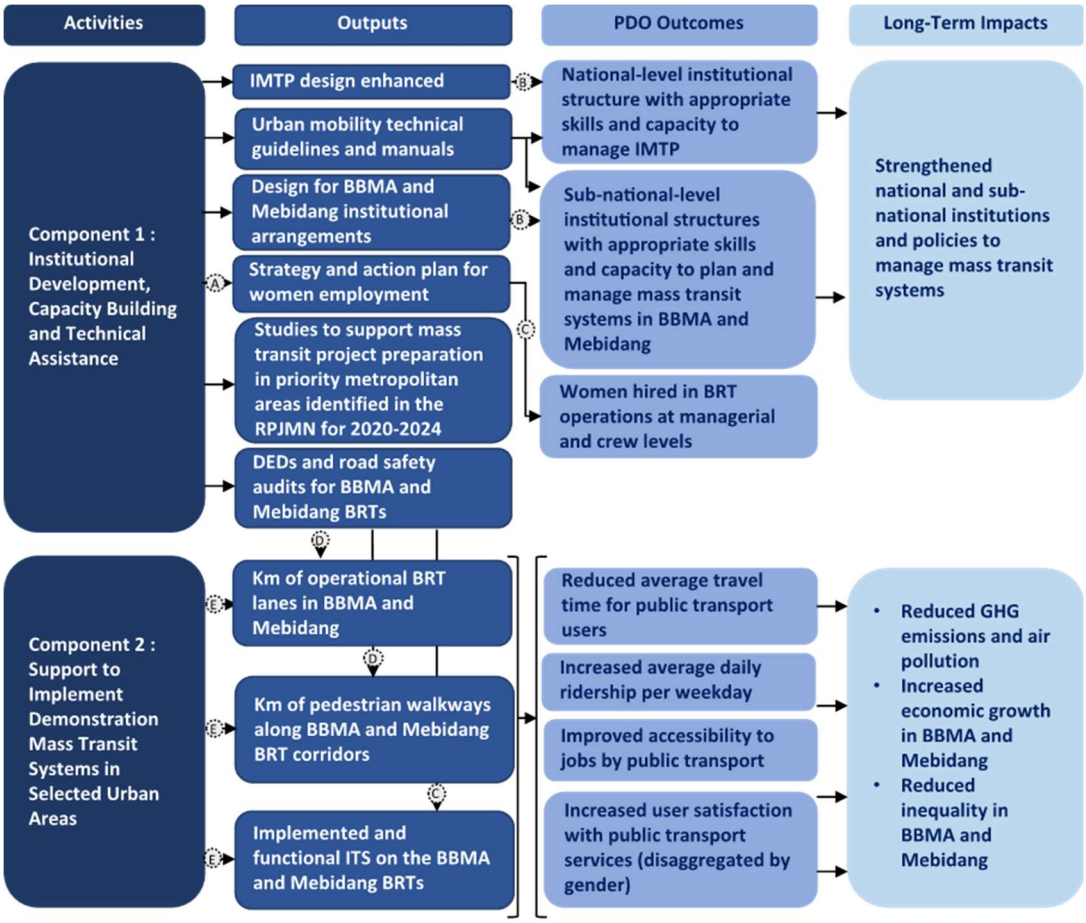
Mebidang. Furthermore, the new BRTs, can be used to increase workforce diversity in the transport sector by promoting employment of women in BRT operations.

35. MoT and the sub-national governments of the provinces of West Java and North Sumatra and BBMA and Mebidang will benefit from capacity building in planning, preparing and implementing mass transit projects. Increased employment opportunities for women in the BRT Management Entities of BBMA and Mebidang will be promoted by ensuring a minimum requirement for percentage of women engaged in BRT operations at managerial and crew levels. Other Indonesian metropolitan areas, especially those identified in the RPJMN for 2020-2024 as priorities to implement mass transit systems (i.e. Greater Jakarta, Greater Surabaya, Greater Makassar, Greater Semarang and Greater Denpasar), will benefit from a strengthened policy and regulatory framework to facilitate mass transit systems implementation and an enhanced IMTP design, management and M&E based on the experience learned during the implementation of the demonstration projects in BBMA and Mebidang, as well as capacity development support through training programs, knowledge events, development of manuals and technical assistance activities.

D. Results Chain

36. The theory of change (ToC) is based on the fundamental logic that the implementation of BRT corridors in BBMA and Mebidang can provide numerous benefits not only for both metropolitan areas, but also for other Indonesian metropolitan areas.

37. The following diagram represents the ToC behind MASTRAN:



Critical assumptions

- (A) *BBMA and Mebidang BRT Operating Agencies agree to having a minimum percentage of female employees*
- (B) *Institutional capacity enhanced to plan and implement mass transit*
- (C) *Women are interested and available to work in BRTs operations*
- (D) *MOT and sub-national governments support the implementation of BRTs in BBMA and Mebidang*
- (E) *Effective coordination between agencies and contractors*

E. Rationale for Bank Involvement and Role of Partners

38. **The World Bank involvement will contribute in guiding GOI, providing international expertise, delivering a significant capacity building element to develop and operationalize a national-level program for mass transit systems in the metropolitan areas of the country.** The World Bank has knowledge and experience in helping to set up national urban transport programs in comparable developing countries such as Mexico and Colombia which will be applied to assist the central government to establish the appropriate structures for oversight and management of the IMTP. The World Bank will also bring global expertise with planning and

implementation of mass transit systems, which will be used to guide the technical solutions developed for this project. This experience includes recent and ongoing BRT projects in Argentina, Brazil, Colombia, India, Peru, Mexico, Vietnam, Senegal, and Nigeria and the Bank's urban passenger rail experience. This expertise will bring global best -practices into the technical design of the mass transit systems in each city to ensure that aspects which may not have been addressed without World Bank involvement are considered – such as gender-informed design, climate mitigation and resilience, sustainable urban planning and development, universal accessibility features, and road safety design and assessment. This project will support global public goods and important innovations in mass transit to Indonesia that are scalable and have demonstration effects for other cities and countries. The processes and institutions established under the project will provide a model for subsequent roll-out of the IMTP by the GOI to the remaining cities that have been identified in the RPJMN, and subsequent cities thereafter.

39. **The World Bank will facilitate the adoption of a collaborative approach to implement MASTRAN between The World Bank, AFD and national and sub-national Indonesian agencies**[16]**.** One of the biggest challenges in mass transit development is the huge upfront costs for mass transit, and as discussed in previous section, national government must step in to provide financial support through its own budget and other mechanisms. The World Bank involvement in this project is likely to leverage donors and private sector participation in urban mass transit projects by supporting sound project preparation and appropriate risk allocation. The project will assess the most appropriate components to be financed by the private sector. It is envisaged that a combination of public sector funding of infrastructure elements and private sector financing of rolling stock, operation and maintenance is likely to deliver bankable projects that will be attractive for private sector investment. As per international good practice successful contracts with private sector for BRT operations involves the transfer of demand risk substantially to the concession granting agency and payment to the private operator on the basis of service performed with clear incentives for improved performance, and this will be the approach adopted under the Project.

40. **The World Bank will also leverage its convening power for knowledge, training, and capacity building for urban transport in the broader context of urban development.** Involvement of the World Bank team on this project will support the ongoing work performed by colleagues on the Indonesian National Urban Development Project (P163896) and the Indonesia Infrastructure Finance and Energy Transition Development Policy Loan (P171353).

F. Lessons Learned and Reflected in the Project Design

41. Lessons learned from international experience in mass transit and national support platform development and from previous World Bank Group-financed urban transport projects have been incorporated into the design of each Project component:

[16] Grant funding has also been obtained from the Japan-World Bank Program for Mainstreaming Disaster Risk Management in Developing Countries to support the proposed project with preparation of technical guidelines on resilience building standards for the IMTP. The grant understands Indonesia as one of the most disaster-prone countries in the world. The grant funding will also support capacity building of staff within MoT and the Ministry of Public Works and Housing, as well as support the two selected urban areas of the IMTP with resilient urban mobility diagnostics.

I) **The importance of having a national-level program in place.** Over the last two decades the World Bank has been supporting public transport activities in over 30 countries. Success of BRT systems in Bogota, Mexico, and other country are strongly determined by the initiation of national urban transport program. The program works as a platform that aids the development of mass transit in several big cities. A well-designed national support program for urban transport would help in coordinating national and subnational levels of government and generates substantial benefits. MASTRAN has adopted this approach and will help finalize the complete program design while in parallel start the implementation of the first stage project.

II) **The urgency for early implementation of robust institutional structures.** Early implementation of institutional, and stakeholder strategy is key to ownership of the project and its success. Since mass transit and public transport systems require the collaboration between various Government agencies, it is important to define clear roles and responsibilities in the implementation of mass transit projects that are inherently complex and will be captured through MoU and/or agreement between the two. The support from National Government did not waive the responsibility of sub national government for operation and maintenance, even though they are the lead actor in the implementation stages. Institutional organization with adequate capabilities, both at the national and sub-national levels, are a must to reach mass transit development benefit.

III) **The relevance of an integrated mass transit network.** Project design should focus on comprehensive multimodal integration with a strong emphasis on accessibility and integration in the urban environment. The system is designed as part of a comprehensive public transport system with the BRT as its backbone and complemented by a large regular and feeder bus and *angkot* network. The experience of implementing mass transit in cities with existing public transport operators of varying levels of self-regulation or informality shows that stakeholder engagement is critical for a viable and sustainable operation that ultimately benefits the users. Some developing world cities have managed to incorporate existing operators into BRT operations by reforming regulations such as permits or service contracts while enforcing minimum standards for vehicle and service quality and safety. The operation of the BRT and its direct feeders will be closely joined to foster better integration. The design of the BRT infrastructure and stations puts a strong emphasis on accessibility by pedestrians, safety, and inter-exchange with other transport modes through big terminals and several important stations.

IV) **The importance of ensuring financial sustainability and promoting PCM.** There are important lessons from mass transit projects in other countries pointing to the importance of financial sustainability and PCM in the success of such systems and the need for special attention to securing adequate resources for optimal utilization of assets during operations phase. Financial instruments in the development of mass transit are the key to motivate sub-national entities to generate and implement urban transport projects. However, there is still a challenge that cities are experiencing since operations will likely need subsidies to ensure the sustainability of the system. Initial estimates of the expected annual deficits have been developed which will be finetuned before the completion of construction. The fiscal analysis of the sub-national government indicate that there is sufficient fiscal space and surplus to accommodate the likely annual deficits from the projects. The Project will support the sub-national agencies in the preparation of sound financing plans for the BRT project. It is expected that private investment will be mobilized through private sector procurement of the vehicles and operations and maintenance of the fleet. The government, possibly through a state-owned or regional enterprise, will set and collect tariffs, and provide infrastructure including land acquisition. The contract is proposed to be as per gross cost model and its variants, where revenues are managed by the

government (or SOE) and the private operator is mainly paid for services performed with incentives. A competitive tender for the private operator, along with incentives for efficient performance, will help determine the lowest subsidy needed for the optimal performance while still maintaining appropriate risk allocation. The program requires the mass transit project to be conceived within the sustainable financial plan of the metropolitan area and ensures the ownership and commitment of the sub-national government in the long-term project implementation.

V) **The need for conducting stakeholder consultations and implementing an effective communication strategy.** The project design reflects best international practices from the successful BRT projects in the world and yet accommodate local context. National support should be flexible to respect the diverse city needs. The best way to gain perspective on local context is through direct consultation with local stakeholders and inclusiveness in the planning stage. Their participation is also maintained during the development of the program. At the same time, a proper engagement strategy with existing operators to discuss and agree on the contours of their participation in the new system can reap rich dividends.

VI) **The importance of preventing and addressing** Gender-Based Violence **(GBV) and women safety concerns.** Women are considered as high potential passenger for public transport but often face higher risk on violence. There are many efforts could be taken to mitigate the risk and it start from the system design. The new mass transit should be designed as convenient as possible for women without exposing them to any safety concern.

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

42. **The Ministry of Transportation (MOT) will be the implementing agency for the Project** and responsible for project implementation, financial management of the IBRD loan proceeds, implementation of environmental and social management requirements in accordance with the World Bank's Environmental and Social Framework (ESF), and the procurement and management of all contracts under components 1 and 2. Under component 1, MOT will provide technical assistance to sub-national governments related to project preparation and implementation and develop Indonesia Mass Transit Program. Under component 2, MOT will develop BRT infrastructure and system and then upon construction completion, the BRT infrastructure and system will be transferred to West Java Province and North Sumatera Province, as in-kind contributions, for sub-national agencies to operate and maintain. Other responsibilities of MOT will include coordination and monitoring progress of project preparation and implementation, holding regular meetings with internal implementing units as well as sub-national agencies to ensure on target and on schedule progress; analyzing ongoing project to ensure that all supporting facilities are available as planned; analyzing consultant reports from sub-national governments to ensure that implementation at the central and sub-national levels are in line with plans; providing direction to coordination teams at sub-national levels to ensure that the implementation processes remain on track; report progress regularly to the steering committee and escalate any significant implementation problems that must be resolved at the inter-ministerial level. MOT will be assisted by subnational agencies in BBMA and Mebidang in carrying out its project implementation responsibilities.

43. **A Project Steering Committee and a Project Management Unit (PMU) have been established** under the Directorate General of Land Transportation (DGLT) of the MOT. The project steering committee, chaired by Director General of Land Transportation of MOT and composed of, among others, Echelon I officials from the line ministries listed in the Project Implementation Manual, provides strategic guidance and oversees Indonesia Mass Transit program development and implementation as well as project preparation and implementation, and also facilitate inter-ministerial coordination. The PMU is responsible for carrying out day-to-day management, implementation and coordination of Project activities and development and implementation of the program. The PMU is led by the Secretary of DGLT, who signs formal letters related to project preparation and implementation, and is assisted by the Director of Road Transportation of MOT as coordinator. The day-to-day responsibility of PMU is managed by the Secretariat of PMU, especially on the coordination between PMU and sub-national governments. The PMU will be supported by a Program Management Consultant (ProgMC) to assist DGLT in implementing the institutional and capacity development and managing the development and implementation of the program; and a Project Management Consultant (PMC) to assist the PMU in managing the demonstration projects. As DGLT is also responsible in delivering the development of BRT infrastructure and system, a Project Implementation Unit (PIU) has also been established under Directorate of Road Transportation of DGLT. The PIU will be led by the Director of Road Transportation of MOT and the members of PIU will include other directorates within DGLT. The PIU is responsible for managing contracts related to the development of the BRT systems and coordinating with the PIUs in the two provinces. The PIU will be supported by Detailed Engineering Design and Construction Supervision Consultants (DSCs) to design the BRT systems and supervise the implementation of civil and other physical works. A ProgMC, a PMC and two DSCs will be hired by not later than three months after the effective date of the Loan Agreement for the project.

44. **MOUs (and agreements to be entered into pursuant to the MOUs) between central government and provincial and regional governments will govern the respective roles and responsibilities**. MOU between central government and West Java Province, and city and district governments in BBMA as well as MOU between central government and North Sumatera Province, and city and district governments in Mebidang have been signed. In the MOUs, central government is represented by Director General of Land Transportation, and BBMA is represented by West Java Governor and also mayors/head of districts in BBMA, and Mebidang is represented by North Sumatera Governor and also mayors/head of district in Mebidang. The MOUs sets responsibilities of central government and provincial/city/district governments. Responsibility of central government will include providing technical assistance to sub-national governments related to project preparation and implementation and developing BRT infrastructure and system to be handed over to West Java Province and North Sumatera Province, as in-kind grants, to operate and maintain. Responsibility of subnational governments (provincial/city/district) will include land acquisition and resettlement costs (especially for depots and bus stations), costs related to social risks mitigation, procuring rolling stock (buses), BRT system operation and maintenance costs, and establishment of an institution to manage, operate, and integrate BRT with other public transport services in the metropolitan area. The MOU provides for a working level agreement to be signed by the parties. The MOU and/or such working level agreement will also reflect project-specific undertakings of the parties, such as the responsibilities to carry out the project activities in accordance with the ESCP and Project Implementation Manual. The signing of such MOU and working level agreement with the sub-national agencies in a metropolitan area, under terms and conditions satisfactory to the Bank, is a withdrawal condition for the withdrawal of loan proceeds allocated to support activities under Component 2 of the Project in the respective metropolitan area

45. **Sub-national government will establish and/or designate a subnational owned partnership company (BRT Management Entity) to manage, operate and integrate BRT with other public transport services in**

metropolitan area. A subnational owned partnership company will enable cities and districts in metropolitan area to have share in the company, so that it can be used to integrate service in metropolitan area and funding from different jurisdictions. The province is expected to have a share of minimum 51%. West Java Province is preparing to change one of its companies to become a subnational owned partnership company and this company will contract out the BRT service operations and maintenance to private operators. In terms of planning integration, West Java has established BBMA management agency. North Sumatera Province shall prepare the institutional model and structure to manage and integrate BRT with other public transport services in Mebidang as part of SUMP development as well as technical assistance under the Project. To ensure proper project implementation, it is envisaged that a BRT Management Entity will be established and/or designated by the subnational agencies in each metropolitan area by not later than 12 months prior to the completion of relevant BRT system construction or 24 months after the effective date of the Loan Agreement for the project, whichever occurs first. It is also envisaged that the established/designated BRT Management Entity in each metropolitan area will enter into BRT operator contracts with one or more private operators, each in form and substance satisfactory to the Bank, by not later than 6 months prior to the completion of relevant BRT system construction.

46. **West Java Province and North Sumatera Province will each set up a Project Implementation Unit (PIU)**. PIUs will be responsible in delivering sub-national government responsibilities, especially in implementing the social and environment mitigation measures, ensuring availability of rolling stock (buses) and operation and maintenance costs, as well as in establishing an institution to manage and operate BRT system (the sub-national-owned partnership company), all as set forth in the MOUs/agreements and Project Implementation Manual. Other responsibilities of PIU will include coordinating all activities with relevant agencies and across the boundaries of the cities and districts comprising the metropolitan areas, and with the central government agencies. The head of PIU is an echelon III official from the transport agency of the provincial government and the members are from the provincial as well as cities/districts government. The provincial PIUs will coordinate with national government agencies, DGLT PMU and PIU and supported by PMU Secretariate. The PIUs will be established by not later than 2 months after the effective date of the Loan Agreement for the project. West Java Province has established a project preparation team to work with MOT and cities/districts in BBMA during project preparation. The members are from different institutions that will be responsible for implementing BBMA responsibilities. The project preparation team can be amended to be PIU by not later than 2 months after the effective date of the loan agreement for the project. Similar arrangement is proposed for Mebidang.

47. **The Project Implementation Manual** will guide the implementation of the Project.

B. Results Monitoring and Evaluation Arrangements

48. **The project results will be monitored by the PMU (established under MoT) with inputs from the PIUs (established under the sub-national governments) based on the Results Framework described in the Section VII.** For this, the PMU at MoT will be staffed with a Monitoring and Evaluation (M&E) Specialist. The PMU will prepare implementation and performance progress reports with inputs/data from the PIUs for their activities on a semiannual basis. The progress reports will be due one month after each reporting period. Progress reports will be prepared by the PMU, endorsed by the Project Coordinator, and approved by the Project Steering Committee. In addition to provide information on the Results Framework indicators, these progress reports will include the updated plan for civil works implementation and other activities, addressing environmental, social and fiduciary aspects. User and non-user (but potential users such as motorcycle users) satisfaction surveys will be conducted

at the start and end of the project to solicit feedback from citizens in regard to their satisfaction with the transit service. The PIUs and sub-national governments will be an important source of information and will support monitoring the progress on the works targets associated to both BRTs in BBMA and Mebidang. The approved progress reports will be shared with the World Bank before implementation support missions to guide the discussion of key issues affecting project implementation. The PMU and sub-national PIUs will be responsible for agreeing their annual work plan and budgets with the Bank every year. Finally, a Mid-Term Review Mission shall be organized at Project mid-term which will include a comprehensive review of all aspects of project progress and performance.

