



Report No: PAD4350

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US\$100 MILLION

TO

MONGOLIA

FOR AN

ULAANBAATAR SUSTAINABLE URBAN TRANSPORT PROJECT

June 1, 2021

Transport Global Practice  
East Asia and Pacific Region

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## CURRENCY EQUIVALENTS

(Exchange Rate Effective April 30, 2021)

Currency Unit = Mongolian Tugrik (MNT)

MNT 2,850 = US\$1

## FISCAL YEAR

January 1 – December 31

## ABBREVIATIONS AND ACRONYMS

|        |   |
|--------|---|
| AADT   | Annual Average Daily Traffic                                  |
| ADB    | Asian Development Bank  |
| ATC    | Area Traffic Control  |
| BRT    | Bus Rapid Transit   |
| CBA    | Cost-Benefit Analysis   |
| CERC   | Contingent Emergency Response Component                       |
| CMP    | Child Money Program   |
| CPF    | Country Partnership Framework                                 |
| DA     | Designated Account  |
| DFIL   | Disbursement and Financial Information Letter                 |
| DRIVER | Data for Road Incident Visualization Evaluation and Reporting |
| E&S    | Environmental and Social                                      |
| EBRD   | European Bank for Reconstruction and Development              |
| EIRR   | Economic Internal Rate of Return                              |
| ESIA   | Environmental and Social Impact Assessment                    |
| ESMF   | Environmental and Social Management Framework                 |
| ESMP   | Environmental and Social Management Plan                      |
| ESRS   | Environmental and Social Review Summary                       |
| FDI    | Foreign Direct Investment                                     |
| FM     | Financial Management  |
| FMM    | Financial Management Manual                                   |
| FRH    | Functional Road Hierarchy                                     |
| GBV    | Gender-Based Violence   |
| GDP    | Gross Domestic Product  |
| GHG    | Greenhouse Gas  |
| GoM    | Government of Mongolia  |
| GRM    | Grievance Redress Mechanism                                   |
| GRS    | Grievance Redress Service                                     |
| IA     | Implementation Agency   |



|       |  |
|-------|--|
| IFC   | International Finance Corporation                    |
| IFI   | International Financial Institution                  |
| IFR   | Interim Financial Report                             |
| IMF   | International Monetary Fund                          |
| ITS   | Intelligent Transport Systems                        |
| JICA  | Japan International Cooperation Agency               |
| MRTD  | Ministry of Roads and Transport Development          |
| MUB   | Municipality of Ulaanbaatar                          |
| M&E   | Monitoring and Evaluation                            |
| MaaS  | Mobility-as-a-Service                                |
| MOF   | Ministry of Finance                                  |
| MRTD  | Ministry of Road and Transport Development           |
| NMT   | Nonmotorized Transport                               |
| NPV   | Net Present Value                                    |
| PAD   | Project Appraisal Document                           |
| PMO   | Project Management Office                            |
| POM   | Project Operations Manual                            |
| PDO   | Project Development Objective                        |
| PPSD  | Project Procurement Strategy for Development         |
| PSC   | Project Steering Committee                           |
| PSI   | Project Safety Impact                                |
| PTSA  | Public Transport Service Agency                      |
| RDA   | Road Development Agency                              |
| RPF   | Resettlement Policy Framework                        |
| RSSAT | Road Safety Screening and Appraisal Tool             |
| SEP   | Stakeholder Engagement Plan                          |
| SMEs  | Small and Medium Enterprises                         |
| SOE   | Statement of Expenditures                            |
| TA    | Technical Assistance                                 |
| TAMP  | Transport Asset Management Plan                      |
| TCC   | Traffic Control Center                               |
| TDM   | Travel Demand Management                             |
| TIIP  | Transport Infrastructure Investment Plan             |
| TPMEA | Traffic Planning, Management, and Engineering Agency |
| USUT  | Ulaanbaatar Sustainable Urban Transport              |
| VOC   | Vehicle Operating Cost                               |
| VKT   | Vehicle-Kilometers-Traveled                          |
| WA    | Withdrawal Application                               |
| WHO   | World Health Organization                            |



**The World Bank**

Ulaanbaatar Sustainable Urban Transport Project (P174007)

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## DATASHEET

### BASIC INFORMATION

|              |   |  |
|--------------|---|--|
| Country(ies) | Project Name                                    |  |
| Mongolia     | Ulaanbaatar Sustainable Urban Transport Project |  |
| Project ID   | Financing Instrument                            | Environmental and Social Risk Classification |
| P174007      | Investment Project Financing                    | Substantial                                  |

### Financing & Implementation Modalities

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

|                        |                       |
|------------------------|-----------------------|
| Expected Approval Date | Expected Closing Date |
| 24-Jun-2021            | 31-Dec-2026           |

### Bank/IFC Collaboration

No

### Proposed Development Objective(s)

The Project Development Objectives are to develop a comprehensive framework for sustainable urban mobility in Ulaanbaatar, and to reduce congestion, improve road safety, and address climate resilience on selected transport corridors.

**Components**

| Component Name   | Cost (US\$, millions) |
|--|-----------------------|
| Integrated Corridors   | 81.00                 |
| Sustainable Public Transport System                          | 10.00                 |
| Effective Institutions for Transport Planning and Management | 9.00                  |
| Contingent Emergency Response                                | 0.00                  |

**Organizations**

|                      |                             |
|----------------------|-----------------------------|
| Borrower:            | Mongolia                    |
| Implementing Agency: | Municipality of Ulaanbaatar |

**PROJECT FINANCING DATA (US\$, Millions)****SUMMARY**

|                    |        |
|--------------------|--------|
| Total Project Cost | 100.00 |
| Total Financing    | 100.00 |
| of which IBRD/IDA  | 100.00 |
| Financing Gap      | 0.00   |

**DETAILS****World Bank Group Financing**

|  |        |
|--|--------|
| International Bank for Reconstruction and Development (IBRD) | 100.00 |
|--|--------|

**Expected Disbursements (in US\$, Millions)**

| WB Fiscal Year | 2021 | 2022 | 2023  | 2024  | 2025  | 2026  | 2027   |
|----------------|------|------|-------|-------|-------|-------|--------|
| Annual         | 0.00 | 5.86 | 12.82 | 18.98 | 20.17 | 21.94 | 20.23  |
| Cumulative     | 0.00 | 5.86 | 18.68 | 37.66 | 57.84 | 79.77 | 100.00 |



## INSTITUTIONAL DATA

### Practice Area (Lead)

Transport

### Contributing Practice Areas

### 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                                     | ● Substantial |
| 2. Macroeconomic  | ● Moderate    |
| 3. Sector Strategies and Policies                               | ● Moderate    |
| 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   | ● Moderate    |
| 9. Other  |               |
| 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 | Not Currently 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

#### 1. Implementation Arrangements

##### (i) Subsidiary Agreement

Loan Agreement: Schedule 2, Section I.A

Recurrent, Continuous

The Borrower shall make available to the Project Implementing Entity the proceeds of the Financing under a subsidiary agreement between the Borrower and the Project Implementing Entity under terms and conditions approved by the Bank; and not amend, waive or abrogate any provisions of the subsidiary agreement unless the Bank agrees otherwise in writing.

##### (ii) Institutional Arrangements

Project Agreement: Schedule, Section I.A



Recurrent, Continuous

The Project Implementing Entity shall, one month after the Effective Date establishes a Project Steering Committee and thereafter, maintain, throughout the period of implementation of the Project: a Project Steering Committee; a Project Management Office; and technical teams; all with composition, functions, staffing, and resources satisfactory to the Bank and set out in the Project Operations Manual.

(iii) Project Operations Manual

Project Agreement: Schedule, Section I.B

Recurrent, Continuous

The Project Implementing Entity shall ensure that the Project is carried out in accordance with the Project Operations Manual, and not amend, waive or abrogate any provisions of the manual unless the Bank agrees otherwise in writing.

(iv) Annual Work Plans and Budgets

Project Agreement: Schedule, Section I.C

Recurrent, By December 5 annually

The Project Implementing Entity shall, prepare and furnish to the Bank for its no-objection no later than December 5 of each fiscal year an annual work plan and budget (AWPB) during the implementation of the Project containing relevant Project activities and expenditures proposed to be included in the Project in the following fiscal year, including a specification of the sources of financing and the Borrower's proposed counterpart share in the cost of the AWPB.

Sections and Description

2. Environmental and Social Standards

Loan Agreement: Schedule 2, Section I.B and Project Agreement: Schedule, Section I.D

Recurrent, Continuous

The Borrower shall take, and shall cause the Project Implementing Entity, to take, all measures necessary to comply with, or all measures necessary to enable the Project Implementing Entity to comply with the provisions of the Environmental and Social Commitment Plan and the Safeguards Instruments.

The Project Implementing Entity shall take all measures necessary to comply with the provisions of the Environmental and Social Commitment Plan and the Safeguards Instruments and, not amend, abrogate or waive any of their provisions unless the Bank agrees otherwise, and report on their status of implementation as part of the project reports.

Sections and Description

3. Contingent Emergency Response

Loan Agreement: Schedule 2, Section I.C

In case of an Eligible Crisis or Emergency

Obligation of the Borrower to adopt a satisfactory CERC Manual for Part 4 of the Project and, in the event of an eligible crisis or emergency, ensure that the activities under said part are carried out in accordance with such manual and all relevant safeguard requirements.

Sections and Description



#### 4. Mid-term Review

Project Agreement: Schedule, Section II.B.2

Once, 20 months after the Effective Date

Obligation of the Project Implementing Entity to prepare and furnish to the Bank a mid-term report in form and substance satisfactory to the Bank.

#### Sections and Description

#### 5. Completion Report

Project Agreement: Schedule, Section II.B.3

Once, 3 months after the Closing Date

Obligation of the Project Implementing Entity to prepare and furnish to the Borrower a completion report in form and substance satisfactory to the Bank.

#### Sections and Description

#### 6. Procurement and Use of Traffic Cameras

Project Agreement: Schedule, Section III.A

Prior to procurement and/or use of traffic cameras under the Project

The Project Implementing Entity shall (i) notify the Bank of such proposed procurement and/or use, and afford the Bank a reasonable opportunity to assess any risks related to such procurement and/or use, including operational, legal and regulatory, institutional, technical, social and environmental, and fiduciary risks, and to recommend appropriate mitigation measures; and (ii) develop a risk mitigation plan for the procurement and use of traffic cameras, in form and substance acceptable to the Bank.

#### Conditions

| Type          | Financing source | Description   |
|---------------|------------------|---|
| Effectiveness | IBRD/IDA         | <p>Loan Agreement: Article V.01</p> <p>(i) the Project Implementing Entity has adopted the Project Operations Manual in form and substance satisfactory to the Bank; and</p> <p>(ii) the Project Implementing Entity has established the Project Management Office with a mandate, composition, resources, and terms of reference satisfactory to the Bank.</p> |
| Disbursement  | IBRD/IDA         | <p>Loan Agreement: Schedule 2, Section III.B</p> <p>(i) (A) the Borrower has determined that an Eligible Crisis or</p>  |



|  |  |   |
|--|--|---|
|  |  | <p>Emergency has occurred, and has furnished to the Bank a request to withdraw Loan amounts under Category [(2)]; and (B) the Bank has agreed with such determination, accepted said request and notified the Borrower thereof; and</p> <p>(ii) the Borrower has adopted the CERC Manual and Emergency Action Plan, in form and substance acceptable to the Bank.</p> |
|--|--|---|



## I. STRATEGIC CONTEXT

### A. Country Context

1. **Mongolia is a landlocked, lower-middle-income country with growth potential owing, in part, to its rich mineral resource endowment.** A traditionally agriculture-based economy has shifted to a mining-based economy during the past two decades, following the exploration of large mineral deposits and a large flow of foreign direct investments (FDIs) to the mining sector. The country's economy experienced rapid yet volatile growth over the last 15 years, creating a wave of economic prosperity across the country with investments in its infrastructure and social services. However, the mining-led growth has resulted in severe macroeconomic instability and is susceptible to external shocks, concentrated and enclave development, excessive capital accumulation, and little innovation.<sup>1</sup> The poverty rate<sup>2</sup> dropped between 2010 and 2018 from 38 percent to 28 percent but remains high. Currently, around 42 percent of the poor in Mongolia live in Ulaanbaatar.<sup>3</sup>
2. **The Government of Mongolia (GoM) has set an agenda to diversify its economy and achieve sustainable economic growth, demanding investment in transport infrastructure.** The key development strategies, as set out in the Three-Pillar Development Policy of 2018, the Mongolia Sustainable Development Vision 2030, and, more recently, the Mongolia Vision 2050, propose to diversify Mongolia's economy towards agriculture, tourism, and industry sectors. Infrastructure inadequacy that inhibits the competitiveness of these sectors has been highlighted as one of the key bottlenecks to realize Mongolia's diversification agenda. The country has consistently lagged in global infrastructure rankings<sup>4</sup> with low scores in transport and logistic infrastructure.<sup>5</sup> As the largest city in Mongolia inhabited by nearly half of the country's population, Ulaanbaatar faces urban transport challenges that significantly affect the country's economic productivity. The recent Mongolia InfraSAP 2020 study suggested five strategic infrastructure interventions to promote the diversification of the economy, which include urban mobility infrastructure to support the service sector including tourism.
3. **Urban centers are important drivers of growth and wellbeing of the Mongolian population, but rapid rural-urban migration over the past two decades has challenged municipal service delivery in the capital city of Ulaanbaatar—Mongolia's economic, financial, and political center.** The population of Ulaanbaatar increased from 780,000 in 2001 to 1.45 million in 2019, an 87 percent increase, while the national population grew only 32 percent during this time. Most of the rural migrants live in *ger* areas<sup>6</sup>, which are characterized by low-density settlements lacking adequate access to basic services and infrastructure such as water, sanitation, paved roads, and formal public transport services. The built-up

<sup>1</sup> World Bank, "Mongolia Growth Study - CEM 2.0", 2019

<sup>2</sup> As calculated using the national poverty line, [http://www.rilsp.gov.mn/upload/2018/argazui/Yduurliin\\_Undsen\\_Uzuuleltuudiig\\_Tootsoh\\_Argachlal.pdf](http://www.rilsp.gov.mn/upload/2018/argazui/Yduurliin_Undsen_Uzuuleltuudiig_Tootsoh_Argachlal.pdf).

<sup>3</sup> National Statistics Office, 2020

<sup>4</sup> See, for example, the World Economic Forum's Global Competitiveness Report 2019, which ranked Mongolia 101 out of 141 countries in infrastructure. Mongolia ranked 112 with regard to quality of roads, 112 with regard to road connectivity, and 117 with regard to efficiency of air transport.

<sup>5</sup> Mongolia ranks 130 out of 160 on the Logistics Performance Index and 135 on the infrastructure aspect.

<sup>6</sup> *Ger* is a traditional dwelling hut which is portable, round, and covered with felt as insulation. Ger area is a form of residential district, often in the outskirts of the city, where residents live in traditional *gers* (yurts) or in small houses.



area of the city increased threefold between 1998 and 2017 from 160 km<sup>2</sup> to 537 km<sup>2</sup>, mostly in *ger* areas.<sup>7</sup> *Ger* areas now comprise 83 percent of the city's built-up area and are home to 55 percent of its population.<sup>8</sup> The rapid and unorganized expansion of the city and the weak fiscal capacity of the municipality have resulted in a number of urban management challenges, including inadequate public/municipal services, poor municipal asset management, and unequal access to services and infrastructure. The poor are particularly at a disadvantage when it comes to the availability of essential services, including public transport, preventing them from accessing jobs and social services in the wider municipality.

4. **The ongoing COVID-19 pandemic has taken a heavy toll on Mongolia's economy and its people.** Despite the initial success in prevention, local transmission started last November has not been brought fully under control. Mongolia's high population concentration in the capital city has facilitated rapid transmission, although the death rate remains low. The economy contracted by over 5 percent in 2020, the first sizable recession in over a decade. Nearly ninety percent of population experienced income losses, based on the phone survey carried out by the World Bank. In response, the government has unveiled several rounds of stimulus measures. These measures, the strong recovery of commodity demand from China, and the recent rapid roll-out of vaccines have fortunately triggered a solid recovery in 2021 so far. But uncertainty remains high and support from the international community remains critical.

## B. Sectoral and Institutional Context

5. **The Municipality of Ulaanbaatar (MUB) has been facing challenges to meet the increasing urban transport demand from rapid urbanization.** The city's latest Master Plan was approved in 2014 with its population projected to reach 1.4 million by 2030, which was surpassed in 2019 when the population reached 1.45 million. In addition, Ulaanbaatar has a relatively high motorization rate (392 registered motor vehicles per 1,000 people as of 2019) compared to its peer cities with similar income levels.<sup>9</sup> In response to the rapid increase in private car ownership, from 258,000 in 2012 to about 615,000 in 2021,<sup>10</sup> the MUB tried implementing policies to restrict car use.<sup>11</sup> Walking trips have declined sharply since 2009 with trips by car increasing significantly. Of the 2.3 million person-trips Ulaanbaatar citizens made per day in 2016, over half were by public transport (37.3 percent) or walking (15.3 percent), with a slight increase in public transport trips but a sharp decline in walking trips compared with data in 2009; there was an increasing share of private car trips (38.5 percent) and a stable percentage<sup>12</sup> of trips by taxi (8.4 percent).<sup>13</sup>

<sup>7</sup> Ulaanbaatar Design Institute, Baseline Study for Ulaanbaatar Master Plan 2040, 2018

<sup>8</sup> Ibid.

<sup>9</sup> Ulaanbaatar has a total 568,866 registered vehicles and a 1.45 million population (National Statistics Office 2020).

<sup>10</sup> National Statistics Office, 2020

<sup>11</sup> The License Plate Restriction rule regulates the use of vehicles in Ulaanbaatar based on the last digit of a vehicle's license plate number. Cars with license plate number ending with 1 or 6 cannot go on road in the city on Mondays, 2 or 7 on Tuesdays, and so on. During the past few years, this rule has often been converted to 'odd-even' numbers (only cars with license plate numbers ending with either odd or even number can drive on each day) in response to severe congestion problems often during national holidays/start of school/special high-level visits.

<sup>12</sup> 2009 and 2016 Ulaanbaatar Household Travel Survey, from Sustainable Financial Strategy for Urban Transport Sector in Ulaanbaatar. World Bank, 2018.

<sup>13</sup> Ibid.



6. **Traffic congestion has significantly worsened in Ulaanbaatar over the past two decades.** Average travel speed in the city halved from 30–40 km per hour in 1998 to 16–20 km per hour in 2011.<sup>14</sup> In 2019, average travel speed was down to 13 km per hour on the arterial roads and only 9 km per hour during peak hours.<sup>15</sup> The traffic congestion issue reflects a dysfunctional urban mobility system in Ulaanbaatar. Rapid urbanization and growing motorization have generated increasing travel demand where origins and destinations are far apart due to low density and a sprawling urban form. Poor public transport services and extremely deficient nonmotorized transport (NMT) facilities make walking and public transport even less attractive and less efficient, which further encourages private car use. Due to the urban construction boom without proper land use and transport planning, Ulaanbaatar's current 1,100-km-long street network is sparse and disconnected and does not have a clear functional road hierarchy (FRH)<sup>16</sup> resulting in inefficient traffic mixes. Traffic management and road safety facilities especially at junctions are insufficient and ineffective, causing delays and traffic crashes, which also contribute to congestion. Parking is not managed, and parked cars occupy and obstruct sidewalk and roadway in the most congested city center. The streets are of overall poor quality and vulnerable to climate hazards—resulting in frequent disruptions on streets and causing delays and traffic congestion.

7. **Transportation contributes to Ulaanbaatar's severe air pollution.**<sup>17</sup> In 2019, the city's PM<sub>2.5</sub> level was higher than the World Health Organization (WHO) safe level<sup>18</sup> for seven months of the year. Although the transport sector's footprint on Ulaanbaatar's air pollution is dwarfed by the city's power sector,<sup>19</sup> the transport sector contributes significantly to important pollutants, for example, approximately 20–30 percent of the annual average PM<sub>10</sub>.<sup>20</sup> The root causes of air pollution from transport include the large size and age of the vehicles in circulation, exacerbated by traffic congestion and poor road pavement condition. The vehicle fleet in the city is old and mostly second-hand, predominantly from the Republic of Korea (56 percent of imported trucks) and Japan (93 percent of imported personal vehicles).<sup>21</sup> The latest data show that about 74 percent of the car fleet registered in Ulaanbaatar was over 10 years old and over 94 percent older than 7 years.<sup>22</sup> About 70 percent of the current bus fleet in Ulaanbaatar is over 8 years old, and about 30 percent of the buses are over 11 years old.<sup>23</sup>

<sup>14</sup> Mongolia Ministry of Road and Transport Development (MRTD) 2013. <https://www.uncrd.or.jp/content/documents/7EST-B1G4-3p.pdf>.

<sup>15</sup> Japan International Cooperation Agency (JICA) traffic speed and traffic volume study in Ulaanbaatar, 2019.

<sup>16</sup> A functional road hierarchy is a way of defining roads by their functions rather than their physical characteristics or their operating characteristics or their design standards. Functions can be broadly categorized into environmental, access, local traffic, and through traffic. Most roads perform many functions and they are often not clear-cut. Roads are not just for moving vehicles, and for all road users, a balance needs to be achieved between traffic capacity, environment, speed, safety, convenience, and comfort. The Master Plan of 2030 lists 'Effectively defining the functional hierarchy of Ulaanbaatar's roads' as Goal 2.10 within the Priority Directions.

<sup>17</sup> Ulaanbaatar has been listed as the fifth most polluted capital city in the world in 2018, measured by the annual average PM<sub>2.5</sub>. <https://www.nationalgeographic.com/environment/2019/03/mongolia-air-pollution/>

<sup>18</sup> Air quality guideline is an annual mean concentration guideline for particulate matter from the WHO. The guideline stipulates that PM<sub>2.5</sub> should not exceed 10 µg per m<sup>3</sup> annual mean or 25 µg per m<sup>3</sup> 24-hour mean.

<sup>19</sup> The main source of Ulaanbaatar's pollution is from household stoves fired by raw coal, which is the primary source of heat during winter months. There were 130,000 registered stoves in *ger* areas as of 2014 (Air Quality Agency, [www.agaar.mn](http://www.agaar.mn))

<sup>20</sup> Air Quality Agency, [www.agaar.mn](http://www.agaar.mn)

<sup>21</sup> National Statistics Office, 2020

<sup>22</sup> Ibid.

<sup>23</sup> Public Transport Service Agency, 2021



8. **The increase in road crashes is damaging the economic competitiveness of the city.** Road traffic crashes have increased considerably since the 2000s due to rapid urbanization, growing motorization, and deteriorating road conditions. The majority (87 percent) of all road crashes in Mongolia take place in Ulaanbaatar.<sup>24</sup> In 2007, 5,464 road traffic crashes happened in Ulaanbaatar (9 deaths per 100,000 population),<sup>25</sup> while 2019 reported a whopping 21,874 road traffic crashes (8.5 deaths per 100,000 population).<sup>26</sup> Mongolia has recently enacted new road traffic rules and implemented a broad range of campaigns to promote safer road use, which has yielded positive results in reducing road crash fatalities in Ulaanbaatar.<sup>27</sup> Nevertheless, the cost of road crashes remains high for Mongolia and is estimated at 5.5 percent of the national gross domestic product (GDP), with most fatalities and injuries (84 percent) occurring in the economically productive age groups (15–64 years).<sup>28</sup> Since road safety falls under the responsibility of the Transport Police, most efforts have been focused on enforcement (revision of traffic regulations and equipment for traffic police) and education (campaigns to reduce speed, improve the use of seat belts, and encourage safe driving behavior). Very few actions have been taken to improve transport infrastructure, as there is no institutional setup, financial resources, or technical capacity for the identification, design, and implementation of targeted interventions.

9. **The public transport sector is struggling with service provision and financial sustainability.** The city's low density, sprawling land use, sparse road network, and congestion pose challenges to efficient public transport provision. While it is costly to cover low-demand peripheral areas, it is also inefficient to operate high-frequency services through heavily congested corridors in the central area. Ulaanbaatar currently has no rail-based mass transit or bus rapid transit (BRT) services, only conventional buses. The total fleet of 1,196 buses are operated by two state-owned operating companies (30 percent of the total fleet) and 16 other private bus operators (70 percent of the total fleet).<sup>29</sup> The bus system serves 840,000 passengers per day, approximately 68 passengers per hour per bus,<sup>30</sup> with an average day-time operating speed under 12 km per hour during weekdays.<sup>31</sup> While requiring high subsidies from the city budget, the public transport sector of Ulaanbaatar is struggling to provide adequate services. Subsidies for bus operation represented 15 percent of the total MUB budget in 2020, covering 57 percent of the total operating costs while the farebox revenue recovered the remaining 43 percent.<sup>32</sup> The burden of subsidies is sometimes higher as the city is taking the revenue risk. On the one hand, citizens are not satisfied with the bus services including route coverage, frequency, reliability, or comfort; on the other hand, the public transport sector is underfunded with bus operators running an aging fleet with little profit or incentives to make improvements. This unsustainable financial situation stems from an inefficient route design and service plan, low fleet productivity due to traffic congestion, lack of bus priority, an ineffective and

<sup>24</sup> Transport Police, Road crash situation report, 2019

<sup>25</sup> EPOS Health Management, Black Spots Study, 2011

<sup>26</sup> Transport Police, Road crash situation report, 2019

<sup>27</sup> Ibid.

<sup>28</sup> World Bank, Guide for Road Safety Opportunities and Challenges: Low- and Middle-Income Countries Country Profiles, 2019

<sup>29</sup> Public Transport Service Agency, 2019 Sector Statistics Report, 2019

<sup>30</sup> World Bank, Sustainable Financial Strategy for Ulaanbaatar Public Transport Sector, 2018

<sup>31</sup> Data from

[https://www.uncrd.or.jp/content/documents/7197Presentation%203\\_Bulgaa%20Khurelbaatar%202018.09.30%20\(1\).pdf](https://www.uncrd.or.jp/content/documents/7197Presentation%203_Bulgaa%20Khurelbaatar%202018.09.30%20(1).pdf).

<sup>32</sup> Farebox recovery ratio is estimated as 43 percent for the first seven months of 2019 (Transport Department of the Capital City, 2019) but is only around 30 percent for the surveyed bus operators in the technical assistance (TA) study conducted by the World Bank team in 2017.





inflexible fare policy, high levels of fare evasion caused by an inefficient allocation of incentives, and the suboptimal contract with bus operators.<sup>33</sup>

**10. Ulaanbaatar's urban mobility system is vulnerable to frequent and severe natural hazards.**

Urban flooding, storm surges, and severe winter events are expected to have the strongest impact on the urban environment and transport infrastructure in Ulaanbaatar.<sup>34</sup> Besides changing temperature and precipitation patterns due to climate change, the construction boom in the city, the rapid expansion of *ger* areas, and the lack of flood prevention facilities have resulted in a drastic increase in flooding risks in the city. The infrastructure including existing flooding facilities has been deteriorating while maintenance has lagged and is insufficient. Currently, 10–36 percent of road assets, including sidewalks and guardrails, and only 18 percent of road pavement are above good condition.<sup>35</sup> Flooding and icing of roads and sidewalks seriously inhibit the mobility of the residents, cause safety issues, contribute to traffic congestion, and damage economic productivity. More frequent flooding of roads during the summer and freezing of the road asphalt during the winter have also resulted in a more rapid deterioration of road pavement. Climate vulnerability is exacerbated by weak planning and management capacity at the local level, with inadequate early warning systems, and a lack of an enabling legal environment as well as technical capacity.

**11. The shortcomings of Ulaanbaatar's urban transport system have been exacerbated by the COVID-19 pandemic.**

The need for social distancing calls for a reallocation of road space to accommodate more trips on foot and bicycles and to release pressure on public transport (with higher service frequency and more waiting area at stations). Due to the inadequate conditions for pedestrians, cyclists, and public transport users, a shift to private car trips has already been observed in Ulaanbaatar. This increases the pressure along vital corridors and makes access to critical destinations such as hospitals more challenging. Road space for NMT and public transport access needs to be rethought to prevent further deterioration of the city's already high levels of traffic congestion and air pollution as well as a further increase in safety risks for vulnerable road users. Since the disruption created by COVID-19 has significantly changed people's perception of NMT, there is an opportunity to improve the currently inadequate conditions for cyclists and pedestrians. Currently, the absence of up-to-date travel activity data makes it difficult to respond to the impact of COVID-19 on travel demand, and there is a requirement for innovative approaches for data collection to improve urban planning.

**12. The urban transport sector challenges described above disproportionately hurt the vulnerable and low-income population.**

Average commute time of Ulaanbaatar residents was estimated to be 37 minutes, which is relatively long given its total population and the size.<sup>36</sup> For those who do not own private vehicles, commuting takes on average almost twice as long by public transport than by car due to the remoteness of bus stations and the need for frequent transfers to reach the destination.<sup>37</sup> The low-income population living on the periphery in *ger* areas has very poor accessibility and mobility options. Only 10 percent of the roads in the *ger* area are paved. Unpaved roads are particularly difficult to navigate and can become impassible in harsh weather conditions. Low density, difficult landscapes, and poor-quality unpaved roads in these peripheral areas make formal bus service provision extremely challenging.

<sup>33</sup> World Bank, Sustainable Financial Strategy for Ulaanbaatar Public Transport Sector, 2018

<sup>34</sup> Data from <https://thinkhazard.org/en/>.

<sup>35</sup> World Bank, Ulaanbaatar Transport Asset Management Plan for Road Safety and Climate Resilience: Phase I, 2020.

<sup>36</sup> World Bank, Integrated Review of Urban Transport in Ulaanbaatar, 2015

<sup>37</sup> Ibid.



Transport costs for low-income families residing in the periphery areas can be prohibitive—adding up to 25–35 percent of the average household income in the *ger* area.<sup>38</sup> Among the 131 road crash fatalities in 2019 occurring in Ulaanbaatar,<sup>39</sup> 67 percent were pedestrians, the most vulnerable road users.<sup>40</sup>

**13. Streets in Ulaanbaatar are neither safe nor convenient for women, limiting their mobility options.** Mongolia ranks 53 out of 159 countries globally in gender inequality.<sup>41</sup> Analysis by the World Bank team and consultation with civil groups found that streets in Ulaanbaatar in general lack adequate lighting, continuous sidewalks, protected crossings, warm and secure bus waiting areas, curb ramps for stroller and wheelchairs, and other safety facilities. Besides infrastructure deficiencies, the street space is also poorly maintained and managed, with sometimes deserted frontage (old garages and closed stores) and various blockages (unfinished construction, disorganized parking, dumpsters, exposed wires, and broken pavement) that make walking unsafe, especially at night. Moreover, harassment and violence against women and girls on streets and public transport also reduce women's use of transportation and accessibility to services and job opportunities. Studies found that girls and women are exposed to psychological abuse and sexual harassment in public spaces and on buses, and women travelers are advised to avoid walking alone in the dark and to stay cautious when travelling by public transport in Ulaanbaatar.<sup>42</sup> The Mongolia UN Social Indicator Sample Survey of 2018 reported that only 50 percent of women felt safe while walking alone in an urban area compared to 79 percent of men. The street is the second leading location women reported incidents of assault in Mongolia.<sup>43</sup>

**14. The fragmented institutional arrangement of the urban transport sector in Ulaanbaatar adds to the challenges of addressing its multifaceted urban transport issues.** The GoM is responsible for the approval, implementation, and overseeing of the overall development policies including those in the transport sector. Specifically, the MRTD oversees the execution of the sector-related legal and policy acts and formulates and approves relevant technical standards and norms. In the jurisdiction of Ulaanbaatar, the mandates to finance and deliver transport services such as the public transport and transport infrastructure including the roads, bridges, traffic signals, and street lighting remain with the MUB (2011 Budget Law of Mongolia, Article 58.1). In Ulaanbaatar, the Road Development Agency (RDA) of the MUB is mandated with the planning, design, and management of road infrastructure. The Public Transport Service Agency (PTSA) oversees public transport service delivery. The city's Traffic Control Center (TCC) and Transport Police oversee traffic management and road safety, respectively. In addition, the City Manager, appointed by the Governor of Ulaanbaatar, oversees the local and private operators in the area of routine maintenance and flood protection of transport infrastructure assets in the city.

**15. The MUB needs more institutional capacity to efficiently allocate its limited financial resources to the growing infrastructure investment needs.** It was estimated that a capital investment of more than US\$20 billion was needed to reach the long-term goals in the Ulaanbaatar Master Plan until 2030.<sup>44</sup> However, Ulaanbaatar reported total revenues ranging between US\$195 million in 2016 and US\$300

<sup>38</sup> World Bank, Integrated Review of Urban Transport in Ulaanbaatar, 2015

<sup>39</sup> At the national level, road fatalities were 561 as of 2019.

<sup>40</sup> Transport Police, Road crash situation report, 2019

<sup>41</sup> Broaden Opportunities for Women Workers in Mongolia: New World Bank Report. March 27, 2018.

<sup>42</sup> Begzsuren, Tsolmon, and Veronica Mendizabal Joffre. 2018. "Translating Women's Voices into Action in Mongolia- Addressing Gender-Based Violence through Investments in Infrastructure." ADB East Asia Working Paper Series No. 14.

<sup>43</sup> United Nations Children's Fund. 2008. *Mongolia Social Indicator Sample Survey - 2018 INFOGRAPHIC*.

<sup>44</sup> World Bank, Guidebook for Capital Investment Planning for the Capital City of Ulaanbaatar, 2018



million in 2019, inclusive of intergovernmental transfers.<sup>45</sup> The lack of funding permeates through every aspect of the urban transport sector, and the effects of the financial constraints are further worsened by lack of policy coordination and inefficient planning. The public transport sector is highly dependent on municipal subsidies while not being able to ensure enough profit margins for bus operators to improve their fleets, operations, and services. The city's street network is quickly deteriorating with lags in repair and maintenance, resulting in costly rehabilitation and reconstruction. With the support from the World Bank, the city has just started to build an inventory of its transport infrastructure assets and develop strategies toward long- and medium-term asset management as well as tools to effectively prioritize its investment.<sup>46</sup>

**16. Without a coherent vision or comprehensive strategy for urban transport, the MUB has been implementing piecemeal urban transport initiatives and programs over the past decade.** Investment decisions have been poorly coordinated and resources spread among unsolicited projects with financial assistance from bilateral and international partners. The Asian Development Bank (ADB) has the largest presence among other international financial institutions (IFIs) in terms of providing financial assistance to Mongolia in the transport sector. The ADB's portfolio included a multi-tranche investment program for the construction of a BRT system for Ulaanbaatar, which was cancelled later. JICA financed the construction of a road, a flyover, and a prefeasibility study for a light rail. The European Bank for Reconstruction and Development (EBRD) has provided financing for the construction of road sections and a prefeasibility study on a bus fund for the upgrade of Ulaanbaatar's public transport fleet. A multitude of interventions from various development partners have been implemented with little coordination or coherent overall vision for the urban transport sector.

**17. A comprehensive program is needed to address urban transport issues in Ulaanbaatar in a sustainable way.** The piecemeal urban transport interventions and uncoordinated projects have resulted in inefficient (sometimes wasteful) investments that have had little effect on the city's increasing traffic congestion, air pollution, road crashes, and public transport service quality. Addressing Ulaanbaatar's multifaceted urban transport issues will require a comprehensive program that can build a well-functioning system to provide urban mobility for all users in a sustainable way. Over the last six years, the World Bank team and MUB officials have been working on a series of TA programs, including sector diagnostics, sector strategies with specific recommendations for improving capital investment planning, transport infrastructure asset management, public transport financial sustainability, bus management system, mass transit deployment, road safety, and climate resilience. These TA activities have led to the conceptualization of the Ulaanbaatar Sustainable Urban Transport (USUT) Program. This includes a multiyear investment program to improve transport mobility for all users in a sustainable way—that is, environmentally sustainable in that walking, biking, and public transport are encouraged and the system is also resilient to disasters, financially sustainable with funds efficiently allocated to both construction and maintenance, and socially sustainable as all users especially the most vulnerable groups also benefit from improved mobility as well as safety. The USUT Program will be implemented in the long run, requiring significant financial and institutional resources. The USUT Program will also help the MUB coordinate all future urban transport initiatives and investments, moving from its previous piecemeal

<sup>45</sup> Budget Amendments 2016–2019.

<sup>46</sup> World Bank, Ulaanbaatar Transport Asset Management Plan for Road Safety and Climate Resilience: Phase I, 2020



approach to addressing the root causes of the urban transport issues discussed above in a comprehensive manner.

18. **The proposed project aims to build the foundation for the USUT Program—by establishing its framework and demonstrating its implementation.** During project preparation, the project components, the pool of candidate activities, and the initial selection methodology to identify and prioritize the activities have been developed. During project implementation, responsible agencies of the MUB, with the support of the Bank team, will continue to develop the framework with strategic study and technical assistance activities, and to select and implement priority activities on a rolling basis, until all the loan amount is fully utilized. Using the framework approach has two major advantages. First, it provides the MUB and the World Bank flexibility in activity selection and implementation sequencing depending on the Government's changing priorities, fiscal space, and implementation capacity. Second, the framework approach focuses on the capacity of the MUB and its relevant agencies in planning, designing, implementing, and managing urban transport activities, which would be gradually institutionalized to enhance client ownership, sustainability, and long-term impacts.

### C. Relevance to Higher Level Objectives

19. **The project is planned in the new World Bank Group Country Partnership Framework (CPF) for Mongolia (FY21-25) (Report No. 132-141-MN).** The CPF aims to support Mongolia in overcoming the COVID-19 crisis in the short term, while promoting a more sustainable, inclusive, and resilient recovery over the medium term, with a strong focus on job creation and climate resilience. It has three key focus areas of strengthening economic governance, boosting competitiveness, and improving quality of life. The CPF recognizes urban centers as drivers of competitiveness and key to people's wellbeing. Improving the livability of urban centers is an important objective under the CPF's Focus Area 3 of improving quality of life. It includes the WBG's ongoing and planned engagement to improve air quality, heating services, urban transportation, and other municipal services. As envisioned in the CPF, the proposed USUT Project will improve transport mobility for all road users in the capital city, where close to half of the country's population reside. The improvement of urban mobility will not only improve the lives of its residents, particularly the vulnerable population, but also enhance the competitiveness of the city and the overall growth of the country.

## II. PROJECT DESCRIPTION

### A. Project Development Objective

#### PDO Statement

20. The Project Development Objectives (PDOs) are to develop a comprehensive framework for sustainable urban mobility in Ulaanbaatar and to reduce congestion, improve road safety, and address climate resilience on selected transport corridors.

#### PDO Level Indicators

21. The achievement of the PDOs will be measured by the following set of proposed indicators:



*Develop a comprehensive framework for sustainable urban mobility in Ulaanbaatar*

- (a) Establishment of a comprehensive framework for sustainable urban mobility in Ulaanbaatar

*Reduce congestion, improve road safety, and address climate resilience on selected transport corridors*

- (b) Travel time by buses and cars during peak hours on selected transport corridors
- (c) Fatalities and serious injuries from road traffic crashes on selected transport corridors
- (d) Application of climate resilience practice in design and implementation of selected transport corridors

*Corporate commitments: citizen engagement and gender*

- (e) Pedestrians satisfied with the walking environment along selected transport corridors
- (f) Women who walk on selected transport corridors because of safety improvement of the project

## **B. Project Components**

22. The proposed USUT Project includes the following four components:

### **Component 1: Integrated Corridors (IBRD loan: US\$81 million)**

23. Targeting Ulaanbaatar's sparse and disconnected street network and inadequate traffic management system, this component will improve transport corridors to promote efficient use of road spaces to benefit all types of road users (including vehicle occupants, pedestrians, bicyclists, and public transport users) while reducing congestion, incorporating road safety, and addressing climate resilience.

24. Activities of Component 1 include corridor-specific as well as citywide interventions. Road reconfiguration, rehabilitation, and construction activities will be focused on selected priority corridors, while Intelligent Transport Systems (ITS) and Smart Parking Management System will cover the city's entire road network.

25. The main government counterparts (implementing entities) for this component will be the RDA and the TCC of the MUB, with support from the Transport Police. Activities to be financed under the project are listed as follows, where ✓ shows activities that are ready to be implemented as soon as the project becomes effective.

*Subcomponent 1.1: Corridor-specific infrastructure investments, including two types of works:*

- ✓ **Type I corridor rehabilitation and reconfiguration.** Works will be done within the existing right-of-way, and works will comprise rehabilitation of roadway and sidewalk, reconfiguration of selected street cross-sections, intersection channelization, and installation of additional traffic engineering facilities such as signs and road markings, traffic signals, and safety barriers.
- **Type II corridor upgrading.** This will mainly comprise new construction of road corridors to improve network connectivity and to provide accessibility to residents in *ger* areas. This type



of work will need land acquisition to widen the existing roadway.

*Subcomponent 1.2: Intelligent Transport Systems*

- Upgrade of centralized systems such as the Area Traffic Control (ATC) system and equipment
- Upgrade of on-street ITS equipment such as traffic signals, traffic enforcement, and monitoring cameras

*Subcomponent 1.3: Smart Parking Management System*

- The development and operationalization of a Smart Parking Management System, including the procurement of hardware and development of software, and the implementation of a zonal parking system with differentiated pricing.

**Component 2: Sustainable Public Transport System (IBRD loan: US\$10 million)**

26. This component aims to improve the quality and reliability of public transport services, expand access to previously unserved population groups, and facilitate integration with other modes. While this public transport component is essential for the USUT Program, activities to be implemented under this project are limited in scope and scale given the readiness consideration and resource constraints. The MUB is working with other development partners to implement major public transport investments, while this project will help the MUB carry out the institutional reforms needed (in Component 3) to improve the financial sustainability of the sector, demonstrating good infrastructure design, facilitating integration, and piloting the use of innovative technologies to complement other public transport interventions as needed. Candidate activities under this component include corridor-specific investments as well as citywide ones. Specifically:

*Subcomponent 2.1: Corridor-specific investments*

- Installation of bus lanes on selected corridors
- Improvement of bus stops along selected corridors

*Subcomponent 2.2: City-wide investments*

- Upgrade of bus management systems
- Deployment of on-demand transit services

**Component 3: Effective Institutions for Transport Planning and Management (IBRD loan: US\$9 million)**

27. This component will help the MUB develop a comprehensive and effective institutional framework for sustainable urban mobility by providing strategies, tools, and methodologies in transport infrastructure planning, management, and service provision. The framework is to be sustained beyond the project's life.

28. The following is the list of proposed activities, and those activities with a ✓ are ready to be implemented as soon as the project becomes effective.



*Subcomponent 3.1: Strategic studies*

(a) Vision and strategy

- ✓ A sustainable and resilient urban mobility strategy for Ulaanbaatar, including institutional, financial, and technical recommendations and action plans. This strategy will be supported by travel demand management (TDM), accessibility, and congestion analyses
- ✓ A parking management plan including an institutional framework

(b) Transport infrastructure investment planning and management

- ✓ Transport Infrastructure Investment Plan (TIIP) and tools for transport investment planning based on proactive risk mitigation, life-cycle cost approach, and transparent and objective investment prioritization. The TIIP will cover both new construction and repair and maintenance of road investments. Thus, Transport Asset Management Plan (TAMP) will be part of TIIP.

(c) Road safety

- ✓ A Road Traffic Crash Data Platform (for example, deployment of the World Bank crash data analysis tool Data for Road Incident Visualization Evaluation and Reporting [DRIVER]), leading to the identification and prioritization of remedial measures comprising engineering, education, and enforcement activities
- ✓ A speed management plan leading to more appropriate speeds on the road network and identification of traffic calming measures

(d) Public transport

- Policy and institutional framework for private sector participation in Ulaanbaatar's urban transport sector, including the restructuring of public transport sector operation, fare setting, and operator contract structures
- Smart integrated public transport system toward Mobility-as-a-Service (MaaS) including bus network design and route planning, on-demand transit services, and integration with new mobility technologies

*Subcomponent 3.2: Capacity building and implementation support*

- ✓ Project management and implementation support, including Project Management Office (PMO) support, technical designs, environmental and social (E&S) studies, public consultation and engagement, and monitoring and evaluation (M&E)
- ✓ Feasibility studies and designs for project activities
- Capacity-building activities that will support the implementation of the above strategies: workshops, training, conferences, and study tours for government departments and technical staff





#### Component 4: Contingent Emergency Response (total cost: US\$0)

29. This zero-dollar component is designed to provide swift response in the event of an eligible crisis or emergency, by enabling Ulaanbaatar to request the World Bank to reallocate project funds to support emergency response and reconstruction where needed. A Contingent Emergency Response Component (CERC) annex will be included in the Project Operations Manual (POM), specifying the implementation arrangements for the component, including its activation process, roles and responsibilities of implementation agencies (IAs), a list of activities that may be financed, E&S aspects, and fiduciary arrangements. When the Government has determined that an eligible crisis or emergency has occurred, it can request and seek the agreement of the World Bank to include relevant activities under the project. In such situations, all E&S instruments required for the added activities need to be prepared, disclosed, and approved by the World Bank.

30. **Project cost and financing.** The total cost of the proposed project as currently estimated is US\$100 million, all of which the IBRD loan will finance. The MUB is committed to provide in-kind contribution (such as tax exemption) as needed and will cover all land acquisition and resettlement costs using its own funds.