C. Sustainability

49. **The project will provide technical assistance to operationalize IMTP and ensure its long-term sustainability. The Sub-component 1A will provide support to MoT and sub-national governments to structure and institutionalize IMTP not only in BBMA and Mebidang, but also in the other priority cities identified in the RPJMN for 2020-24.** The main objective of that sub-component is to support GoI to fine-tune and operationalize the national program, including the (i) revision and development of the necessary regulatory framework; (ii) technical assistance to support mass transit projects preparation in other Indonesian metropolitan areas; and (iii) the development of guidelines, manuals, and other technical materials. The experience and lessons learned from the implementation of the demonstration mass transit projects in BBMA and Mebidang will be considered to refine IMTP and ensure its sustainability.

50. **The project will support institutional development at both national and sub-national levels to contribute to mass transit projects' long-term operation, maintenance and sustainability.** The project will support the establishment of national and sub-national institutional structures with appropriate skills and capacity to plan, develop and manage mass transit systems to ensure the long-term sustainability of BBMA and Mebidang BRTs and other future mass transit systems in Indonesia. In particular, the Sub-component 1B will provide support to strengthen the technical, operational and administrative skills of MoT and sub-national governments for medium- and long-term management, supervision, and maintenance of the new BRTs in BBMA and Mebidang. This will include, among others: (i) recommendations on organizational structures, necessary skillsets, staffing plans and policy reforms to implement and operationalize the proposed institutional structures at national and sub-national level; (ii) capacity building programs (e.g. workshops, trainings, exposure visits and peer-to-peer knowledge exchange activities).

51. **BBMA and Mebidang BRTs financial sustainability will be ensured with the revenues generated by systems, the provision of subsidy by the subnational government for supporting operations, and the PPP arrangements for the provision and operation of the fleet systems.** The currently saturated demand along the selected urban corridors in BBMA and Mebidang provides a promising ridership to the BRTs when in full operation. In addition, integration with or improvement of the *angkot* system will enhance the BRTs impact and will generate further demand of public transport by ensuring better services to the users. This increased demand will lead to significant commercial revenues from fares. There is also potential for non-fare revenues from advertising, leasing and land development around stations. Furthermore, the proposed PPP arrangements for the provision, operation and maintenance of the BRTs fleet will contribute to sustainability of services delivered by private operators. A concessionaire will be selected through a transparent and competitive bidding process to finance, operate and maintain buses along the selected corridors in BBMA and Mebidang. With provision for adequate budgeting for

deficits during operations phase, one could expect to lower the risk and widen the competition, thus contributing to the long-term financial sustainability of the system. In this project, PPP Arrangements have been defined as: "the arrangements to engage private sector operator(s) through the Borrower's public-private partnership law and/or multi-year contracts under the Borrower's public procurement law".

IV. PROJECT APPRAISAL SUMMARY

A. Technical Economic and Financial Analysis

Technical Appraisal

Mebidang

52. **Corridor Selection.** The proposed BRT corridor in Mebidang is a natural existing corridor with adequate space to insert segregated bus lanes for BRT. The corridor, 21 km in length (18 km if we consider only one one-way leg in the centre), runs from Pinang Baris Terminal in the west of the city, through the central business district, before turning south and ending in Amplas terminal. The corridor has potential to be extended in the future to Sunggal and Binjai City in the west and Tanjung Morawa and Lubuk Pakam in the east.

Physical Design. Design will incorporate best practices in BRT infrastructure. The Mebidang BRT will generally run in exclusive bus lanes located in the median of the existing roads, with central stations. In the central area, the corridor operates using parallel one-way streets due to restricted road width. The corridor will have 31 stations, 2 terminals with an average distance of 650 m between stations. Design will incorporate all elements for a top end BRT: i) closed stations with ventilation, with design interventions for universal access, ii) automatic fare collection off-board, iii) on level boarding, iv) actions for flooding resilience and reduce impacts of seismic events, v) BRT access infrastructure (footpaths, sidewalks, stations, traffic lights, street lighting) designed to reduce travel times and enhance road safety to ensure safe access of passengers to the median stations, security, accessibility, and walkability of beneficiaries and vi) optimized architectural designs to reduce fuel and electricity consumption by incorporating solar panels and rainwater collection. The designs and bidding documents will include technical specifications and key elements to reduce transmission of disease and address gender needs, PWD, and other vulnerable users by providing safe access to/out of stations (including bus stops), entrance to and exit from buses, as well availability of space in buses. Design concept uses the existing right of way, with reduces need for land acquisition. Most of the carriageway will require pavement improvement but with also reduced need for total pavement reconstruction. As areas are consolidated, needs of utilities relocation will be small. Bus stops outside the corridor will have proper design and branding of the BRT system.

53. **Demand and performance.** The operational concept for the corridor uses direct service routes (open system) that minimizes transfers. Seventeen existing routes will be replaced by the BRT service. These routes start and/or end outside the BRT corridor, with at least 30% of each route length being within the corridor. Operation will be performed with modern, clean, new vehicles. The exclusive bus lanes in the corridor will allow the BRT services to operate at an average of 19 km/h, inside the corridor, compared to 10 km/h for the corridor as a whole before the project. Average travel time over all modes will reduce from 45 minutes to 36 minutes, a reduction of 20% in travel time. Estimated demand is 150 thousand passengers per day. 76% of the ridership is

expected from existing demand of the direct service routes, and balance attracted from competing routes and from mode shift from cars and motorcycles.

54. **Accessibility.** The existing public transport provides poor accessibility to jobs for the nearly 5 Million residents of Mebidang. The functional urban area, which excludes rural and low-density locations, houses a population of 4.0 million people and provides 2.1 million jobs[17]. Only 466,000, or 22 percent of total jobs in the functional urban area, can be reached within 60 minutes travel using the existing public transport system and 840,000 (40 percent) within 90 minutes[18]. Implementation of the BRT increases the number of jobs that can be reached within 60 minutes to 526,000 (25 percent of total jobs), while the equivalent figure for jobs within 90 minutes travel time increases to 958,000 (46 percent of total jobs). Implementation of the BRT is thus expected to improve regional accessibility by 13 percent and 14 percent for 60- and 90-minute travel time respectively.

55. **Operations.** Operations will be monitored by a control center with information systems for users, operators, and management organization. The system will implement an Automated Fare Collection with smart cards and new technologies (including to ensure COVID-19 preparedness) that may have an independent service provider to give more transparency to the system. Operational design will consider reorganization of existing public transport routes to optimize performance and productivity. Services will be provided through contracted private operators that may or may not be responsible for fleet procurement. The nature of the contract, whether bundled or unbundled, and number of operators will be determined at the business model stage including based on market appetite. The contract is proposed to be on gross cost format with revenue risk substantially being borne by the public agency. There is a spectrum of business models ranging from pure gross cost to hybrids and other variants and this requires a detailed study and discussion to decide the best alternative for the project. International Finance Corporation (IFC) has a study ongoing to assess the private sector capacity and risk appetite for BRT/bus operations in Indonesian cities.

56. **Intelligent Transport System (ITS).** All ITS systems procurement will require open protocols to facilitate the participation of different providers and developers to participate in biddings. Fare collection, fleet management, security and user information systems will be procured with requirements of open protocols and mapping to allow integration among the systems. Fare collection validation will occur at stations (in the BRT corridor) and inside buses (outside the BRT infrastructure).

57. ***Angkot* reorganization.** The reorganization of *angkots* along the proposed corridor can help improve BRT demand and performance. This is a much broader in scope as it requires not just redefining routes and service frequencies but also involves negotiations with existing operators and community consultations for their inclusion into the BRT operations as well as feeders, and the development of a new business model for the system. BBMA and Mebidang could implement the models implemented in Jakarta and Semarang, or modification of the two models.

58. **Integration.** The BRT corridor passes in close proximity to Medan Railway Station and can thus integrate with commuter rail services. Future plans for a north-south LRT line also cross the BRT corridor in the center of the city and current planning includes integration with the LRT line. The two end points of the BRT corridor, namely Amplas and Pinang Baris terminals are also major terminals for suburban bus services, providing

[17] Mebidangro Sustainable Urban Mobility Plan, Diagnosis Report, Egis, 2021
[18] Analysis by World Bank Transport team, 2021

excellent integration with such services. Detailed design will include integration with bicycles and motorcycles at a number of the BRT stations.

59. **Other benefits from the BRT implementation.** The BRT design will be done from “facade to façade" within the road right of way in order to organize street space and give better sidewalks, road safety and environmental design. As design considers mostly the existing right of way and use of standard and medium size buses, pavement reconstruction will be restricted to where the pavement is not in good condition. New buses, covered bus stops, closed stations and new vehicles will improve the trip experience for users. Improved reliability will give more assurance to access transportation and manage time. The design will include traffic management measures to prioritize bus movement along the corridor, but which will also improve traffic circulation and decrease congestion.

Bandung Basin Metropolitan Area BRT

60. **Corridor Selection.** The proposed corridor follows the west-east city development axis, which corresponds to the main traffic flow directions. The west corridor is a natural path to link the City of Cimahi in the west to Terminal Cicaheum in the northeast area. The corridor has 17.3 km of segregated lanes and 3.1 km of mixed traffic. The corridor considers the extension to the center south area of Bandung down to Tepallenga Park. The BRT infrastructure has a T shape to allow services to reach the center of the city. The BRT network can be extended later to include the ring formed by Jl Jamika/Peta/BKR/Pelajar Pejuarang/Laswi and the southeast region through Jl Jendral Gatot Subroto and Kiaragondong.

61. **Physical Design.** The BBMA BRT design is restricted by streets width. The system will use one direction curbside segregated lanes and curbside stations. The network will have 36 stations, running on one-way streets. The same, high-quality BRT design features described for the Mebidang BRT will also be applied in BBMA.

62. **Demand and performance.** As is proposed for the Mebidang system, the operational concept for the BBMA BRT is direct service routes (open system) that minimize transfers. 16 existing routes, with at least 30% overlapping with the corridor, will be replaced with BRT services. Operation will be performed with modern, clean, new vehicles. Speed for the BRT services will be 17 km/h, compared to 10 km/h for the corridor before the project. Average travel time over all modes will go from 45 minutes to 40 minutes, with a reduction of 11% in travel time. Estimated demand is 99 thousand passengers per day. 79% of the demand is estimated to be from the existing routes that will be transformed into direct services, and the remainder from other competing routes and from mode shift from cars and motorcycles.

63. **Accessibility.** The impact of more serve congestion makes travel speeds in the BBMA slower than Mebidang. While the population density of the City of Bandung is almost twice that of Medan City, less than 30 percent of the metropolitan population live with the City of Bandung. The dispersed urban structure of the BBMA, coupled with higher levels of congestion, result in accessibility being significantly worse in BBMA than Mebidang. The BBMA covers the full extent of the Bandung Basin and includes large tracts of agricultural and forest land. The accessibility analysis therefore assessed the functional urban area, where residential density exceeds 40 person per hectare, or where peripheral areas are economically linked to the city of Bandung by daily commuter flows. Of the 9 million population in the BBMA, 7.8 million live within the functional urban area, which also provides 2.8 million jobs. An exceptionally low figure of 10 percent of employment in the functional urban

area, namely 290,000 jobs, can be reached within 60 minutes by the existing public transport system. This increases to 587,000 jobs, or 21 percent of employment, reachable within 90 minutes. The dedicated lanes provided by the BRT are expected to make a significant reduction in travel time, and this is reflected in the number of jobs reachable within 60 and 90 minutes increasing to 350,000 (13 percent of jobs within the functional urban area) and 683,000 (25 percent of jobs) respectively. This is equivalent to a 21 percent improvement in the number of jobs accessible within 60 minutes, and 16 percent within 90 minutes.

64. **Operations.** Operations will be monitored by a control center with information systems for users, operators, and management organization. The system will implement an Automated Fare Collection with smart cards and new digital technologies (including to ensure COVID preparedness) that may have an independent service provider to give more transparency to the system. Operational design will consider reorganization of routes to optimize performance and productivity. Services will be provided through contract with private operators with or without fleet procurement, on gross cost contract basis or its variants.

65. **ITS.** All ITS procurement requirements will be the same as for Mebidang.

66. ***Angkot* improvement or reorganization**. Stakeholder engagement, planning and implementation support for the reorganization, improvement and inclusion of *angkots* and other existing operators to ensure improved services for users and complementarity with the BRT will be part of the Project as in Mebidang.

67. **Integration.** Direct services will have itineraries adjusted to integrate with the existing commuter rail services at Cimindi, Central and Kiaracondong rail stations. The BRT will have a small overlap with the future LRT north-south line on Jalan BKR, where interchange facilities will be provided.to ensure easy transfer. The detailed design will also investigate integration of the BRT and LRT systems at the intersection Jalan Asia Africa and Jendral Ahmad Yani. Design will include facilities for integration with bicycles and motorcycles.

68. **Other benefits from the BRT implementation.** Implementation of the BRT will entail reorganization of street space and give better sidewalks along the corridor, feeder roads and around stations, road safety and environmental design. As design considers mostly the existing right of way and use standard/ medium buses, pavement reconstruction will be restricted to where the pavement is not in good condition. New buses, covered bus stops, closed stations (with ventilation to ensure COVID-19 preparedness) with disabled friendly accessibility designs and new vehicles will improve trip experience. Improved reliability will give more assurance to access transportation and manage time. The design will include better traffic management along the corridor that can also improve circulation and decrease congestion.

69. **Road Safety.** Safety of road users, particularly of vulnerable road users will be addressed in the design of the BRT systems with the focus on safe access to the stations, safe pedestrian crossings, sidewalks and other safety facilities. Road safety audit of the designs and during construction are planned as part of due diligence and quality assurance work.

70. **E-Mobility Adoption Roadmap**. The World Bank has been implementing a TA on "*Electric Mobility Roadmap for the Indonesian Mass Transit Program*"[19] to: (i) review the e- mobility global trends and conduct a

[19] A selected consortium of firms, led by the Institute of Transportation and Development Policy (ITDP) and supported by the

market and regulatory/policy assessment of e-mobility in Indonesia; and (ii) provide technical advice and practical recommendations to assist GOI/MOT to develop a roadmap to adopt e-mobility in mass transit systems in BBMA and Mebidang. The preliminary findings of this TA recommended a staged deployment of e-buses (and the related charging infrastructure) on both BRTs in BBMA and Mebidang. MOT has limited capacity to manage mass transit systems, let alone e-buses, but they are keen to explore this option. During project preparation, the World Bank will continue providing support to MOT to promote the deployment of e-buses on selected BRT routes using the most suitable business models to leverage private sector participation.

71. **Resilient Urban Mobility**. A study was undertaken on Resilient Urban Mobility Diagnostics for Indonesian Cities to improve the design, construction, and operations of urban transport systems and infrastructure in Indonesia, with a focus on mass public transit (including LRT and BRT networks) by incorporating disaster resilience standards and good practices for risk-informed planning, resilient design and construction practices, and business continuity planning during and after disaster shocks. It helped developed Resilient Urban Mobility Diagnostics for BBMA and Mebidang that identify disaster risks including mitigation measures. Detailed climate risk screening and mitigation measures are included under Section VI. Key Risks.

Economic, Financial & Fiscal Analysis

72. The Mebidang BRT project has a Base Case IRR of 13%, with an NPV (discounted at 7% p.a. to 2021) of IDR 1336 billion. And the BBMA BRT project has a Base Case IRR of 10%, with an NPV (discounted at 7% p.a. to 2021) of IDR 510 billion. The composition of costs and benefits is summarized in the Table 1 below.

Item	Mebidang NPV (IDR bill)	BBMA NPV (IDR bill)
Capital expenditure	-1101	-959
User benefits	2519	1392
Vehicle operator costs (net)	227	453
BRT maintenance and management costs	-532	-490
Externalities	223	114
Total	1336	510

73. Sensitivity tests have also been undertaken to assess the robustness of the estimated IRR to variations in capital costs, demand and operating costs and this is found to be the case.

74. **The financial impact** of the project once it is in operation has been calculated as the difference in revenue and operating cost of the BRT less the cost of maintaining the BRT infrastructure. This is summarized for key years in Table 2 and 3 below[20].

International Council on Clean Transportation (ICCT), was mobilized to support the World Bank with this TA implementation, which was funded by the Mobility and Logistics (MOLO) Trust Fund and the Energy Sector Management Assistance Program (ESMAP).

[20] The 2024 estimates include the impact of the ramp-up of demand in the initial years.

Table 2 Mebidang Revenues and Expenditure 2024 – 2054 (IDR billion)

	Revenue	Bus operating cost	Infrastructure maintenance	Operating staff	Net
2024	141	241	28	15	-144
2030	255	327	28	18	-119
2035	270	349	28	21	-128
2040	284	367	28	24	-135
2045	311	386	28	28	-131
2050	327	405	28	33	-139
2054	337	418	28	36	-145

Table 3 BBMA Revenues and Expenditure 2024 – 2054 (IDR billion)

	Revenue	Bus operating cost	Infrastructure maintenance	Operating staff	Net
2024	74	140	25	15	-106
2030	134	191	25	18	-99
2035	143	203	25	21	-106
2040	150	214	25	24	-113
2045	158	225	25	28	-120
2050	166	236	25	33	-128
2054	171	243	25	36	-133

75. In a typical year, the net cost to government, under the assumptions embedded in the traffic modelling which forms the basis for the evaluation, is around IDR 120-140 billion, of which about IDR 50 billion is for infrastructure maintenance and system operating staff (stations and control centre) and IDR 70-90 billion is for the deficit on bus operations. The deficit cannot be solved by simply raising fares. Raising fares will impact the user affordability and reduce demand.

76. **Fiscal Analysis**. A review of West Java/ Bandung City/ Bandung District/ West Bandung District and North Sumatera/ Medan City's fiscal resources suggests that both sub-national governments (SNGs) have sufficient fiscal resources to fund the annual BRT deficits. This is reflected in three fiscal parameters, (i) size of transport-related taxes and levies (vehicle tax, vehicle transfer tax, and fuel tax); (ii) fiscal space, and (iii) fiscal surplus. More details are included in the Annex 3.

77. The fiscal space was estimated by deducting annual revenues with permanent commitments and earmarked spending, which consist of indirect personnel spending, revenue sharing and financial assistance to other regions, and the specific allocation grants (DAK). For both North Sumatera and Medan City, the annual BRT operational cost was about 4-8% of their annual fiscal spaces. Further, during 2017-2019, the combined surplus of both sub-national governments were about 5.5 to 7 times more than the annual BRT cost. While budget surplus should not be planned, this perennial phenomenon among SNGs should enable both SNGs to cover the BRT operational cost.

78. West Java's and Bandung City's fiscal spaces were much larger than the annual BRT cost. This cost was about 2% and 5% of West Java's and Bandung City's annual fiscal spaces. During 2018-2019, West Java's budget surplus was 20 times larger than the annual cost, while the Bandung City's were 50% larger than the annual cost.

79. **GHG Emissions**. The Table 4 below outlines the GHG emission savings from the two demonstration projects. The net effect of the project is to reduce GHG emissions by 16,000 tonnes p.a. over the next 30 years.