#### C. Project Beneficiaries

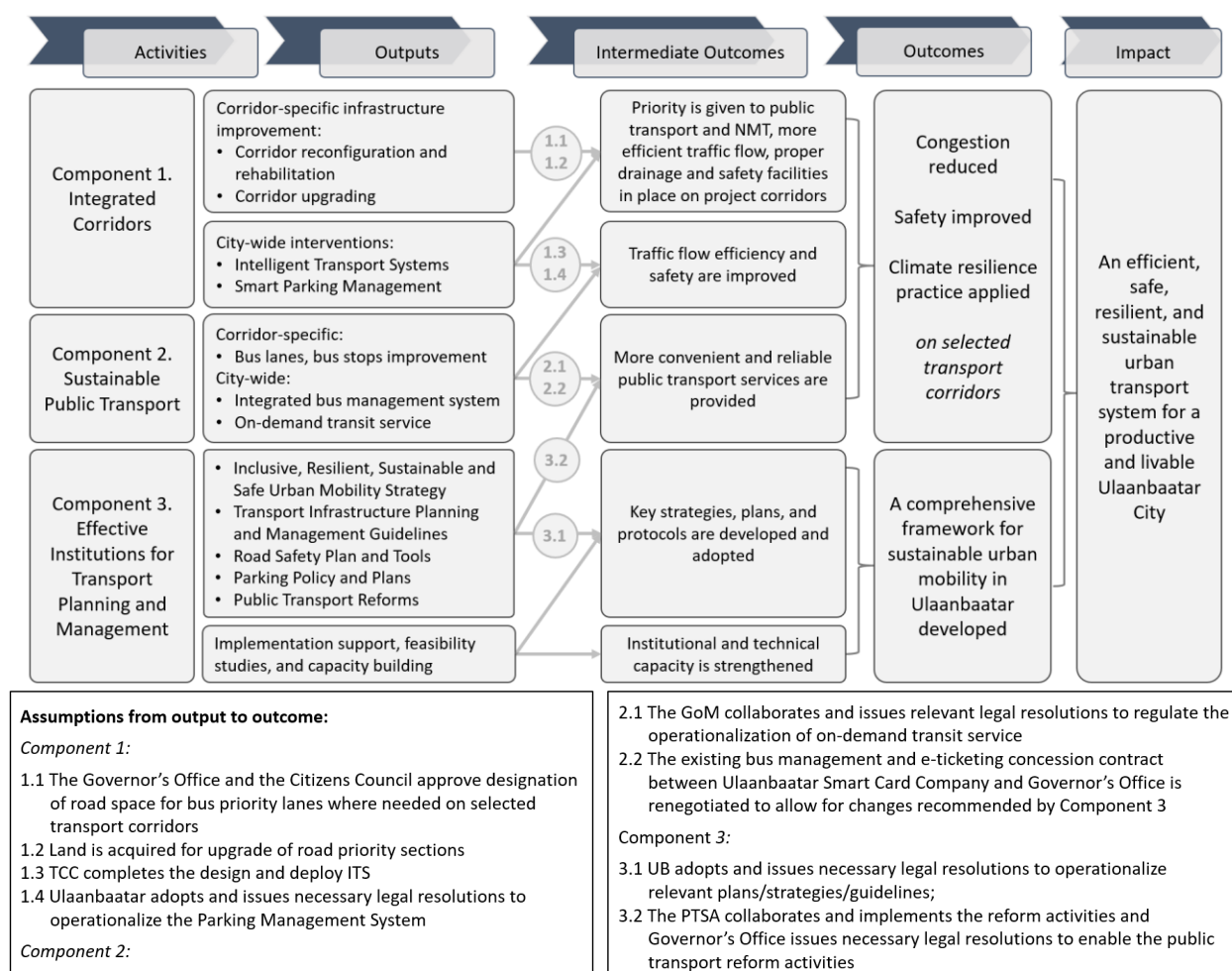
31. **The direct beneficiaries of the project** include motorized and nonmotorized road users enjoying reduced congestion and safer, more convenient, more reliable, and more resilient journeys along the selected project corridors that receive infrastructure improvement interventions. Among those, the project will benefit more vulnerable users such as pedestrians and public transport riders, women, and low-income population living in the ger area. For example, an estimated average daily traffic of 10,300 vehicles and 10,000 pedestrians is expected to benefit from Type I works on every project corridor. Direct beneficiaries also include the Governor's Office of Ulaanbaatar, the RDA, the TCC, the Transport Police, the PTSA, the Traffic Planning, Management, and Engineering Agency (TPMEA), and their staff, which/who will have expanded knowledge and improved capacity in planning, implementation, and management of safe, resilient, and sustainable urban transport systems.

32. **The indirect beneficiaries of the project** will comprise all motorized and nonmotorized road users and citizens in Ulaanbaatar, who will enjoy better mobility services due to a better-functioned urban transport system and better quality of life in the city with less congestion, air pollution, and crashes. Road users are the population of Ulaanbaatar (1.45 million) and visitors to the city. Also, the MRTD and its agencies that oversee the national transport system will be indirect beneficiaries. Successful introduction and institutionalization of safe and resilient transport planning and management practices can be scaled up to national road network management to strengthen their capacity and institutional setup.





## D. Results Chain



## E. Rationale for Bank Involvement and Role of Partners

33. Drawing upon its international and regional experience, the World Bank is in a strong position to support the GoM in formulating comprehensive strategies to the urban transport sector and address complex urban accessibility and affordability issues. The World Bank has extensive experience in financing urban transport investments in street networks, public transport infrastructure and rolling stock, traffic management and ITS. The World Bank's international experience in disaster risk management and its support for climate resilience activities as well as in road safety offer significant value addition to address the city's climate resilience and road safety challenges. Also, the World Bank has a special role to play as a convening power in supporting a comprehensive urban transport program in Ulaanbaatar owing to its continued engagement with the MUB on urban transport aspects, carrying out in-depth analytical studies and assessments, and preparing strategies and actions plans to tackle identified issues. These previous engagements have engendered strong ownership of the outputs and interest in continued collaboration with the World Bank to implement the actions and strategies laid out by prior studies.



34. **Having been an ‘honest broker’ in the urban transport sector in Ulaanbaatar, the World Bank is uniquely positioned to ensure collaboration and coordination among its development partners.** The World Bank has been closely communicating with development partners such as the ADB, EBRD, JICA, and International Finance Corporation (IFC) to make sure the development objectives, strategies, and concepts are consistent, and interventions complement each other. To be established under this project, the comprehensive USUT Program will serve as the framework for the MUB to coordinate all relevant interventions in the urban transport sector regardless of their financing sources. The framework design also gives the MUB the flexibility to adjust the financing sources of interventions when situations change. Ongoing and planned strategic studies by development partners can be coordinated under the thematic areas in Component 3. Specifically, the TIIP and TAMP in Subcomponent 3.1 will set the foundation for the MUB to prioritize and manage transport investments in Ulaanbaatar. Regarding specific investments, while this project focuses on integrated corridors, the ADB has indicated near-term plan of mass transit investment which the project’s Component 2 will complement, and JICA is exploring opportunities in new expressway, bridge, and underpass infrastructure which will be closely coordinated with the project’s Component 1. Some activities in Component 1 will also need to coordinate with the ADB’s ongoing *ger* area redevelopment project, when necessary, especially related to utilities and public space.

35. **The project focuses on improvements for the public good, including pedestrian facilities, traffic flow, and the management of road infrastructure.** The project will increase the financial and environmental sustainability of the city and improve the economic competitiveness of the city and quality of life for residents, especially those who are in the vulnerable population group. The urban poor suffer disproportionately from an inadequate transport system. Underinvestment in public transport raises the cost of commuting and restricts access to jobs and services. The poor tend to be more exposed to risks associated with externalities in transport. They lack adequate means to avoid exposure to polluted air, face higher commuting distances and costs, and are particularly affected when there is a lack of provision for pedestrians. The current institutional structure, especially in the public transport sector, is not attractive to commercial financing for the private operators to tap into and improve services. Also, the public good character of public transport and the non-excludable nature of the proposed project investments may reduce the potential for private sector financing. However, the project will assess options for cost recovery from revenue-generating activities, such as parking, access fees, and increased land values at public transport stations. The project will also assess the financial standing of the bus company(ies) when the activities in Component 2 are identified. A collaboration with IFC on private financing of bus fleets is being explored.

## **F. Lessons Learned and Reflected in the Project Design**

36. The project draws on lessons learned from ongoing World Bank-financed projects in Mongolia, particularly in Ulaanbaatar; World Bank-financed urban transport projects worldwide, past and ongoing transport-related projects implemented by other international donors in Ulaanbaatar; and past engagement with Ulaanbaatar through trust fund activities. The most significant lessons learned are summarized in the following paragraphs.

37. To ensure sustainable and equitable development of urban transport, Ulaanbaatar needs to adopt a **comprehensive approach** driven by a common objective tracked by a set of measurable indicators. Institutional and policy actions targeted at improving the urban transport governance challenges such as the adoption of an urban mobility strategy and parking management policy, transport infrastructure asset



management process, road safety platform and speed management plan, and the public transport reform make up the foundation of this comprehensive approach. The comprehensive framework will allow for the diverse activities and interventions in all spheres of the urban transport sector to converge to create a harmonized impact and improve the mobility of all residents, including those in the city peripheries.

38. The **flexibility and simplicity** of the project design are key to achieve project objectives and their sustainability. The fragility in the political economy of Ulaanbaatar's urban transport sector leads to frequently changing priorities. In response, the framework approach allows flexibility for the MUB to prioritize activities based on national and municipal development agenda at the time, the condition of existing assets, and the ease of implementation from E&S perspective. These criteria were suggested in the Capital Investment Planning Guideline for Ulaanbaatar prepared by the World Bank in 2019. Moreover, practical, low-cost, and open-source technological solutions will be encouraged over complex and proprietary options, to ensure the efficiency and the sustainability of the project activities.

39. **Implementation arrangements** are important. Successful implementation requires the early establishment and engagement of a competent project team. There are two main project management options for the World Bank-supported infrastructure projects in Mongolia: (a) centralized, by the MUB, or (b) decentralized, by relevant agencies. Given that the MUB is experienced in implementing similar IFI-financed projects in the transport sector and is acquainted with the IFI guidelines and procedures, the project adopted a centralized project management concept. Project coordination responsibilities, including procurement and financial management (FM), are handled by the MUB.

40. The **advanced start** of detailed preparatory work before project effectiveness will enhance the readiness for project implementation and mitigate the risk of significant implementation and disbursement delays during project implementation. Early start of project feasibility studies; preparation of bidding documents; and intensive capacity building on disbursements, procurement processes, M&E, and support on environmental safeguards have proved to be critical to the effective implementation of World Bank projects. The project management capacity of the PMO and technical staff at relevant agencies will need to be built up over time.

### III. IMPLEMENTATION ARRANGEMENTS

#### A. Institutional and Implementation Arrangements

41. **The MUB will be responsible for the overall project implementation and oversight.** A Project Steering Committee (PSC) will be established under the leadership of the MUB, with representation from the Citizen's Council, MUB, MRTD, and Ministry of Finance (MOF). The PSC will be responsible for overseeing and facilitating the coordination among relevant agencies during the project implementation.<sup>47</sup> A PMO will be established under the Governor's Office of Ulaanbaatar. The PMO director will be appointed by the Governor's decree. The PMO will be responsible for the overall day-to-day implementation of the project, including (a) preparation of annual work plans and budgets and periodical reports, (b) processing of procurement, FM, and E&S impact management including the

<sup>47</sup> The PSC's composition, rights, responsibilities, and work processes will follow Provision 7.6 of Regulation on the use, implementation, monitoring and evaluation of projects financed by international loan, Ministry of Finance, Regulation #4, January 11, 2021.



implementation of a grievance redress mechanism (GRM); and (c) M&E of the project. The PMO will be staffed with a coordinator, specialists, and consultants hired only for coordinating the proposed USUT Project, according to the MOF guidelines.<sup>48</sup> The PMO staff responsible for procurement and FM will be selected and appointed by the MOF. The establishment of a PMO with the composition, resources, and terms of references satisfactory to IBRD is a condition of effectiveness.

42. Municipal agencies including the RDA, TCC, and PTSA will act as Implementation Agencies (IAs). These IAs will implement and oversee specific activities related to their agency responsibilities and can be supported by specialist consultants hired. The IAs will be responsible for the definition of technical specifications and implementation of the contracts under their own components. Each of the IAs should maintain a capable technical team to provide technical support for the implementation of the project. The project's institutional and implementation arrangements, including the PMO composition and financial resources, are further detailed in the POM and in annex 1.

## **B. Results Monitoring and Evaluation Arrangements**

43. The PMO will be responsible for M&E of project implementation, the achievement of PDO result indicators, and reporting to the World Bank. The technical support team at the IAs will monitor and report to the PMO regarding progress on achieving the PDO results indicators and intermediate results indicators. The PMO will submit biannual progress reports to the World Bank for review. A midterm review will be carried out to assess the overall project progress; identify critical implementation issues; and make any necessary adjustments to the project design, its components, or implementation schedule. This will be carried out in conjunction with World Bank implementation support missions. M&E arrangements for each component are further described in annex 1.

## **C. Sustainability**

44. The sustainability of the project will be ensured by (a) instituting a framework approach, which gives a flexible framework guided by overarching strategies and supported by practical tools to identify, prioritize, sequence, prepare, and implement urban transport activities regardless of funding sources—introduction of this framework will help Ulaanbaatar city more efficiently coordinate activities funded by IFIs, donor agencies, the private sector, and the national and municipal budget; (b) developing practical policy and planning strategies and guidelines that can be adopted without any contingency requirements, ensuring that the municipal and subsector-level development plans incorporate the actions recommended in the strategy documents, and operationalizing the processes and procedures as recommended in the guideline documents for prioritization and selection of investments; (c) incorporating climate resilience, gender, disability, road safety, and NMT considerations in the design of road corridors; (d) using modern, non-proprietary, and low-cost technology solutions to the extent possible; (e) enhancing Ulaanbaatar city's and other relevant agencies' technical and operational capacity; and (f) strengthening Ulaanbaatar city's long-term financial performance through prudent planning and management of urban transport assets using whole life-cycle approaches.

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<sup>48</sup> Regulation on the use, implementation, monitoring, and evaluation of projects financed by international loan, Ministry of Finance, Regulation 4, January 11, 2021.

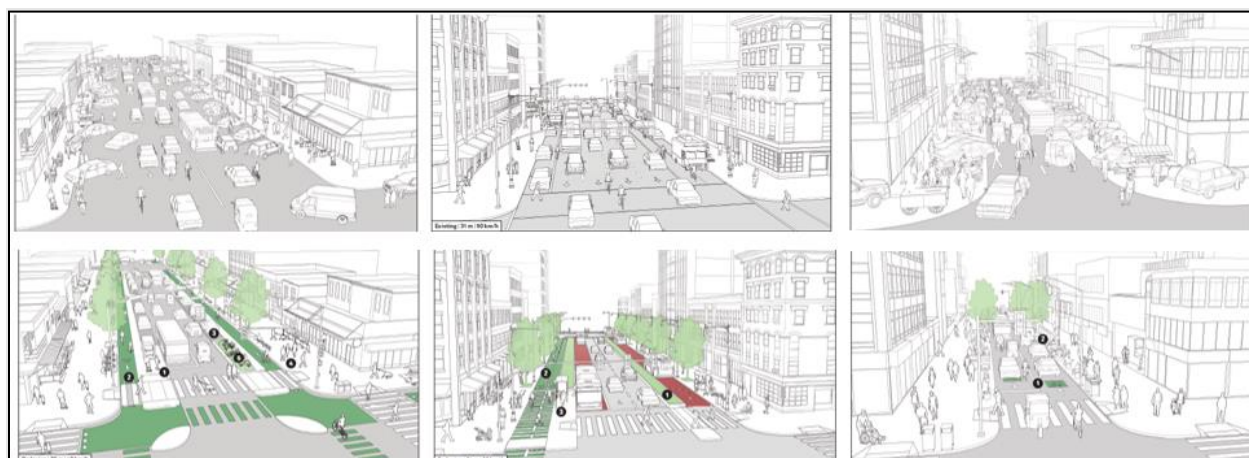


## IV. PROJECT APPRAISAL SUMMARY

### A. Technical and Economic Analysis

45. **Design principles and approaches.** With the top priority of reducing traffic congestion, the MUB is fully onboard with the comprehensive USUT Program and the main design principles of this project. These principles include the Complete Streets Concept,<sup>49</sup> where mobility of all users is enabled; the Safe Systems<sup>50</sup> approach, where road safety is considered from infrastructure, vehicle, user, and speed management perspectives; the FRH, where road designs and features are defined by the corridor's functionality; and climate resilience considerations. These concepts will be incorporated in the design of the project corridors, including roadway, bike lane, bus lane and stops, sidewalk, curb, crossing, traffic sign and marking, streetlight, junction and signaling, parking, drainage, planting, street furniture, and store front. The demonstration effect of safe, efficient, convenient, and accessible streets for all users, with priorities given to pedestrians, bicycle riders, and public transport passengers, would be transformative in Ulaanbaatar. The Complete Streets Concept to be applied in the reconfiguration of the street cross-section (Type I works) in Subcomponent 1.1 is shown in Figure 1. Besides the infrastructure design, management and enforcement measures enabled by the ITS (Subcomponents 1.2 and 1.3) and governed by relevant policies and standards (Subcomponent 3.1) not only facilitate the efficient flow of traffic but also improve the safety for all users.

**Figure 1. Sample Corridor Transformation through Reconfiguration of Street Cross-Section**



Source: National Association of City Transportation Officials Global Street Design Guide 2016.

<sup>49</sup> 'Complete Streets' is an approach that plan, design, operate, and maintain streets to enable safe and convenient travel and access for users of all ages and abilities regardless of their mode of transportation. The approach promotes streets with safe and continuous sidewalks, segregated cycle lanes, safe pedestrian crossings with refuges, uniform carriageways, and organized on-street parking. By promoting NMT, complete streets help in achieving the sustainability and livability goals of a city. Complete Streets allows for safe travel by those walking, cycling, driving automobiles, riding public transportation, or delivering goods. Source: <https://smartgrowthamerica.org/program/national-complete-streets-coalition/>

<sup>50</sup> The Safe Systems approach is a holistic view of the road transport system and the interactions among roads and roadsides, travel speeds, vehicles, and road users. The Safe Roads approach aims to minimize road crash fatalities and injuries based on the following principles: a hierarchically structured road network, homogeneity of speed, predictability of road course and road user behavior, forgiveness of the environment and road users, and state of awareness by the road users.





46. **Corridor selection.** Corridors (including streets, intersections, and adjacent feeder streets) to be improved under the project are prioritized and selected based on a data-based transport infrastructure investment planning process. The RDA of the MUB in collaboration with the World Bank has developed the preliminary versions of the multicriteria methodology and tools during previous World Bank TA activities. The roads are prioritized based on criticality, climate risk, road safety risk, and existing asset condition, using data collected through the newly established transport infrastructure asset inventory system. These tools and methodologies will be further developed into policy and institutional process guidelines under the project's Component 3 and will be adopted as part of the MUB's official transport investment planning and management process. These tools and methodologies will become part of the comprehensive USUT Program, to be continued beyond the life of the project.

47. **Technical capacity and readiness.** All components are designed on the analytical foundation of previous TA activities, and all the IAs have been involved in these TA activities in the past six years. Within the project components, Type I integrated corridor rehabilitation and reconfiguration (Subcomponent 1.1) and most activities in Component 3 are ready to be implemented as soon as the project becomes effective. The RDA is responsible for all the road construction, rehabilitation, repair, and maintenance in Ulaanbaatar, and it has the strongest technical capacity to plan, design, and implement the corridor-specific infrastructure. With the experiences in the transport infrastructure asset management plan for road safety and climate resilience of the World Bank TA, the RDA has completed the prioritization exercise and identified two Type I corridors (detailed process is in annex 2). The World Bank team used data of these two corridors for technical appraisal and found them technically sound and feasible and economically viable, and they can contribute to addressing important gender gap as well as climate adaptation and mitigation goals (see discussions in the following paragraphs). The RDA is working closely with international transport engineering experts and drainage design and pavement experts to finalize the designs and construction drawing for these two corridors in a couple of months. Most studies in Subcomponent 3.1 are readily defined with previous analytical works. The RDA is continuing the prioritization process to identify other Type I and Type II corridors. Subcomponent 3.2 will support the feasibility studies and design works as needed. The TCC has started the system planning and design process for ITS (Subcomponent 1.2), while the PTSA is still at an early discussion stage for Component 2. The World Bank team has been mobilizing trust fund resources to support the design of project activities in Components 1 and 2 and the strategic studies in Component 3. For example, the already secured Global Facility for Disaster Reduction and Recovery (GFDRR) grant will support the TIIP and TAMP in Subcomponent 3.1 (b) as well as the drainage experts for Subcomponent 1.1. The Global Road Safety Facility (GRSF) will support the DRIVER platform adoption in Subcomponent 3.1 (c).

48. **Economic analysis** of the proposed project was carried out in accordance with the World Bank guidelines of Economic Analysis of Investment Operations and Economic Analysis Guidance Note (World Bank 1998). The project will bring substantial economic benefits to both motorized and nonmotorized transport users living around the selected project corridors mainly through a reduction in vehicle operating costs (VOCs) and reductions in travel time due to reduced traffic congestion. The project will also bring significant economic benefits from the reduction of road crashes and a small share of economic benefits from greenhouse gas (GHG) reductions, monetized in accordance with the World Bank's 2017 guidance note on the shadow price of carbon in economic analysis. The project's estimated economic internal rate of return (EIRR) is 26 percent and its estimated net present value (NPV) is US\$224 million at a 6 percent discount rate. Sensitivity analysis carried out indicates that the EIRR remains higher than 6



percent even for the worst-case scenario of a 20 percent increase in costs and 20 percent reduction in benefits. Annex 3 provides details of the economic analysis.

49. **Road safety assessment.** The World Bank's Road Safety Screening and Appraisal Tool (RSSAT) was used to assess the project safety impact (PSI) of road improvement interventions. The preliminary design features of the first two selected corridors for reconfiguration and rehabilitation have been tested to determine the PSI. The roads assessed were the 5.54 km Bayankhoshuu Road and 2.27 km Unur District Road. The annual fatality rates on these two roads ranged from 1 to 3 based on the average of 2018 and 2019 crash data, which are categorized as high fatality rate per km based on international standards. The RSSAT demonstrates a PSI score of 0.86 for Bayankhoshuu Road and 0.93 for Unur District Road<sup>51</sup> when these first two selected corridors open for public use after reconfiguration and reconstruction in 2024. The safety features built into the project design for all road users on the currently selected corridors (at the time of Project Appraisal Document [PAD] preparation) are expected to reduce crash fatality rate by 7.5 percent on Unur District Road and by 14.5 percent on Bayankhoshuu Road, with an estimated economic benefit of US\$93,000 and US\$545,000 per year by 2025, respectively. Annex 5 provides the detailed results of the RSSAT assessment of these two corridors.

50. **Climate risk screening.** The overall climate risk of this project is Moderate. A climate and disaster risk in-depth screening tool was used to identify the major climate risks affecting the project and to identify the mitigation measures. Ulaanbaatar city is located at a moderately high altitude, at 1,305 m above sea level, and is ranked as the coldest capital city in the world. The city is situated in a discontinuous permafrost zone, resulting in substantial construction and maintenance challenges in the predominantly shaded areas year-round. The city sits in a valley surrounded by four mountains with the Tuul River flowing through. Owing to its geographical features, the city is vulnerable to wildfires, urban flooding due to heavy precipitation (rain), river flooding, landslides, and earthquakes. The city's road network and its facilities are prone to flooding during the summer season, from its annual average rain of 353 mm, which is increasing in frequency and severity due to climate change effects. The roads and roadside facilities are also susceptible to heavy icing during the winter, from lack of snow removal, which creates road safety concerns both for motorized and nonmotorized road users. Climate change risks of the project can be mitigated if adequate climate adaptation measures are incorporated into the designs of the project's infrastructure interventions. Measures will include ensuring all road rehabilitation and construction designs incorporate climate adaptation standards and engineering solutions such as appropriate drainage facilities, and all design documents are reviewed and cleared by drainage experts.

51. **Climate co-benefits.** The project seeks to address current and future climatic vulnerabilities. The following physical and nonphysical interventions are intended to have substantial climate adaptation and mitigation co-benefits. Specifically, Subcomponent 1.1 both Type I and Type II corridor works will incorporate measures to make them more resilient to climate hazards like flooding, while both Type I and Type II works will reduce GHG emissions with fuel efficiency improvement due to reduced congestion and modal shift toward more sustainable modes due to improvement of NMT and public transport facilities (sidewalk, pedestrian crossing, and bus priority lane). Subcomponent 1.2 on ITS and Subcomponent 1.3 on parking will yield mitigation co-benefits through improved traffic flow efficiency and reduced travel (including searching for parking) and therefore reduced fuel consumptions and GHG emissions.

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<sup>51</sup> As per World Bank guidelines, the PSI impact shall stay below 1.0 to ensure that project interventions do not worsen road safety conditions.



Component 2 on public transport improvement will facilitate a modal shift to public transport, which will yield mitigation co-benefits through reduced private vehicles' GHG emission. For Component 3, all seven proposed strategies and tools for sustainable transport planning and management in Subcomponent 3.1 will have climate co-benefits. Subcomponent 3.2 will yield adaptation co-benefit through building the capacity of infrastructure management entities in terms of climate resilience in Ulaanbaatar. Annex 6 includes a detailed analysis. To quantify climate mitigation benefits, a GHG accounting analysis was conducted for the project interventions. The analysis indicates that project activities can reduce 326,825 tons of CO<sub>2</sub> equivalent (tCO<sub>2</sub>e) of GHG emissions over the economic lifetime of the project or a 19,225 tCO<sub>2</sub>e annually. The detailed analysis is included in annex 3.

52. **Gender.** The project design incorporates actions to address the gap identified in the previous analysis that the lack of safety on streets and public transport reduces women's use of transportation. Potential specific activities identified at the appraisal stage include (a) transforming walking and public transport space on project corridors, including improvement of streetlighting, sidewalk, curb ramps, bus stops, landscaping, and treatment of deserted street front (Subcomponent 1.1 both Type I and Type II corridor works); (b) piloting the 'family-only bus waiting area' program by selecting and preparing stores along project corridors to offer indoor secure (and warm) bus waiting areas for women and children (Subcomponent 2.1 on both Type I and Type II corridors); and (c) organizing public awareness and education campaigns including nonconfrontational ways to deal with harassment in public space and training for transport sector staff, transport operators, and stores' staff to prevent and respond to harassment in public space (Component 3). With these activities, the outcome will be measured by the indicator of 'women who walk on selected transport corridors because of safety improvement of the project'. An assessment of the specific gender constraints and needs on the project corridors will be conducted to design the interventions to have the most impacts. Annex 6 shows the gender tag results chain with detailed actions as well as details of the indicator.

53. **Citizen engagement.** Public consultation and citizen engagement were emphasized during project preparation and will be continued during implementation to strengthen the project accountability and achieve the PDO. A citywide mobility survey is ready and will be conducted before, during, and after project implementation. The results from the survey will be used to inform the preliminary and detailed designs of corridor-specific and citywide infrastructure investments. The survey results will also establish the baseline and support the monitoring of project outcomes. Consultations were held with related agencies to understand the demand from stakeholders for improving the sustainability of urban transport planning and management. The results of these consultations were also incorporated into the project design. In addition, GRMs will be established to process complaints or grievances related to construction and the operations of project corridors, including gender-based violence (GBV) and personal safety-related complaints, with various channels such as in-person visits, email, letter, phone calls, and online.

54. **Maximizing Finance for Development.** Activities identified for the project have been based on series of analytical activities conducted by the Bank in the past few years. The Bank has considered the market failures that exist in the urban transport sector when planning for activities to be financed either by the project or by the private sector. Thus, the private sector participation aspect will be strongly considered under the public transport component, through the PSP study for the public transport sector under Subcomponent 3.1 (d)—'Policy and institutional framework for private sector participation in Ulaanbaatar's urban transport sector, including the restructuring of public transport sector operation, fare





setting, and operator contract structures.’ The Bank is also working closely with the IFC team to explore private sector financing for bus fleets and other potential collaboration.

## **B. Fiduciary**

### **(i) Financial Management**

55. **The MUB will be responsible for the overall project implementation and oversight**, and a PSC will be established under the leadership of the MUB. In addition, a PMO will be established under the MUB to carry out day-to-day implementation and coordination of the project activities together with several IAs. The project’s FM arrangements, including the handling of IBRD loan proceeds through the project’s Designated Account (DA), will be managed by the PMO with proper approvals from both the MUB and the MOF. The DA will be set up with the Treasury Single Account. The World Bank has conducted an FM assessment on the MUB and relevant municipal agencies responsible for project implementation and has identified certain measures to strengthen the project’s FM capacity. The residual FM risk for the project after the mitigating measures is assessed as Substantial. The FM assessment concludes that with the implementation of the proposed mitigating measures, the FM arrangements will meet the World Bank’s minimum requirements under the World Bank Directive: Financial Management Manual for World Bank Investment Project Financing Operations. Annex 1 provides detailed information on the project FM and disbursement arrangements. The Financial Management Manual (FMM) will be developed and finalized by the PMO before project effectiveness as an integral part of the POM.

56. **Advance contracting and retroactive Financing.** Retroactive financing of an aggregate amount not to exceed US\$20,000,000 of the IBRD loan will be allowed for eligible expenditures incurred after June 1, 2021, but before the signature date of the Loan Agreement. Payments will be made only for project expenditures under Category 1 and those against contracts procured in accordance with applicable World Bank procurement rules and procedures.

### **(ii) Procurement**

57. **Applicable procurement rules and procedures.** Procurement for the project will be carried out in accordance with the World Bank’s Procurement Regulations for IPF Borrowers, dated November 2020, as required by the provisions of the Loan Agreement. Also applicable to the project is the World Bank’s Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants. In this project, the World Bank’s planning and tracking system (Systematic Tracking of Exchanges in Procurement) will be used to prepare, clear, and update Procurement Plans and conduct all procurement transactions. Accordingly, all the procurement activities under the proposed project will be entered into, tracked, and monitored online through the system.

58. **Project Procurement Strategy for Development.** In accordance with the World Bank’s Procurement Regulations, a Project Procurement Strategy for Development (PPSD) has been developed by the MUB. The procurement activities under the project mainly are Component 1: Integrated Corridors, including Subcomponent 1.1 Corridor-specific infrastructure investments with Type I rehabilitation of roadway and reconfiguration of selected street cross-sections and Type II Corridor upgrading mainly including new construction of road corridors, Subcomponent 1.2 Intelligent Transport Systems, and



Subcomponent 1.3 Smart Parking Management System; Component 2: Sustainable Public Transport System; and Component 3: Effective Institutions for Transport Planning and Management, including the strategic studies, tools, and capacity building. Based on the information available at this stage, the national market will be interested in Type I and II works contracts, and local contractors are capable of executing the work contracts included in the project. International contractors are welcome to participate in the procurement process if they have interests. For other activities, such as procurement of various systems and consulting services for various studies, both national and international markets may have interests. However, international suppliers/manufacturers and international consultants will be more competitive and capable of executing the contracts considering the size of the contracts and their capacity in design, supply, and installation of the abovementioned systems and in carrying out the studies included in the project.

59. **Procurement Plan.** Based on the PPSD, the Procurement Plan has been prepared and cleared by the World Bank at project negotiations. The Procurement Plan includes the contract activities to be procured during the whole project period or for at least the initial 18 months. The Procurement Plan will be updated at least annually or on a need basis to (a) reflect project implementation, (b) accommodate changes to be made, and (c) add new packages as needed for the project. All the contract activities included in the Procurement Plan will be procured by following the World Bank Procurement Regulations.

### C. Legal Operational Policies

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

### D. Environmental and Social

60. The program is designed to improve systematic planning, infrastructure investments, and management of the urban transport system in the MUB. The investments are anticipated to bring overall E&S benefits with improved drainage and climate resilience on critical corridors, reduced GHG emission from urban transport, and improved transport safety and livability in the city.

61. The environmental risk of the proposed project is Substantial given the undetermined subproject activities and the limited capacity of the borrower, as follows:

- (a) The project-associated risks and impacts will be largely site specific and will mainly occur during construction since works under the project will mainly involve rehabilitation and/or improvements of existing rights-of-way and other small-scaled construction activities. Nevertheless, road subprojects and their locations are largely undetermined at this point.
- (b) Potential environmental impacts mainly relate to construction nuisance that can be managed through the implementation of engineering measures and good construction management. Risks and impacts of corridor subprojects will be screened, assessed, and managed in site-specific Environmental and Social Impact Assessments (ESIAs)/



Environmental and Social Management Plans (ESMPs) to be prepared during project implementation when the locations of these roads are known and detailed designs are prepared.

- (c) Based on the recent engagement of the World Bank with the MUB and the capacity assessment included in the project Environmental and Social Management Framework (ESMF), the overall E&S capacity of the borrower is considered to be low, and necessary measures are proposed to strengthen the borrower's E&S management capacity as needed to support project preparation and implementation.

62. The social risks are Substantial. Urban transport and mobility projects have the potential to create or exacerbate a range of social risks if they do not adequately address the needs of, and include, vulnerable and otherwise excluded people in project prioritization and decision-making processes. Specific risks associated with land acquisition, business impacts, and livelihoods can also be created if not properly assessed, understood, and effectively designed into the project. Although no land acquisition will be required (or permitted) for Type I physical investments, land acquisition can be expected to be relevant to Type II physical investments which are larger in scale. Notwithstanding that Type I works will not need land acquisition, parts of the road corridor in Ulaanbaatar accommodate informal businesses which operate on a permanent or seasonal basis; these and potentially other activities have the potential to be affected by the project and to be complicated to manage. Type II works are likely to have more significant risks including land acquisition and potential impacts (and benefits) on vulnerable groups which will bring social and project delivery risks. Potential increased risk of GBV due to labor influx is considered moderate due to the nature of the project where the labor force will be small, and all activities will be located in the Ulaanbaatar city areas removing the risks associated with construction camps and remoteness. The Substantial risk rating is proposed due to the risks associated with Type II works which will be assessed through the studies proposed during early implementation under Component 1.

63. An ESMF has been developed, along with a Resettlement Policy Framework (RPF) and Labor Management Procedures, to address the anticipated E&S risks/impacts of the project activities (both physical and analytical) and any identified associated facilities against the requirements of the World Bank's Environmental and Social Framework and the Environmental and Social Standards. This ESMF is built on an E&S impact assessment conducted for the project during preparation and establishes screening criteria for subprojects to exclude high E&S risk activities from project financing (for example, any land acquisition for Type I works and significant land acquisition/resettlement for Type II works). The social assessment included in the ESMF also defines additional assessment work to be undertaken during project preparation, which will, in turn, inform the decision-making process for prioritization of certain corridors over others for project funding. The E&S instruments establish specific E&S management approaches for each type of physical investment and document critical matters for consideration in the range of analytical work. In addition, a generic ESMP has been developed as part of the ESMF to provide guidance on E&S mitigation strategies for road repair, maintenance, and reconstruction works proposed under the project. For sites/corridors chosen for project financing during implementation, subsequent ESIA/ESMPs and other appropriate E&S instruments for subprojects will be prepared, disclosed, reviewed, and implemented following the ESMF requirements. Additionally, the ESMF includes a tailored E&S capacity-building plan to enhance the E&S management capacity of the borrower, including internal staffing of at least one dedicated E&S coordinator, recruitment of external technical experts, and training program.



64. Consistent with the World Bank's policy requirements, the E&S package, including the ESMF, RPF, Stakeholder Engagement Plans (SEP) has been disclosed locally, which, together with the Environmental and Social Commitment Plan (ESCP), were also disclosed on the World Bank's website. The ESMF was disclosed on April 27, 2021; and the SEP and ESCP were disclosed on April 21, 2021.

## V. GRIEVANCE REDRESS SERVICES

65. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB'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 WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB 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](http://www.inspectionpanel.org).

## VI. KEY RISKS

66. The overall risk rating for the project is assessed as Substantial. This rating considers substantial political and governance, institutional capacity, fiduciary, and E&S risks as assessed at appraisal stage.

67. **Political and governance risk is assessed as Substantial.** High turnover rate of relevant government officials and decision makers have created uncertainties and policy inconsistencies in the past. In the absence of a firm strategic vision of the urban transport sector in Ulaanbaatar, various urban transport interventions have been proposed in the past championed by different cohort of leaders and officials. These have caused inconsistencies and inactions in the past. To mitigate these risks, the team has prepared the project using a framework approach. The project concept focuses on the pressing issues of Ulaanbaatar that the leadership aims to tackle and designs a comprehensive program targeting the root causes of the dysfunctional urban transport system. The program and components are deliberately flexible to respond to different government priorities if it were to happen in the case of an MUB leadership change. In addition, through more than five years of collaboration in analytical works, the World Bank team has built a strong partnership with the project implementation entities in the MUB and relevant agencies at the working level. This partnership can, to some extent, safeguard the technical soundness of project activity selection and design from undue political influence.

68. **Institutional capacity risk is assessed as Substantial.** This will be the Bank's first transport sector lending to Mongolia over the past 20 years. The capacity to implement a transport project needs to be built and closely monitored to ensure the success of the project. In general, the number of transport professionals is limited in Mongolia and their technical capacities are weak. Close supervision in the selection of project team members and continued capacity building during the implementation of the project can help improve weak institutional capacity. Intensive implementation support by the World



Bank team including additional international expertise on the ground will help mitigate some of the risks. The multitude of IAs and hence the risk of potential fragmentation and overlap of roles and responsibilities in implementation arrangements are mitigated through a flexible implementation sequencing of the project components and their activities within a comprehensive program based on government priorities. A series of targeted capacity-building activities can help address limitations of the technical capacity of IAs.

69. **Fiduciary risk is assessed as Substantial.** The risk may be updated once the proposed mitigation measures below are taken. The implementing agencies of the MUB will be new to the World Bank's procurement procedures and other fiduciary requirements. These agencies' lack of experience in the World Bank's projects and procurement may cause delay in preparing and implementing the project and provide less assurance on fiduciary management. The proposed mitigation measures are as follows: (a) the PMO under the MUB will be established with qualified staff including FM and procurement staff and with proper segregation of duties, (b) the participating IAs will be required to assign qualified staff including technical and contract management to be responsible for implementation of their respective components and contracts and to work with close coordination with the PMO, (c) the World Bank will provide training and guidance throughout project preparation and implementation as needed and continuously maintain close coordination with project stakeholders, and (d) the PMO will prepare the Procurement Management Manual as part of the POM, which shall be finalized before project effectiveness.

70. **E&S risk is rated as Substantial.** Risk assessment, policies triggered, and mitigation measures are discussed in detail in the Environmental and Social Review Summary (ESRS) and summarized in Section D of this document.

71. **Other risk.** Uncertainties around COVID-19 may continue to disrupt public and private sector operations and cause delays in project implementation. The closure of borders to international travel has also affected project preparation. The Bank will continue to monitor development on the ground, and adjust operational model, including through strengthened physical presence of Bank staff in Mongolia.



## VII. RESULTS FRAMEWORK AND MONITORING

### Results Framework

COUNTRY: Mongolia

Ulaanbaatar Sustainable Urban Transport Project

### Project Development Objectives(s)

The Project Development Objectives are to develop a comprehensive framework for sustainable urban mobility in Ulaanbaatar, and to reduce congestion, improve road safety, and address climate resilience on selected transport corridors.

### Project Development Objective Indicators

| Indicator Name  | PBC | Baseline | End Target |
|---|-----|----------|------------|
| <b>Develop a comprehensive framework for sustainable urban mobility in Ulaanbaatar</b>                              |     |          |            |
| 1. Establishment of a comprehensive framework for sustainable urban mobility in Ulaanbaatar (Number)                |     | 0.00     | 6.00       |
| <b>Reduce congestion on selected transport corridors</b>  |     |          |            |
| 2.a. Travel time by buses during peak hours on selected transport corridors (Percentage)                            |     | 100.00   | 85.00      |
| 2.b. Travel time by cars during peak hours on selected transport corridors (Percentage)                             |     | 100.00   | 85.00      |
| <b>Improve road safety on selected transport corridors</b>  |     |          |            |
| 3. Fatalities and serious injuries from road traffic crashes on selected transport corridors (Percentage)           |     | 100.00   | 85.00      |
| <b>Address climate resilience on selected transport corridors</b>   |     |          |            |
| 4. Application of climate resilience practice in design and implementation of selected transport corridors (Yes/No) |     | No       | Yes        |



| Indicator Name   | PBC | Baseline | End Target |
|--|-----|----------|------------|
| <b>Corporate commitments: citizen engagement and gender</b>  |     |          |            |
| 5. Pedestrians satisfied with the walking environment along selected transport corridors (Percentage)                |     | 0.00     | 20.00      |
| 6. Women who walk on selected transport corridors because of safety improvement of the project (Percentage)          |     | 0.00     | 15.00      |
| <b>Intermediate Results Indicators by Components</b>   |     |          |            |
| Indicator Name   | PBC | Baseline | End Target |
| <b>Component 1: Integrated Corridors</b>   |     |          |            |
| Length of priority road sections reconfigured and repaired with improved NMT/PT facilities (Kilometers) (Kilometers) |     | 0.00     | 15.00      |
| Length of priority road sections upgraded and constructed with improved NMT/PT facilities (Kilometers) (Kilometers)  |     | 0.00     | 25.00      |
| Area Traffic Control and equipment in the Traffic Control Center upgraded (Y/N) (Yes/No)                             |     | No       | Yes        |
| Percentage of on-street ITS equipment upgraded (Percentage)  |     | 0.00     | 100.00     |
| Smart parking management system developed and operationalized (Yes/No) (Yes/No)                                      |     | No       | Yes        |
| <b>Component 2: Sustainable Public Transport System</b>  |     |          |            |
| Integrated bus management solutions launched (Yes/No) (Yes/No)   |     | No       | Yes        |
| On-demand transit service launched (Yes/No) (Yes/No)   |     | No       | Yes        |
| <b>Component 3: Effective Institutions for Transport Planning and Management</b>                                     |     |          |            |



| Indicator Name   | PBC | Baseline | End Target |
|--|-----|----------|------------|
| Number of strategies, plans, guidelines, and analyses developed (Number) (Number)                              |     | 0.00     | 7.00       |
| Data for Road Incident Visualization Evaluation and Reporting (DRIVER) platform operationalized (Y/N) (Yes/No) |     | No       | Yes        |
| Staff trained (Number)   |     | 0.00     | 1,000.00   |

#### Monitoring & Evaluation Plan: PDO Indicators

| Indicator Name  | Definition/Description   | Frequency | Datasource                  | Methodology for Data Collection   | Responsibility for Data Collection |
|---|--|-----------|-----------------------------|---|------------------------------------|
| 1. Establishment of a comprehensive framework for sustainable urban mobility in Ulaanbaatar | This indicator measures whether Ulaanbaatar has developed and adopted key strategies, plans, and guidelines that make up the foundation of a comprehensive institutional framework for sustainable urban transport planning and management. Sustainable refers to financial, policy, environmental, and safety sustainability. The indicator is measured in scores from 0 to 10, in terms of the | Annual    | Ulaanbaatar City Government | The PMO will validate whether specific strategy, plan, or guideline has been developed and adopted in the following four thematic areas: (a) vision & strategy, (b) transport infrastructure asset management and planning; (c) road safety, and (d) public transport reform. Each strategy/plan/guideline is | PMO                                |





|  |   |  |  |   |  |
|--|---|--|--|---|--|
|  | <p>comprehensiveness of the framework established.</p> <p>This indicator measures the “develop a comprehensive framework for sustainable urban mobility” aspect of the PDO.</p> |  |  | <p>assigned certain points. Specifically: (a) sustainable urban mobility strategy: 2 points; parking management plan: 1 point; (b) Transport Infrastructure Investment Plan (TIIP) +Transport Asset Management Plan (TAMP): 3 points; TAMP only: 1 point; (c) DRIVER: 1 point; speed management plan: 1 point; (d) private sector participation in public transport sector: 1 point; integrated public transport and Mobility as a Service (MaaS): 1 point. The associated points are obtained if the strategy/plan/guideline is developed (covering key content as specified in Annex 2 Detailed Project Description of the PAD and the POM), and adopted with</p> |  |
|--|---|--|--|---|--|



|   |   |        |                            |   |         |
|---|---|--------|----------------------------|---|---------|
|   |   |        |                            | h an implementation plan (including implementation arrangement, indicative budget, and timeline) by the Mayor of the City through official Mayoral Decrees. The value of this indicator is the sum of the points obtained.  |         |
| 2.a. Travel time by buses during peak hours on selected transport corridors | <p>This indicator is the average travel time by bus during peak hours on project corridors in both directions, normalized as a percentage of the baseline, weighted by the number of bus routes operating on these project corridors.</p> <p>By showing a percentage change of travel time during peak hours on project corridors, this indicator measures the “reduce congestion on selected transport corridors” aspect of the PDO, for bus riders.</p> | Annual | Measurement by the PMO/RDA | <p>The travel time by bus is measured along each project corridor in both directions. The travel time for the subject corridor (travel time by bus on corridor i) is calculated taking the average of the 8-12 runs in each direction in the AM peak (8.30 am – 10:00 am) and 8 - 12 runs in each direction in the PM peak (5:00 pm – 8:00 pm) taken in five days (Monday-Friday) of a normal working week (5 workdays), when schools and</p> | PMO/RDA |



|  |  |  |  |   |  |
|--|--|--|--|---|--|
|  |  |  |  | <p>universities are in session, and when buses are in operation, serving riders as usual. The baseline travel time for the subject corridor is measured and calculated before project implementation, and the travel time by bus on corridor i is normalized as the percentage of the baseline. For each run, the measurement will be taken as soon as the bus enters the intersection where the corridor starts (defined by front wheels crossing the stop line) and will end as soon as the bus leaves the intersection where the corridor ends (defined by front wheels crossing the stop line of the next corridor). The measurement will</p> |  |
|--|--|--|--|---|--|



|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  | <p>include the entire duration of the time the bus spends on the road, including stops, delays, and running time. Designated people tasked to measure time will ride buses running on the entirety of the subject corridor. Running time, delay time, and stopped time should all be measured and marked. Average travel time in each direction will be added to get the total travel time for both directions. If the subject corridor has a portion that is not passable by bus before the project, the baseline measurement should take the nearest alternative route given the same starting and ending points. To get the average of travel times by bus of all corridors, the number</p> |  |
|--|--|--|--|--|--|



|  |   |        |                            |   |         |
|--|---|--------|----------------------------|---|---------|
|  |   |        |                            | of bus routes operating on the corridor will be used as weights. The indicator is calculated as: $\sum (\text{travel time by bus on corridor } i \times \# \text{ of bus routes on corridor } i) / \sum (\# \text{ of bus routes on corridor } i)$  |         |
| 2.b. Travel time by cars during peak hours on selected transport corridors | <p>This indicator is the average travel time by car during peak hours on project corridors in both directions, normalized as a percentage of the baseline, weighted by the traffic volumes of these project corridors.</p> <p>By showing a percentage change of travel time during peak hours on project corridors, this indicator measures the “reduce congestion on selected transport corridors” aspect of the PDO, for car users.</p> | Annual | Measurement by the PMO/RDA | <p>The travel time by car is measured along each project corridor in both directions. The travel time for the subject corridor (travel time by car on corridor i) is calculated taking the average of the 8-12 runs in each direction in the AM peak (8.30 am – 10:00 am) and 8 - 12 runs in each direction in the PM peak (5:00 pm – 8:00 pm) taken in five days (Monday-Friday) of a normal working week (5 workdays), when schools and universities are in session. The baseline</p> | PMO/RDA |



|  |  |  |  |   |  |
|--|--|--|--|---|--|
|  |  |  |  | <p>travel time for the subject corridor is measured and calculated before project implementation, and the travel time by car on corridor i is normalized as the percentage of the baseline. If the subject corridor has a portion that is not passable before the project, the baseline measurement should take the nearest alternative route given the same starting and ending points. For each run, the measurement will be taken as soon as the car enters the intersection where the corridor starts (defined by front wheels crossing the stop line) and will end as soon as the car leaves the intersection where the corridor ends (defined by front wheels</p> |  |
|--|--|--|--|---|--|



|  |  |  |  |   |  |
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|  |  |  |  | <p>crossing the stop line of the next corridor). The measurement will include the entire duration of the time the car spends on the road, including stops, delays, and running time. The floating car technique will be used to measure the travel time by car each run. This involves cars that are specifically dispatched to drive with the traffic stream for the purpose of data collection. A passenger in the test vehicle will manually record travel time at the checkpoint (intersections) using a timer and clipboard. Average travel time in each direction will be added to get the total travel time for both directions. To get the average of travel times by car of all corridors, traffic</p> |  |
|--|--|--|--|---|--|



|  |   |        |                                    |   |                  |
|--|---|--------|------------------------------------|---|------------------|
|  |   |        |                                    | volume on the corridor (using Annual Average Daily Traffic, i.e. AADT as reported by the TCC and RDA) will be used as weights. The value of this indicator is calculated as: $\sum (\text{travel time by car on corridor } i \times \text{AADT of corridor } i) / \sum (\text{AADT of corridor } i)$  |                  |
| 3. Fatalities and serious injuries from road traffic crashes on selected transport corridors | <p>The indicator is the number of persons killed and seriously injured each year involving road users on project corridors, normalized as a percentage of the baseline.</p> <p>By showing a percentage reduction of fatalities and serious injuries, this indicator measures the “improve road safety on selected transport corridors” aspect of the PDO.</p> | Annual | Crash data of the Transport Police | Total numbers of persons killed and seriously injured (KSI) each year are collected from Transport Police on the project corridors (those that happened within the right of way of the project corridors), using domestic definition. For example, fatality is counted if the person dies within the duration of the crash registration and investigation (typically 2 months) due to injuries received | Transport Police |