Table 4 GHG emissions (tonnes 000 CO2e) 2024 - 2054

	Over project lifetime			Annual average
	With project	Without Project	Net Saving	Net Saving
		BBMA		
Transport	1,798	2,026	228	8
Construction	37		-37	-1
Total	1,835	2,026	190	6
		Mebidang		
Transport	1,470	1,781	311	10
Construction	37		-37	-1
Total	1,507	1,781	274	9
		Combined		
Transport	3,268	3,807	539	18
Construction	74		-74	-2
Total	3,342	3,807	463	15

B. Fiduciary

(i) Financial Management

80. This Financial Management Assessment (FMA) assess the adequacy of the financial management system of the implementing agencies, Directorate General of Land Transportation (DGLT) of Ministry of Transportation (MoT) as the implementing agency to produce timely, relevant and reliable financial information on MASTRAN activities, and if the accounting systems for project expenditures and underlying internal controls are adequate to meet fiduciary objectives and allow the Bank to monitor compliance with agreed implementation procedures and appraise progress towards its objectives. The financial management risk is assessed as being Substantial Risk before mitigation and Moderate after mitigation.

81. FMS has identified the main financial management risk of the MASTRAN due to (i) no experience of DG Land Transportation in Ministry of Transportation in implementing Bank financed project; (ii) the project required extensive coordination with the participating local governments. To mitigate the associated risk (i) FM consultant (as part of management/ supervision consultant) expected to be hired to support project implementation; (ii) the Project will need to prepare Project Implementation Manual (PIM). PIM will be used to guide project implementation and to monitor the progress of the project including arrangement to enable good coordination with participating local government covering organization structure, inclusion of program budget into DIPA of DGLT, payment verification mechanism, funds flow mechanism, IFR and financial statement preparation, disbursement mechanism and internal and external audit arrangement; and (iii) financial management training will be conducted before the project implementation start.

82. The applicable disbursement methods are Advance, Direct payment and Reimbursement; Special Commitment is not anticipated under the project. One (1) DA denominated in US dollars will be open in the Central Bank under the name of MoF. The DA will be a pooled account, with fluctuated ceiling, for receipts of funds from the Bank and AFD only. The DA will be used for financing eligible expenditures of the Project implementation. Applications for the replenishment of the DA advance may be submitted through quarterly IFR which consist of (i) DAs Activity Statement; (ii) Statement of Expenditures under Bank's prior review and non-prior review; (iii) Project Cash Forecast for 6 months period; and (iv) Project Sources and Uses of Funds.

(ii) Procurement

83. **Applicable Procurement Framework.** Procurement under the project that are partly or fully financed will be carried out in accordance with the World Bank's Procurement Regulations for IPF Borrowers fourth edition dated November 2020 (here in after referred to as "Procurement Regulations"), the relevant provisions of the Loan Agreement and the Procurement Plan agreed with the Bank. The Project will use the Systematic Tracking of Exchanges in Procurement (STEP) to plan, record and track procurement transactions.

84. **Use of National Procurement Procedures.** All contracts for goods, works, and non-consultancy and consultancy services to be procured in line with the national market approach shall follow the Indonesia's national procurement procedures (NPP) set out to follow Perpres No. 16/2018 and amendment Perpres no 12/2021, which were assessed and found to be broadly consistent with the requirement of the World Bank Procurement Regulations, section V - paragraph 5.4, National Procurement Procedures (subject to a few conditions specified in the Project Procurement Strategy for Development [PPSD]) and in the project text section of the Procurement Plan that will be approved at negotiations).

85. **Procurement capacity and risk assessment**. The DGLT, Ministry of Transportation would be the main Agency which would carry out all the procurements and contract management under the project. The procurement capacity assessment of the agency has been completed. Based on the assessment and the procurement profile of the project, the Procurement residual risk, after mitigation measures, is rated as "Substantial". Before mitigation the risk was considered high because the agency has no prior experience with implementing The World Bank financed projects and the agency has also not carried out such procurements as envisaged under the project.

86. **Procurement arrangements for the proposed project**: MoT drafted a Project Procurement Strategy for Development (PPSD) to inform fit-for-purpose procurement arrangements that will support the PDO achievement and submitted to the Bank. Based on the PPSD findings, the Procurement Plan detailing out the methods of procurement, contracting mechanism etc were finalized. Both the PPSD and Procurement Plan will be regularly updated during project implementation as needed. More details on the PCRA, procurement risk rating, and mitigation measures, as well as summaries of the PPSD and Procurement Plan are presented in Annex 3.

C. Legal Operational Policies Legal

	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

D. Environmental and Social

87. The project is expected to generate overall positive environmental and social outcomes. Construction of BRT lines in BBMA and Mebidang will not only ease congestion on the road but also reduce traffic accidents, emissions, noise, and air pollution. The Environmental and Social risk is now rated Substantial, lowered from High at the concept stage, as the scope of Component 2 is now narrowed to two Bus Rapid Transit (BRT) constructions in BBMA and Mebidang. As Light Rapid Transit (LRT) has been dropped, the project will unlikely require significant land acquisition. Land Acquisition and Resettlement Action Plans (LARAPs) have been prepared for BRT constructions in BBMA and Mebidang based on the information available at the feasibility study stage which found that limited land acquisition is expected where bus stops and BRT platforms are built and if bus depots cannot be built on publicly owned lands. The exact scale of land acquisition will be known when detailed designs are prepared during implementation and the LARAPs are updated to present the exact scale and scope of impacts as well as applicable mitigation measures based on the principles provided in the LARAPs that have been prepared. Significant social impact due to labor influx is unlikely given high local absorption capacity. Health and safety risks for local communities are expected both during the construction and operation phases, which can be mitigated through proper implementation of ESMPs. No Indigenous Peoples who meet the criteria of ESS7 are found to be present in project areas. The Project will affect the job of local transport providers (*angkot*). Based on the preliminary assessment, the Project will likely affect about 1,300 *Angkot* operators in Bandung and 2,300 operators in Medan. The project plans to use a similar approach to mitigate impact on *angkot* operators as is done under BRT constructions in other cities in Indonesia and employ affected *angkot* operators under BRT operations with necessary training. Preliminary assessment shows that about 1,500 jobs may be created by the BRT operator in Medan while the equivalent figure is 900 in Bandung. Mitigation measures will be developed during implementation in close consultation with *angkot* operators. The preliminary ESIA includes a social assessment of the project impact on *angkot* operators which will be updated when the *angkot* integration plan is finalized which will determine which *angkot* routes are retained or modified and what jobs are to be offered to *angkot* operators with what training. Stakeholder engagement plans (SEPs) have been prepared both for Mebidang and BBMA BRT constructions based on the on-going consultations with stakeholders including *angkot* operators.

88. For Component 1 which supports various TA activities including preparation of detailed engineering designs (DEDs), E&S capacity building of national and SNGs Transport Agency, and other technical studies for BRTs infrastructure, facilities and equipment, an Environmental and Social Management Framework (ESMF) was prepared to address associated environmental and social risks including the preparation of design stage ESIAs and LARAPs. The ESMF will assist the development of mass transit projects (i.e. only BRT) in other cities. The ESMF provides the framework for support to relevant project actors—both government and non-government stakeholders—for environmental and social risk management and engagement. The ESMF also provides generic measures and plans to reduce, mitigate, and/ or offset adverse risks and impacts as well as grievance redress mechanism and cost estimation for the ESMF implementation. The draft ESMF was disclosed on December 1, 2021,

and its hybrid virtual and face to face consultation meetings were held on December 9, 2021 in Medan and on December 13, 2021 in Bandung, and the final version of ESMF was redisclosed to the public on January 27, 2022.

E. Gender

89. **Despite women's higher dependency on public transport than men, the lack of secure and safe transport infrastructure and services have limited their mobility in BBMA and Mebidang.** Women combined roles (domestic and care-giving tasks and employment and income-generating activities) lead to more complex daily mobility patterns than men in BBMA and Mebidang. Most global studies that examine transport use postulate that women are more likely than men to use public transport, because they lack independent access to private transport and public transport is more economical and affordable. In Indonesia, national data show that daily public transport use of workers/commuters is much higher among women. Girls and young women (ages 15 to 24) use public transport at nearly four times the rate of males, and consistently higher percentages of use (though declining) across all age groups. In contrast, males use of public transport is consistently low, hovering at around two percent[21]. However, the GESI assessment conducted by the World Bank for BBMA and Mebidang mass transit[22] revealed that women may choose to forgo mobility because of security concerns. Between 30-40 percent of women feel unsafe in the available public transport in BBMA and Mebidang[23]. Security is an even greater concern for those who use public transport at night (for instance, in BBMA, more than 85 percent of females report feeling unsafe at night while waiting for public transport or being on board). Focus Group Discussions (FGDs) conducted with female respondents in BBMA and Mebidang revealed that some of them have experienced sexual harassment in public infrastructure (in stations or transport vehicles), both physical and verbal assault.

90. **Women's labor force participation in the transport industry in Indonesia is among the lowest of any sector**. The Indonesian Bureau of Statistics or *Badan Pusat Statistik* (BPS) tracks employment in 17 different sectors, disaggregated by gender and urban or rural locales. Nationally, 6.47 percent of the population is engaged in transport-related employment. Urban women make up just 0.84 percent of the workforce in transport (including warehousing and communications), in comparison with 8.42 percent of men. TransJakarta only employs 11.0 percent of women. While there is a dearth of official data, similar disparities are likely reflected in BBMA and Mebidang. Preliminary investigations conducted by the World Bank reveal that the percentage of women employed in the existing Bandung Transport Agency is around 3.0 percent. As aforementioned, most employment opportunities in the transport sector are male dominated, but there are some high-profile examples where women play a relevant role. For instance, women make up 50 percent of the Blue Bird Group's senior management, but just 120 drivers among the company's rank-and-file 40,000 taxi drivers[24].

91. **MASTRAN will contribute to enhancing women's accessibility to education, health, and economic/income-generation opportunities and their agency, voice, and influence in the transport decision-making process.** The operation is aligned with the World Bank Group Gender Strategy (2016-2023) which identifies

[21] UNESCO; "Inequitable Impact of COVID-19 in Indonesia: Evidence and Policy Response"; 2020.
[22] The GESI assessment was funded by Government of the United Kingdom (UK) as represented by the Foreign, Commonwealth, and Development Office (FCDO) through the Global Infrastructure Program (GIP); and completed in March 2021 (Greater Bandung) and April 2021 (Greater Medan).
[23] One third of women in Greater Medan stated that they feel unsafe in the available public transportation. Source: AFD; "Mebidangro Sustainable Urban Mobility Plan. Diagnosis Report – Draft"; April 2021. In BBMA, the phone survey conducted in March 2021 revealed that nearly 40 percent of women felt "unsafe" waiting at bus stops, stations, and pick-up locations.
[24] Jakarta Globe (2017). "Women Seek Greater Role in Indonesia's Transportation Industry"; October 3, 2017; *link*.

gender equality as a key pathway to ensuring poverty reduction and inclusive growth[25]. MASTRAN will incorporate features in the design of the BRT infrastructure and fleets, including in the passenger stations, bus terminals and vehicles that will address women's needs based on their mobility patterns (traveling off peak, accompanied, or transferring to other transport modes) and personal security concerns (e.g. well-lit stations, including close circuit television (CCTV) cameras in transport vehicles and facilities, or deployment of women complaint hotlines). In addition to gender-sensitive infrastructure, other options to empower women in the mass transit governance and raise awareness to stimulate public transport users behavioral changes will be considered under the operation. MASTRAN's results framework will also track benefits for women; in particular, (i) women's satisfaction with security and safety of the BRTs; and (ii) women hired in BRT operations at managerial and crew levels in both BBMA and Mebidang BRT Management Entity.

V. GRIEVANCE REDRESS SERVICES

92. Communities and individuals who believe that they are adversely affected by the World Bank supported project may submit complaints to existing project-level grievance redress mechanisms or the World Bank's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the World Bank's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of the World Bank non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

VI. KEY RISKS

A. Risk Rating Summary Table

Risk Category	Risk Rating
Overall Project	**Substantial**
Political and Government	Moderate
Macroeconomic	Moderate
Sector Strategies and Policies	Substantial
Technical Design of Project or Program	Moderate
Institutional Capacity	Substantial
Fiduciary	Substantial
Environmental and Social	Substantial
Stakeholder	Substantial

[25] World Bank; "Gender Equality, Poverty Reduction, and Inclusive Growth: Gender Strategy (2016-2023)"; 2015.

B. Overall Risk Rating Explanation

93. The overall risk rating of this project is determined as 'Substantial'. It is the consequences of the high rating for risks pertaining in six out eight highlighted area. The six high and substantial risk areas are:

- **Sector Strategies and Policies: Substantial.** The sector strategies in urban transport are relatively undeveloped and evolving. The absence of a clear planning, institutional and funding framework for urban mobility has been a major constraint to the development of sustainable mobility solutions. Furthermore, the mobilization of different sources of funds requires high-level coordination and needs to follow various regulations. In order to mitigate these risks, the task team has been engaged in early discussions with Bappenas and Coordinating Ministry of Maritime and Investment Affairs and later with Ministry of Finance and Ministry of Transportation in ensuring (i) the inclusion of public transport as a priority in the RPJMN 2020-24 and the commitment to develop mass transit systems in six metropolitan areas, and (ii) establishing a steering committee and implementation strategy at national level. The team have also been in dialogue with GOI on the development of an Urban Mobility Policy.

- **Institutional Capacity: Substantial.** The first real BRT project outside Jakarta is subject to high institutional capacity risks due to: (i) technical capacity of the agencies to implement mass transit projects, (ii) multiple PIUs leading to complex coordination, and (iii) coordination and co-implementation risks with local governments. Several measures are being put in place to address these risks, such as the establishment of a technical team and technical secretariat supported by experts, under the steering committee, to coordinate the project and assist both national and local governments. The commitment towards the operation and maintenance responsibility and related deficits for the BRT from the SNG is crucial to the systems successful operation. The roles and responsibilities, and funding responsibility and mechanism between national, provincial and local governments in each metropolitan area are outlined and agreed, and documented in a Memorandum of Understanding (MoU) and a working level agreement to be entered pursuant to the MoU. The MoU is signed by DGLT and the Provincial Governor and the Mayors of respective cities and districts in the metropolitan area. Technical support will be extended to DGLT and the SNG for development of adequate institutional and funding arrangements. Preparation of a financing plan for the BRT operations and maintenance, provision of adequate budgetary commitments by the SNG, and timely contracting of private operators are among the mitigation measures incorporated under the project design.

- **Fiduciary: Substantial.** The Fiduciary risk is rated as Substantial after mitigation. The fiduciary risk covering both FM and procurement. The financial management main risk identified is mainly that DG Land Transportation in MoT has no prior experience with implementing the World Bank financed project. The proposed financial management mitigation as indicated in fiduciary section will satisfy the Bank's minimum requirements under Bank Policy IPF and Bank Directive IPF effective October 1, 2018, and be adequate to provide, with reasonable assurance, accurate and timely information on the status of the loan as required by the Word Bank. The Bank team conducted the procurement capacity and risk assessment of the implementing agency and rated the residual procurement risk as Substantial owing to the lack of prior experience of MoT for implementing the World Bank funded project.

- **Environmental and Social: Substantial.** The Environmental and Social risk is now rated Substantial, lowered from High at the concept stage, as the scope of Component 2 is now narrowed to two Bus Rapid Transit (BRT) constructions in BBMA and Mebidang. As Light Rapid Transit (LRT) has been dropped, the project will unlikely require significant land acquisition. No Indigenous Peoples who meet the criteria of ESS7 are found to be present in project areas. Some jobs for existing public transport service providers (microbuses owners and drivers) may well be impacted, but BRT operators may offer them jobs as they did in Jakarta.

- **Stakeholders: Substantial**. The stakeholder risk is substantial as there could be opposition from incumbent *angkot* operators to the project. Not agreeing to the reorganisation of routes and integration with the BRT could result in unhealthy competition and reduced demand and performance of the BRT system. Similarly, other affected stakeholders include shopkeepers and local vendors. The project proposes to ensure a proper communication and engagement strategy and the inclusion of the *angkot* operators into the BRT design or operations with the aim of improving services to users by ensuring a more safe and efficient integrated public transport system. The successful integration of *angkots* into the transit system in Jakarta and Semarang points to some successful models available in the Indonesian context.

- **Climate and Disaster Risks: Substantial.** Indonesia is very vulnerable to various climatic and natural disaster, particularly flooding, landslides, and earthquake. In 2019 along, Indonesia experienced 734 flood hazards and 685 landslides hazards[26]. The 'Resilient Mobility Diagnostics'[27] conducted for Bandung Metropolitan Areas as part of project preparation found that flooding, especially flash flooding, is the most disruptive climatic hazards affecting the project areas, particularly for networks in the city center and to the east and south of the city. Landslide risks following flooding are limited because slopes are mainly on the outskirts of the city hence outside of the project area. All stations and networks in Bandung are located in a high-level earthquake hazard area. For Medan, the Diagnostics indicates flooding as the major hazard the project network exposes to. In comparison, the exposure to earthquake and landslides are low. Looking forward, although the projections in rainfall are less certain cross various climate models, the trend is clear that precipitation is projected to increase for western (including Medan and Bandung) and southern areas of the country, with an increased in intensity for extreme rainfall events[28]. To mitigate the risks, several mitigation measures have been incorporated into project design, including locating key facilities away from areas of risk, if possible, raising station entrances in flood-prone areas, integrating drainage systems of the mass transit systems with city-wide drainage systems, and strengthening building structures to ensure they apply national earthquake resistance standards. Recognizing that it is impossible to mitigate all natural hazards, contingency measures will be put into place such as Business Continuity Plan, robust emergency communication systems, and comprehensive training programs.

[26] The Jakarta Post (2019). 3,622 natural disasters occurred in 2019: BNPB. TheJakartaPost. URL: https://www.thejakartapost.com/news/2019/12/18/3622-natural-disasters-occurred-in-2019-bnpb.html
[27] World Bank, 2021, Addressing Disaster Risk Management and Climate Change Adaptation for Mass Transit Systems in Indonesia Cities, Resilient Mobility Diagnostics for Bandung and Medan Metropolitan Area.
[28] World Bank, 2021, Climate Change Knowledge Portal, Country Profile for Indonesia.

VII. RESULTS FRAMEWORK AND MONITORING

Results Framework
COUNTRY: Indonesia
Indonesia Mass Transit Project

Project Development Objectives(s)

To improve urban mobility and accessibility on high priority corridors in selected urban areas of Indonesia and strengthen institutional capacity for mass transit development.