|  |  |        |                       |  |     |
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|  |  |        |                       | <p>in the road crash. KSI count. This indicator is calculated using a three-year rolling average. E.g. the KSI for the year 2021 is the average of KSIs on the project corridor for 2019, 2020, and 2021. The KSI on project corridors is reported as the percentage of the baseline KSI. Once the DRIVER platform is deployed by the Transport Police under the Component 3 of the Project, DRIVER will be used to measure this indicator, including analyzing data by user types and gender.</p> |     |
| 4. Application of climate resilience practice in design and implementation of selected transport corridors | <p>This indicator measures whether climate resilience improvement practices have been applied during the design and implementation of all road works along project corridors.</p> <p>This indicator measures the</p> | Annual | Validation by the PMO | <p>The PMO will validate whether a climate resilience due diligence has been applied throughout the process of design and implementation of project corridors. Specifically, the PMO</p>   | PMO |



|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  | <p>“address climate resilience on selected transport corridors” aspect of the PDO.</p> |  |  | <p>will validate whether an expert specialized in climate resilience in road engineering has reviewed corridor works’ design and the construction drawings for the bidding documents, and ensuring the climate resilience measures such as proper grading, use of flood minimizing and permeable pavements and sidewalk materials, and improvement of drainage channels among others have been considered and utilized wherever appropriate; whether supervision consultants takes climate resilience into consideration during construction; and finally, whether climate resilience is considered during operation of the corridors, such as making arrangements</p> |  |
|--|--|--|--|--|--|



|  |   |  |                              |  |     |
|--|---|--|------------------------------|--|-----|
|  |   |  |                              | and allocating resources to ensure proper maintenance of the drainage outlets and filters.   |     |
| 5. Pedestrians satisfied with the walking environment along selected transport corridors | <p>This indicator measures the percentage change of pedestrians who are satisfied with the walking environment along project corridors. This indicator is intended to serve as beneficiary feedback to measure the improvement of corridor-specific infrastructure.</p> <p>The indicator is segregated by gender.</p> | Before project implementation and three months after the completion of the project corridors | Surveys conducted by the PMO | <p>Satisfaction survey will be conducted at the beginning and at the end of the project. Sample size: 400–500. Surveys to be conducted on randomly selected pedestrians along major transport corridors in Ulaanbaatar during both work and non-work hours. The baseline survey and monitoring survey after project implementation should be conducted in the same month of year to control for the seasonality factor of walkability. Survey must ask the respondents' gender and income. Location of the corridors should be recorded or marked by</p> | PMO |



|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  | <p>GPS.</p> <p>Pedestrian satisfaction could be measured using a 5-point Likert scale (1: unsatisfied; 2: moderately unsatisfied; 3: neutral; 4: moderately satisfied; 5: satisfied) in the questionnaire, asking whether the pedestrian is satisfied with the overall walking environment nearby. Those who answer 4 or 5 will be counted as “satisfied.” The baseline percentage of “satisfied” respondents is calculated from the total sample before project implementation (i.e. baseline percentage). Setting the indicator baseline value to zero, the value of this indicator is calculated as the percentage of</p> |  |
|--|--|--|--|--|--|



|   |  |   |                                     |  |            |
|---|--|---|-------------------------------------|--|------------|
|   |  |   |                                     | <p>“satisfied” respondents on the project corridors minus the baseline percentage</p> <p>.</p> <p>Survey instruments should be consistent for baseline and project years. Focus groups can be used to obtain a better understanding of user satisfaction. SMS or web-based (app) surveys could be used as complementary measuring tools.</p> |            |
| <p>6. Women who walk on selected transport corridors because of safety improvement of the project</p> | <p>This indicator measures the percentage of women who start to walk on the project corridors because they feel safer due to the safety improvement of project corridors.</p> <p>This indicator measures the project's impact on the identified gender gap—an unsafe street environment reduces women’s transportation use and</p> | <p>Three months after the completion of the project corridors</p> | <p>Surveys conducted by the PMO</p> | <p>A mobility survey will be conducted at the end of the project. Sample size: 200–300. Surveys to be conducted on randomly selected pedestrians along project corridors in Ulaanbaatar during both work and non-work hours. The survey must ask the respondents’ gender</p>   | <p>PMO</p> |



|  |  |  |  |   |  |
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|  | accessibility to services and job opportunities. |  |  | and income. The location of the corridors should be recorded or marked by GPS. Results from women are consolidated and reported. Respondents will be asked in the questionnaire to report whether he/she used to take the same trip on the corridor before the corridor improvement project. And if not, the respondent will pick from the following multiple choices for the reasons that he/she makes the current trip: (a) streets and bus waiting areas are safer because of the corridor improvement project; (b) change of home/work/school location; (c) new attractions such as store/restaurant/café was opened; (d) |  |
|--|--|--|--|---|--|



|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  | <p>others. The respondents who did not make the same trip before and picked (a) as the reason for making the current trip will be counted, and divided by the total number of respondents to get the value of this indicator.</p> <p>Focus groups can be used to obtain a better understanding of the reasons for the change. SMS or web-based (app) surveys could be used as complementary measuring tools.</p> |  |
|--|--|--|--|--|--|

#### Monitoring & Evaluation Plan: Intermediate Results Indicators

| Indicator Name  | Definition/Description   | Frequency | Datasource       | Methodology for Data Collection   | Responsibility for Data Collection |
|---|--|-----------|------------------|---|------------------------------------|
| Length of priority road sections reconfigured and repaired with improved NMT/PT facilities (Kilometers) | Total length of the corridor reconfigured and rehabilitated (Type I works) under the project | Annual    | Progress reports | This indicator will be measured from progress reports produced by the contractor. | PMO/RDA                            |



|  |  |        |                  |   |          |
|--|--|--------|------------------|---|----------|
| Length of priority road sections upgraded and constructed with improved NMT/PT facilities (Kilometers) | Total length of the corridor upgraded and constructed (Type II works) under the project  | Annual | Progress reports | This indicator will be measured from progress reports produced by the contractor. | PMO/RDA  |
| Area Traffic Control and equipment in the Traffic Control Center upgraded (Y/N)                        | Whether the central ATC system and related field equipment, and hardware and software at Traffic Control Center have been upgraded | Annual | Progress reports | This will be reported by the PMO.   | PMO/TCC  |
| Percentage of on-street ITS equipment upgraded   | Percentage of on-street ITS equipment that has been upgraded   | Annual | Progress reports | This will be reported by the PMO  | PMO/TCC  |
| Smart parking management system developed and operationalized (Yes/No)                                 | Whether the parking management system has been developed, handed over, and operationalized   | Annual | Progress reports | This will be reported by the PMO.   | PMO      |
| Integrated bus management solutions launched (Yes/No)  | Whether integrated bus management solution have been developed and launched  | Annual | Progress reports | This will be reported by the PTSA.  | PMO/PTSA |
| On-demand transit service launched (Yes/No)  | Whether an on-demand transit service has been developed and launched   | Annual | Progress reports | This will be reported by the PTSA.  | PMO/PTSA |
| Number of strategies, plans, guidelines, and analyses developed (Number)                               | Number of strategic strategies, guidelines, plans and analyses completed and delivered   | Annual | Progress reports | The PMO will report the number of strategies developed.                           | PMO      |





|   |  |        |                  |   |                      |
|---|--|--------|------------------|---|----------------------|
| Data for Road Incident Visualization Evaluation and Reporting (DRIVER) platform operationalized (Y/N) | Whether the DRIVER platform is developed and operationalized   | Annual | Progress reports | The Transport Police will report whether the DRIVER platform has been operationalized.  | PMO/Transport Police |
| Staff trained   | The total person-days of staff and officials trained under the project, in all areas covered by the project including comprehensive urban transport planning and management, policy and planning, road safety, and climate resilience. | Annual | Progress reports | Person-days of total trained officials, staff and officers will be reported by the PMO. | PMO                  |



## ANNEX 1: Implementation Arrangements and Support Plan

COUNTRY: Mongolia

Ulaanbaatar Sustainable Urban Transport Project

### Project Management Office and Implementation Entities

1. A PMO will be established under the Governor's Office of Ulaanbaatar. The PMO director will be appointed by the Governor's Decree. The PMO will be responsible for project management and coordination; the procurement and contract management of goods, works, and services; undertaking of FM including disbursement processing and project audit; public relations; implementation of E&S safeguards measures in compliance with the World Bank's requirements; preparation of periodical reports; M&E and their submission to the World Bank; and implementation of GRM. The PMO will be staffed with coordinator, specialists and consultants hired for the sole purpose of coordinating the proposed USUT project, according to the MOF guidelines<sup>52</sup>. The PMO staff responsible for procurement and FM will be selected and appointed by the MOF. Establishment of a PMO with the composition, resources, and terms of references satisfactory to IBRD is a condition of effectiveness. Details of the project's institutional and implementation arrangements, including the PMO composition and financial resources, are further detailed in the POM.

2. Municipal agencies such as the RDA, the TCC, and the PTSA will act as IAs. These IAs will implement and oversee specific activities related to their agency responsibilities and can be supported by specialist consultants hired. The IAs will be responsible for the definition of technical specifications, and construction/service supervision. Establishment and thereafter maintaining of a technical team within each of the IAs on terms of reference and with qualifications acceptable to IBRD to provide technical support for the implementation of the project is a legal covenant. Details of the project's institutional and implementation arrangements, including the PMO composition and financial resources, are further detailed in the POM.

3. The **RDA** will be responsible for the implementation of Component 1: the rehabilitation and reconstruction of selected road corridors under the project. It is responsible for planning, implementing, maintaining, and managing Ulaanbaatar's road assets. It has worked with the Word Bank in developing the TAMP and the asset inventory system. The RDA prioritized and selected the priority corridors to be financed under the project using the methodology developed under TAMP and the data generated from the asset inventory system. This first set of priority corridors is ready to be implemented at the time of the PAD preparation.

4. The **TCC** is responsible for optimizing traffic management through the control of traffic lights and ITS equipment, monitor Ulaanbaatar's traffic and preparing reports of Ulaanbaatar's traffic conditions. It will be a vital counterpart in the implementation of the ITS activities under Component 1.

5. The **PTSA** will be the implementing body for Component 2: introduction of sustainable public transport systems. It is the regulatory and management body of Ulaanbaatar's public transport sector and

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<sup>52</sup> Regulation on the use, implementation, monitoring and evaluation of projects financed by international loan, Regulation #4, January 11, 2021



operations. The PTSA awards contracts for private bus operators, while overseeing the operation of the incumbent state-owned bus operators. It also oversees the e-fare system, the bus management system and the bus information systems, all of which are contracted out to a concessionaire Ulaanbaatar Smart Card.

6. **Transportation Police.** Transport Police is a national transportation safety agency in charge of enforcement of traffic rules. It has separate sub-departments for the capital city and for the rest of the country. The Transport Police will be the key implementing partner on the project interventions related to road safety: rolling out of the DRIVER and the speed management plan. It has been collaborating and sharing data with the World Bank team in preparation of the DRIVER over the past two years and is fully ready to be engaged further to roll-out the system.

7. The **TPMEA** will be another implementing partner of Component 1: Integrated corridors and Subcomponent 3.1: strategic studies. This is a newly established agency within the MUB in an effort to consolidate actions to curb congestion under one entity and is reported to be responsible for developing relevant procedures, rules, standards, and engineering interventions to more efficiently plan the road network and reduce traffic congestion in Ulaanbaatar. It supports the PMO in the implementation of the parking related activities.

## **Monitoring and Evaluation**

8. The PMO will be responsible for the M&E of project implementation, achievement of PDO results indicators, and reporting to the World Bank. IAs will monitor and report to the PMO with regard to progress on achieving the PDO results indicators and intermediate results indicators. The PMO will submit biannual progress reports to the World Bank for review. A midterm review will be carried out to assess the overall project progress; identify critical implementation issues; and make any necessary adjustments to the project design, its components, or implementation schedule. This will be carried out in conjunction with World Bank team implementation support missions. Detailed M&E arrangements for each component are further described in section VII of the PAD.

## **Financial Management**

9. The World Bank FM team has conducted an assessment on the adequacy of the project FM arrangements. The assessment, based on the World Bank Directive: Financial Management Manual for World Bank Investment Project Financing Operations issued on February 10, 2017, concluded that the project will meet the World Bank's minimum FM requirements. In the FM team's view, the project will have FM arrangements acceptable to the World Bank which, as part of the overall arrangements that the borrower will have put in place for implementing the operation, provide reasonable assurance that the proceeds of the IBRD loan will be used for the intended purposes for which the loan is provided.

10. FM risk is the risk that the loan proceeds will not be used for the purposes intended and is a combination of country, sector, and project-specific risk factors. The FM capacity assessment identified certain risks associated with the proposed implementation arrangements. Although the MUB will be the ultimate project IA and there will be a PMO established under the MUB, the proposed operation will be closely implemented by several municipal agencies such as the RDA, the TCC, and the PTSA, and these agencies will be responsible for the actual implementation of the project activities. Under the overall



oversight from the MUB, these agencies will be heavily involved in procurement activities and contracting as well as FM matters such as planning/budgeting and establishing internal controls. Therefore, these agencies are envisioned to have substantial inputs to the daily fiduciary work to be carried out by the PMO staff despite their lack of experience of working on World Bank financed projects. As a mitigating measure, these municipal agencies will be centrally supported by the MUB leadership, the World Bank task team and the PMO and they will also leverage their experience of implementing other urban transport initiatives and programs working together with other bilateral and international partners, such as the ADB, JICA and EBRD. The PMO will be filled with qualified fiduciary staff preferably with experience of working on World Bank financed projects, who should get appointed early enough so that they could be trained in the World Bank's fiduciary and disbursement policies and procedures, and be involved in the preparation of the FMM. Overall, the residual FM risk for the project is assessed as **Substantial**.

11. Day-to-day fiduciary responsibilities including management of project funds as well as accounting and financial reporting duties under the proposed operation will be carried out by the PMO. Although IAs will be responsible for contract management for their respective project activities, the PMO will be solely responsible for initiating payments and disbursement of funds from the project accounts. Project IAs will submit, where applicable, relevant payment requests and supporting documentations including delivery acceptance forms for their responsible project activities to the PMO for payment processing. All disbursement of project proceeds except for incremental operating costs (IOC) will be processed by the PMO with the approval from two authorized signatories. One of the authorized signatories will be designated by the MUB and the other by the MOF. Payments relating to the IOC will be authorized by the PMO coordinator and accountant. The PMO will also be responsible for documenting all the project expenditures to the Bank in a timely manner based on the frequency indicated in the project disbursement letter.

### ***Weaknesses and Action Plan***

12. As part of the assessment, certain project FM weaknesses were detected and actions for addressing and mitigating these weaknesses have been identified as below:

| <b>Significant Weaknesses</b>   | <b>Actions</b>  | <b>Responsible Party</b>      | <b>Completion Date</b> |
|---|---|-------------------------------|------------------------|
| PMO is not yet in place and no FM staff has been appointed  | A PMO should be established with a qualified financial staff member who would assist putting in place the project FM arrangements discussed in this document. The World Bank will help train this financial staff member in the relevant World Bank FM and disbursement procedures and practices.             | MUB and MOF<br><br>World Bank | Before effectiveness   |
| Project FM-related procedures and practices are not yet defined or ready for project implementation | The POM should be prepared along with an FM Manual on project FM procedures including, but not limited to, the following: <ul style="list-style-type: none"><li>FM roles and responsibilities for involved parties including the project Financial Management System, other PMO staff, MUB and IAs;</li></ul> | MUB and PMO                   | Before effectiveness   |



| Significant Weaknesses  | Actions  | Responsible Party  | Completion Date                               |
|---|--|--------------------|---|
|   | <ul style="list-style-type: none"> <li>Chart of accounts including account descriptions;</li> <li>Design of manual accounting registers for recording project transactions during the initial months of project implementation (the manual registers shall then be replaced by a suitable computerized accounting system within 3 months of effectiveness);</li> <li>Formats of the project interim financial reports (IFRs) as agreed by the World Bank;</li> <li>Other project FM arrangements.</li> </ul> |                    |   |
| Lack of experience of World Bank-financed project implementation and operations at the project IAs' level | Close monitoring and guidance in terms of project implementation support for the project IAs.  | PMO and World Bank | During project implementation                 |
| Language barrier at the project IAs   | Strong support will likely be needed in terms of communication with the World Bank for the project IAs.  | PMO                | During project preparation and implementation |

### Risk Assessment and Mitigation

13. The following risks with corresponding risk mitigating measures have been identified during the assessment (abbreviations used: RR – Risk Rating; H – High; S – Substantial; M – Moderate):

| Risk   | RR | Risk Mitigating Measures Incorporated into Project Design  | RR After Mitigating Measures |
|--|----|--|------------------------------|
| <b>Inherent Risk</b>   |    |  |                              |
| <ul style="list-style-type: none"> <li>Country Level</li> </ul> Potential changes in leadership and government officials involved in project activities due to election cycles and possible impact on PMO and FM staffing.   | H  | Collaborate with the new or re-elected Government and its officials to ensure that continuity around project implementation is maintained.   | S                            |
| <ul style="list-style-type: none"> <li>Entity Level</li> </ul> The key municipal agencies responsible for project implementation lack prior experience in and knowledge of procedures relating to Bank-financed projects and, therefore, may not be as efficient and effective in implementing project activities. | H  | MUB has experience of successfully implementing Bank-financed projects before and it is also currently implementing the Additional Financing to Ulaanbaatar Clean Air Project financed by the Bank. In addition, MUB, PMO and the Bank will support these implementing agencies on executing project activities and ensure that they are timely and in acceptable quality. | S                            |
| <ul style="list-style-type: none"> <li>Project Level</li> </ul>  | S  | PMO will be established under MUB to effectively   | M                            |



| Risk  | RR | Risk Mitigating Measures Incorporated into Project Design  | RR After Mitigating Measures |
|---|----|--|------------------------------|
| Readiness of the project's FM arrangements:<br>A PMO is not yet established and a qualified financial officer for the project is also to be appointed.  |    | coordinate daily activities of the project.<br>A qualified project financial officer will be recruited and will work on the FM readiness matters including preparation of the FMM.<br>A detailed FMM will specify adequate FM and disbursement procedures for successful implementation of the project from the FM perspective.  |                              |
| <b>Control Risk</b>   |    |  |                              |
| <ul style="list-style-type: none"> <li>Budgeting</li> </ul> Poor budgeting: the project funds not used for the intended purposes due to poor budgeting and budget controls. The project funds may not be spent in accordance with the project budget. | H  | Annual project budgets will be prepared each year based on procurement and disbursement plans and approved by the PSC and the Bank.<br>The PMO shall conduct variance analysis between actual vs. planned expenses of the project regularly and communicate the issues with large discrepancies with the task team for resolution.   | S                            |
| <ul style="list-style-type: none"> <li>Accounting</li> </ul> Reliability of the accounting system: there is a risk associated with selection of the software and its accuracy and reliability for the project accounting.                             | S  | The PMO will work closely with potential software vendors and the Bank on identifying the most appropriate accounting software for the project and on making sure to meet specific requirements of the project.<br>Prior to purchasing and utilizing the accounting software, manual accounting records can be maintained in the beginning of the project. The manual registers shall then be replaced by a suitable computerized accounting system within 3 months of effectiveness.  | M                            |
| <ul style="list-style-type: none"> <li>Internal Control</li> </ul> Weak internal controls: there are not any internal controls-related FM policies and procedures established for the project yet.  | H  | The FMM will be prepared by the MUB/PMO and approved by the Bank.<br>The internal control procedures will be designed for the project and documented in the project FMM which will include but not be limited to the following:<br>- Proper authorization and approval procedures for payments;<br>- Appropriate segregation of duties and job description for each PMO staff;<br>- Bank's no objection for significant project activities;<br>- Control mechanism for accounting and reporting;<br>- Regular bank reconciliation and periodic cash count;<br>- Suitable project documentation filing procedures for relevant documents;<br>- MUB's internal control department will also conduct annual internal audit on the project activities. | S                            |
| <ul style="list-style-type: none"> <li>Funds Flow</li> </ul> Delays and bottlenecks in the project funds flow arrangements that got complicated with the full transfer of   | H  | Closely collaborate with MOF and MUB in ensuring the project funds are managed as efficiently as possible through the government's Treasury system.  | S                            |



| Risk   | RR       | Risk Mitigating Measures Incorporated into Project Design   | RR After Mitigating Measures |
|--|----------|---|------------------------------|
| project accounts to the Treasury Single Account.   |          |   |                              |
| <ul style="list-style-type: none"> <li>Financial Reporting</li> </ul> Reliability and timeliness of financial reporting: the financial statements do not fully and accurately report on the project activities and usage of project funds. | H        | The project will adopt financial reporting templates that satisfy the Bank's reporting requirements. IFRs will be prepared and submitted to the Bank for review on a quarterly basis as specified in the legal agreement.<br>The IFRs will be system generated from the software to be purchased under the project. | S                            |
| <ul style="list-style-type: none"> <li>Auditing</li> </ul> Audit quality: unqualified auditors may audit the project's financial statements. Poor follow-up on audit findings: PMO does not address audit findings noted by the auditors.  | S        | An independent external audit firm, acceptable to the Bank, will be appointed by the Mongolian National Audit Office to conduct the project's annual audit under the terms of reference approved by the Bank. The Bank's FM team will monitor the PMO's implementation of annual audit findings.                    | M                            |
| <b>Overall:</b>  | <b>H</b> | <b>Residual:</b>  | <b>S</b>                     |

## Disbursement and Funds Flow Arrangements

14. Four disbursement methods will be available for the project including advance, reimbursement, direct payment, and special commitment. The primary method of disbursement for the project will be the advance method. Supporting documents for the Bank disbursements will be statements of expenditures (SOEs) and project account statements. The detailed requirements will be laid out in the project Disbursement and Financial Information Letter (DFIL) to be issued by the Bank and agreed with the Borrower.

15. A segregated US dollar DA will be maintained by the PMO at the Treasury Single Account with oversight from the MUB and MOF, on terms and conditions satisfactory to the Bank, including appropriate protection against set off, seizure and attachments. The ceiling of the DA will be discussed and agreed between the Bank and the Borrower and will be specified in the DFIL.

16. Funds will be disbursed from the Bank to the project DA in US dollars. The DA will mainly be used for US dollar transactions. For all other local currency payments, an MNT investment sub-account will be used that will be replenished from the DA. The project's investment sub-account will be opened with the Treasury. The disbursement against eligible project expenditures from the DA and the investment sub-account will be signed off by authorized officials from MOF and MUB. Specific project payment approval procedures will be documented in the FM Manual and will follow government requirements. SOEs will report the payments made by the project. The ceiling will not be established for the investment sub-account but it will be dictated by the overall ceiling set for the DA.