Project Development Objective Indicators

Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
Strengthen institutional capacity for mass transit development							
Establishment of an institutional structures to manage mass transit at the national level and sub-national levels (Text)		No dedicated unit within MoT and no operating entities at sub-national level to manage mass transit					Functional institutional arrangements at national and sub-national level
Establishment of an institutional structure (a dedicated equipped unit within MoT) to manage mass transit at the national level (Text)		No dedicated unit within MoT to manage urban mobility/IMTP	Endorsement of Indonesia Mass Transit Program design (Text)	Issuance of the IMTP policy	Development of regulation, manuals, and materials to support IMTP	Establishment of an institutional structure to manage mass transit at the national level (Text)	Dedicated equipped unit within MoT to manage urban mobility/IMTP
Establishment of institutional structures (BRT Management Entity) to plan and manage mass transit		Partially functional Transit Agency to plan and manage transit in Bandung city	Endorsement of the final design for the establishment of BBMA BRT Management Entity	Financing Plan for the Operations and Maintenance of the BRT systems prepared and	Establishment / Designation of an institutional structure (BRT Management	Contract for the Operations & Maintenance of the BRT system awarded	Functional BRT Management Entity to plan and manage mass transit systems in BBMA

Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
systems in BBMA (Text)			(Text)	approved	Entity) to plan and manage mass transit system in BBMA (text)		
Establishment of institutional structures (BRT Management Entity) to plan and manage mass transit systems in Mebidang (Text)		No Operating Agency to plan and manage mass transit systems in Mebidang	Endorsement of the final design for the establishment of Mebidang BRT Management Entity (text)	Financing Plan for the Operations and Maintenance of the BRT system prepared and approved	Establishment / Designation of an institutional structure (BRT Management Entity) to plan and manage mass transit system in Mebidang (text)	Contract for the Operations & Maintenance of the BRT system awarded	Functional BRT Management Entity to plan and manage mass transit systems in Mebidang
Women employed in BBMA BRT operations at both managerial and crew levels (percentage) (Percentage)		0.00					15.00
Women employed in Mebidang BRT operations at both managerial and crew levels (percentage) (Percentage)		0.00					15.00
To improve urban mobility and accessibility on high priority corridors in selected cities							
Average travel time for public transport users from Stasiun Cimindi to Intersection Jl. Jendral Ahmad Yani/Jl. Kiaracondong on the BBMA BRT corridor (minutes) (Minutes)		50.00					40.00
Average travel time for public transport users from Pinang		83.00					62.00

Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
Baris to Amplas on the Mebidang BRT corridor (minutes) (Minutes)							
Average daily passenger ridership per weekday on the BBMA BRT (number of passengers) (Number)		0.00					60,000.00
Average daily passenger ridership per weekday on the Mebidang BRT (number of passengers) (Number)		0.00					90,000.00
Jobs accessible by public transport within 90 minutes commuting period in BBMA (percentage) (Percentage)		21.00					25.00
Jobs accessible by public transport within 90 minutes commuting period in Mebidang (percentage) (Percentage)		40.00					46.00
Users satisfaction with public transport services (with a focus on safety and security) along BBMA BRT corridor (percentage) (Percentage)		48.00					75.00
Female users satisfaction with public transport services (with a focus on safety and security) along BBMA BRT corridor		40.00					75.00

Indicator Name	PBC	Baseline	Intermediate Targets				End Target
			1	2	3	4	
(percentage) (Percentage)							
Users satisfaction with public transport services (with a focus on safety and security) along Mebidang BRT corridor (percentage) (Percentage)		58.00					75.00
Female users satisfaction with public transport services (with a focus on safety and security) along Mebidang BRT corridor (percentage) (Percentage)		56.00					75.00

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	End Target
Component 1: Institutional Development, Capacity Building, and Technical Assistance			
Indonesia Mass Transit Project Design Finalised (Yes/No)		No	Yes
Number of metropolitan areas beyond BBMA and Mebidang benefited from project preparation assistance (number) (Number)		0.00	2.00
Designs for sub-national level institutional arrangements in BBMA and Mebidang finalized (Yes/No)		No	Yes
Development of guidelines and manuals in relevant areas (number) (Number)		1.00	4.00
Component 2: Support to Implement Demonstration Mass Transit Systems in Selected Urban Areas			

Indicator Name	PBC	Baseline	End Target
Constructed BBMA BRT corridor (kilometer) (Kilometers)		0.00	20.00
Constructed Mebidang BRT corridor (kilometer) (Kilometers)		0.00	21.00
BRT ITS implemented and functional in BBMA (Yes/No)		No	Yes
BRT fare collection system implemented and function in BBMA (Yes/No)		No	Yes
BRT passenger information and bus managements systems implemented and function in BBMA (Yes/No)		No	Yes
BRT ITS implemented and functional in Mebidang (Yes/No)		No	Yes
BRT fare collection system implemented and function in Mebidang (Yes/No)		No	Yes
BRT passenger information and bus managements systems implemented and function in Mebidang (Yes/No)		No	Yes
Pedestrians/walkway infrastructure rehabilitated in BBMA (kilometer) (Kilometers)		0.00	20.00
Pedestrians/walkway infrastructure rehabilitated in Mebidang (kilometer) (Kilometers)		0.00	21.00
Road safety audit conducted on BBMA and Mebidang BRT corridors at project, design, construction and post-construction phases (Yes/No)		No	Yes
Road safety audit conducted on BBMA BRT corridors at project design phase (Yes/No)		No	Yes
Road safety audit conducted on Mebidang BRT corridors at project design phase (Yes/No)		No	Yes
Road safety audit conducted on BBMA BRT corridors at project construction phase (Yes/No)		No	Yes
Road safety audit conducted on Mebidang BRT corridors at project construction phase (Yes/No)		No	Yes
Road safety audit conducted on BBMA BRT corridors at		No	Yes

Indicator Name	PBC	Baseline	End Target
project post-construction phase (Yes/No)			
Road safety audit conducted on Mebidang BRT corridors at project post-construction phase (Yes/No)		No	Yes
Designs for resilience against flooding events developed and incorporated into BBMA BRT design (infrastructure and vehicle specification) (Yes/No)		No	Yes
Designs for resilience against flooding events developed and incorporated into Mebidang BRT design (infrastructure and vehicle specification) (Yes/No)		No	Yes
Gender and disable-friendly station designs in BBMA BRT (Yes/No)		No	Yes
Gender and disable-friendly station designs in Mebidang BRT (Yes/No)		No	Yes

Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Establishment of an institutional structures to manage mass transit at the national level and sub-national levels	This indicator measures the establishment of a national-level and two sub-national-level entities to manage IMTP	Once at the end of project	Ministry of Transportation	Review of the Government Order, staff, budget and procedures put in place by GOI to set up these institutional structures	PMU

Establishment of an institutional structure (a dedicated equipped unit within MoT) to manage mass transit at the national level	This indicator measures the establishment of an entity to manage IMTP at the national level	Once at the end of project	Ministry of Transportation	Review of the Government Order, staff, budget and procedures put in place by GOI to set up this institutional structure	PMU
Establishment of institutional structures (BRT Management Entity) to plan and manage mass transit systems in BBMA	This indicator measures the provision of an entity for mass transit operations planning and management in BBMA	Once at the end of project	Sub-national government	Review of the Government Order, staff, budget and put in place by GOI to set up this institutional structure	PIU
Establishment of institutional structures (BRT Management Entity) to plan and manage mass transit systems in Mebidang	Provision of entity for mass transit operations planning and management in Mebidang	Once at the end of the project	Sub-national government	Review of the Government Order, staff, budget and put in place by GOI to set up this institutional structure	PIU
Women employed in BBMA BRT operations at both managerial and crew levels (percentage)	This indicator measures the women employed at managerial and crew levels in the BBMA BRT Management Entity	Semi-annual	HR reports from the BBMA BRT Management Entity	The percentage of women employed in BBMA BRT operation will be calculated based on the records of the number of women working at managerial and crew levels in the BBMA BRT Management Entity	PMU

Women employed in Mebidang BRT operations at both managerial and crew levels (percentage)	This indicator measures the women employed at managerial and crew levels in the Mebidang BRT Management Entity	Semi-annual	HR reports from the Megidang BRT Management Entity	The percentage of women employed in Mebidang BRT operation will be calculated based on the records of the number of women working at managerial and crew levels in the Mebidang BRT Management Entity	PMU
Average travel time for public transport users from Stasiun Cimindi to Intersection Jl. Jendral Ahmad Yani/Jl. Kiaracondong on the BBMA BRT corridor (minutes)	This indicator measures the travel time (inclusive of waiting time, in-vehicle travel time and transfer time) from Stasiun Cimindi to Intersection Jl. Jendral Ahm(9.1 km) and from Intersection Jl. Jendral Ahmad Yani/Jl. Kiaracondong to Stasiun Cimindi (9.4 km) on the BBMA BRT corridor	Annually during project implementation and at commencement of operations	Surveys; ITS data	Baseline travel time will be measured by on-board surveys of waiting time, in-vehicle travel time and transfer time in both directions in the corridor in the morning and evening peak hours of a typical weekday. A minimum of six bus trips per direction in each of the morning and evening peak hours shall be recorded. This will be done with a GSP-enabled smartphone	BBMA BRT Management Entity

				app to record time and location data. The time recording shall commence on boarding the vehicle at the start of the route and end when the destination point is reached. If a transfer between vehicles is required, the time recording shall continue during the transfer between vehicles. Average waiting time prior to each measured trip shall be calculated as half of the time between departure of the preceding bus trip and the departure of the trip for the in-vehicle measurements are taken. On commencement of operations, a further set of on-board travel time and waiting time surveys shall be performed. In addition, total travel time will be	

				estimated using ITS data collected by BBMA BRT Management Entity at end of project and the results compared with the on-board survey.	
Average travel time for public transport users from Pinang Baris to Amplas on the Mebidang BRT corridor (minutes)	This indicator measures the travel time (inclusive of waiting time, in-vehicle travel time and transfer time) from Pinang Baris to Amplas (17.8 km) and from Amplas to Pinang Baris (18.1 km) on the Mebidang BRT corridor	Annually during project implementation and at commencement of operations	Surveys; ITS data	Baseline travel time will be measured by on-board surveys of waiting time, in-vehicle travel time and transfer time in both directions in the corridor in the morning and evening peak hours of a typical weekday. A minimum of six bus trips per direction in each of the morning and evening peak hours shall be recorded. This will be done with a GSP-enabled smartphone app to record time and location data. The time recording shall commence on boarding	Mebidang BRT Management Entity

				the vehicle at the start of the route and end when the destination point is reached. If a transfer between vehicles is required, the time recording shall continue during the transfer between vehicles. Average waiting time prior to each measured trip shall be calculated as half of the time between departure of the preceding bus trip and the departure of the trip for the in-vehicle measurements are taken. On commencement of operations, a further set of on-board travel time and waiting time surveys shall be performed. In addition, total travel time will be estimated using ITS data collected by Mebidang BRT Management Entity at	

				end of project and the results compared with the on-board survey.	
Average daily passenger ridership per weekday on the BBMA BRT (number of passengers)	This measures the average daily passenger ridership of BBMA BRT. This indicator will reflect the number of direct beneficiaries of the project: the BBMA BRT passengers	Monthly after starting BBMA BRT operation	BBMA BRT fare collection system	The number of daily passengers will be estimated based on the fare collection system records	BBMA BRT Management Entity
Average daily passenger ridership per weekday on the Mebidang BRT (number of passengers)	This measures the average daily passenger ridership of Mebidang BRT. This indicator will reflect the number of direct beneficiaries of the project: the Mebidang BRT passengers	Monthly after starting Mebidang BRT operation	Mebidang BRT fare collection system	The number of daily passengers will be estimated based on the fare collection system records	Mebidang BRT Management Entity
Jobs accessible by public transport within 90 minutes commuting period in BBMA (percentage)	This indicator measures accessibility to jobs (i.e. percentage of jobs accessible within a 90-minute commute using non-private transport [public transportation and walking]) in the area of influence of BBMA BRT	At the start and end of project	Internet access of online official population and employment data from BPS Census. Public Transport route, stop, timetable	Accessibility to jobs shall be calculated using the methodology specified for the "World Bank -Urban Accessibility Indicator" and the Conveyal Accessibility tool or equivalent ArcGIS or R methodology. Travel time using public transport and walking	West Java Sub-national government (Dishub)

			data from Dis hub, verified by on-board trip surveys with GPS logging of route and stop location and time to confirm travel time per route carried out by independent firms	between each origin and destination pair shall be calculated, using General Transit Feed Specification (GTFS) to describe the public transport network and pedestrian routes within 20 minutes walking time from each stop from Open Street Map. Population of each local government unit from the most recent census shall be allocated to grid cells in proportion to the relative population density from WorldPop. Employment within the metropolitan area shall be obtained from the most recent census and distributed to georeferenced grid cells in proportion to the relative number of employment opportunities derived from employment	

				generating points of interest and other parameters that may identify location of jobs. The number of jobs accessible from each point within 90 minutes travel time shall be calculated. A regional accessibility indicator shall be obtained by weighting the jobs accessible at each zone by the population.	
Jobs accessible by public transport within 90 minutes commuting period in Mebidang (percentage)	This indicator measures accessibility to jobs (i.e. percentage of jobs accessible within a 90-minute commute using non-private transport [public transportation and walking]) in the area of influence of Mebidang BRT	At the start and end of project	Internet access of online official population and employment data from BPS Census. Public Transport route, stop, timetable data from Dishub, verified by on-board	Accessibility to jobs shall be calculated using the methodology specified for the "World Bank -Urban Accessibility Indicator" and the Conveyal Accessibility tool or equivalent ArcGIS or R methodology. Travel time using public transport and walking between each origin and destination pair shall be calculated,	North Sumatra Sub-national government (Dishub)

			trip surveys with GPS logging of route and stop location and time to confirm travel time per route carried out by independent firms	using General Transit Feed Specification (GTFS) to describe the public transport network and pedestrian routes within 20 minutes walking time from each stop from Open Street Map. Population of each local government unit from the most recent census shall be allocated to grid cells in proportion to the relative population density from WorldPop. Employment within the metropolitan area shall be obtained from the most recent census and distributed to georeferenced grid cells in proportion to the relative number of employment opportunities derived from employment generating points of interest and other parameters that may	

				identify location of jobs. The number of jobs accessible from each point within 90 minutes travel time shall be calculated. A regional accessibility indicator shall be obtained by weighting the jobs accessible at each zone by the population.	
Users satisfaction with public transport services (with a focus on safety and security) along BBMA BRT corridor (percentage)	This measures the level of satisfaction of public transport users in terms of safety and security on board transit, at station and walking (day and night)	Annual (after start of operations)	Users satisfaction surveys done by independent contractors	Personal interview survey of a random sample of public transport users will be carried out. A minimum of four locations shall be sampled, comprising two terminals and two mid-route stops. The sample size shall be determined based on the number of BRT users in order to give 95 percent confidence level and 5 percent margin of error. The minimum sample size shall be 400. The	BBMA BRT Management Entity and PIU

				surveys will be implemented at peak and off-peak hours. The surveys shall use a 100-point scale where 0 is completely dissatisfied and 100 is maximum satisfaction. The percentage of satisfied users shall be presented based on responses higher than 60. Results shall be presented disaggregated by socio-economic level and gender.	
Female users satisfaction with public transport services (with a focus on safety and security) along BBMA BRT corridor (percentage)	This measures the level of satisfaction of public transport female users in terms of safety and security on board transit, at station and walking (day and night)	Annual (after start of operations)	Users satisfaction surveys done by independent contractors	Personal interview survey of a random sample of female public transport users will be carried out. A minimum of four locations shall be sampled, comprising two terminals and two mid-route stops. The sample size shall be determined based on the number of BRT users in order to give	BBMA BRT Management Entity and PIU

				95 percent confidence level and 5 percent margin of error. The minimum sample size shall be 400. The surveys will be implemented at peak and off-peak hours. The surveys will be implemented at peak and off-peak hours. The surveys shall use a 100-point scale where 0 is completely dissatisfied and 100 is maximum satisfaction. The percentage of satisfied users shall be presented based on responses higher than 60. Results shall be presented disaggregated by socio-economic level and gender.	
Users satisfaction with public transport services (with a focus on safety and security) along Mebidang BRT corridor (percentage)	This measures the level of satisfaction of public transport users in terms of safety and security on board transit, at station and	Annual (after start of operations)	Users satisfaction surveys done by independent	Personal interview survey of a random sample of public transport users will be carried out. A minimum	Mebidang BRT Management Entity and PIU

	walking (day and night		contractors	of four locations shall be sampled, comprising two terminals and two mid-route stops. The sample size shall be determined based on the number of BRT users in order to give 95 percent confidence level and 5 percent margin of error. The minimum sample size shall be 400. The surveys will be implemented at peak and off-peak hours. The surveys shall use a 100-point scale where 0 is completely dissatisfied and 100 is maximum satisfaction. The percentage of satisfied users shall be presented based on responses higher than 60. Results shall be presented disaggregated by socio-economic level and gender.	

Female users satisfaction with public transport services (with a focus on safety and security) along Mebidang BRT corridor (percentage)	This measures the level of satisfaction of public transport female users in terms of safety and security on board transit, at station and walking (day and night)	Annual (after start of operations)	Users satisfaction surveys done by independent contractors	Personal interview survey of a random sample of female public transport users will be carried out. A minimum of four locations shall be sampled, comprising two terminals and two mid-route stops. The sample size shall be determined based on the number of BRT users in order to give 95 percent confidence level and 5 percent margin of error. The minimum sample size shall be 400. The surveys will be implemented at peak and off-peak hours. The surveys will be implemented at peak and off-peak hours. The surveys shall use a 100-point scale where 0 is completely dissatisfied and 100 is maximum satisfaction. The percentage of satisfied users shall be	BBMA BRT Management Entity and PIU

				presented based on responses higher than 60. Results shall be presented disaggregated by socio-economic level and gender.	

Monitoring & Evaluation Plan: Intermediate Results Indicators					
Indicator Name	**Definition/Description**	**Frequency**	**Datasource**	**Methodology for Data Collection**	**Responsibility for Data Collection**
Indonesia Mass Transit Project Design Finalised	This measure the completion of the IMTP design	Mid-term and at the end of the project	PIU	Consultations with MOT/GOI	PMU
Number of metropolitan areas beyond BBMA and Mebidang benefited from project preparation assistance (number)	This indicator measures the number of metropolitan areas that will receive support from the project to prepare mass transit projects	Mid-term and at the end of the project	PIU/Cities benefit from project preparation assistance	Mass transit project preparation documentation finalized for metropolitan areas beyond BBMA and Mebidang	PMU
Designs for sub-national level institutional arrangements in BBMA and Mebidang finalized	This indicator measures the finalization of the institutional arrangements designs for BBMA and	Mid-term and at the end of the project	PIU	Consultations with MOT/Sub-national governments	PMU

	Mebidang				
Development of guidelines and manuals in relevant areas (number)	This measures the provision of guidelines and manuals for mass transit projects development	Mid-term and at the end of the project	Studies done by independent consultants agreed by the World Bank	Guidelines and manuals for mass transit projects development finalized	PMU
Constructed BBMA BRT corridor (kilometer)	This measures the total length of constructed BRT infrastructure in BBMA	Semi-annual	Project progress report	BRT civil works entirely completed as per good practice standards (including properly designed stations and dedicated bus lanes) and certified by the supervision consultant	PMU
Constructed Mebidang BRT corridor (kilometer)	This measures the total length of constructed BRT infrastructure in Mebidang	Semi-annual	Project progress report	BRT civil works entirely completed as per good practice standards (including properly designed stations and dedicated bus lanes) and certified by the supervision consultant	PMU
BRT ITS implemented and functional in BBMA	This measures BBMA BRT ITS systems being implemented and	Once at the end of project	Project progress report	ITS BRT installed and certified by the supervision consultant	PMU

	functioning successfully				
BRT fare collection system implemented and function in BBMA	This measures BBMA BRT fare collection system being implemented and functioning successfully	Once at the end of project	Project progress report	BBMA BRT fare collection systems installed and certified by the supervision consultant	PMU
BRT passenger information and bus managements systems implemented and function in BBMA	This measures BBMA BRT information and bus managements systems being implemented and functioning successfully	Once at the end of project	Project progress report	BBMA BRT fare collection systems installed and certified by the supervision consultant	PMU
BRT ITS implemented and functional in Mebidang	This measures Mebidang BRT ITS systems being implemented and functioning successfully	Once at the end of project	Project progress report	ITS BRT installed and certified by the supervision consultant	PMU
BRT fare collection system implemented and function in Mebidang	This measures Mebidang BRT fare collection system being implemented and functioning successfully	Once at the end of project	Project progress report	Mebidang BRT fare collection systems installed and certified by the supervision consultant	PMU
BRT passenger information and bus managements systems implemented and function in Mebidang	This measures Mebidang BRT information and bus managements systems being implemented and functioning successfully	Once at the end of project	Project progress report	Mebidang BRT information and bus managements systems installed and certified by the supervision	PMU

Pedestrians/walkway infrastructure rehabilitated in BBMA (kilometer)	This measures the total length of rehabilitated pedestrians/walkway infrastructure in BBMA	Semi-annual	Project progress report	Pedestrian/walkway infrastructure civil works completed as per good practice design standards and certified by the supervision consultant	PMU
Pedestrians/walkway infrastructure rehabilitated in Mebidang (kilometer)	This measures the total length of rehabilitated pedestrians/walkway infrastructure on level without steps or interferences/obstacles (width will depend on the volume of pedestrians) along the corridor in Mebidang	Semi-annual	Project progress report	Pedestrian/walkway infrastructure civil works entirely completed as per good practice design standards and certified by the supervision consultant	PMU
Road safety audit conducted on BBMA and Mebidang BRT corridors at project, design, construction and post-construction phases	Road safety audits conducted during project design, construction and post-construction to ensure road safety provisions are adequate along the BBMA and Mebidang BRT corridors	At least six	Independent road safety auditor	Design review and technical field visits	PIU
Road safety audit conducted on BBMA BRT corridors at project design phase	Road safety audits conducted during project design to ensure road safety provisions are adequate on the BBMA BRT designs	At least one	Independent road safety auditor	Design review and technical field visits	PIU

Road safety audit conducted on Mebidang BRT corridors at project design phase	Road safety audits conducted during project design to ensure road safety provisions are adequate on the Mebidang BRT designs	At least one	Independent road safety auditor	Design review and technical field visits	PIU
Road safety audit conducted on BBMA BRT corridors at project construction phase	Road safety audits conducted during project construction to ensure road safety provisions are adequate along the BBMA BRT corridor	At least one	Independent road safety auditor	Design review and technical field visits	PIU
Road safety audit conducted on Mebidang BRT corridors at project construction phase	Road safety audits conducted during project construction to ensure road safety provisions are adequate along the Mebidang BRT corridor	At least one	Independent road safety auditor	Design review and technical field visits	PIU
Road safety audit conducted on BBMA BRT corridors at project post-construction phase	Road safety audits conducted during project post-construction to ensure road safety provisions are adequate along the BBMA BRT corridor	At least one	Independent road safety auditor	Design review and technical field visits	PIU
Road safety audit conducted on Mebidang BRT corridors at project post-construction phase	Road safety audits conducted during project post-construction to ensure road safety provisions are adequate along the Mebidang BRT corridor	At least one	Independent road safety auditor	Design review and technical field visits	PIU
Designs for resilience against flooding events developed and incorporated into	This measures if flooding resilience is mainstreamed	Semi-annual	Independent consultant	Engineering designs review	PIU

BBMA BRT design (infrastructure and vehicle specification)	into BBMA BRT design (infrastructure and vehicle specification)				
Designs for resilience against flooding events developed and incorporated into Mebidang BRT design (infrastructure and vehicle specification)	This measures if flooding resilience is mainstreamed into BBMA Mebidang design (vehicle specification)	Semi-annual	Independent consultant	Engineering designs review	PIU
Gender and disable-friendly station designs in BBMA BRT	This measures if BBMA BRT stations are gender- and disability-inclusive	Semi-annual (before, during and after stations construction)	Independent consultant	Engineering designs review; user satisfaction survey at design stage and post construction	PIU
Gender and disable-friendly station designs in Mebidang BRT	This measures if Mebidang BRT stations are gender- and disability-inclusive	Semi-annual (before, during and after stations construction)	Independent consultant	Engineering designs review; user satisfaction survey at design stage and post construction	PIU

ANNEX 1: Implementation Arrangements and Support Plan

COUNTRY: Indonesia
Indonesia Mass Transit Project

1. **The Ministry of Transportation (MOT) will be the implementing agency for the Project** and responsible for project implementation, financial management of the IBRD loan proceeds, implementation of environmental and social management requirements in accordance with the World Bank's Environmental and Social Framework (ESF), and the procurement and management of all contracts under components 1 and 2. Under component 1, MOT will provide technical assistance to sub-national governments related to project preparation and implementation and develop Indonesia Mass Transit Program. Under component 2, MOT will develop BRT infrastructure and system and then hand over to West Java Province and North Sumatera Province, as in-kind grants, for sub-national agencies to operate and maintain. Other responsibilities of MOT will include coordination and monitoring progress of project preparation and implementation, holding regular meetings with internal implementing units as well as sub-national agencies to ensure on target and on schedule progress; analyzing ongoing project to ensure that all supporting facilities are available as planned; analyzing consultant reports from sub-national governments to ensure that implementation at the central and sub-national levels are in line with plans; providing direction to coordination teams at sub-national levels to ensure that the implementation processes remain on track; report progress regularly to the steering committee and escalate any significant implementation problems that must be resolved at the inter-ministerial level. MOT will be assisted by subnational agencies in BBMA and Mebidang in carrying out its project implementation responsibilities.

2. **A Project Steering Committee and a Project Management Unit (PMU) have been established** under the Directorate General of Land Transportation (DGLT) of the MOT. The project steering committee, chaired by Director General of Land Transportation of MOT and composed of, among others, Echelon I officials from the line ministries listed in the Project Implementation Manual, provides strategic guidance and oversees Indonesia Mass Transit program development and implementation as well as project preparation and implementation, and also facilitate inter-ministerial coordination. The PMU is responsible for carrying out day-to-day management, implementation and coordination of Project activities and development and implementation of the program. The PMU is led by the Secretary of DGLT, who signs formal letters related to project preparation and implementation, and is assisted by the Director of Road Transportation of MOT as coordinator. The day-to-day responsibility of PMU is managed by the Secretariat of PMU, especially on the coordination between PMU and sub-national governments. The PMU will be supported by a Program Management Consultant (ProgMC) to assist DGLT in implementing the institutional and capacity development and managing the development and implementation of the program; and a Project Management Consultant (PMC) to assist the PMU in managing the demonstration projects. As DGLT is also responsible in delivering the development of BRT infrastructure and system, a Project Implementation Unit (PIU) has also been established under Directorate of Road Transportation of DGLT. The PIU will be led by the Director of Road Transportation of MOT and the members of PIU will include other directorates within DGLT. The PIU is responsible for managing contracts related to the development of the BRT systems and coordinating with the PIUs in the two provinces. The PIU will be supported by Detailed Engineering Design and Construction Supervision Consultants

(DSCs) to design the BRT systems and supervise the implementation of civil and other physical works. A ProgMC, a PMC and two DSCs will be hired by not later than three months after the effective date of the Loan Agreement for the project.

3. **MOUs (and agreements to be entered into pursuant to the MOUs) between central government and provincial and regional governments will govern the respective roles and responsibilities**. MOU between central government and West Java Province, and city and district governments in BBMA as well as MOU between central government and North Sumatera Province, and city and district governments in Mebidang have been signed. In the MOUs, central government is represented by Director General of Land Transportation, and BBMA is represented by West Java Governor and also mayors/head of districts in BBMA, and Mebidang is represented by North Sumatera Governor and also mayors/head of district in Mebidang. The MOUs sets responsibilities of central government and provincial/city/district governments. Responsibility of central government will include providing technical assistance to sub-national governments related to project preparation and implementation and developing BRT infrastructure and system to be handed over to West Java Province and North Sumatera Province, as in-kind grants, to operate and maintain. Responsibility of subnational governments (provincial/city/district) will include land acquisition and resettlement costs (especially for depots and bus stations), costs related to social risks mitigation, procuring rolling stock (buses), BRT system operation and maintenance costs, and establishment of an institution to manage, operate, and integrate BRT with other public transport services in the metropolitan area. The MOU provides for a working level agreement to be signed by the parties. The MOU and/or such working level agreement will also reflect project-specific undertakings of the parties, such as the responsibilities to carry out the project activities in accordance with the ESCP and Project Implementation Manual. The signing of such MOU and working level agreement with the sub-national agencies in a metropolitan area, under terms and conditions satisfactory to the Bank, is a withdrawal condition for the withdrawal of loan proceeds allocated to support activities under Component 2 of the Project in the respective metropolitan area.

4. **Sub-national government will establish and/or designate a subnational owned partnership company (BRT Management Entity) to manage and integrate BRT with other public transport services in metropolitan area.** A subnational owned partnership company will enable cities and districts in metropolitan area to have share in the company, so that it can be used to integrate service in metropolitan area and funding from different jurisdictions. The province is expected to have a share of minimum 51%. West Java Province is preparing to change one of its companies to become a subnational owned partnership company and this company will contract out the BRT service operations and maintenance to private operators. In terms of planning integration, West Java has established BBMA management agency. North Sumatera Province shall prepare the institutional model and structure to manage and integrate BRT with other public transport services in Mebidang as part of SUMP development as well as technical assistance under the Project. To ensure proper project implementation, it is envisaged that a BRT Management Entity will be established and/or designated by the subnational agencies in each metropolitan area by not later than 12 months prior to the completion of relevant BRT system construction or 24 months after the effective date of the Loan Agreement for the project, whichever occurs first. It is also envisaged that the established/designated BRT Management Entity in each metropolitan area will enter into BRT operator contracts with one or more private operators, each in form and substance satisfactory to the Bank, by not later than 6 months prior to the completion of relevant BRT system construction.

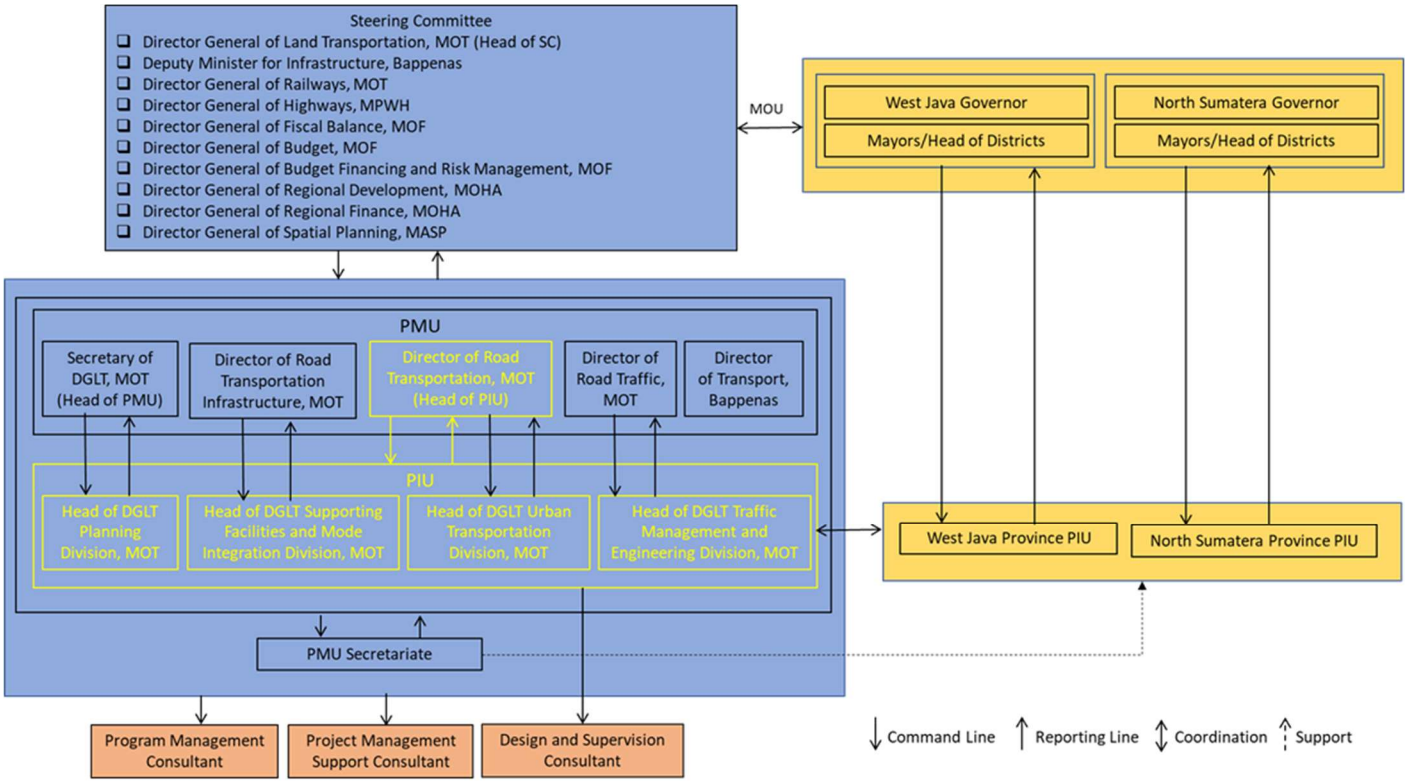
5. **West Java Province and North Sumatera Province will each set up a Project Implementation Unit**

(PIU). PIUs will be responsible in delivering sub-national government responsibilities, especially in implementing the social and environment mitigation measures, ensuring availability of rolling stock (buses) and operation and maintenance costs, as well as in establishing an institution to manage and operate BRT system, all as set forth in the MOUs/agreements and Project Implementation Manual. Other responsibilities of PIU will include coordinating all activities with relevant agencies and across the boundaries of the cities and districts comprising the metropolitan areas, and with the central government agencies. The head of PIU is an echelon III official from the transport agency of the provincial government and the members are from the provincial as well as cities/districts government. The provincial PIUs will coordinate with national government agencies, DGLT PMU and PIU and supported by PMU Secretariate. The PIUs will be established by not later than 2 months after the effective date of the Loan Agreement for the project. West Java Province has established a project preparation team to work with MOT and cities/districts in BBMA during project preparation. The members are from different institutions that will be responsible for implementing BBMA responsibilities. The project preparation team can be amended to be PIU by not later than 2 months after the effective date of the loan agreement for the project. Similar arrangement is proposed for Mebidang.

6. **The Project Implementation Manual** will guide the implementation of the Project.

7. **The relationship between implementing arrangements, coordinating arrangements and the PMC is presented in Figure below**, and further details will be presented in the Project Implementation Manual (PIM).

Figure: Project Institutional Arrangements: Coordinating and Implementing



ANNEX 2: Project Cost

COUNTRY: Indonesia
Indonesia Mass Transit Project

1. Total Project Cost

No	Component	Total (USD)
1	**Component 1: Development Institutional and Capacity Building**	**33,200,000**
	a. Project Management Consultant (2 cities)	6,750,000
	b. Detailed Engineering Design & Construction Supervision Consultant Bandung	5,000,000
	c. Detailed Engineering Design & Construction Supervision Consultant Medan	5,000,000
	d. Program Management Consultant	3,450,000
	e. Mass Transit Preparation Support to other Cities	8,000,000
	f. Guidance Documents & Manuals and Technical Studies	4,500,000
	g. Development of Urban Transport Database	500,000
2	**Component 2: Demonstration Mass Transit System in Selected Urban Areas**	**230,795,982**
	a. Pengembangan Sistem BRT Metropolitan Medan	127,600,000
	b. Pengembangan Sistem BRT Metropolitan Bandung	103,195,982
	Total	**263,995,982**

2. **Component I**

No	Sub-Component	Cost in USD
1	**Project Management Consultant (2 cities)**	**6,750,000**
	1a. BRT Project Management; Infra Design Review; Operations Plan; ITS; Traffic Management; Angkot Operations review and reorganization plan; Transaction Advisory for contracting of operations; M&E; capacity building; Parking Management; Operations Manual, Institutional Capacity Building Study	6,750,000
2	**Detailed Engineering Design & Construction Supervision Consultant Bandung**	**5,000,000**
	2a. Detailed Engineering Design & Construction Supervision Management	4,000,000
	2b. Safeguards Documents (ESMF; ESIA; RAP; GAP & GBV; Labor Mgmt. Procedures; GRM; Community Health & Safety Plan; stakeholder consultation, etc.)	1,000,000
3	**Detailed Engineering Design & Construction Supervision Consultant Medan**	**5,000,000**
	3a. Detailed Engineering Design & Construction Supervision Management	4,000,000
	3b. Safeguards Documents (ESMF; ESIA; RAP; GAP & GBV; Labor Mgmt. Procedures; GRM; Community Health & Safety Plan; stakeholder consultation, etc.)	1,000,000
4	**Program Management Consultant**	**3,450,000**
	4a. Overall Program Design, Management and M&E	1,500,000
	4b. Knowledge Events, Peer-to- Peer Learning, Training Programs	700,000
	4c. Institutional & Capacity Development Study for Urban Transport	1,250,000
5	**Mass Transit Preparation Support to other Cities**	**8,000,000**
	5a. Safeguards Documents & DED (Makassar)	4,000,000
	5b. Safeguards Documents & OED Review (Semarang)	2,500,000
	5c. Feasibility Study (Surabaya}	1,500,000
6	**Guidance Documents & Manuals and Technical Studies**	**4,500,000**
	6a. PPP Contracts; ToD for Mass Transit; Parking Management; Metropolitan Governance; Urban Transport Funds	3,000,000
	6b. Studies on (i) State of Urban Mobility in Indonesian Cities; (ii) Public Transit cash grant;(iii) Angkot Reorganization	1,500,000
7	**Development of Urban Transport Database**	**500,000**
Total		**33,200,000**

3. **Component II**

Mebidang BRT

Package	Activities	Total (USD)
A	**Depo Development (Design and Build) & Depot & Terminal Infrastructure**	**11,583,724**
	Depot Facilities	7,722,483
	Terminal & Control Centre	3,861,241
B	**Infrastructure Development & BRT corridor infrastructure including pavement, stations, stares, furniture, footpath**	**68,306,674**
	Civil Infrastructure Busway	26,907,512
	Contractors Detailed Design	1,013,478
	Disaster Resilience - Flooding; Earthquake@5%	3,813,324
	Electrical Supply & Telecom	3,470,468
	Preliminaries	2,895,651
	Road Repairs & Reconfiguration	7,292,082
	Stops & Elevated Crossings	13,510,076
	Traffic Management Implementation (infra part)	1,112,042
	Urban Realm & NMT Improvements - street furniture etc.	8,292,040
C	**ITS - Operator, bus. Fare collection user information security by SNG**	**17,762,773**
	AFCS	1,703,415
	ITS including Fleet Management	9,000,000
	Stops - Comms & ITS	3,186,184
	Terminals - Comms & ITS	1,770,240
	Testing & Commissioning	239,402
	Traffic Signals & Junction Improvement	1,863,531
D	**Traffic Management, TOM, Feeder Road, and access improvements**	**9,793,092**
	Access Road Improvements (road repairs)	8,681,050
	Traffic Management Implementation (TOM part)	1,112,042
E	**Off corridor stations**	**3,500,000**
	Off corridor stations	3,500,000
F	**Contingency**	**12,986,157**
	Contingency	12,986,157
Total		123,932,419
Total nominal cost 2021 adjusted for inflation		**127,600,000**

BBMA BRT

Package	Activities	Total (USD)
A	**Depo Development (Design and Build) & Depot & Terminal Infrastructure**	**6,626,097**
	Motorbike Depot	321,931
	Depot	4,641,107
	Terminal Facilities	1,663,059
B	**Infrastructure Development & BRT corridor infrastructure including pavement, station s, street furniture, footpath etc.**	**49,760,309**
	Road Engineering (Demolition)	410,766
	BRT Station, Power Supply, Lighting	8,939,985
	Pavement & Dividers	6,972,920
	Pedestrian Access	2,233,094
	Engineering Newly Built	6,039,914
	Utilities	5,293,977
	Temporary fee of road traffic facilities during construction	1,547,036
	NMT Improvement	2,069,934
	Pedestrian Skywalk	10,926,187
	Other components	2,712,358
	Disaster Resilience - Flooding; Earthquake@5 %	2,614,138
C	**ITS - Operator, bus. Fare collection user information security by SNG**	**21,464,729**
	Traffic Signals & Signs	7,482,438
	AFCS & ITS for Stations	4,776,067
	ITS including Fleet Management; PIS etc.	9,000,000
	Testing & Commissioning	206,224
D	**Traffic Management and TOM & Feeder Road and access improvements**	**7,142,857**
	Urban Realm & NMT Improvements including feeders	**7,142,857**
E	**Off corridor stations**	**1,331,776**
	New off-corridor stops	1,331,776
F	**Contingency**	**12,948,865**
	Contingency	12,948,865
Total		99,274,634
Total nominal cost 2021 adjusted for inflation		**103,195,982**

ANNEX 3: Economic, Financial & Fiscal Analysis

COUNTRY: Indonesia
Indonesia Mass Transit Project

A. INTRODUCTION

1. This appendix presents the economic and financial evaluation over a period of 30 years of the proposed BRT projects in BBMA and Mebidang. It first defines the framework within which the evaluation is undertaken and the basis of the evaluation parameters. It then considers the two cities in turn. For each, it describes the key features of the project, estimates the economic rate of return for the project, including a set of sensitivity tests, and summarises the operating revenues and expenditures. Finally, it includes the estimated economic rate of return for the project as a whole.