17. The project will also utilize a separate Treasury Operating sub-account (OA) for PMO's incremental operating costs with signing authority delegated to the Project Coordinator and Accountant. This will ensure efficiency in that MOF and MUB won't have to review and sign off on all the incremental



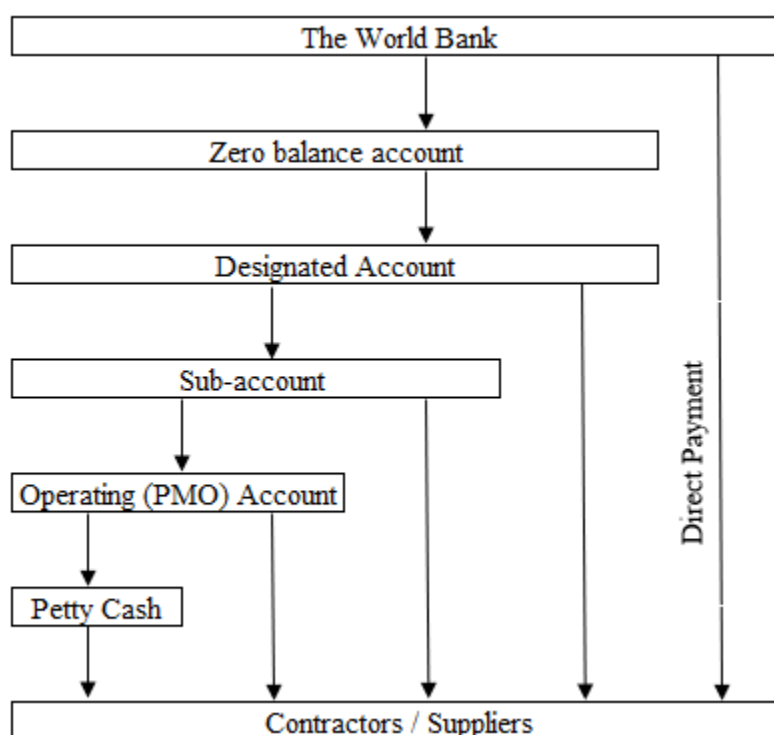
operating costs incurred by the PMO. The OA will be replenished from the investment sub-account based on quarterly operating budgets as approved by MOF.

18. To receive funds from the Bank, the DA will make use of a Zero balance account. The Zero balance account will be maintained separately at a commercial bank, the State Bank, and will be used to initially draw funds from the Bank. Once the funds are received in the Zero balance account, they will automatically get transferred to the project DA. This renders the Zero balance account a “pass-through account” through which funds from the Bank get transferred to the main project DA. MOF has reached an agreement with the State Bank on the use of Zero balance accounts to accommodate Treasury Single Account needs as they pertain to project funds flow and disbursement.

19. The PMO may manage a petty cash up to the ceiling to be approved under the project’s internal control procedures.

20. The following chart shows the general flow of funds for the project as described:

**Figure 1.1. The Project’s Flow of Funds Chart**



21. The PMO will be directly responsible for the management, maintenance, reconciliations of the DA, SA, OA and cash transactions and will prepare withdrawal applications (WAs) for documenting project expenditures as well as requests for an advance or direct payment. The DA Reconciliation Statement will be prepared when submitting the WAs per the frequency stated in the project disbursement letter. The WAs will be reviewed and signed off by the authorized representatives from the MOF and MUB before being submitted to the Bank for review and processing.





22. Primary financial documents maintained for the project shall be made available for review by the Bank's supervision missions, external auditors, internal auditors, MUB, MOF and other relevant local inspections. If the auditors or the Bank find disbursements that are not justified by supporting documentation or made for ineligible expenditures, the Bank may request the funds spent on ineligible expenditures to be refunded to the Bank or take other actions in line with relevant Bank policies.

23. The project proceeds will be disbursed against eligible expenditures (inclusive of taxes) according to the following table:

**Table 1.1. Disbursement Table**

| <b>Category</b>   | <b>Amount of IBRD Loan (US\$)</b> | <b>Percentage of Expenditures to be Financed (inclusive of Taxes)</b> |
|---|-----------------------------------|---|
| (1) Goods, works, consulting services, non-consulting services, training and workshops, and operating costs under Parts 1, 2 and 3 of the project | 100,000,000                       | 100%  |
| (2) Emergency Expenditures under Part 4 of the project  | 0                                 |   |
| <b>TOTAL AMOUNT</b>   | 100,000,000                       |   |

#### **Advance contracting and retroactive Financing**

24. Retroactive financing of up to an aggregate amount not to exceed US\$20,000,000 of the IBRD loan will be allowed for eligible expenditures incurred after June 1, 2021 but prior to the Signature Date of the Loan Agreement. Payments will be made only for project expenditures under Category 1 and those against contracts procured in accordance with applicable World Bank procurement rules and procedures.

#### **Planning and Budgeting**

25. The PMO will prepare an annual budget/disbursement plan based on realistic estimates with a quarterly timetable with inputs from the project implementing agencies. The annual budget/disbursement plan will be discussed and approved by the PSC and the Bank and will be reflected in the relevant section of the state budget.

26. The PMO will conduct regular variance analyses and report the results in the IFRs during project implementation to explain reasons for any differences between planned (budgeted) and actual expenditures and necessary actions to be taken to ensure that the project can be implemented as planned.

#### **Accounting and Financial Reporting**

27. Separate administration, accounting, and reporting will be set up for this project in accordance with Bank requirements, which obligates MUB to prepare project financial statements in accordance with acceptable accounting standards. The PMO may adopt the cash basis of accounting for preparing the financial statements.

28. For the project's initial few months of implementation until setting up a computerized accounting system, the PMO may maintain manual accounting records and produce financial reports using MS Excel.



After the initial 3 months, the project accounting and reporting should be done through a commercially available computerized accounting software package which will have to be procured by the project. Prior to the purchase and implementation of the accounting software, the project can consult with the Bank's FM team as needed. The FM team will plan a supervision mission shortly after the system is put in place to ensure its readiness to be used for the project.

29. The Bank does not mandate a specific format for project financial statements. The project financial statements shall include the following in addition to the local reporting requirements:

- Balance Sheet of the Project
- Statement of Sources and Uses of Funds
- Disbursement Report
- Statement of Designated Account
- Statement of Sub-account
- Statement of Operating Account
- Notes to the Financial Statements (for audit of annual financial statements).

30. The PMO will prepare IFRs, inclusive of the above reports, in accordance with pre-agreed formats as part of reporting on the project financial statements. These reports will be used to monitor and supervise project implementation. The IFRs will be submitted to the Bank within 45 days after the end of each reporting quarter.

31. The Bank task team will monitor the project's accounting and financial reporting processes during the project implementation to ensure complete and accurate financial information is available to the relevant project stakeholders in a timely manner.

### **Internal Control**

32. To mitigate risks in the area of internal control, regular oversight by the PSC, periodic Bank supervision, internal audit by MUB and annual external audits will serve as mechanisms to ensure that the project's Financial Management System is functioning properly. In addition, proper review and authorization for payment requests, segregation of duties, and other internal control mechanisms relating to the project will be defined and included in the FM Manual. The procedures in the FM Manual should be fully and adequately implemented by all parties involved in project implementation.

### **Audit Arrangements**

33. The Bank requires the project financial statements to be audited in accordance with auditing standards acceptable to the Bank. The Mongolian National Audit Office (MNAO) will appoint an independent external auditor acceptable to the Bank to conduct an annual financial audit of the project's financial statements in accordance with International Standards on Auditing and under terms of reference satisfactory to the Bank. The annual project audits will be financed from the project.



34. The auditors will: (a) express an opinion on the project financial statements; (b) determine whether the project funds have (i) been correctly accounted for, and (ii) been used in accordance with the legal agreements; and (c) determine adequacy of the supporting documents and controls surrounding the use of SOEs as the basis for disbursement. The auditors will also furnish a separate Management Letter, which will: (a) identify significant weaknesses in accounting and internal control as well as asset management; (b) report on the degree of compliance with financial covenants of the Loan Agreement, and (c) communicate matters that have come to the attention of the auditors which might have a significant impact on the implementation of the project. MUB will submit the annual audit report on the project financial statements to the IBRD within 6 months after the end of the reporting period (by June 30 of each calendar year). This requirement will be stipulated in the Loan Agreement.

### **Implementation Support Plan**

#### ***Strategy and Approach for Implementation Support***

35. Implementation is expected to begin in 2021 following Board approval and implementation support will begin as early as possible to prepare the MUB and the implementing entities ahead of the first disbursement.

#### ***Implementation Support Plan***

36. The World Bank team members for procurement, FM, and safeguards will be based in Washington DC, United States; Beijing, China; and Ulaanbaatar, Mongolia, and will coordinate to ensure timely support to the client. Formal supervision and field visits will be carried out at least twice a year.

#### ***Financial Management***

37. The FM implementation support plan for this project will be based on its FM risk rating, which will be evaluated on a regular basis by the Bank's FM team in line with the World Bank's FMM and in consultation with the task team leader. During the early implementation of the project, the FM team supervision will focus on the following areas:

- Appropriateness of procedures and policies included in the FMM;
- The project's adherence to the agreed FM arrangements stated in the FMM;
- Timeliness and accuracy of the manual accounting and financial reporting of the project;
- Proper and full recording of transactions through review of sample transactions; and
- Timely adoption of an accounting software.

#### ***Procurement Support***

38. The World Bank is expected to support procurement implementation through two missions per year. Later on, the frequency of implementation support for procurement will depend on the progress of capacity building in the PMO. Procurement post reviews will be conducted at least annually by the World Bank or by its consultants or audit agencies acceptable to the World Bank.

**Implementation Support Plan for the first two years**

| <b>Time</b>     | <b>Focus</b>  | <b>Skills Needed</b>   | <b>Resource Estimate</b>                |
|-----------------|---|--|---|
| First 12 months | Build capacity for project management, procurement, FM, and E&S | Project Management<br>Transport expert<br>Traffic management expert<br>Traffic engineer<br>Climate resilience expert<br>Procurement<br>FM<br>E&S | US\$300,000 including US\$60,000 travel |
| 12–24 months    | Build capacity for project management, procurement, FM, and E&S | Project Management<br>Transport expert<br>Traffic management expert<br>Traffic engineer<br>Climate resilience expert<br>Procurement<br>FM<br>E&S | US\$300,000 including US\$60,000 travel |



## ANNEX 2: Detailed Project Description

COUNTRY: Mongolia

### Ulaanbaatar Sustainable Urban Transport Project

1. The USUT Project is designed to develop a framework that will guide the MUB plan for its medium- and long-term urban transport investment program—USUT Program—to improve transport accessibility and mobility for all users in the city in a sustainable way. The USUT Framework will help the MUB move from its piecemeal and fragmented approach to addressing the root causes of the urban transport issues in a comprehensive manner. The project will use the tools and methodologies of the USUT Program to identify, design, and implement several urban transport priority activities. These activities are both city-level and corridor-specific interventions. The corridor-specific interventions will demonstrate congestion reduction and improvement of climate resilience and road safety.

#### Component 1: Integrated Corridors (US\$81 million)

##### *Subcomponent 1.1: Corridor-specific infrastructure investments*

2. Infrastructure improvement interventions will be implemented on selected existing and planned corridors in Ulaanbaatar. The project will finance two types of interventions on selected transport corridors:

- **Type I corridor rehabilitation and reconfiguration.** Type I works will be reconfiguration and rehabilitation of existing corridors within its current rights-of-way. The reconfiguration of corridors will aim to improve the efficiency of both motorized and nonmotorized traffic along existing priority corridors, improve infrastructure road safety, improve resilience to climate risks, and enhance the inclusiveness and accessibility of all types of road users. Priority corridors are selected using a multicriteria analysis with consideration to road safety, infrastructure condition, criticality of the corridor to the network, and climate risks (especially flooding). More details are discussed in the sections below.
- **Type II corridor upgrading.** Type II works will be (re)construction of corridors to expand the network coverage in the city, specifically to *ger* areas. The (re)construction of corridors may need land acquisition to widen the existing rights-of-way. The design concepts will be similar to Type I interventions, where the goal is to expand the network coverage, enhance accessibility for *ger* area residents, and ultimately improve the traffic flow on Ulaanbaatar's road network with a denser road network. More details are discussed in the sections below.

3. The framework workflow for corridor-specific infrastructure investments planning and implementation is as follows:

- (a) Establish the framework of an FRH. The RDA will categorize Ulaanbaatar's road network into an FRH based on the desired functions of roads in the network.
- (b) Identify priority corridors through the TIIP framework, which is an evidence-based transport infrastructure investment planning tool, to be developed under Component 3. Citizen



engagement is also key. The first batch of corridors have been prioritized using the base methodology developed through prior collaboration between the World Bank and the RDA. Details of the corridor selection methodologies and exercise are described below.

- (c) Develop corridor designs, by applying the complete streets concept, paying attention to the needs of different gender, age, and disability groups; conduct public consultation on designs; apply Road Safety Audit on designs.
- (d) Conduct procurement and implementation, coordinating with relevant stakeholders, including, but not limited to, the Transport Police, maintenance companies, utility companies, store owners, and residents
- (e) Monitor and evaluate results.

*Type I: Corridor Rehabilitation and Reconfiguration*

4. **Works involved.** Reconfiguration of street cross-section to allocate more space to sidewalk, bus priority lanes, bike lanes, and intersection redesign and channelization. Civil works (repaving road space, curb, sidewalk, median, planting, safety islands, bus stops, and drainage), traffic engineering (markings, traffic signs, and barriers), and equipment procurement and installation (traffic signals and controls and monitoring cameras on this corridor if necessary).

5. **Type I corridor selection methodology.** The framework for the USUT Program to plan for the MUB's medium and long-term investment decisions enables a flexible yet evidence-based prioritization and selection process of road corridors for construction, rehabilitation, reconfiguration, and repairs through the TIIP. The complete analytical guidance for prioritization and selection of corridors for the USUT Program will be developed as part of Component 3, as the TIIP. However, for selecting priority corridors to be implemented during the early phase of the project, a base, pilot methodology for the TIIP has been developed during the prior TA collaboration between the World Bank and the RDA.<sup>53</sup> Figure 2.1 presents the four criteria and their corresponding weights for selecting the priority road segment for repair and maintenance works. The methodology has been applied to identify current priority roads within Ulaanbaatar's road network (based on 2018 data) to identify priority corridors ready to be implemented under the project.

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<sup>53</sup> Transport Infrastructure Asset Management Plan for Road Safety and Climate Resilience: Phase I.



**Figure 2.1. Prioritization Criteria and Weights for Selecting Candidate Corridors for Type I Works**

| CRITERION                         |                                  | INDICATOR                         | SUB-INDICATOR             | INDICATOR WEIGHT | CRITERION WEIGHT |
|-----------------------------------|----------------------------------|-----------------------------------|---------------------------|------------------|------------------|
| I                                 | CRITICALITY                      | 1.1. Road Hierarchy               | -                         | 25%              | 0.2              |
|                                   |                                  | 1.2. Major Road Links             | 1.2.a.Traffic Volume      | 12.5%            |                  |
|                                   |                                  |                                   | 1.2.b. Population Density | 12.5%            |                  |
|                                   |                                  | 1.3. Access to Essential Services | 1.3.a. Public Hospitals   | 12.5%            |                  |
|                                   |                                  |                                   | 1.3.b. Secondary Schools  | 12.5%            |                  |
| 1.4. Access to Lifeline Utilities |                                  | -                                 | 25%                       |                  |                  |
| II                                |                                  | Climate Risk                      | -                         | -                | 0.2              |
| III                               |                                  | Road Safety Risk                  | -                         | -                | 0.2              |
| IV                                | ASSET CONDITION<br>(PERFORMANCE) | 4.1. Pavement Condition           | -                         | 20%              | 0.4              |
|                                   |                                  | 4.2. Sidewalk Condition           | -                         | 20%              |                  |
|                                   |                                  | 4.3. Road Curb Condition          | -                         | 20%              |                  |
|                                   |                                  | 4.4. Road Marking Condition       | -                         | 20%              |                  |
|                                   |                                  | 4.5. Traffic Sign Condition       | -                         | 20%              |                  |

Source: World Bank team.

6. **Sample prioritization exercise and candidate corridor results.** Figure 2.2 demonstrates the priority corridors, where red lines denote priority sections and orange lines denote moderate-high priority sections. Given available resources, urgency, and relevant implementation considerations, short-listed priority candidate corridors for Type I works were identified (figure 2.3). As urban mobility strategies, priorities, and the visions are further clarified by the MUB, the criteria and their scoring may be adjusted, resulting in a more up-to-date short list of priority corridors. This is the essence of the framework of the USUT Program.

**Figure 2.2. High-Priority (red) and Moderate-High Priority (orange) Road Segment for Rehabilitation and Reconfiguration**



Source: World Bank team.





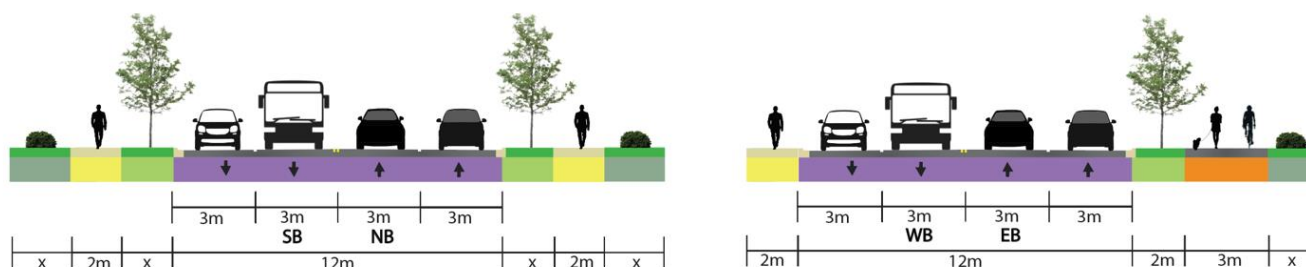
Figure 2.3. Candidate Priority Corridors for Type I Works in Ulaanbaatar



Source: World Bank team

7. **Priority corridors ready to be implemented.** Two priority corridors have been confirmed and endorsed by the RDA and MUB as ready for implementation as soon as the project goes into effectiveness. These corridors are Corridor 1 - Bayankhoshuu (corridor I in figure 2.3) and Corridor 2 - Unur Street (corridor H in figure 2.3). Figure 2.4 shows the sample cross-section of the two priority corridors for Type I works.

Figure 2.4. Sample Cross-Section Designs of Corridor 1 (left) and Corridor 2 (right)



Source: World Bank team.

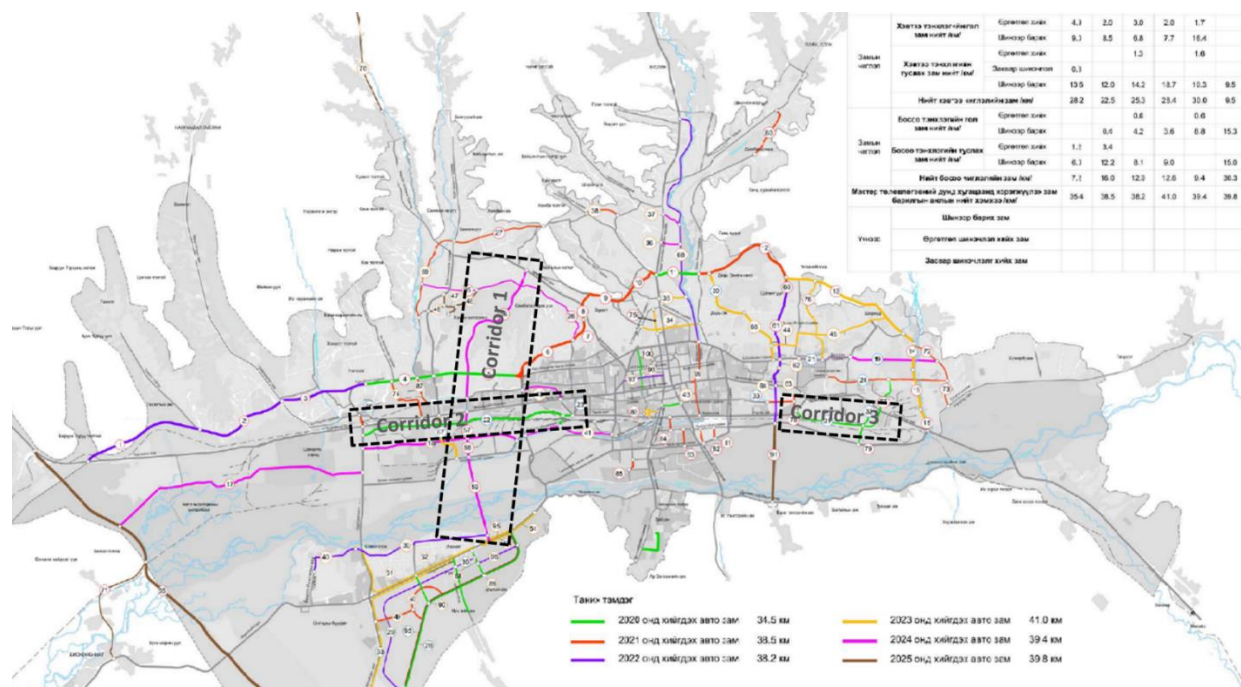
### Type II: Corridor Upgrade

8. **Works involved.** Type II works will be (re)construction of corridor, including civil works, traffic engineering facilities, and procurement of and installation of ITS equipment. The works will include the construction of sidewalks, bus priority lanes, bike lanes, and intersection channelization. Land acquisition may be needed to widen the existing roadway.

9. **Type II corridor selection methodology.** Similar to the methodology used to select Type I, a pilot methodology was developed for scoping priority corridors to be included in the project, based on the Road Master Plan of Ulaanbaatar City 2030 (shown on figure 2.5). The multicriteria criticality defining methodology, where accessibility improvement for low-income *ger* area residents, population density to



**Figure 2.5. Ulaanbaatar City Road Development Master Plan 2020–2030, Corridor Development Plan**



10. **Sample exercise and candidate corridor results.** The MUB and World Bank team conducted a sample prioritization exercise on the Ulaanbaatar Road Development Master Plan (2020–2025). Limitations pertaining to available resources, implementation considerations, and Ulaanbaatar city urban development considerations led to short-listing of potential candidate Type II corridors. This is not a final list of corridors and will be further assessed as the TIIP methodology is to be further refined.

### Table 2.1. Sample Prioritization Exercise for Corridor Type II Works

| Corridor | Road Section Code on the Master Plan | Work Planned   | Planned Road Category | Planned # of Lanes | Additional Structures                    | Works length (km) | Estimated Cost (US\$) | Planned Year | Existing Roadway | Land Acquisition |
|----------|--------------------------------------|----------------|-----------------------|--------------------|--|-------------------|-----------------------|--------------|------------------|------------------|
| 1        | 56                                   | New            | Arterial II           | 4                  | Restoration of at-grade junction         | 5.1               | \$ 12,626,343         | 2024         | old paved path   | no               |
|          | 57                                   | New            | Arterial II           | 4                  | Flyover over rail (or at grade junction) | 0.9               | \$ 2,264,943          | 2024         | dirt path        | no               |
|          | 58                                   | Rehab/Widening | Arterial II           | 4                  | Flood tunnel                             | 0.6               | \$ 1,480,200          | 2024         | dirt path        | no               |
|          | 59                                   | New            | Arterial II           | 4                  | Bridge                                   | 2.8               | \$ 8,306,052          | 2024         | none             | no               |
| 2        | 22                                   | New            | Arterial I            | 4                  | n.a.                                     | 6.9               | \$ 17,022,300         | 2020         | none             | yes              |
| 3        | 31                                   | New            | Arterial I            | 4                  | n.a.                                     | 4                 | \$ 9,868,000          | 2021         | old paved path   | minimal          |
| Total    |                                      |                |                       |                    |  | 20.3              | \$ 51,567,838         |              |                  |                  |

Source: World Bank team



### ***Subcomponent 1.2: Intelligent Transport Systems***

11. This subcomponent comprises an upgrade of ITS such as the ATC system and equipment in the TCC together with an upgrade of on-street ITS equipment such as traffic signals, e-police enforcement cameras, vehicle monitoring cameras, and traffic guidance systems. This subcomponent is an essential complement to Subcomponent 1.1 (corridor-specific infrastructure investments) and Subcomponent 1.3 (Smart Parking Management System). The ITS in this subcomponent will be complemented with the 'Three E' of traffic management and road safety, which denote engineering (Component 1) and education and enforcement campaigns (Component 3). The World Bank recommends the MUB and the GoM to redeploy the traffic signals currently in use to other towns in the provinces to get benefits from recycling/reusing of equipment.