B. IDENTIFICATION OF BENEFITS AND COSTS

2. The projects result in improved public transport services in each of the two cities. These benefits and costs fall into three groups:

- users of the services experience benefits through reduced travel times, changes in travel costs and improved service quality in terms of comfort, reliability and punctuality (collectively known as the 'user surplus')
- operators through changes in operating costs net of changes in operating revenues (known as the 'operator surplus').
- non-users of the infrastructure who experience changes in congestion and accidents as the result of the changes generated by the project, as well as more general effects such as any change in greenhouse gas emissions.

C. MEASUREMENT OF BENEFITS AND COSTS

3. This section derives the difference in costs and benefits arising from the project compared to the 'without-project' case. The financial costs of construction and operation have been converted to economic costs by excluding VAT through factoring by 0.9. No other costs and benefits have been adjusted. All costs and prices are expressed in IDR 2021.

4. User benefits

Service improvements arise not just from reduced travel time but also from improvements in service quality such as reliability, punctuality, improved terminal facilities and better information. All of these have happened to a greater or lesser extent and the user benefits are typically larger than just the improvement in travel time. This has been allowed for in the evaluations by reducing the value of in-vehicle time for the BRT by 20%.

5. The evaluation of user benefits only concerns itself changes in (adjusted) in-vehicle time. It is extremely likely that any passenger transferring to BRT from other PT modes would receive the full value of the transfer and the benefits for those transferring from conventional bus and *angkot* have thus been included in full. For those

diverting from other modes (car and motorcycle), the benefits have been estimated using the 'rule-of-a-half', a standard approach for such users. Public transport fares are transfer payments to the operators and have been excluded from the evaluation. The time savings in both cities have been valued at IDR 11,400 per hour in 2024. For future years, this cost has been factored according to forecast growth in per capita GDP of 3% p.a. to 2034 and 2% p.a. thereafter).

6. *Operator benefits*

These benefits are the difference in operator surplus (the difference between revenue and cost) between the 'with-project' case and the 'without-project' case. They include:

- The maintenance cost of the new facilities
- The difference between revenue and cost for professional operators (bus companies and independent public transport (*angkot*)). These have been separated between the costs of operating the vehicles themselves and the cost (in the BRT case) of fare collection at the BRT stations and the control centre.
- The difference between the perceived cost of travelling by private car or motorcycle and the economic (or 'resource') cost (often termed the 'resource-cost correction')

7. The maintenance cost of the new investment has been estimated as 2% of the capital cost. This is an average value, varying between 1% for structures, 1.5% for BRT roadway and terminals and 10% for equipment (excluding buses).

8. Data collected as part of the feasibility studies showed that the margin between revenue and expenses for most *angkot* operators is close to zero. The cost of the public bus services and the proposed electric BRT services is based on contract prices commonly experienced in Indonesia. The BRT services are costed at IDR 21,000/bus-km compared to conventional buses at IDR 16,000/bus-km.

9. There is a difference between the cost of private transport as perceived by the owners/users (and thus included in the user benefit for those transferring to BRT) and the resource cost. In practice, most private transport users recognise short-term cash costs such as fuel and parking but only consider a part of maintenance cost. The evaluation allows IDR 1500 per car-km and IDR 500 per motorcycle-km.

10. *Non-user benefits*

Non-user benefits arise as a result of the change in traffic flows by mode. Three main non-user benefits have been included in the evaluation, all related to reduced use of the road network:

- Changes in the level of road congestion
- Reduction in road accidents
- Reduction in greenhouse gases (GHG)

11. No allowance has been made for any reduction in road maintenance costs on the general carriageway. The change in congestion cost has been estimated by estimating the net change in speed as the result of the reduction in PT vehicles (particularly the *angkots*) in the corridor combined with the reduction in road capacity as the result of converting traffic lanes to a segregated busway where this is relevant. The net change is small in both

cities. It has been included in the evaluation using an externality cost/benefit of US 1 c/pcu-km. This generates small changes which, as most of it reflects in-vehicle time, have been factored for future years as were the time savings.

12. Very little data is available on accident rates in urban areas in Indonesia. A rate of 10 deaths per billion vehicle-km was adopted and combined with a 2021 value of life (VOL) of IDR 3.9 billion, seventy times the estimated urban per capita GDP, a typical valuation used in a range of countries, increasing in line with per capita GDP.

13. Injuries were not separately accounted for. Although most studies expect these to decline over time, this has not been included in this evaluation.

14. The projected changes in fuel and energy consumption as a result of the project were used as the basis for the calculation of changes in both greenhouse gases (GHG), principally carbon dioxide (CO2) and diesel particulate (PM2.5) and nitrogen oxide (NOx) emissions. The resulting changes in GHG were included in the economic evaluations with prices increasing from US$ 40/tonne in 2020 to US$78/tonne in 2050, consistent with the shadow prices in the IBRD Low Case. The IBRD High Case (with CO2 prices increasing from $US80/tonne in 2020 to $156/tonne in 2050) has been included as a sensitivity test. Changes in diesel particulates were estimated but were not significant and have not been included. The detailed assumptions made for the calculation of the GHG savings are summarised in Section E.

MEBIDANG BRT

A. Project Description

15. The project in this city is 20.9 km long (Figure 1), stretching along two main corridors (Sisingmangaraja and Gatot Subroto) which meet at right angles in the centre of the city. These are both heavily used by both private vehicles (cars and motorcycles) as well as public transport (PT) buses and minibuses (‘*angkot*’). The segregated BRT will provide a much faster service for PT users in the two corridors as well as removing an estimated 40 per cent of the *angkot* services, thus improving traffic flow for the remaining traffic.

Figure 1 BRT proposed for Mebidang

16. The route starts at the Amplas transport terminal and then turns north along Jl. Sisingmangraja to the Capital Building. It then turns west and runs along Jl. Gatot Subroto to the Advent Hospital and the Medan Immigration Office. This is planned as a segregated bi-directional BRT in the centre of both corridors, except for a short length at the intersection of the two corridors with two separate unidirectional sections to negotiate the turn.

17. At present, normal city buses and privately-operated *angkot* (carrying up to 10-12 passengers) run along all or part of this route. Forecasts of future peak-hour demand with the BRT have been prepared using a standard transport model and are summarised in Table 1. The model considers public transport trips only and estimates the diversion to BRT on the basis of the generalised time (a combination of in-vehicle time, waiting time and access/egress time) of each mode. Fares by each mode were estimated to be similar and were not specifically modelled. The selection between modes was determined by an all-or-nothing assignment.

Table 1 Passengers and vehicles with and without project (AM peak 2024)

	Without project		With project	
	Passenger-km	Vehicle-km	Passenger-km	Vehicle-km
Angkot	222802	59862	129631	34829
Bus	42588	1765	39743	1647
Car	3323(1)	1313		
Motorcycle	8966(1)	6897		
BRT			105149	4572
Total	277679	69837	274523	41048

(1) Only includes passengers transferring to BRT in the 'with-project' case

18. AM peak vehicle trips were converted to daily and annual trips using day expansion factors of 10 for bus and BRT and 8.47 for other modes and an annual expansion factor of 314, patronage is forecast to increase at

1.4% p.a. to 2034 and 1% p.a. thereafter. BRT passengers per day in 2024 (without allowing for ramp-up) are forecast at 150,000 and 12% of the BRT demand is forecast to transfer from car and motorcycle.

B. Calculation of Internal Rates of Return

19. The evaluation is based on a project cost (at 2021 prices) of IDR 1418 billion. This expenditure is assumed to take place over 3 years (2021 – 2023), with the first benefits appearing in 2024.

20. The project has a Base Case IRR of 13%, with an NPV (discounted at 7% p.a. to 2021) of IDR 1329 billion. The composition of costs and benefits is summarised in Table 2.

Table 2 Base case evaluation

Item	NPV (IDR bill)
Capital expenditure	-1101
User benefits	2519
Vehicle operator costs (net)	227
BRT maintenance and management costs	-532
Externalities	223
Total	1336

21. Sensitivity tests have also been undertaken (Table 3) to assess the robustness of the estimated IRR to variations in the following:

- project costs increased by 25%
- demand increased by 25%
- demand reduced by 25%
- operator costs increased by 25%

Table 3 Project IRR Sensitivity Tests (% p.a.)

Test	IRR (%)	NPV (INR million)
Base	13	1336
Project costs +25%	11	1060
Demand increased by 25%	15	1965
Demand reduced by 25%	10	706
Operator costs increased by 25%	13	1258
IBRD High Case for price of CO2	13	1414

C. Financial impact

22. The financial impact of the project once it is in operation has been calculated as the difference in revenue and operating cost of the BRT less the cost of maintaining the BRT infrastructure. This is summarised for key years in Table 4.

Table 4 Revenues and Expenditure 2024 – 2054 (IDR billion)

	Revenue	Bus operating cost	Infrastructure maintenance	Operating staff	Net
2024	141	241	28	15	-114
2030	255	327	28	18	-119
2035	270	349	28	21	-128
2040	284	367	28	24	-135
2045	311	386	28	28	-131
2050	327	405	28	33	-139
2054	337	418	28	36	-145

23. In a typical year, the net cost to government, under the assumptions embedded in the traffic modelling which forms the basis for the evaluation, is around IDR 140 billion, of which about IDR 50 billion is for infrastructure maintenance and system operating staff (stations and control centre) and IDR 90 billion is for the deficit on bus operations.

D. Fiscal impact Analysis at Sub-national Level

24. A review on North Sumatera's and Medan City's fiscal resources suggests that both sub-national governments (SNGs) have substantial fiscal resources to fund the annual BRT cost. This is reflected in three fiscal parameters. First is he sizes of transport-related taxes and levies during 2017-2019. As shown in Table 5, after deducted by revenue sharing to districts, the North Sumatera provincial government collected around IDR 2.4-2.6 trillion from three transport-related taxes: vehicle tax, vehicle transfer tax, and fuel tax. In these three years, about IDR 1.3-1,4 trillion was contributed by the vehicle tax. Compliance of the rule on 10% allocation from the vehicle tax for public transport is almost equal to the annual BRT operating cost. In addition to the provincial sources, Medan City may contribute to the BRT operational cost from its transport-related revenues. During 2017-2019, the City collected around IDR 640-720 billions of transport-related revenues, of which more than 90% originated from revenue sharing from the provincial government.

Table 5 Potential Sub-National Funding Sources for Medan BRT (IDR billion)

Sub-national government	Transport-related revenues			Fiscal space			Annual budget surplus		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
North Sumatera PG	2,438.1	2,696.6	2,576.8	3,113.0	3,108.8	2,242.0	841.5	981.2	336.6
Medan City	641.0	719.5	680.9	1,860.1	2,200.7	3,374.0	43.7	67.3	506.7
Deli Serdang	129.1	147.1	147.6	1,040.7	1,074.7	1,254.2	198.9	123.2	83.4
Binjai City	25.4	26.6	26.2	351.6	342.7	330.1	45.1	6.2	8.7
Karo	37.0	41.0	39.7	427.5	464.3	311.8	184.7	350.2	239.7

25. The second fiscal parameter is the overall sub-national fiscal spaces. This fiscal space was estimated by deducting annual revenues with permanent commitments and earmarked spending, which consist of indirect personnel spending, revenue sharing and financial assistance to other regions, and the specific allocation grants

(DAK). For both North Sumatera and Medan City, the annual BRT operational cost was about 4-8% of their annual fiscal spaces. The third fiscal parameter that reflected the SNG capacity to fund the BRT annual cost is annual budget surplus. During 2017-2019, the combined surplus of both sub-national governments were about 5.5 to 7 times more than the annual BRT cost. While budget surplus should not be planned, this perennial phenomenon among SNGs should enable both SNGs to cover the BRT operational cost.

26. In addition to North Sumatera and Medan City, the sub-national fiscal analysis revealed that the other three SNGs in Mebidang have limited fiscal resources. As shown in Table 5, the three fiscal parameters showed that Deli Serdang, Binjai City, and Karo had significantly smaller transport-related revenues and fiscal spaces. The fiscal constraints in these three districts may become an important factor when the BRT network is to be expanded in the future.

BBMA BRT

A. Project Description

27. The project in this city consists of 17.3 km of segregated BRT (shown as green in Figure 2), together with 3.1 km of mixed traffic roads (purple in Figure 2). It stretches along two main corridors which meet at right angles in the centre of the city. These are currently both heavily used by both private vehicles (cars and motorcycles) as well as some public transport (PT) buses and a larger volume of minibuses ('*angkot*'), and the BRT will provide a much faster service for users in the two corridors. In total, the proposal would replace 16 existing bus and *angkot* routes with BRT vehicles.

Figure 2 BRT proposed for BBMA

28. Most of the east-west segregated route consists of a one-way couplet consisting of Jl. Sudirman and Jl. Kebon Jati. At its eastern end, the two routes join to form a single two-directional route running north-east along Jl. Ahmed Yani, operating in mixed traffic.

29. The north-south route consists of a one-way couplet along Jl. Iskandar Dinata and Jl. Toha. This is planned as a segregated uni-directional BRT [in the centre of each corridors].

30. At present, normal city buses and privately-operated *angkot* (capable of carrying up to 10-12 passengers but averaging much fewer in practice) run along all or part of these routes. Forecasts of future peak-hour demand over all the routes served by BRT have been prepared using a standard transport model and are summarised in Table 5 (average over the length of the route). As in Medan, the model considers public transport trips only and estimates the diversion to BRT on the basis of the generalised time (a combination of in-vehicle time, waiting time and access/egress time) of each mode. Fares by each mode were estimated to be similar and were not specifically modelled. The selection between modes was determined by an all-or-nothing assignment.

Table 5 Passengers and vehicles with and without project (AM peak 2024)

	Without project		With project	
	Passenger-km	Vehicle-km	Passenger-km	Vehicle-km
Angkot	178587	30515	143012	18916
Bus	81972	6831	75660	6306
Car(1)	1652	653		
Motorcycle(1)	3128	2203		
BRT			44432	2111
Total	265339	40202	207255	24074

(1) Car and motorcycle demand which transfers to BRT in the 'with-project' case.

31. AM peak vehicle trips were converted to daily and annual trips using day expansion factors of 12 for bus and BRT and 10 for other modes and an annual expansion factor of 330, patronage is forecast to increase at 1.4% p.a. to 2034 and 1% p.a. thereafter.

B. Calculation of Internal Rates of Return

32. The evaluation is based on a project cost (at 2021 prices) of IDR 1225 billion. This expenditure is assumed to take place over 3 years (2021 – 2023), with the first benefits appearing in 2024.

33. The project has a Base Case IRR of 10%, with an NPV (discounted at 7% p.a. to 2021) of IDR 510 billion. The composition of costs and benefits is summarised in Table 6.

Table 6 Base case evaluation

Item	NPV (IDR bill)
Capital expenditure	-959
User benefits	1392
Vehicle operator costs (net)	453
BRT management and operation costs	-490
Externalities	114
Total	510

34. Sensitivity tests have also been undertaken (Table 7) to assess the robustness of the estimated IRR to variations in the following:

- project costs increased by 25%
- demand increased by 25%
- demand reduced by 25%
- operator costs increased by 25%

Table 7 Project IRR Sensitivity Tests (% p.a.)

Test	IRR (%)	NPV (INR million)
Base	10	510
Project costs +25%	8	271
Demand increased by 25%	12	859
Demand reduced by 25%	8	162
Operator costs increased by 25%	10	501
IBRD High Case for price of CO2	11	570

C. Financial impact

35. The financial impact of the project once it is in operation consists of the difference in revenue and operating cost of the BRT less the difference in revenue and operating cost of the existing heavy bus operation less the cost of maintaining the BRT infrastructure. This is summarised for key years in Table 8.

Table 8 Revenues and Expenditure 2024 – 2054 (IDR billion)

	Revenue	Bus operating cost	Infrastructure maintenance	Operating staff	Net
2024	74	140	25	15	-106
2030	134	191	25	18	-99
2035	143	203	25	21	-106
2040	150	214	25	24	-113
2045	158	225	25	28	-120
2050	166	236	25	33	-128
2054	171	243	25	36	-133

36. In a typical year, the net cost to government, under the assumptions embedded in the traffic modelling

which forms the basis for the evaluation, is around IDR 120 billion, of which about IDR 50 billion is for infrastructure maintenance and system operating staff (stations and control centre) and IDR 70 billion is for the deficit on bus operations.

D. Fiscal impact analysis at Sub-national level

37. A review on West Java's and Bandung City's fiscal resources shows that both SNGs have adequate fiscal resources to fund the annual BRT cost. This is reflected in three fiscal parameters. First is the sizes of transport-related taxes and levies in 2018 and 2019. As shown in Table 9, in both years, after deducted by revenue sharing to districts, the West Java provincial government collected around IDR 11-12 trillion from three transport-related taxes: vehicle tax, vehicle transfer tax, and fuel tax. In both years, more than IDR 5 trillion was contributed by the vehicle tax. Compliance of the rule on 10% allocation from the vehicle tax for public transport almost quadruples to the annual BRT operating cost. In addition to the provincial sources, Bandung City may contribute to the BRT operational cost from its transport-related revenues. During 2018 and 2019, the City collected around IDR 770-800 billions of transport-related revenues, of which more than 90% originated from revenue sharing from the provincial government.

Table 9 Potential Sub-National Funding Sources for BBMA BRT (IDR billion)

Sub-national government	Transport-related revenues		Fiscal space		Annual surplus	
	2018	2019	2018	2019	2018	2019
West Java PG	10,259.00	11,286.46	7,549.03	7,049.63	3,060.69	3,289.30
Bandung City	772.77	799.89	2,938.53	3,407.97	233.79	231.28
Bandung District	303.29	333.13	1,937.21	2,067.81	709.43	636.92
Cimahi City	102.58	107.39	511.31	703.50	166.34	121.69
Bandung Barat	161.10	175.52	679.67	862.68	272.06	233.91
Sumedang	87.54	94.84	792.00	976.87	109.36	112.93

38. The second fiscal parameter is the overall sub-national fiscal spaces. This fiscal space was estimated by deducting annual revenues with permanent commitments and earmarked spending, which consist of indirect personnel spending, revenue sharing and financial assistance to other regions, and the specific allocation grants (DAK). As shown in Table 9, West Java's and Bandung City's fiscal spaces were much larger than the annual BRT cost. This cost was about 2% and 5% of West Java's and Bandung City's annual fiscal spaces. The third fiscal parameter that reflected the SNG capacity to fund the BRT annual cost is annual budget surplus. During 2018-2019, West Java's budget surplus was 20 times larger than the annual cost, while the Bandung City's ones were 50% larger than the annual cost.

39. In addition to West Java and Bandung City, the sub-national fiscal analysis revealed that, while significantly smaller than West Java's and Bandung City's ones, four other SNGs in BBMA have substantial fiscal resources. As shown in Table 9, the three fiscal parameters showed that Bandung District, Cimahi City, Bandung Barat, and Sumedang raised significant transport-related revenues and had decent fiscal spaces, as well as accumulated annual budget surpluses. These fiscal resources indicate that the four districts are capable of contributing to the BRT funding, if the BRT network is to be expanded in the future.

D. COMBINED COMPONENTS

40. The two projects together have a Base Case IRR of 12%, with an NPV (discounted at 7% p.a. to 2021) of IDR 1846 billion. The composition of costs and benefits is summarised in Table 9.

Table 10 Base case evaluation

Item	NPV (IDR bill)
Capital expenditure	-2060
User benefits	3911
Vehicle operator costs (net)	680
BRT management and operation costs	-1023
Externalities	338
Total	1846

41. Sensitivity tests have also been undertaken (Table 10) to assess the robustness of the estimated IRR to variations in the following:

- project costs increased by 25%
- demand increased by 25%
- demand reduced by 25%
- operator costs increased 25%

Table 11 Project IRR Sensitivity Tests (% p.a.)

Test	IRR (%)	NPV (INR million)
Base	12	1846
Project costs +25%	10	1331
Demand increased by 25%	14	2824
Demand reduced by 25%	9	869
Operator costs increased by 25%	12	1761
IBRD High Case for price of CO2	12	1984

E. GREEENHOUSE GAS AND POLLUTION SAVINGS

42. The fuel savings generated by the project, and hence the reduction in GHG, assume that during the evaluation period road vehicles progressively convert to electric propulsion. As noted in the economic evaluation above, there are expected to be limited changes to general traffic from reduced congestion as a result of the project and any resulting changes in GHG emissions have not been included. Table 11 summarises the consumptions and emissions associated with petroleum-based fuels.

Table 12 Key parameters related to petroleum-based GHG estimates

Mode	Fuel	% veh-km 2024(1)	L/100 veh-km	Kg CO_2/litre	Kg CO_2/100km
Angkot	Petrol	85(2)	12.3	2.32	28.5
	Diesel	15	9.6	2.70	25.9
Bus	Diesel	100	50.0(3)	2.70	135.0
BRT	Diesel	100	40.0(4)	2.70	108.0
Car	Petrol	97(2)	11.3(5)	2.32	26.2
	Diesel	3	8.2	2.70	22.1
Motorcycle	Petrol	100	1.8	2.32	4.2

(1) % of vehicle-km using petroleum-based fuels. See Table 13 for share of electric vehicles by vehicle type
(2) 2024; 100% petrol from 2034
(3) Reducing to 45 in 2034 and 40 in 2044
(4) Reducing to 35 n 2034 and 30 in 2044
(5) Reducing to 10.0 in 2034 and 8.6 in 2044

43. Table 12 summarises the future assumptions for electricity-based vehicles. These include an allowance for the expected decarbonisation of electricity over the evaluation period.

Table 13 Key parameters related to electricity-based GHG estimates

Mode	**Year**	**% veh-km**		**kwh/veh-km**	**Kg CO_2/kwh(1)**	**Kg CO_2/100km(2)**
		Medan	**Bandung**			
Angkot	2034	15	25	0.30	0.720	23.5
	2044	30	50	0.30	0.600	19.5
Bus	2034	10	10	1.50	0.720	117.7
	2044	30	30	1.20	0.600	78.0
BRT	2024	5	5	1.20	0.843	110.3
	2034	50	50	1.10	0.720	86.3
	2044	100	100	1.00	0.600	65.0
Car	2034	10	10	0.23	0.720	17.7
	2044	30	30	0.21	0.600	13.7
Motorcycle	2034	10	10	0.05	0.720	3.9
	2044	30	30	0.05	0.600	3.3

(1) Bandung figures. Medan are 7% lower.
(2) Bandung figures. Medan are 7% lower; these figures an allowance for transmission and distribution losses of 9%

44. Construction emissions were estimated using an average of 1900 tonnes of CO2 per route-km and 2800 tonnes of CO2 per BRT station. The resulting differences in GHG emissions are summarised in Table 13.

Table 14 GHG emissions (tonnes 000 CO2e) 2024 - 2054

	Over project lifetime			Annual average
	With project	Without Project	Net Saving	Net Saving
		BBMA		
Transport	1,798	2,026	228	8
Construction	37		-37	-1
Total	1,835	2,026	190	6
		Mebidang		
Transport	1,470	1,781	311	10
Construction	37		-37	-1
Total	1,506	1,781	273	9
		Combined		
Transport	3,268	3,807	539	18
Construction	74		-74	-2
Total	3,332	3,807	463	15

The net effect of the project is to reduce GHG emissions by 15,000 tonnes p.a. over the next 30 years.

ANNEX 4: Fiduciary and Safeguards

COUNTRY: Indonesia
Indonesia Mass Transit Project

FIDUCIARY

(i) Financial Management

1. The total Loan amount is USD 223,996,591 (with co-financing from Agence Francaise De Developpement/ AFD amounted to USD 39,999,391) out of the total project cost of USD 364 million. This Indonesia Mass Transit Project (MASTRAN/ the Project) proposed development objective is to improve urban mobility and accessibility on high priority corridors in selected urban areas of Indonesia and strengthen institutional capacity for mass transit development. MASTRAN will be implemented for 6 years (2022-2028).

2. This Financial Management Assessment (FMA) assess the adequacy of the financial management system of the implementing agencies, Directorate General of Land Transportation (DGLT) of Ministry of Transportation (MoT) as the implementing agency to produce timely, relevant and reliable financial information on MASTRAN activities, and if the accounting systems for project expenditures and underlying internal controls are adequate to meet fiduciary objectives and allow the Bank to monitor compliance with agreed implementation procedures and appraise progress towards its objectives.

3. FMS has identified the main financial management risk of the MASTRAN due to no experience of DG Land Transportation in Ministry of Transportation in implementing Bank financed project; and (ii) the project required extensive coordination with the participating local governments. To mitigate the associated risk (i) FM consultant (as part of management/ supervision consultant) expected to be hired to support project implementation; (ii) The Project will need to prepare Project Implementation Manual (PIM). PIM will be used to guide project implementation and to monitor the progress of the project including arrangement to enable good coordination with participating local government, covering organization structure, inclusion of program budget into DIPA of DGLT, payment verification mechanism, funds flow mechanism, IFR and financial statement preparation, disbursement mechanism and internal and external audit arrangement; and (iii) financial management training will be conducted before the project implementation start.

Summary Strength and Weaknesses as a result of the FMA

Strength

- DG Land Transportation in Ministry of Transportation has experience in implementing JICA, KfW, IDB and ADB financing projects in the last 5 years.
- Review of FY 2019 and 2020 audit report of MoT indicated that auditor provided unqualified opinion in both audit reports. Furthermore, no significant findings found in DG Land transportation.
- It was noted that MoU between DGLT and participating local governments have been signed.
- Based on the MoU, the Mass Transit Systems developed under component 2 by DGLT will be granted to the participating provincial government after the development completed.

Weaknesses

- DG Land Transportation in Ministry of Transportation has no experience in implementing Bank financed project
- The project requires extensive coordination with participating local governments which makes the project more complex.

Budgeting

4. In Indonesia, financing arrangements for Bank project implemented by Central Government Agencies are governed by integrated budget or DIPA. Source of financing for project activities, including financing percentage, are detailed in DIPA and strictly followed. As such, project activities identified to be jointly financed by IBRD and AFD will be based on a financing split proportional to respective contributions; however, in the case where AFD funds become available at a later stage, IBRD may finance at 100% and such financing split may be recalculated when needed. The budget of the project will be included in the DGLT's budget documents (DIPA).

Internal controls

5. The project plan to finance mostly civil works (80%) and consultant contract and non-consulting services 20%. FM consultant will be hired as part of PMC to support project implementation to do more robust payment verification and assist IFR and annual financial statement preparation. PIM will be used to guide project implementation and to monitor the progress of the project including arrangement to enable good coordination with participating local government, covering organization structure, inclusion of program budget into DIPA of DGLT, payment verification mechanism, funds flow mechanism, IFR and financial statement preparation, disbursement mechanism and internal and external audit arrangement.

Internal audit

6. The project implementation will be subject to internal audit by MoT Inspector General. Report on the IMPTSP internal audit will be available for the Bank during Project supervision.

Accounting and Reporting

7. The Project accounting will follow government accounting system. For reporting to the Bank purposes, the PMU will appoint staff who are responsible for quarterly Interim Financial Report (IFR) preparation. IFR should be received by the Bank no later than 45 days after the end of each calendar quarter.

8. The assets constructed under the project will be transferred to the participating local governments. The arrangement will be reflected in the MoU with the participating local governments.

9. The PMU will also require preparing an annual unaudited financial report completed with Notes to the Financial Statements for auditing purposes. The annual financial statements should be reviewed by the Inspectorate General of MoT prior to submission to BPK. PMU staff and FM consultant will receive training to get familiar with Bank procedures. IFR format and financial statement format and guidelines for its preparation will be reflected in PIM.

Flow of Funds

10. A Designated Account (DA) will be opened by MoF specifically for IMPTSP. An advance will be requested based on the request from the project. Subsequent transfers shall be based on IFR submitted by the project. PMU in DGLT will be assisted by FM consultant to prepare for WA submission.

11. When payment request received from consultant/ vendor, payment will be made from DA.
3 options are available for the project:

1. the project may use the advance method; the flow of funds is as follows:
    a. DA will be open under the name of MoF
    b. the PMU submits a request for an advance to the Bank
    c. The Bank will transfer initial deposit (advance) to DA based on request (using IFR format which include projection of project needs for the 6 months period).
    d. the project make payment to consultant/contractor.
    e. Additional transfer can be made based on request (using IFR format which include projection of the project needs for the 6 months period).
2. Direct payment is available for contracts with minimum value of USD 100,000/ withdrawal application.
3. The project may opt for the pre-financing method, where instead of transferring the funds to the DA, the Bank transfers the funds to MoF's account as reimbursement for the pre-financing amount.

The above arrangement will be reflected in the PIM.

Disbursement Arrangements

12. The applicable disbursement methods are Advance, Direct payment and Reimbursement; Special Commitment is not anticipated under the Project. One (1) pooled DA denominated in US dollars will be opened in the Central Bank under the name of MoF. The DA will be a pooled account with fluctuated ceiling for both the Bank and AFD funds only. Advances from the Bank and AFD will be deposited in this DA and will be solely used to finance eligible expenditures identified under the project for IBRD/AFD financing. The funds will be withdrawn and used proportionately for these identified activities or 84.85% from the Bank and 15.15% from AFD. However, in the case where AFD funds become available at a later stage, IBRD may finance identified activities or expenditures at 100% and once AFD funds are available, the financing split between IBRD and AFD may be recalculated based on then respective available funds. Applications for the replenishment of the DA advance may be submitted through quarterly IFR which consist of (i) DAs Activity Statement; (ii) Statement of Expenditures under Bank's prior review and non-prior review; (iii) Project Cash Forecast for 6 months period; and (iv) Project Sources and Uses of Funds. In addition, no retroactive financing is expected and therefore is not provided under this project.

The disbursement category and allocation for activities financed by the Bank and AFD loans are described in the table below:

Allocation of IBRD and AFD Loan Proceeds

Category	Amount of the IBRD Loan Allocated (expressed in USD)	Amount of the AFD Loan Allocated (expressed in USD)	% of Expenditures to be financed (inclusive of taxes)
(1) Non-consulting services, consulting services, Incremental Operating Costs and Training for component 1 of the Project (excluding Land Expenditures)	28,169,268	5,030,226	% as specified in the Disbursement and Financial Information Letter
(2)(A) Goods, works and consulting services under sub-components 2(a)(i) and 2(a)(ii) of the Project (excluding Land Expenditures)	87,562,304	15,636,126	% as specified in the Disbursement and Financial Information Letter
(2)(B) Goods, works and consulting services under sub-components 2(b)(i) and 2(b)(ii) of the Project (excluding Land Expenditures)	108,265,019	19,333,039	% as specified in the Disbursement and Financial Information Letter
TOTAL	223,996,591	39,999,391	

13. **Counterpart Funds**

Counterpart funds in the aggregate amount equivalent to not less than $50million will be provided by the Borrower, through MOT, and/or the subnational agencies to cover costs such as fleet provisions, O&M, any land acquisition and resettlement costs, etc., under component 2 of the Project. It is also envisaged that the Project will be supported by contributions in an aggregate amount equivalent to approximately $50 million from the private sector operators through public-private partnership arrangements under sub-components 2(a)(iii) and 2(b)(iii) of the Project. These Project cost items are 100% financed by these funds only.

14. **AFD Disbursements**

In line with the co-financing agreement between the Bank and AFD, the Bank will provide disbursement services for AFD; the Bank will process withdrawal applications based on the Bank's disbursement related policies and procedures. The Application for Withdrawal to be submitted by the Borrower for the Bank's review and processing will be used as the basis for review and processing by the Bank for payments for both the Bank's Loan part as well as the AFD's loan part, i.e., separate Application for Withdrawal for AFD's loan part is not required. However, AFD will effect payment transfers based on payment instructions to be sent by the Bank via secured messages.

15. **External Audit Arrangements**

MASTRAN will be subject to external audit. Each audit will cover a period of one fiscal year of the recipient. Audit will be conducted by BPK. Audit reports and audited financial statements will be furnished to the Bank by not later than six months after the end of the fiscal year concerned and shall be made available to the public.

16. **Supervision Plan**

Risk-based supervision of MASTRAN financial management will be conducted. This will involve desk supervision, including review of IFRs and audit reports and field visit. Financial management supervision plan to be conducted every 6 months together with the task team as part of the project implementation support.

(ii) Procurement

17. **Procurement capacity and risk assessment.** The MoT thru DGLT would be responsible for conducting the Procurement and contract management under the project under both component 1 and 2. The Bank team conducted the procurement capacity and risk assessment of the implementing agency and rated the residual procurement risk as Substantial. MoT has no prior experience of implementing some World Bank funded project. The Assessment is ongoing and will be completed by Appraisal.

18. **Key procurement risks and mitigation measures**

Table 1.1. Procurement Risks and Mitigation Measures

No.	Risk Description	Mitigation Measures
1	Conflicts between Bank procurement Regulations and the provisions of the Government Perpres procurement rules and documentation	• PIM will consist of a procurement chapter to clarify that procurement will follow the World Bank Procurement Regulations as specified in the Loan Agreement. • For open national competitive procurement, the Indonesia' national procurement procedures (NPP) can be applied subject to the conditions specified in PPSD and in the project textual part of the procurement plan.
2	Delays in procurement process due to capacity constraints (weak procurement capacity, lack of experience in Bank's Procurement Regulations, constraints of staffing resources for procurement and contract management)	• Recruitment of qualified Individual procurement specialists with prior experience in World Bank funded project to support procurement implementation. • Early setting up of exclusive Pokja for the Bank project, accelerate the Government's internal approval of procurement documents • Bank will provide training on Procurement Regulations and the use of STEP • Bank's prior and post review, regular implementation support missions, hands-on operational/fiduciary advice and guidance,
3	Low procurement readiness in the first year of the project	• Enhancement of procurement readiness by mobilizing resources to prepare TORs of critical consultancy services, specifications/draft bidding documents of key goods/works packages, training on procurement procedures and STEP before project effectiveness
4	Improper packaging plan, inappropriate technical requirements/design, and low levels of interest from market	• Preparing a Project Procurement Strategy for Development (PPSD) to work out appropriate procurement packaging arrangements, detailed and realistic procurement schedules, contract management plan

No.	Risk Description	Mitigation Measures
	attracted, which may result in bidding failure or low quality of procured goods/works, and low value for money of concerned procurement activities	• Preparing technical specifications/TORs based on market survey and engagement activities.
5	Uncertainty over capacities of procurement committee members (Pokja) and the PIU	• Competent and experienced staff will be designated for the procurement committees and PIUs. The Bank will provide training and experience-sharing will be provided for the committee members

19. **Use of National Procurement Procedures.** All contracts for goods, works, and non-consultancy and consultancy services to be procured in line with the national market approach shall follow the Indonesia's national procurement procedures (NPP) set out to follow Perpres No. 16/2018 and amendment Perpres no 12/2021, which were assessed and found to be broadly consistent with the requirement of the World Bank Procurement Regulations, section V - paragraph 5.4, National Procurement Procedures (subject to a few conditions specified in the Project Procurement Strategy for Development [PPSD]) and in the project text section of the Procurement Plan).

20. **PPSD Summary and Procurement Plan**: A Project Procurement Strategy for Development (PPSD) for the project has been prepared by the implementation agency with the support of the World Bank, which forms the basis for the Procurement Plan of the contract packages to be procured under the project. The PPSD identifies the risks and sets out mitigation measures. A draft PP for the first 18 months of the project has been prepared, and submitted for the World Bank's clearance, and will be subsequently published through the Systematic Tracking of Exchanges in Procurement (STEP) system. The PP will be updated annually, or as often as required, to reflect the Project implementation needs, improvements in institutional capacity, and adjustments in procurement risk. It will also be published on the website of the United Nations Development Business (UNDB) and on the Bank's external website. In implementing the procurement activities under the Project, the major procurement categories to be financed by the Bank and their implementation arrangements have been assessed in the PPSD.

(a) **Works.** There are construction of the BRT core infrastructure and to ensure BRTs adequate integration with the existing transport networks. This will include, among others, road infrastructure and its drainage system, enhancement of main corridor and adjacent streets, landscaping, depot, terminals, stations, intersections, corridor traffic management systems, sidewalks, pedestrian crosswalks, and some bike lanes along the corridors

(b) **Goods and equipment.** Provision of ITS including fleet management, vehicle tracking, passenger information, grievance management and automatic fare collection system which will enable a centralized control of bus operations, fare management and customer interface, traffic signaling and management systems including enforcement systems.

(c) **Consulting services.** Consulting firms/individuals would be required for review, develop and finalize the preliminary and detailed engineering designs (DEDs), Construction Supervision Consultants, Project Management Consultant, and other technical studies various capacity Consultant selection methods and

procedures are stipulated in the Bank's Procurement Regulations and the method thresholds are defined in the Procurement Plan.

21. **Project implementation support staff.** Individuals to be contracted for positions to support Agencies in carrying out its project management functions (as assessed in the PPSD), as distinct from individual consulting positions identified in the Procurement Plan, may be selected according to Agency/Government's personnel hiring procedures, as reviewed, and found acceptable by the Bank. This means that such project implementation support staff are not deemed Consultants as defined in the Bank's Procurement Regulations and their selection and contracts are not governed by the consultant selection procedures under the Bank's Procurement Regulations, but by the Agency/Government's own rules. Such personnel should not be included in the Procurement Plan in STEP but identified in the project implementation/staffing plan. They are eligible expenses under the project under the IOC category. Similarly, the recurrent services and supplies to maintain project office operations (office rental, internet, stationery) should be financed by IOC of the Loan or the Government's budget, thus not included in the Procurement Plan or STEP.

22. **Bank's Systematic Tracking of Exchanges in Procurement (STEP).** The Project will use the STEP system to plan, record and track procurement transactions. The applicable method of procurement for each specific contract and the Bank's review requirements (prior or post review) will depend on the nature, value, and risk of each contract and are specified in the Procurement Plan approved by the Bank. STEP will help the World Bank to monitor the procurement progress and take appropriate supportive actions in due course. All relevant procurement and contract documents will be recorded in STEP.