12. This subcomponent has been created in the context of smart mobility trends in smart cities where 'seamless' mobility is rapidly evolving. Developing cities such as Ulaanbaatar can benefit from the latecomer advantage on ITS and leapfrog to the latest most appropriate technology for its needs without having to go through the prior development stages of ITS technology that older cities have experienced. This subcomponent also aims to address the issue of a piecemeal approach and legacy ITS by adopting a structured approach.

13. Subcomponent 1.2 is envisaged to be rolled out in three stages:

- **Stage 1 (2021–2022): preparation and design.** This stage will complete the needs assessment and overall system design, with the support of Component 3. The needs assessment will also include determining the communication protocols for the systems and equipment.
- **Stage 2 (2022–2024): pilot implementation.** This stage involves procuring and installing (a) on-street equipment for Type I works in Subcomponent 1.1, (b) electronic enforcement cameras for speed management according to results from the Speed Management Plan in Subcomponent 3.1 (b), and (c) CCTV monitoring cameras for the detection of traffic violation and incidents.
- **Stage 3 (2024–2026): full procurement and implementation.** This stage will roll out citywide ITS equipment and the central ATC system and equipment. The PMO will (a) prepare technical specifications and bid documents for the upgrade of the TCC (including hardware and software), ATC, and enforcement and monitoring cameras together with variable message signs and (b) procure and install equipment.

14. A review of the domestic legal framework for personal data collection will be carried out during the preparation before implementation of activities for Subcomponent 1.2.

### ***Subcomponent 1.3: Smart Parking Management System***

15. With the parking management plan in Subcomponent 3.1 (a) which will also establish an institutional framework for parking management, this subcomponent will support the operationalization of a Smart Parking Management System, including the procurement of hardware and development of software, and the implementation of a zonal parking system with differentiated pricing.



16. Subcomponent 1.3 is envisaged to be rolled out in three stages as follows, which intertwines with Component 3 with relevant institutional and capacity-building activities:

- **Stage 1 (2022–2023).** The Parking Management Plan will be developed (in Component 3).
- **Stage 2 (2023–2024).** Pilot implementation of parking zones through signing and road markings and by using media campaigns. This stage will focus on the project corridors in Subcomponent 1.1. Pilot parking management projects will be used to troubleshoot and resolve issues and determine what equipment is required to replicate broader measures citywide.
- **Stage 3 (2025–2026).** Full procurement and implementation by expanding the pilot project citywide. This includes civil works associated with removing on-street parking, relocating on-street parking, improving off-street parking, and providing off-street turnover parking at commercial hubs and other attractors. The procurement and deployment of both on-street parking equipment such as parking meters, pay and display meters, and electronic payment systems as well as off-street parking equipment such as automatic barriers at public parking lots and access systems and vehicle recognition for off-street residential parking will be completed before the installation of the Parking Management System. As a last step, the hardware and software for the Parking Management System will be procured and deployed, including an on-street Parking Guidance System with variable message signs directing drivers to parking bays, sensors in parking bays, cameras for parking enforcement, communications network, and links to the TCC for future integration into overall ITS.

## **Component 2: Sustainable Public Transport System (US\$10 million)**

17. This component will assist the MUB to establish a sustainable public transport system to improve the service quality and efficiency of its public transport system through a range of activities. The previous analytical study carried out in collaboration between the World Bank and the PTSA identified six key strategies to reform the public transport sector for better financial sustainability and better quality of service: (a) establishing a commercial network manager, (b) updating the business model and contract structure for private sector partners, (c) establishing the bus operator contracts and payment system, (d) reforming the fare policy, (d) implementing bus priority measures, (e) developing an integrated public transport network, and (f) fully developing the bus management and e-ticketing system. Activities to be implemented under this project are limited in scope and scale given the readiness consideration and resource constraints. The MUB is working with other development partners to implement major public transport investments, while this project will help the MUB carry out the institutional reforms needed (in Component 3) to improve the financial sustainability of the sector, demonstrating good infrastructure design, facilitating integration, and piloting the use of innovative technologies to complement other public transport interventions as needed.

18. Component 2 is envisaged to be rolled out in three stages:

- **Stage 1 (2021–2022): preparation and capacity building (to be implemented as part of Component 3).** During this stage, the PMO will commission the preparation of a framework for private sector participation in the public transport sector and the MaaS study. These studies, coupled with existing analytical works, will enable the PTSA to (a) learn from regional



and international experience on sustainable public transport systems, (b) assess and document the existing gaps of public transport system in Ulaanbaatar, and (c) develop an integrated public transport system service plan and identify priority interventions.

- **Stage 2 (2021–2022): implementation of public transport facilities on selected corridors (to be implemented as part of Subcomponent 1.1).** These facilities include bus priority physical improvements and bus shelters, to be implemented in coordination with the PTSA and the RDA.
- **Stage 3 (2023–2026): citywide interventions.** The specific activities to be implemented under the project will be decided during the implementation of the project after Stage 1. Following are the candidate activities under consideration:
  - (a) **Bus priority infrastructure improvements.** The experience gained in Stage 2 can be used in the design and implementation of other corridors.
  - (b) **Upgrade of bus management systems.** These could support the upgrade of the public transport command center, upgrade or development of an integrated bus dispatching and management system, e-ticketing system, and provision of electronic signs, as well as CCTV monitoring system covering the bus vehicles, bus stops, and bus terminals.
  - (c) **Deployment of on-demand transit services.** This will focus on the development of the platform and pilot on several routes, including the hardware and software needed on the service management side (onboard unit, fleet dispatching and management system) and passenger information side (app). There is potential for on-demand transit services to utilize existing minibuses managed by private operators.

### Component 3: Effective Institutions for Transport Planning and Management (US\$9 million)

19. The activities proposed to be included in the component are built upon results and outputs produced by previously conducted analytical activities by the World Bank team and intend to fill critical gaps. This component includes seven analytical studies, in addition to project management and implementation support.

#### ***Subcomponent 3.1 Strategic studies***

##### *(a) Vision and strategy*

20. **Sustainable Urban Mobility Strategy for Ulaanbaatar.** This strategic study will build a coherent vision and the long-term overall strategy to build a sustainable urban transport system to benefit all users. Its scope includes institutional, financial, and technical recommendations and action plans, covering land use planning, pricing, and TDM measures. This strategy will be supported by accessibility and congestion analyses.

21. **Parking Management Plan.** This will encompass (a) carrying out a diagnostic, assessing, and documenting the existing supply of parking; (b) developing parking methodology options for forecasting parking demand and selecting the preferred option; and (c) developing a parking business plan. This plan will consider the TDM measures and include a step-by-step implementation approach based on



hierarchical parking zones within an FRH with differentiated pricing. The business plan will comprise reviews and guidelines on operating parking as a business and a service, privatization of management, scope for public-private partnerships, and civilianization of enforcement.

*(b) Transport infrastructure investment planning and management*

22. **The transport infrastructure investment planning and management documents** will introduce a systematic and transparent process for planning transport investment projects in Ulaanbaatar in the medium and long term. The principal aspect of the TIIP will be to introduce life-cycle costing in infrastructure planning, operations, and management. The TIIP will cover both new construction and repair and maintenance of road investments. Thus, TAMP will be part of the TIIP. The TIIP guideline will integrate recommendations from existing analytical works, including, but not limited to, the Capital Investment Planning Guideline (World Bank 2018), Public Investment Management Assessment (IMF 2016), and TAMP Phase I (World Bank 2020).

23. The TIIP will incorporate the following key principles:

- Establish a multicriteria methodology for investment planning.
- Utilize innovative technologies, such as crowdsourcing of street-view images via Mapillary, use of flood simulation tool in risk assessment, and geographic information system-based accessibility analysis.
- Develop a screening methodology for public-private partnerships.
- Develop a low-cost life-cycle costing methodology for planning of transport investments.
- Link to fiscal capacity and long- and medium-term budget planning.
- Encourage effective citizen participation.
- Mainstream of gender, climate change, and road safety considerations.

*(c) Road safety*

24. Road safety-related works will include developing and introducing a road crash data platform and using the data generated to implement evidence-based measures for safe users, safe speeds, safe roads, and safe vehicles, linking with investment prioritization, in accordance with the Safe Systems approach.

25. **The DRIVER platform and tool** will be adapted and deployed in Ulaanbaatar. DRIVER is a web-based and open-source system for geospatially recording and analyzing road crashes. Deployment of DRIVER will lead to the identification and prioritization of remedial measures comprising engineering, education, and enforcement activities, based on data analysis, including gender-segregated crash data. This platform has been presented to the Transport Police during the previous analytical engagement, and the Transport Police has requested the World Bank assistance to deploy the platform. The project will adapt DRIVER to fit the needs and capacity of the Transportation Police and will build necessary capacity at the Transport Police as well as universities to promote continued development and use of the platform beyond the life of the project.



26. **The Speed Management Plan** will lead to more appropriate speeds on the road network and help identify appropriate traffic calming measures across Ulaanbaatar's road network. The plan will be developed using data from DRIVER, and while the DRIVER platform is being developed, an interim pilot Speed Management Plan will be developed at project commencement. The Speed Management Plan will comprise:

- A needs assessment for speeding intervention,
- Review of speed limits in Ulaanbaatar within the context of an FRH, and
- Development of speed reduction measures.

*(d) Public transport*

27. Public transport sector improvement documents will guide Ulaanbaatar to improve public transport services and the financial sustainability of the public transport sector through a series of detailed TAs and analytical works. Existing analytical works<sup>54</sup> will be the basis for identifying the need for detailed institutional strengthening TA activity, aimed at improving the public transport sector competitiveness with the use of private cars, bus operations and management, and customer service and reliability. Identified priority activities will be financed under the project, within the framework approach. At the time of the PAD preparation, two priority studies were identified:

- (a) Framework of private sector participation in the public transport sector.** This study will identify potential areas for private sector participation, develop viable contract structures for these potential areas, and assess the added values of private sector involvement. Enhancing private sector participation in the public transport sector through efficient risk and incentive allocation will be part of the comprehensive reform process of Ulaanbaatar's public transport sector for better quality of service and financial sustainability.
- (b) MaaS** is the integration of various forms of transport services into a single mobility service accessible on demand. Introduction of MaaS facilitates a diverse menu of transport options, including public transport, ride, car, or bike sharing, taxi or car rental/lease, or a combination thereof, to meet the travel demand and improve accessibility, especially from/to areas where there is no existing public transport service. The aim of MaaS will be to provide an alternative mobility options to the use of the private car that may be equally convenient, more sustainable, and more affordable. This study will design and prepare guidelines to introduce MaaS at the best value proposition to Ulaanbaatar that enhances accessibility of mobility of citizens.

***Subcomponent 3.2: Capacity building and implementation support***

28. **Project management and implementation support.** This subcomponent includes the support provided to the PMO, technical designs, E&S studies, public consultation and engagement, and M&E.

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<sup>54</sup> The World Bank has carried out a series of analytical studies of Ulaanbaatar's public transport sector, including the Diagnostics Report, the Review of the Bus Management and Bus Information System, and the Sustainable Financing Strategy of the Public Transport Sector of Ulaanbaatar.



29. **Feasibility studies and designs** for project activities to be prepared at a later stage of the project during implementation.
30. **Capacity-building activities** that will support the implementation of the abovementioned strategies: workshops, training, conferences, and study tours for government departments and technical staff.





## ANNEX 3: Economic Analysis

### COUNTRY: Mongolia Ulaanbaatar Sustainable Urban Transport Project

#### A. Introduction

1. This annex presents an economic analysis of the project, covering Type I and Type II works and ITS and public transport improvement on project corridors over a period of 20 years. It first briefly summarizes the background of the framework approach, then the scope of the economic analysis (which is undertaken within the framework approach of the project) as well as the detailed analysis, and finally it estimates the economic rate of return, including the sensitivity analysis, for the project.

#### B. Background of the Framework Approach

2. This project is unique in the sense that it includes a framework of the USUT Program to help the MUB identify, prioritize, sequence, prepare, and implement activities regardless of funding sources. As discussed previously in the sectoral and institutional context, the framework approach provides the MUB and the World Bank flexibility to identify a pool of activities during the preparation as well as the implementation using a multicriteria selection methodology, depending on the Government's changing priorities, fiscal space, and implementation capacity.

#### C. Scope and the Methodology of the Economic Analysis

3. During the preparation of the project, using the methodology developed from previous analytical works, the RDA has identified and appraised two priority transport corridors for Type I activities. Table 3.1 presents some basic information of the sample transport corridors proposed under the project. It is estimated that about a total of 15 km of roads will require Type I activities.

**Table 3.1. Selected Priority Corridors Information**

|  | Corridor 1                      | Corridor 2                      |
|--|---------------------------------|---------------------------------|
| Road name                                  | Bayankhoshuu Road (North–South) | Unur Khoroolol Road (East–West) |
| Length (km)                                | 5.5                             | 2.27                            |
| Existing number of lanes                   | 4                               | 4                               |
| Lane width                                 | Medium (2.75 m < w < 3.25 m)    | Medium (2.75 m < w < 3.25 m)    |
| Area type                                  | Urban                           | Urban                           |
| Terrain type                               | Flat                            | Flat                            |
| Population                                 | 13,000                          | 32,700                          |
| GDP per capita (US\$) (2021) <sup>55</sup> | 4,139                           | 4,139                           |
| GDP per capita growth rate (%) (2019)      | 5.2                             | 5.2                             |
| AADT (2019)                                | 9,869                           | 10,752                          |

<sup>55</sup> International Monetary Fund (IMF), World Economic Outlook Database, October 2020. GDP per capita at the national level, not specific to the project districts/areas.





|   | Corridor 1 | Corridor 2 |
|---|------------|------------|
| Vehicle composition: <sup>56</sup>                    |            |            |
| Cars (%)  | 77.5       | 77.5       |
| Trucks (%)  | 19         | 19         |
| Buses (%)   | 3.5        | 3.5        |
| Vehicle fleet mean speed (km/h) (2021)                | 12.9       | 12.9       |
| Average annual fatalities in the corridor (2018–2019) | 3          | 1          |

Source: RDA and the World Bank estimates.

4. The scope of economic analysis at appraisal stage mainly focuses on corridor-specific Type I and Type II activities as well as ITS equipment and public transport improvements on the project corridors that represent a large portion of the investments (around US\$82.5 million investment) excluding the city-wide ITS and public transport and Component 3. Below is the summary of proposed activities to be performed under the project, with the activities included in the economic analysis shaded in grey.

### Component 1: Integrated Corridors

#### *Subcomponent 1.1: Corridor-specific infrastructure investments*

- Type I corridor rehabilitation and reconfiguration
- Type II corridor upgrading

#### *Subcomponent 1.2: Intelligent Transport Systems*

- Upgrade of centralized systems such as the ATC system and equipment
- Upgrade of on-street ITS equipment such as traffic signals, traffic enforcement and monitoring cameras

#### *Subcomponent 1.3: Smart Parking Management System*

### Component 2: Sustainable Public Transport System

#### *Subcomponent 2.1 Corridor-specific investments*

- Installation of bus lanes on selected corridors
- Improvement of bus stops along selected corridors

#### *Subcomponent 2.2 City-wide investments*

- Upgrade of bus management systems
- Deployment of on-demand transit services

### Component 3: Effective Institutions for Transport Planning and Management

5. A cost-benefit analysis (CBA) was carried out in three parts. First, considering the characteristics of two sample roads presented under Table 3.1 above, a CBA was conducted for a total of 15 km of Type

<sup>56</sup> Source: Estimation and Prediction of Road Traffic Emissions in Ulaanbaatar, January 2017.



I corridors and related ITS equipment, second a separate analysis was conducted for a total of 25 km of Type II corridors and related ITS equipment, and finally both analysis were consolidated to obtain the overall results of the project. Once project framework identifies remaining Type I corridors, Type II corridors as well as city-wide investment activities at later stage, individual economic analysis of those activities will be conducted as part of the respective feasibility study.

6. In the absence of the feasibility study for Type I and Type II corridors, the CBA has made a series of independent analyses and assumptions. One of the key assumptions made is that both Type I and Type II corridors will have similar profiles of the two selected transport corridors in Table 3.1 above in term of population, economic growth, and traffic composition and so on. It is estimated that both Type I and Type II corridors will be rehabilitated and (re)constructed within the first three years of the project approval and improved corridors will be operational for 17 years, until 2040.

#### *Traffic Analysis and Forecast*

7. **Population and economic growth.** In 2020, Ulaanbaatar's population reached about 1.58 million, which is about 47 percent of the national population. About 615,000 people owned private vehicles (National Statistics Office, 2021) and vehicle ownership is expected to continue growing. While the country's population is expected to grow at a lower rate, approximately 1.6 percent per year, the country's GDP is expected to grow at a higher rate, approximately 5.5 percent per year and inflation is expected to grow approximately 6 percent per year until 2026<sup>57</sup>.

8. **Traffic volume (AADT).** This analysis uses the average of the AADT on the two example Type I corridors to be the traffic volume (AADT) for the Type I corridors for the base year (2021). Assumption is made that the traffic on Type I corridors will grow approximately 3.5 percent every year until 2040, based on forecasted income and the population growth rates. For Type II corridors, an AADT of 15,000 is assumed given they would be 4-lane arterial with central division. Traffic for Type II works in newly (re)constructed roads are expected to grow approximately 5.5 percent every year for the first five years of operation, then it will stabilize at 3.5 percent every year until 2040. The baseline (without project) and project (with project) scenarios are assumed to have the same traffic volume, without considering the generated traffic.

9. **Travel distance (VKT).** For Type I corridors, baseline travel distance and project travel distance are the same as the corridor length. For Type II corridors, since some portion might be non-existent before project implementation, that is, baseline traffic has to take other routes to go from their origin to destination, an assumption is made that the baseline travel distance would be on average 20% more than the project travel distance (that is, corridor length).

#### *Economic Costs*

10. The total investment cost of Type I and Type II activities, ITS equipment and public transport facilities are estimated at US\$82.5 million, of which Type I activities and related ITS equipment are estimated at US\$20 million and the remaining US\$62.5 million for Type II activities and related ITS equipment. Since the economic cost does not include taxes, the financial costs have been converted to

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<sup>57</sup> IMF, World Economic Outlook Database, 2021



economic costs by factoring by 0.90. No other financial costs and benefits have been adjusted. The unit cost for corridor-specific Type I and Type II works are estimated at US\$1.33 million per km and US\$2.5 million per km respectively. Annual average maintenance costs for Type I corridors is estimated at US\$8,237 per km and for newly (re)constructed Type II corridors at US\$6,590 per km. Major maintenance will be carried out every 10 years and estimated to cost about 6 percent of the initial investment cost per kilometer of road. Value of time is calculated as a function of the expected growth of the economy. Operation and maintenance costs of bus depots and other road assets improved are estimated to grow approximately half a percent of the initial investment cost each year.

11. Table 3.2 below summarizes the key assumptions made in the CBA analysis of Type I and Type II activities and ITS equipment:

**Table 3.2. Key assumptions of Type I and Type II Corridors**

| Item   | Type I Corridors and related ITS | Type II Corridors and related ITS  |
|--|----------------------------------|------------------------------------|
| Total length of priority corridors (km)                | 15                               | 25                                 |
| Total number of lanes                                  | 4                                | 4-lane with central division       |
| AADT (number of vehicles) (2021)                       | 10,311                           | 15,000                             |
| Vehicle composition: <sup>58</sup>                     |                                  |                                    |
| Cars (%)   | 73.7                             | 73.7                               |
| Trucks (%)   | 21.7                             | 21.7                               |
| Buses (%)  | 4.7                              | 4.7                                |
| Vehicle fleet mean speed (km/h) (2021)                 | 13.0                             | 13.0                               |
| Annual traffic growth rate (percent)                   | 3.5 (2024-2040)                  | 5.5 (2024-2028)<br>3.5 (2029-2040) |
| Unit cost for corridor specific work (US\$ million/km) | US\$1.33                         | US\$2.5                            |
| Average VOC (US\$/100 VKT)                             | 33.72                            | 33.72                              |

Source: The World Bank estimates.

### *Economic Benefits*

12. The project will generate direct and indirect benefits as a result of the improved and new corridors, new bus priority lanes, bus stops, upgraded pedestrian and bicycle facilities, and enhanced traffic management. Taking conservative approach, the project does not account for modal shift benefits. The proposed ITS equipment and traffic engineering facilities will enhance traffic management and information sharing in the whole city. As a result, the project will assume the following quantifiable economic benefits: (a) reduction in VOCs, (b) vehicle travel time and bus passenger travel time savings, (c) reduction of the frequency and severity of road crashes, and (d) reduction in GHG emissions.

<sup>58</sup> In the absence of vehicle composition data in the selected project corridors during the project preparation, the assumption is made that the project corridors have the similar vehicle composition as the city. A conversion factor - Passenger Car Unit - is used to convert trucks and buses into passenger car equivalent.



13. The methodology for quantifying these economic benefits is as follows:

- **Benefits of lower VOC in selected corridor areas due to reduced congestion and lower vehicle-kilometers-traveled (VKT).** VOC savings for private vehicles, taxis, and trucks are calculated based on reduced VKT and per-VKT VOC because of reduced congestion (that is, increased speed of travel during peak hours). VOC savings for buses are calculated based on reduced bus operation cost and time because the proposed project will develop bus priority lanes and bus stops and improve operational efficiency.
- **Benefits of travel time savings due to reduced congestion.** The travel time of private vehicles and buses will decrease resulting in travel time savings for all passengers on project corridors. Travel time cost savings are calculated by multiplying time savings by a gradually increasing forecasted value of time.
- **Benefits of reduced road crashes.** The World Bank's RSSAT was used to assess the 'with' and 'without' project scenarios, to estimate the change in road crashes (expressed in the PSI), and finally to estimate the safety benefits and costs of the project for 17 years operational period.
- **GHG emission reduction.** This is measured by the lower carbon dioxide (CO<sub>2</sub>) emission cost. The economic benefit of GHG accounting is calculated in accordance with the World Bank's 2017 guidance note on the shadow price of carbon in economic analysis. The benefit of GHG emission reduction stems from less fuel consumption due to improved road conditions and increased public transport use.

14. Type I and II activities will be completed tentatively end of 2023, and selected corridors will start generating benefits. Table 3.2 presents the estimated benefits.

**Table 3.2. Economic Benefits for Type I and Type II Corridors 'With Project' Scenario**

| Benefits   | Type I Corridors       |                        | Type II Corridors      |                        |
|--|------------------------|------------------------|------------------------|------------------------|
|  | 2030<br>(with project) | 2040<br>(with project) | 2030<br>(with project) | 2040<br>(with project) |
| VOC savings (US\$, millions/year)                          | 1.2                    | 1.7                    | 9.7                    | 13.6                   |
| Fuel consumption savings (%/year)                          | 5                      | 5                      | 5                      | 5                      |
| Travel time cost savings (US\$, millions/year)             | 1.3                    | 3.4                    | 12.5                   | 30.2                   |
| Travel time savings (%/year)                               | 7.1                    | 7.1                    | 22.6                   | 22.6                   |
| Vehicle speed (km/h)                                       | 14.0                   | 14.0                   | 14.0                   | 14.0                   |
| Reduction in total number of fatalities (percent/year)     | 18                     | 18                     | 18                     | 18                     |
| GHG reduction - at low shadow price (US\$, millions/year)  | 0.10                   | 0.18                   | 0.78                   | 1.53                   |
| GHG reduction - at high shadow price (US\$, millions/year) | 0.20                   | 0.36                   | 1.37                   | 2.70                   |

Source: The World Bank estimates and calculation.