23. **Disclosure of procurement information.** The following documents shall be disclosed on the websites of procuring entities/implementing agencies and SPSE, the Government's e-procurement system: (a) a Procurement Plan and updates; (b) an invitation for bids for goods and works for all contracts; (c) request for expression of interest for selection/hiring of consulting services; (d) contract awards of goods and works procured following international and national procedures; (e) a list of contracts/ purchase orders placed following shopping procedures on a quarterly basis; (f) a list of contracts following direct selection on a quarterly basis; For international competitive bidding, in addition, international publication will be done in accordance with the requirements in the World Bank's Procurement Regulations.

24. **Frequency of procurement supervision.** The World Bank's oversight of procurement will be done through increased implementation support and increased procurement post review of a sample of contracts awarded based on risk. All contracts not covered under prior review by the Bank will be subject to post review during implementation support missions and/or special post review missions, including missions by consultants hired by the Bank. To avoid doubts, the Bank may conduct, at any time, Independent Procurement Reviews (IPRs) of all the contracts financed under the loan.

(iii) Environmental and Social

25. The Project Social risk is rated Substantial, lowered from High at the concept stage, as the scope of Component 2 is now narrowed to two Bus Rapid Transit (BRT) constructions in BBMA and Mebidang. As Light Rapid Transit (LRT) has been dropped, the project will unlikely require significant land acquisition. A preliminary Land Acquisition and Resettlement Action Plans (LARAPs) was prepared for BRT constructions in BBMA and Mebidang based on the information available at the feasibility study stage. The preliminary LARAPs found that

proposed BRT lines will pass through densely populated areas, however, the scale of land acquisition will unlikely be significant because bus depots would be built on state lands, the BRT tracks will likely be built on existing roads, and only a limited land acquisition will be necessary where bus stops and BRT platforms are built (22 of them are expected to be built). The exact scale and scope of land loss would be determined when detailed designs are ready during project implementation. No physical displacement is expected, and detailed designs will be adjusted if necessary to avoid physical displacement. About 20 non-housing structures such as fences, walls, parking lots may be damaged under BRT construction in Mebidang. The scale of impact on structure is not known for BRT construction in BBMA, but the impact will unlikely be significant. No squatters are found to be present. A Grievance Redress Mechanism will be set up in BBMA and Mebidang, respectively.

26. The Project will affect the job of local transport providers (*angkot*). In many cities of Indonesia, *Angkot* has been both an important mode of transport and an important means of livelihoods for low income groups, although the size of *angkot* fleet is declining throughout Indonesia as passengers opt for other modes of transport such as online transport operators (both motorcycle and 4-wheel vehicles), and DAMRI (public transport operates by state-owned enterprise). Consultations with *angkot* operators indicate that, while they are supportive of BRT construction, they are concerned about potential job loss. The BRT construction will likely lead to the cancellation or modification of some *angkot* routes. While the exact scale and scope of impact on job and income of *angkot* operators will only be known when routes to be cancelled, modified (e.g. route shortening, transformation into feeder routes) or maintained are determined based on the on-going technical as well as demand assessment, it is expected that the project would affect about 1,300 *Angkot* operators in Bandung and 2,300 operators in Medan. The project plans to use a similar approach to mitigate impact on *angkot* operators as is done under BRT constructions in other cities in Indonesia and employ affected *angkot* drivers under BRT operations with necessary training. Preliminary assessment shows that about 1,500 jobs may be created by the BRT operator in Medan while the equivalent figure is 900 in Bandung. Mitigation measures will be developed during implementation in close consultation with *angkot* operators.

27. It is expected that approximately 1510 workers would be hired throughout the project cycle, including contracted workers, consultants, and potentially primary supply workers. Potential labor risks include poor working conditions, occupational health and safety, child labor, labor influx, Gender Based Violence (GBV) issues, spread of COVID-19 (or other forms of transmittable disease). Significant social impact due to labor influx is unlikely given high local absorption capacity. Health and safety risks for local communities are expected both during the construction and operation phases, which can be mitigated through proper implementation of ESMPs.

28. Stakeholder engagement plans (SEPs) have been prepared both for Mebidang and BBMA BRT constructions based on the on-going consultations with stakeholders including *angkot* operators. Governments officials and consultants have had on-site discussions and interviews with approximately 25 local people including *angkot* operators in both locations (and in total 75 people including local- and field- government staffs). Based on these initial engagements, *angkot* operators and street vendors were worried of losing their means of livelihoods, which will affect their income during construction and operation of the BRT. They are also concerned on availability and accessibility of grievance redress channels if they want to complain or negotiate on the compensation/agreement. The same concerns were raised during consultation meetings of the preliminary ESIAs and LARAPs held on December 9, 2021 in Medan and on December 12, 2021 in Bandung, respectively. These concerns have been captured and incorporated in the preliminary ESIAs, the SEPs and other relevant ESF instruments at the city level.

29. No major health and safety impacts on local communities including SEA/SH risks are anticipated although there might be low to moderate risk of SEA/SH during BRT operations. The SEA/SH action plans including mapping of service providers have been prepared for BBMA and Mebidang, and standard operating procedure on SEA/SH prevention will be prepared and operation-staffs in the field be trained for handling of SEA/SH incidents. BRT constructions will cause health and safety risks to local populations during constructions through the transportation and operation of construction machinery and tracks, which will be mitigated through relevant safety measures in the ESMP. Specific attention will be given to provision of safe accessibility of passengers during the operational phase, and due consideration of gender aspects of personal safety on stations and on-board.

30. No Indigenous people that meet the requirements of paragraph 8 and 9 of ESS7 on Indigenous Peoples were found to be present in the project areas in BBMA and Mebidang.

31. Component 1 would provide capacity and institutional development of mass transit systems both at national and sub-national levels. Social risks of such TA activities can and will be managed by ensuring that Terms of References of respective activities address relevant standards adequately. This component will also support preparation of BRT projects in other Indonesian metropolitan areas. The nature and scale of such future investments are expected to be similar to those that are funded under Component 2 of this project and associated social risks will be addressed through design-stage ESIA, LARAP and other relevant instruments which will be developed as part of the detailed design process. The ESMF prepared under this project provides details on how such design-stage instruments should be prepared in compliance with relevant standards. The ESMF includes as annexes a Land Acquisition and Resettlement Policy Framework (LARPF), Indigenous Peoples Planning Framework (IPPF), Labor Management Procedures (LMP) and Stakeholder Engagement Framework (SEF). The ESMF and annexes will govern all technical assistance activities of the project to be implemented under Component 1, except that the LMP would apply to all labor issues including with regard to BRT constructions in Bandung and Medan. The ESMF was disclosed at MOT website on December 1, 2021 and the consultation meeting have been conducted on 9 and 13 December 2021.

32. The environmental risk rating is Substantial, downgraded from High at the Concept Review Meeting. This is due to changes in typology of investment, the Borrower has decided to exclude investment on the light rapid transit (LRT) and improvement of community railways because the two investments are assessed to be not feasible. The loan will only finance Bus Rapid Transit (BRT) in the two metropolitan cities, i.e. Bandung and Medan Metropolitan. Both Bandung and Medan Metropolitan have run bus service system, five corridors each.

33. Considering the typology of investment and potential impacts, construction of BRT in urban setting is still considered complex and large investments with potential permanent and long term adverse E&S impacts. Other considerations for the risk rating are that the magnitude and spatial extent (i.e. the geographical area or size of the population likely to be affected is large to very large).

34. The risk rating also takes into account factors outside the control of the Project, i.e. earthquake and flood that could have a significant adverse impact on the E&S performance and outcomes of the Project. The main impacts of this project will be on traffic, in addition, there will be excavation work, noise, air pollution, and possibility of surface water pollution via sediment run-off. All of these impacts are temporary during construction, during operation main impact will be cumulative impacts, modeling of the impact will be required. On air pollution, the fleets will have to meet at minimum Euro 4 standard emission. On flood and earthquake, there are comprehensive studies on these two that are prepared specifically to address the BRT of Bandung and Medan.

For example of mitigation measures for flood, the ESMF requires the BRT bus station to be constructed on elevated concrete structures; then on earthquake, national building code on earthquake prone will be applied in design. Nonetheless, all potential significant adverse E&S risks and impacts can be mitigated using available mitigation measures e.g. through design that taken into account of the natural disaster, e.g. flood.

35. The BRT construction and operation are not new in Indonesia, including Bandung and Medan metropolitan have operated BRT like facilities although not as advance as the BRT operating in Jakarta Metropolitan (noting that the BRT of Jakarta Metropolitan was developed by the Provincial Government of DKI Jakarta) that has included feeders into the system and is managed with advance traffic management system to mitigate congestion. Related to the MoT's E&S capacity as implementation agency, it has some experiences with E&S requirement of other development partners but not with the World Bank ESF or OPs. Based on initial assessment on existing manpower, the capacity of participating institutions (National and SNGs Transport Agency) may not be sufficient to manage risk and impacts of construction and operation. To address this issue, the Component 1 will include TAs to strengthen the borrower E&S capacity with various trainings as identified in ESMF. Please note that SNGs staffs have far more experiences than MoT's staff.

36. An ESMF was prepared to assist the development of BRT in other cities. The ESMF provides the framework for support to relevant project actors—both government and non-government stakeholders—for E&S risk management and engagement. The ESMF also provides generic measures and plans to reduce, mitigate, and/ or offset adverse risks and impacts as well as grievance redress mechanism and cost estimation for the ESMF implementation. Noting that site specific measures will be provided in ESIA and contractor-ESMP. For this reason, as for activities planned under Component 2, i.e. BRT system in Medan and Bandung Metropolitan areas, two preliminary ESIAs have been prepared, which include annexes of term of reference on how to prepare the ESIA in according to the World Bank ESF and the GOI's ESIA. The strip map level with indicative mitigation measures were prepared included for each BRT system. In absence of DED, the strip map at this stage will not be able to define project area of influence nor the indirect impacts. Such information will be provided in the ESIA that will be completed in implementation stage, together with DED preparation.

ANNEX 5: Team List

COUNTRY: Indonesia
Indonesia Mass Transit Project

Team Composition				
Bank Staff				
Name	Role	Tittle	Specialization	Unit
Amilia Aldian	Task Team Leader (TTL) (ADM Responsible)	Transport Engineer		IEAT1
Nupur Gupta	Task Team Leader	Sr. Urban Transport Specialist	Co-TTL	IEAT1
Arun Kumar Kolsur	Procurement Specialist (ADM)	Sr. Procurement Specialist	Procurement	EEAR2
Budi Permana	Procurement Specialist	Sr. Procurement Specialist	Procurement	EEAR2
Novira Kusdarti	Financial Management Specialist	Sr. Financial Management Specialist	Financial Management	EEAG1
Annye Frida Meiliani Simbolon	Social Specialist (ADM)	Social Development Specialist	Social Safeguards	SEAS2
Kian Siong	Environmental Specialist	Sr. Environmental Specialist	Environmental Safeguards	SEAE1
Elena Y. Chesheva	Team Member	Sr. Transport Specialist	Transport	IEAT1
Georges Bianco Darido	Team Member	Lead Urban Transport Specialist	Urban Transport	ITRGK
David John Ingham	Team Member	Consultant	Urban Transport	IEAT1
Tomas Herrero Diez	Team Member	Consultant	Urban Transport	IEAT1
Hongye Fan	Team Member	Transport Specialist	Urban Mobility	IEAT1
Satoshi Ishihara	Social Specialist	Sr. Social Development Specialist	Safeguards Policy	SEAS2
Warren Paul Mayes	Team Member	Sr. Social Development Specialist	Safeguards Policy	SCASO
Krisnan Pitradjaja Isomartana	Environmental Specialist	Sr. Environmental Specialist	Environmental Safeguards	SEAE1
Naimah Lutfi Abdullah Talib	Team Member	Consultant	Environmental Safeguards	SEAU1
Adrianus Hendrawan	Team Member	Consultant	Urban Economist	EEAF2
Alan Sebastian Chandra	Team Member	Consultant	Urban Transport	IEAT1
Qi Yahya	Team Member	Consultant	Urban Transport	IEAT1
Paulo Custodio	Team Member	Consultant	Public Transport	IEAT1
Richard G. Bullock	Team Member	Consultant	Financial & Economic Analysis	ISAT1
Tamara Kerzhner	Team Member	Consultant	Urban Transport	IAWT3
Christina Natalia	Team Member	Program Assistant	Administration	EACIF

ANNEX 6: Maps

COUNTRY: Indonesia
Indonesia Mass Transit Project

Figure 1: Indonesia Map

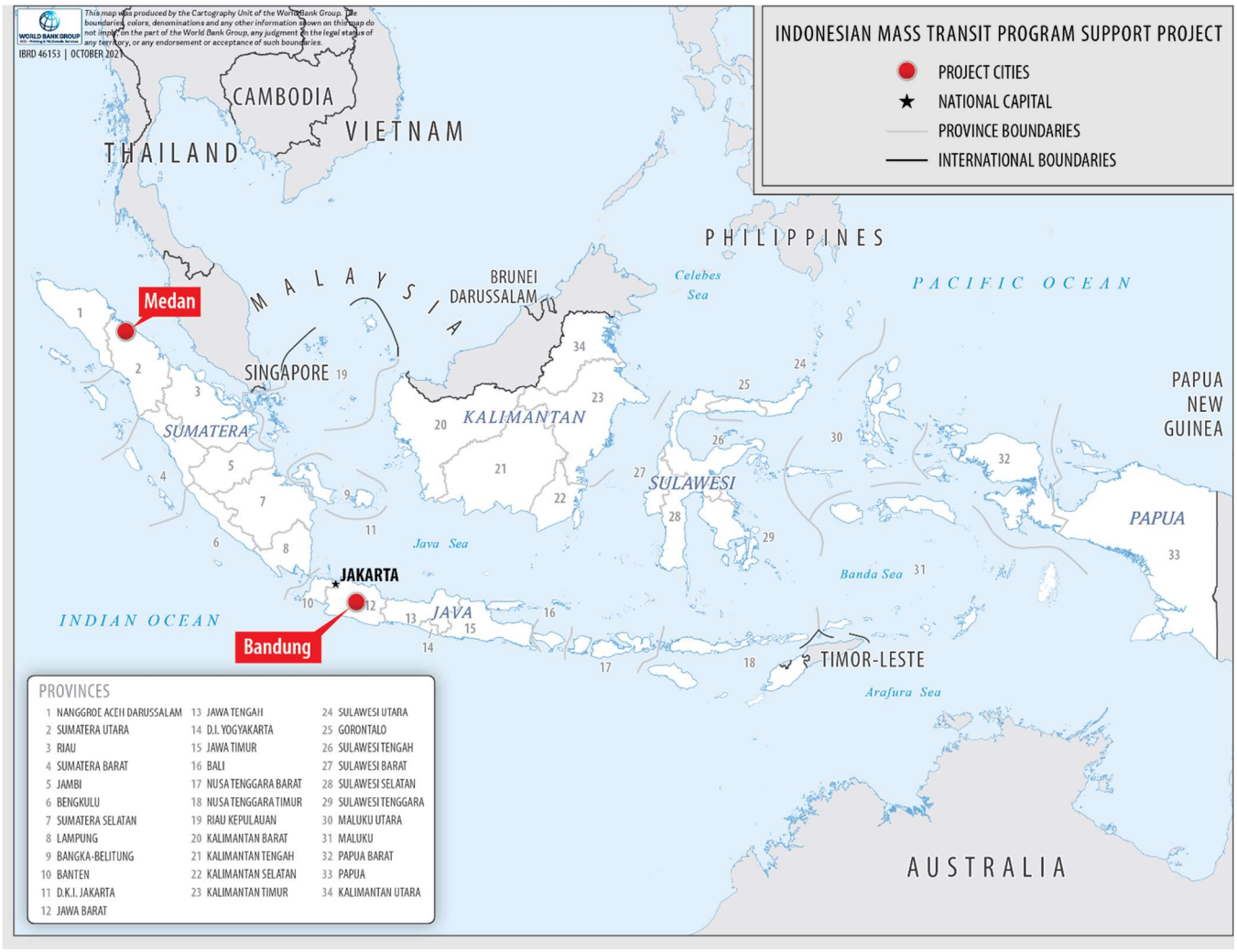


Figure 2: Mebidang Map

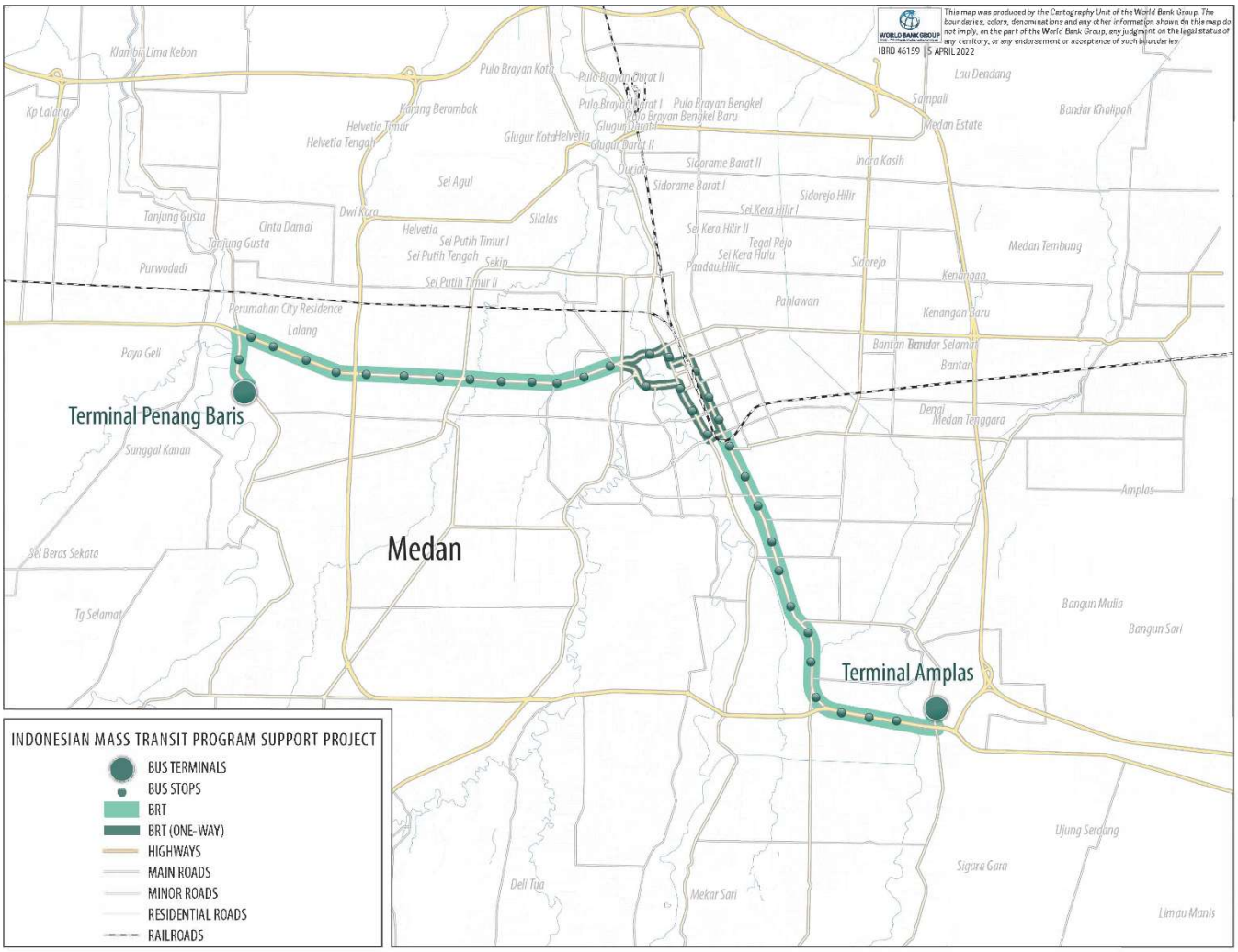


Figure 3: BBMA Map