15. The project Type I and Type II corridors will reduce traffic congestion and VKT, hence reducing the GHG emissions. For Type I corridors, GHG emissions per VKT are reduced because the speed increase at



low speed range improves fuel efficiency. For Type II corridors, total VKT is also reduced because on average vehicles travel less with the new connection. The analysis indicates that project activities can reduce 326,825 tons of CO<sub>2</sub> equivalent (tCO<sub>2</sub>e) of GHG emissions over the economic lifetime of the project, or a 19,225 tCO<sub>2</sub>e annually. Applying the shadow price of carbon, the emissions savings account for 2.66 percent of the project benefits at the low estimate and 5.53 percent at the high estimate from 2024 to 2040.

#### **D. Results of Economic Evaluation and Sensitivity Analysis**

16. The overall economic EIRR and NPV of the project are estimated to be 26 percent and US\$224 million at a 6 percent discount rate. Table 3.4 presents the breakdown of EIRRs and NPVs by type of corridors.

**Table 3.3. Results of Economic Analysis**

|   | Type I Corridor | Type II Corridors | The Project |
|---|-----------------|-------------------|-------------|
| EIRR (%)                                | 21.8            | 27.6              | 26.2        |
| NPV at 6% discount rate (US\$, million) | 42.4            | 182.0             | 224.4       |

17. Sensitivity tests have also been undertaken to assess the robustness of the estimated EIRR and NPV to different key variations and the results are presented in Table 3.5.

**Table 3.5. Results of Sensitivity Analysis**

| Parameter                                    | EIRR (%) | NPV at 6% (US\$, millions) |
|--|----------|----------------------------|
| Base scenario                                | 26.2     | 224.4                      |
| Benefits reduces by 20%                      | 22.8     | 169.7                      |
| Project cost increases by 20%                | 23.5     | 215.6                      |
| Benefits decreases and cost increases by 20% | 19.8     | 158.4                      |



## ANNEX 4: Adjustments to the Country Program in Response to COVID-19

### COUNTRY: Mongolia

#### Ulaanbaatar Sustainable Urban Transport Project

1. **Mongolia has taken proactive measures in preventing the COVID-19 outbreak since the beginning.** From January 2020, Mongolia took early actions including border closure with its two neighbors, complete stop of international commercial air travel, and quarantine measures for arrival passengers through chartered flights. Preventive and containment measures, including strict lockdown across the country especially in urban centers, active contact tracing and testing, and isolation of suspected cases, were carried out. As a result, Mongolia had no reported cases from local transmission until November 2020.
2. **Despite the early successes, local transmission started in November 2020 and, since then, has not been fully brought under control.** So far, over 4,118 local cases have been reported (as of March 19, 2021), mostly in Ulaanbaatar city. Mongolia has had four COVID-19-related deaths. During the strict lockdown in February 2021, the Government organized a large-scale 'one door, one test' campaign in an effort to track down active transmission cases. Approximately half a million tests were carried out. Nonetheless, after these efforts, new cases continued to emerge, some of which were not linked to identifiable clusters.
3. **Mongolia has started its national vaccination program from February 23, 2021.** It is planning to vaccinate at least 60 percent of its 3.3 million people (or all of its adult population) by July 2021. The first shipment of vaccines from COVAX arrived on March 12. In addition, vaccines provided through bilateral channels and purchased by the private sector have also reached Mongolia. The vaccines have been rolling out based on its national vaccination plan, prioritizing health and other frontline workers and vulnerable populations. As of March 19, 2021, 4 percent of Mongolian population have been vaccinated.
4. **The strict lockdown measures are easing gradually.** The Government is considering reopening its borders to vaccinated foreign tourists by May 2021. Other measures include continuing chartered flights for overseas Mongolians to return and reducing the number of mandatory quarantine days upon arrival from abroad from 21 to 10.

#### Impact of COVID-19

5. **While the public health impact of COVID-19 has been relatively limited in Mongolia, impact on the economy has been significant—in 2020, Mongolia's economy contracted by over 5 percent, the country's first sizable recession in over a decade.** The COVID-19 pandemic adversely affected exports, FDI, private investment, and domestic activities. The mining sector was hit amid the collapse in external demand and domestic lockdown measures. Non-mining sector output also contracted, largely driven by slowdowns in the manufacturing, trade, and transportation sectors, as well as tourism. Meanwhile, private investment plummeted amid lower FDI inflows and negative growth of private sector credit. As a result, about 45 percent of firms have permanently exited the market since the beginning of the pandemic.



6. **The economic and social impact is threatening the gains in poverty reduction Mongolia has achieved over the past years.** COVID-19 has led to broad reductions in household income. A recent household phone survey conducted by the National Statistics Office of Mongolia and the World Bank indicates that the pandemic had caused significant disruptions in employment and broad reductions in labor income. With the rise in COVID-19 cases in early November 2020 and stricter containment measures, about 85 percent of households engaged in nonfarm business were not able to operate fully during December 2020 and nearly 90 percent experienced income losses compared to the same period last year. Herders have been able to work during the pandemic, but their livestock income has declined due to disruptions in supply chains and contractions in external demand for livestock products.

7. **In response to the crisis, the Government has announced three phases of stimulus measures amounting to US\$1.5 billion or about 11 percent of GDP for the period between April 2020 and July 2021.** The size of fiscal relief is among the highest in the East Asia and Pacific region. The measures are a mix of forgone revenue and spending relief, primarily focused on supporting households and firms (particularly small and medium enterprises [SMEs]) to cushion losses of income and avoid mass unemployment and bankruptcies. This includes about 8.8 percent of GDP in income support measures to households and 2.2 percent of GDP in income support measures to firms. Key spending measures were an expanded child money program (CMP) and higher health spending. The abovementioned phone survey results indicate that 81 percent of CMP recipient households reported that CMP partially mitigated the negative impacts of the pandemic and another 9 percent reported it completely offset impacts. In early 2021, authorities announced a new stimulus program of about US\$3.5 billion (over 20 percent of GDP) over three years. The program largely targets the banking sector and offers a combination of refinancing from the central bank, interest subsidies from the budget, and an expansion of the state guarantee fund to encourage banks to resume lending to the private sector. The program's direct fiscal impact is relatively limited although contingent liabilities will need to be carefully assessed; its economic impact will depend on the take-up by the banking sector.

### **The World Bank's COVID-19 Response Support**

8. **The World Bank has mobilized quickly in supporting the public health response as well as economic and social assistance targeting the poor and the vulnerable.** As of March 2021, the World Bank has committed US\$116.15 million in COVID-19 response, including US\$80.8 million in public health responses. These funds come from a mix of new financing and reallocations from existing portfolio.

- In the health sector, an emergency financing project (US\$26.9 million) was quickly mobilized as part of the first batch of the Global COVID-19 Multiphase Programmatic Approach in FY20. It was followed by an additional financing (US\$50.7 million) to support purchasing and distributing COVID-19 vaccines approved in FY21. They were complemented by a US\$1 million grant from the Pandemic Emergency Facility and US\$2.2 million from the ongoing E-Health project. These public health responses have focused on providing essential medical equipment and personal protective equipment for hospitals and designated COVID-19 health facilities, procurement and administration of vaccines, capacity building for health workers, and system strengthening for public health emergency responses.
- In economic and social response, the World Bank supported social insurance contribution exemptions and microloans for workers, through restructuring an ongoing project as well as



a new project with a total funding of US\$27.5 million. The ongoing education project provided US\$5 million for cash transfer under the CMP. The ongoing governance projects and SME support project also reallocated funds to support the Government's COVID-19 response and SMEs, respectively.

- As the economy moves from COVID-19 containment to recovery, the authorities are targeting an investment-led recovery, including through the latest stimulus package. The World Bank's support will consequently also shift toward supporting critical infrastructure, while using the opportunity to move to a more sustainable development path. The Ulaanbaatar urban transport project is the first project reflecting this shift.





## ANNEX 5: Road Safety Appraisal Tool Results

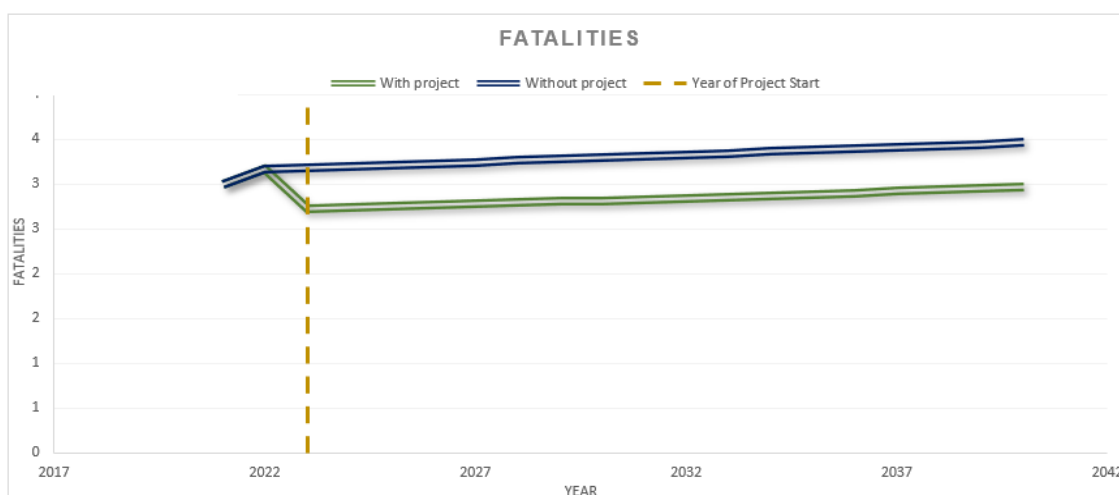
COUNTRY: Mongolia  
Ulaanbaatar Sustainable Urban Transport Project

### Priority Corridor #1- Bayankhoshuu Road

| Results                                    |        |
|--|--------|
| Fatality Percentage Change                 | -14.5% |
| Project Safety Impact (PSI)                | 0.86   |
| Fatalities without project (Selected Year) | 3.2    |
| Fatalities with project (Selected Year)    | 2.7    |

|                   | Fatalities Without Project (Selected Year) | Fatalities With Project (Selected Year) | PSI   | Fatality % Change |
|-------------------|--|---|-------|-------------------|
| Vehicle Occupants | 2  | 1                                       | 0.701 | -29.9%            |
| Motorcyclists     | 0  | 0                                       | 0.673 | 0.0%              |
| Pedestrians       | 2  | 2                                       | 1.010 | 1.0%              |
| Bicyclist         | 0  | 0                                       | 0.598 | 0.0%              |
| Total Fatalities  | 3  | 3                                       | 0.855 | -14.5%            |

| Rate Change (Selected Year)         | Without Project |             | With Project |             |
|-------------------------------------|-----------------|-------------|--------------|-------------|
| Road Casualties                     |                 |             |              |             |
|                                     | Value           | Risk Rating | Value        | Risk Rating |
| Annual Fatalities per km            | 0.5731          | High        | 0.4901       | High        |
| Fatalities per billion veh-km       | 151.42          | High        | 129.5        | High        |
| Annual Serious Injuries per km      | 5.7             | --          | 4.9          | --          |
| Serious Injuries per billion veh-km | 1514            | --          | 1295         | --          |
| Cost Benefit Analysis               |                 |             |              |             |
| Road Safety Cost without project    | \$3,771,938     |             |              |             |
| Road Safety Cost with project       | \$3,225,973     |             |              |             |
| Benefit (Selected Year)             | \$545,964       |             |              |             |



Source: World Bank team.

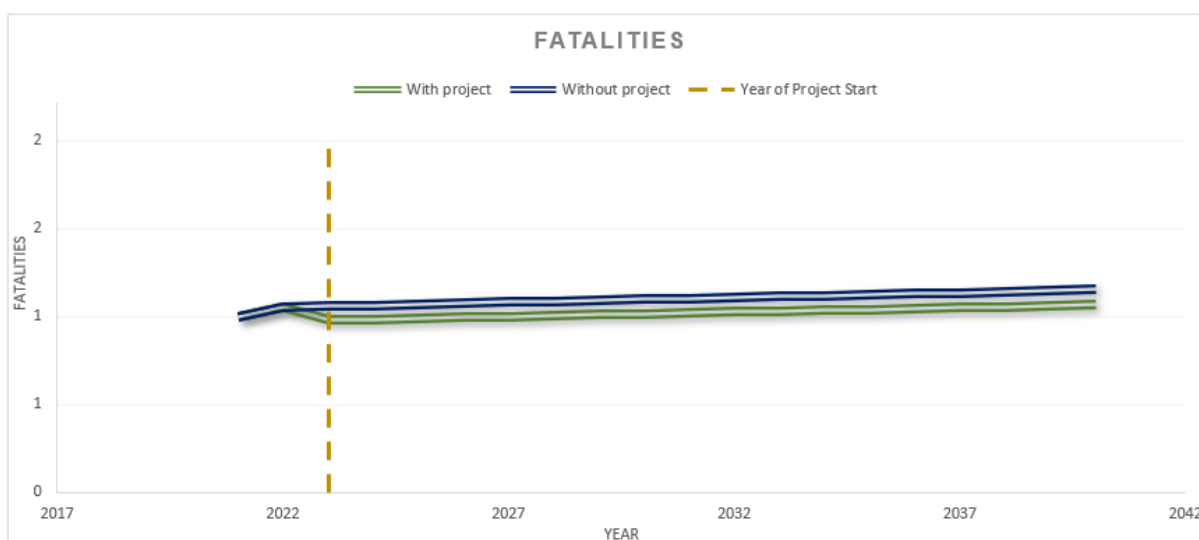


### Priority Corridor #2- Unur District Road

| Results                                    |       |
|--|-------|
| Fatality Percentage Change                 | -7.5% |
| Project Safety Impact (PSI)                | 0.93  |
| Fatalities without project (Selected Year) | 1.1   |
| Fatalities with project (Selected Year)    | 1.0   |

|                   | Fatalities Without Project (Selected Year) | Fatalities With Project (Selected Year) | PSI   | Fatality % Change |
|-------------------|--|---|-------|-------------------|
| Vehicle Occupants | 1  | 0                                       | 0.708 | -29.2%            |
| Motorcyclists     | 0  | 0                                       | 0.680 | 0.0%              |
| Pedestrians       | 1  | 1                                       | 1.143 | 14.3%             |
| Bicyclist         | 0  | 0                                       | 0.604 | 0.0%              |
| Total Fatalities  | 1  | 1                                       | 0.925 | -7.5%             |

| Rate Change (Selected Year)         | Without Project |             | With Project |             |
|-------------------------------------|-----------------|-------------|--------------|-------------|
| Road Casualties                     |                 |             |              |             |
|                                     | Value           | Risk Rating | Value        | Risk Rating |
| Annual Fatalities per km            | 0.4628          | High        | 0.4282       | High        |
| Fatalities per billion veh-km       | 112.25          | High        | 103.9        | High        |
| Annual Serious Injuries per km      | 4.6             | --          | 4.3          | --          |
| Serious Injuries per billion veh-km | 1123            | --          | 1039         | --          |
| Cost Benefit Analysis               |                 |             |              |             |
| Road Safety Cost without project    | \$1,257,313     |             |              |             |
| Road Safety Cost with project       | \$1,163,377     |             |              |             |
| Benefit (Selected Year)             | \$93,935        |             |              |             |

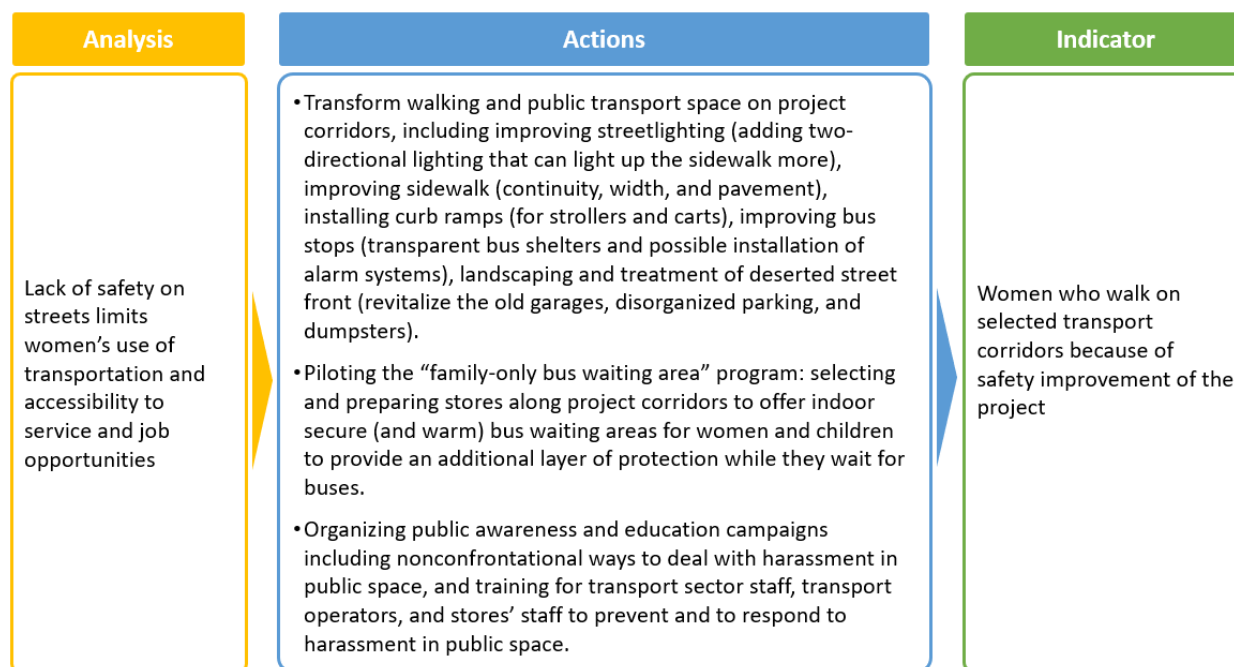


Source: World Bank team



## ANNEX 6: World Bank Corporate Commitment: Gender and Climate Co-Benefits

### A. Gender Tag Result Chain



**Gender indicator:** Women who walk on selected transport corridors because of safety improvement of the project

**Description:** This indicator measures the percentage of women who walk on the project corridors because they feel safer due to the safety improvement of project corridors. This indicator measures the project impact on the identified gender gap—unsafe street environment reduces women's transportation use and accessibility to services and job opportunities.

**Calculation method:** Mobility survey will be conducted at the end of the project. Sample size: 200–300. Surveys to be conducted on randomly selected pedestrians along project corridors in Ulaanbaatar during both work and non-work hours. Survey must ask the respondents' gender and income. Location of the corridors should be recorded or marked by GPS. Results from women are consolidated and reported.

Respondents will be asked in the questionnaire to report whether he/she used to take the same trip on the corridor before the corridor improvement project. And if not, the respondent will pick from the following multiple choices for the reasons that he/she makes the current trip: (a) streets and bus waiting areas are safer because of the corridor improvement project; (b) change of home/work/school location; (c) new attractions such as store/restaurant/café were opened; (d) others. The respondents who did not make the same trip before and picked (a) as the reason for making the current trip will be counted and divided by the total number of respondents to get the value of this indicator.

Focus groups can be used to obtain a better understanding of the reasons for the change. SMS or web-based (app) surveys could be used as complementary measuring tools.



## B. Climate Adaptation and Mitigation Co-benefit Matrix

| Components   | Climate Measures   | Types                   |
|--|--|-------------------------|
| Component 1: Integrated Corridors (IBRD loan: US\$81 million)  |  |                         |
| Subcomponent 1.1<br>Corridor-specific infrastructure investments (IBRD loan: US\$65 million)         | <p><b>Adaptation:</b> Both Type I and Type II corridor works in this Subcomponent will follow the same climate resilient protocols and actions through the project design, implementation, and operations. Specifically, the project will improve resilience to urban flooding and icing through flood mitigation engineering solutions to designs and works, such as proper grading, use flood minimizing and permeable pavements and sidewalk materials, and improvement of drainage channels among others. On the other hand, improved quality and connectivity of the street network will also help residents in Ulaanbaatar reach critical services (foods, hospitals, schools) in case of climate-induced disasters.</p> <p><b>Mitigation:</b> This subcomponent will directly contribute to reducing fuel consumption and GHG emissions through alleviated traffic congestion and better road conditions in the road operations. Both Type I and Type II works will include NMT and public transport facilities (sidewalk, pedestrian crossing, bus priority lane) to encourage the modal shift towards more sustainable modes such as walking, biking, and public transport.</p> | Adaptation & Mitigation |
| Subcomponent 1.2<br>Intelligent Transport Systems (IBRD loan: US\$12 million)                        | The upgraded ITS equipment and software (including traffic signals, control center, monitoring cameras) will improve traffic management and road safety. This leads to more efficient traffic flow and reduced road crashes. Following with benefits including reducing traffic congestion and the stop-and-go and queuing of vehicles. Hence, this subcomponent will indirectly reduce fuel generated GHG emissions from vehicles.  | Mitigation              |
| Subcomponent 1.3<br>Smart Parking Management System (IBRD loan: US\$4 million)                       | This Subcomponent will develop and operationalize a Smart Parking Management System to reduce parking space searching time and alleviate traffic congestion due to disorganized parking, hence reducing fuel consumption and GHG emissions from vehicles.  | Mitigation              |
| Component 2: Sustainable Public Transport System (IBRD loan: US\$10 million)                         |  |                         |
| Subcomponent 2.1<br>Corridor-specific investments (IBRD loan: US\$5 million)                         | This public transport component will improve the quality and reliability of public transport services and facilitate integration with other transport modes. The activities of bus lanes installation, bus stops improvement, bus management systems, and on-demand transit services will make public transport modes more attractive therefore facilitating modal shift from private vehicle travel to more sustainable travel modes, which reduces GHG emissions from passenger transport and yields climate mitigation co-benefits.   | Mitigation              |
| Subcomponent 2.2<br>City-wide investments (IBRD loan: US\$5 million)                                 |  |                         |
| Component 3: Effective Institutions for Transport Planning and Management (IBRD loan: US\$9 million) |  |                         |



| Components   | Climate Measures  | Types                   |
|--|---|-------------------------|
| <b>Subcomponent 3.1</b><br>Strategic studies<br><i>(IBRD loan: US\$4.5 million)</i>                            | <p><b>(1) Sustainable and Resilient Urban Mobility Strategy:</b> will help the city develop a coherent vision towards sustainability and resilience by promoting green modes, travel demand management, integrated land use and transport planning, and by mainstreaming climate resilience considerations in transport planning and management, therefore having both mitigation and adaptation benefits.</p> <p><b>(2) Parking Management Plan:</b> will help the city use pricing to manage parking demand therefore reduce vehicle travel demand, yielding climate mitigation benefits.</p> <p><b>(3) Transport Investment Planning and Management:</b> will incorporate climate risks as a criterion to the prioritization methodology therefore improve long-term climate resilience of all transport investments.</p> <p><b>(4) Road Traffic Crash Data Platform:</b> will help the city use data to identify measures to reduce crashes, leading to smoother traffic flow and improve fuel efficiency on the road, which reduces GHG emissions.</p> <p><b>(5) Speed Management Plan</b> will also lead to fewer road crashes, smoother traffic flow, and optimized speed for higher fuel efficiency, which will reduce GHG emissions in Ulaanbaatar.</p> <p><b>(6) Private Sector Participation in Public Transport</b> will help seek more investment options to improve the public transport service, facilitating modal shift to public transport modes and reducing GHG emissions.</p> <p><b>(7) Smart Integrated Public Transport towards MaaS</b> will help make the public transport sector more accessible and more convenient therefore more competitive to private vehicles, making the modal shift to a greener mode and reducing GHG emissions.</p> | Mitigation & Adaptation |
| <b>Subcomponent 3.2</b><br>Capacity building and implementation support<br><i>(IBRD loan: US\$4.5 million)</i> | This subcomponent will build the capacity of the infrastructure management entities in Ulaanbaatar in regards of mainstreaming climate resilience in pro-rated to the planning prioritization, design (feasibility studies), and monitoring (climate adaptation indicator in the M&E) process. The workshops, training, conferences, and study tours for government departments and technical staff will directly build the institutional capacity in terms of climate resilience feature.  | Adaptation              |